

JUNE 2012



LEVERAGING OPPORTUNITIES FOR SUSTAINING GROWTH:

IDB Biodiversity
Platform for
Latin America
and the Caribbean

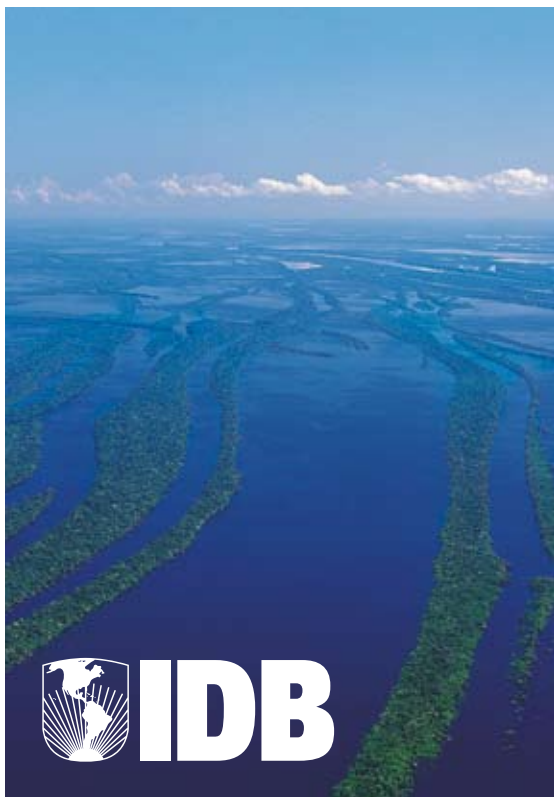


TABLE OF CONTENTS

Acronyms and Abbreviations	3
Executive Summary	4
Chapter 1: Introduction	8
Chapter 2: Ecosystems Status and Trends	10
Chapter 3: Challenges for Leveraging Natural Capital	16
Chapter 4: Opportunities for Sustainable Growth	22
Chapter 5: IDB Sustainability Mandate and Experience	31
Chapter 6: IDB Platform: A Proposal	38
Chapter 7: Call for Engagement	50
References	57
Appendices	61

ACKNOWLEDGMENTS

This document was prepared by the Department of Infrastructure and Environment (INE), under the coordination of Hector Malarin (Chief, INE/RND) and the supervision of Alexandre Rosa (Manager, INE). The document benefitted from contributions provided by the cross-departmental Biodiversity Working Group consisting of: Michele Lemay (focal point), Carolina Jaramillo, Rebecca Benner, Elizabeth Cushion, Maria Claudia Perazza, Eirivelthon Lima, Graham Watkins, Patrick Doyle, Gregory Watson, Paul Winters, Jaime Garcia Alba, Pablo Picon, Gaston Astesiano, Fernando Miralles-Wilhelm, Rosana Brandao, Arnaldo Vieira de Carvalho, Rafael Lima, Judith Anne Morrison, Carlos de Paco, Cristina Dengel, Janine Ferretti, Walter Vergara, Emma Torres, and Elizabeth Chavez. Juan Pablo Bonilla, Chief Advisor, EVP/EVP, also provided valuable insights. The Bank gratefully acknowledges the contributions of Resources for the Future and Gonzalo Castro de la Mata for the studies commissioned as background to this document.

ACRONYMS AND ABBREVIATIONS

CBD	Convention on Biological Diversity
CIESIN	Center for International Earth Science Information Network
CIFOR	Center for International Forestry Research
CSR	Corporate Social Responsibility
CTO	Caribbean Tourism Organization
ECLAC	Economic Commission for Latin America and the Caribbean of the United Nations
GEF	Global Environment Facility
IDB	Inter-American Development Bank
IAG	Independent Advisory Group on Sustainability for the IDB
ICSU	International Council for Science
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
ESG	Environment and Safeguards Compliance Unit of the IDB
FAO	Food and Agriculture Organization of the United Nations
FEMSA	Fundación FEMSA A.C
GCI-9	Ninth Capital Replenishment for the IDB
GDP	Gross Domestic Product
GEO 3	Global Environmental Outlook—3
LAC	Latin America and the Caribbean
LNG	Liquefied Natural Gas
MIF	Multi-Lateral Investment Fund
MMA	Ministério do Meio Ambiente (Brazil)
MPA	Marine Preserved Area
NGOs	Non-governmental Organizations
NTFPs	Non-timber Forest Products
PAs	Protected Areas
PAHO	Pan American Health Organization
PES	Payment for Ecosystem Services
PDMIs	Integrated Management Demonstration Plots
PDSA	Acre Sustainable Development Program
PMR	Project Monitoring Report
REDD	Reducing Emissions from Deforestation and Forest Degradation
RFF	Resources for the Future
RND	Environment, Rural Development and Disaster Risk Management Division
SEA	Social and Environmental Assessment
SME	Small-Medium Enterprise
TEEB	The Economics of Ecosystems and Biodiversity
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNWTO	United Nations World Tourism Organization
WB	World Bank
WBCSD	World Business Council for Sustainable Development
WCMC	World Conservation Monitoring Center
WWF	World Wildlife Fund
EEZ	Ecological and Economic Zoning

EXECUTIVE SUMMARY

With 40% of the world's biodiversity, the Latin America and Caribbean region possesses a vast and unique source of capital—natural capital. If these assets are wisely managed, biodiversity holds significant promise for long-term growth and prosperity. Well-managed biodiversity can help the region meet the ever-increasing demand for energy, water, food, land and other natural resources as it grapples with a growing population that may total 700+ million people by 2030. To help fulfill this promise, the Inter-American Development Bank now seeks feedback on an unprecedented Biodiversity Platform. Only with your ideas and partnership will we be able to help maintain the LAC Region's remarkable biodiversity while driving economic growth and contributing to well-being for all.





Though LAC makes up only 16% of the planet's land, it holds 40% of the world's biodiversity.

PROTECTING BIODIVERSITY, SUSTAINING LIFE

The Latin America and Caribbean (LAC) region is home to some of the world's richest biological diversity—a web of life that provides humanity with myriad benefits, known as ecosystem services. From food and shelter to clean water and air, from flood mitigation to disease and pest control, from breathtaking landscapes to sacred places, LAC's ecosystem services are vital to human life, now and for future generations.

This wealth of biodiversity and related services constitutes a major comparative advantage for the region's future development—one that must be conserved and leveraged. As LAC's populations and economies expand, so do opportunities for investing in this asset to generate sustained regional growth.

But population growth—as well as climate change and other intensifying stressors—pose serious threats to biodiversity and the countless economic activities that depend on healthy ecosystems. LAC's thriving middle classes and robust economic growth are increasing demand for resources, such as food, energy, and water.

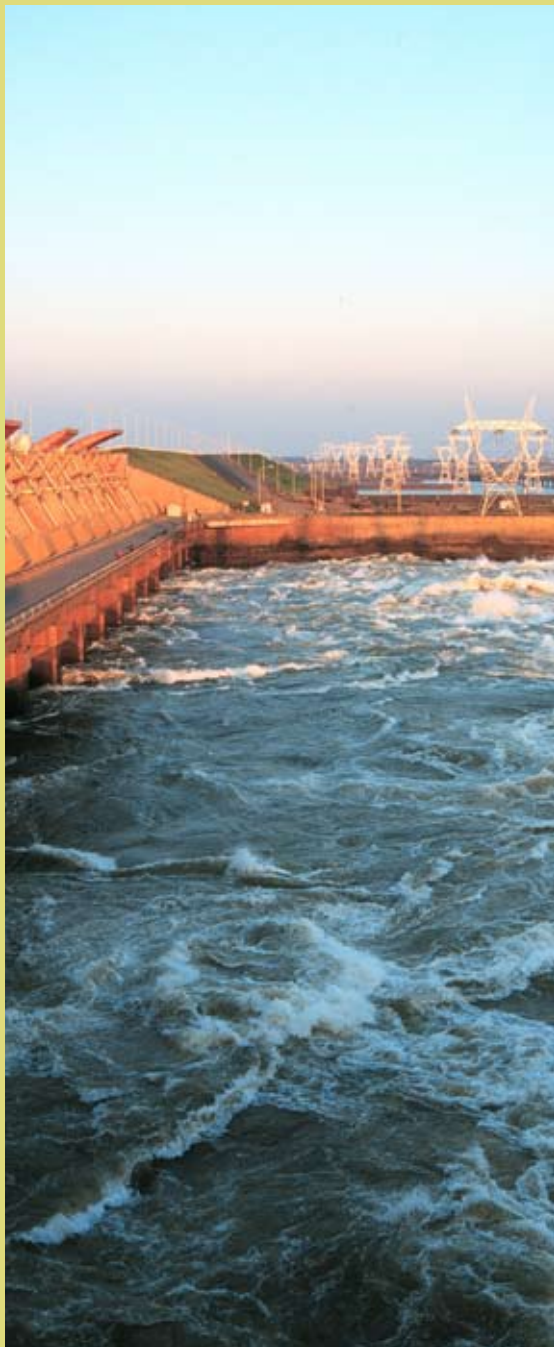
How can biodiversity be an asset for economic growth and conversely, how can growth help preserve the region's rich biodiversity to the benefit of long-term prosperity?

MAXIMIZING OPPORTUNITY FOR SUSTAINED GROWTH

Investing in biodiversity poses definite challenges. For example, measuring the full economic value of ecosystems—including indirect benefits and non-use values—can prove difficult. In addition, most LAC countries still need to develop the capacity to regulate interactions between markets and ecosystems. Factors such as lack of political will, limited enforcement, and insufficient technical capacity make effective governance problematic.

Only by identifying and addressing challenges like these can we maximize opportunities. From developing sustainable business models to increasing investments in natural resource protection, there are multiple opportunities to facilitate growth in LAC. And due to the region's strengths in physical, biological, and human capital, there is ample room to make development both socially and biologically sustainable.

One of these opportunities is to sustain sectors whose products directly depend on biodiversity, such as forestry, agriculture, and tourism. These industries make up a large percentage of the region's GDP, so supporting their ecosystem-based inputs is critical. Another opportunity lies in expanding 'biodiversity-friendly' investments in rapidly



growing sectors not traditionally thought as directly dependent on ecosystem services such as energy generation, mining and infrastructure. Other areas of opportunity include sustaining the livelihoods of indigenous communities and other populations that rely directly on biodiversity for subsistence and sustaining the provision of basic services (e.g., energy, water).

LEVERAGING OUR STRENGTHS AND EXPERIENCE

The Inter-American Development Bank (IDB) has a long history of success in financing conservation and ecosystem services. We work with countries in many stages of the project cycle to mainstream biodiversity and ecosystem services—from regional and country strategy through project evaluation—and our projects to date cover a broad variety of objectives, biomes, issues, and actors. We use a mix of financing tools and market-based approaches, and we bridge the public and private sectors. With both regional scope and in-country presence, IDB has direct access to the national policy makers responsible for the development agenda.

Of course, there are also areas where we can improve. For instance, we want to enhance metrics for measuring impact on biodiversity conservation, create effective demand

within countries for a sustainability agenda, mainstream biodiversity more systematically in all economic sectors, and increase awareness of biodiversity benefits, to name a few. We have much to learn from LAC countries, NGOs, corporations, researchers, scientists, and others who work with these issues every day. We want to build on our strengths to accomplish more.

PROPOSED AREAS OF ACTION AND INVESTMENT

As part of our upcoming Biodiversity Initiative, IDB seeks to enhance the contributions of biodiversity and its associated ecosystem services to LAC's sustainable and inclusive development. As a first step towards a fully endorsed Initiative, we have developed a Biodiversity Platform to help frame potential areas of action and to solicit feedback on the general direction being proposed. The Platform seeks to establish new ways of doing business for the Bank so that public and private investments will improve human well-being and social equity and reduce environmental risks while at the same time leveraging positive outcomes for biodiversity and ecosystem services.

We have identified four themes where the Platform can support investment, knowledge

development, and capacity building. Within these areas, we want to:

- Promote full understanding of the value and potential of managing natural capital
- Help countries achieve more effective biodiversity policies and investments
- Create new economic, financial, and business opportunities that enhance the value of LAC's biodiversity

LAC's diversity in ecosystems, politics, culture, and economics makes prioritizing and refining our themes both complicated and critical. In this publication, we detail these areas, provide indicators for definition, and offer examples of how they might be carried out. The four themes include:

- Mainstreaming biodiversity in economic sectors and accounting for the value of ecosystems
- Maintaining the biodiversity endowment
- Promoting private sector investment in biodiversity
- Improving governance and the policy framework

We go on to propose how these ideas would be put to work. Proposed steps in the action plan include exploring appropriate financing mechanisms, mainstreaming in the Bank's country dialogue and investments, creating strategic partnerships, and measuring progress, among others.

NEXT STEPS

NOW THE PLATFORM NEEDS REFINEMENT. THAT'S WHERE YOU COME IN. To ensure the Platform reflects the concerns of stakeholders, the guidance of experts, and the most innovative solutions, we are launching an unprecedented effort to gather your input.

After our first broad stakeholder engagement at the Rio+20 Conference on Sustainable Development, we will conduct four highly interactive regional stakeholder consultations. In addition, we will offer multiple opportunities to submit feedback online.

Once we've synthesized and incorporated all the input, we will present a revised Platform to the IDB Board of Directors in December 2012. Upon their approval, we will launch the Biodiversity Initiative in early 2013.

Thank you in advance for your guidance and participation in this important effort for the region and the world.

CHAPTER 1

Introduction

From the tiniest bacteria to the largest blue whale, an extraordinary wealth of biodiversity in the Latin America and Caribbean (LAC) region underpins all natural processes upon which human life and development depend. Dubbed a “biodiversity superpower” (Bovarnick *et al.*, 2010), LAC contains some of the richest collections of birds, mammals, plants, and amphibians on the planet. This biodiversity generates important life-supporting benefits for people, called ecosystem services.



LAC contains seven of the world's **25** biodiversity hotspots and six of the **17** “megadiversity” countries.



LAC countries are growing increasingly wealthy, more urban, and more middle class, not only because of unrivaled biodiversity, but also at its expense.

Though LAC makes up only 16% of the planet's land, it holds 40% of the world's biodiversity (UNDP, 2010). According to Conservation International, LAC contains seven of the world's 25 biodiversity hotspots¹ and six of the 17 "megadiversity" countries.

LAC countries are growing increasingly wealthy, more urban, and more middle class, not only because of unrivaled biodiversity, but also at its expense. How can we sustain the region's growth while not just preserving biodiversity but enhancing its natural value and its contribution to LAC's economies?

Promoting socially inclusive, sustainable growth in LAC presents plentiful opportunities for investment and profit. To embrace these unique opportunities, public and private agents must fully understand the costs, benefits, and impacts of their decisions.

To this end, the Inter-American Development Bank (IDB) has launched a transformation process with the goal of making biodiversity conservation and ecosystem services a core part of its business. As part of this initiative, the IDB Biodiversity Platform aims to increase socially and biologically sustainable investments in LAC that will support the poor,

engage the private sector in new business opportunities, integrate traditional knowledge, and build resilience to climate change impacts.

In this report, we introduce LAC's ecosystems; highlight regional biodiversity challenges; present emerging investment opportunities around biodiversity and development; assess IDB's previous experiences in biodiversity-related investments; and finally, present our Biodiversity Platform.

Our aim is to spark a vital discussion around the Platform's direction. How should IDB work with key stakeholders to help transform these challenges and opportunities into enduring successes?

This report is a living document. Through active stakeholder involvement, we will refine the direction IDB is currently considering. We need your input and welcome you on this crucial journey to create a thriving future, not just for the people of LAC but for all life on earth.

This report has been enriched by internal cross-sector discussions as well as input from academia, civil society, and public and private sector institutions.

¹ A biodiversity hotspot is characterized both by exceptional levels of plant endemism and by serious levels of habitat loss (less than 70% of its original vegetation remains). Source: CI, 2012.

CHAPTER 2

Ecosystems Status and Trends

The Latin America and the Caribbean (LAC) region holds a vast array of terrestrial, freshwater, coastal, and marine ecosystems representing many of the earth's biomes.² This web of living and non-living systems supports some of the world's more complex and exceptionally rich natural communities, such as wet and dry habitats; tropical, temperate, and desert systems; forests, shrublands, and grasslands; rivers and their deltas, wetlands, and lakes; and coastal-marine ecosystems.

These ecosystems provide beneficial provisioning, regulating, and cultural services derived from nature, including food, shelter, clean water and air, soil fertility, spiritual fulfillment, and many others. Table 2.1 illustrates the common human benefits of major ecosystems, benefits often overlooked in decision making. Understanding how the region's diverse ecosystems fare today—and what might lie in store for them in the future—helps put into perspective the challenges LAC faces today and in the years ahead.

A closer look at each ecosystem reveals a more detailed analysis of the many benefits of biodiversity—and the significant threats the LAC region faces.

² A biome is considered a major community classified according to the predominant vegetation and characterized by adaptations of organisms to that particular environment (Campbell, 1996).

11 of the Earth's
14 terrestrial biomes
are present in the LAC.

TABLE 2.1. What beneficial human services do ecosystems deliver?

Ecosystem type	Ecosystem	Provisioning services	Regulating services	Cultural services
Terrestrial	Forest	<ul style="list-style-type: none"> • Timber • Fuel • Fiber 	<ul style="list-style-type: none"> • Flood mitigation • Air-quality regulation 	<ul style="list-style-type: none"> • Recreation • Non-timber forest products
	Grasslands	<ul style="list-style-type: none"> • Agriculture • Livestock 	<ul style="list-style-type: none"> • Pollination • Erosion control 	<ul style="list-style-type: none"> • Inherent beauty
Freshwater	Wetlands	<ul style="list-style-type: none"> • Fish 	<ul style="list-style-type: none"> • Water regulation • Flood mitigation 	<ul style="list-style-type: none"> • Cultural values • Religious values
	Rivers	<ul style="list-style-type: none"> • Energy • Clean water 	<ul style="list-style-type: none"> • Water regulation 	<ul style="list-style-type: none"> • Sense of place
Coastal and marine	Mangroves	<ul style="list-style-type: none"> • Fuel • Fish 	<ul style="list-style-type: none"> • Natural-hazard regulation • Coastal protection 	<ul style="list-style-type: none"> • Social relations
	Coral reefs	<ul style="list-style-type: none"> • Fish 	<ul style="list-style-type: none"> • Storm protection 	<ul style="list-style-type: none"> • Aesthetic values

Source: IDB Based on MA, 2005



TERRESTRIAL ECOSYSTEMS RICH BUT AT RISK

LAC comprises 11 of the earth's 14 terrestrial biomes—from tropical and subtropical forests to temperate grasslands, savannas, and shrublands to Mediterranean forests, woodlands, and scrub (see Figure 2.1). Forested biomes together cover almost 900 million hectares, or half of LAC's land mass, and nearly 22% of the world's total forest cover. The most prevalent biome—tropical and subtropical moist broadleaf forest—covers 44% of the region's surface area, mostly in Central America and the Caribbean and northern South America. Almost 75% of these forests remain as primary forest cover in remote or protected areas (FAO, 2011).

These ecosystems are subject to changes from conversion and degradation of the physical and biotic conditions associated with agricultural expansion, road development, mining, logging, animal grazing, fire, and the introduction of invasive species. Such changes affect the ecosystems' capacity to generate services including water regulation, nutrient and carbon-cycle regulation, disease and pest control, pollination, and natural-hazard mitigation. For instance, conversion of forest land for agriculture leads to a loss in the ecosystem's ability to capture and retain carbon and generate water. Subsequent fragmentation and habitat loss further expose natural areas to invasive species and climate change effects (UNEP, 2010b).

FIGURE 2.1 Terrestrial biomes of Latin America and the Caribbean



Recent data suggest that between 1990 and 2005 nearly 7% of the region's forest cover was converted, mostly to agricultural land (UNEP, 2010b). Yearly average forested area loss rates between 2000 and 2010 stood at an average of 0.46% (FAO, 2011). Though a slight improvement over the previous decade, this deforestation rate represented forest loss close to 4.2 million hectares each year. The estimated total carbon stock in LAC forests (including biomass, dead wood and soil) is nearly 200,000 million tons (FAO 2010) with annual carbon emissions as a result of forest conversion estimated at 424 million tons for the period 1990–2010 (FAO, 2011). Total greenhouse gas emissions from land use change sources are the highest contributor (47%) to LAC's total emissions (IDB-ECLAC-WWF, 2012). Maintaining natural ecosystems will be a key for climate stabilization.

The level of threat facing the wider diversity of terrestrial ecosystems varies across the region, but there are widely recognized priorities (Blackman *et al.*, 2012) including seven biodiversity hotspots—high-priority conservation areas that combine exceptional biodiversity and a significant threat level. LAC's hotspots include much of Central America and Mexico, the Caribbean, the Pacific coast, and the central Atlantic region of South America.



FRESHWATER ECOSYSTEMS FLOWING AND FRAGILE

More than 30% of the earth's available freshwater and roughly 40% of its renewable water resources are found in Latin America (UNEP, 2010c). The region contains a wide array of freshwater habitats, including rivers (Amazon, Parana-Paraguay, Orinoco, Uruguay, and Magdalena-Cauca), wetlands (the Pantanal, Amazon, and South American temperate peatlands), lakes (Titicaca, Nicaragua, Managua, Maracaibo, and Chapala,) and aquifers (the Guarani, Chaco, and Puelche). The aquatic biodiversity associated with these habitats is significant. For instance, 227 designated Ramsar sites³ are located in LAC, covering a total area of approximately 35.9 million hectares (UNEP, 2010a).

In South America alone, 55 transboundary watersheds (Plata-Paraná, Orinoco, and Amazon) cover almost 60% of the total territory (UNEP, 2010a). In some countries, these basins represent almost 80% of the country's territory. Hydrogeological reservoirs or aquifers (Guaraní, Chaco and Puelche, and the Valley of Mexico) are another important source of LAC's water resources, providing fundamental water supplies

³ The Ramsar List of Wetlands of International Importance (or Ramsar sites) includes those wetland ecosystems "which are important for the conservation of global biological diversity and for sustaining human life through the maintenance of their ecosystem components, processes, and benefits/services." Source: http://www.ramsar.org/cda/en/ramsar-documents-list/main/ramsar/1-31-218_4000_0_

for cities and agricultural and industrial uses. Glaciers are important systems, particularly in mountainous areas where snowfields present a significant source of water supply and provide hydrological regulation services mainly for urban potable water consumption, hydropower, and agriculture (UNEP, 2010a).

The health and performance of freshwater ecosystems depend on their biotic and physical conditions (e.g, water quality, quantity, and temperature), which allow them to support aquatic life and provide services such as flood mitigation, storm protection, and hydrological regulation. Modifications in water quantity, flow, temperature, and connectivity are likely to affect these conditions and inhibit their capacity to function (Blackman *et al.*, 2012).

Pollution in the form of runoff from fertilized agricultural fields, mining, pesticides, and other agrochemicals, soil erosion, untreated sewage, and industrial wastes also puts environmental stress on freshwater biodiversity (Blackman *et al.*, 2012). Climate change will further exacerbate these conditions by altering temperature and rainfall patterns with likely impacts on water availability (IPCC, 2007). These sources of stress, in turn, can affect dependent economic activities such as fishing, agriculture, and tourism. Urban populations could be subjected to pressing circumstances due to a lack of reliable sources and continuous flow of fresh water for human consumption.

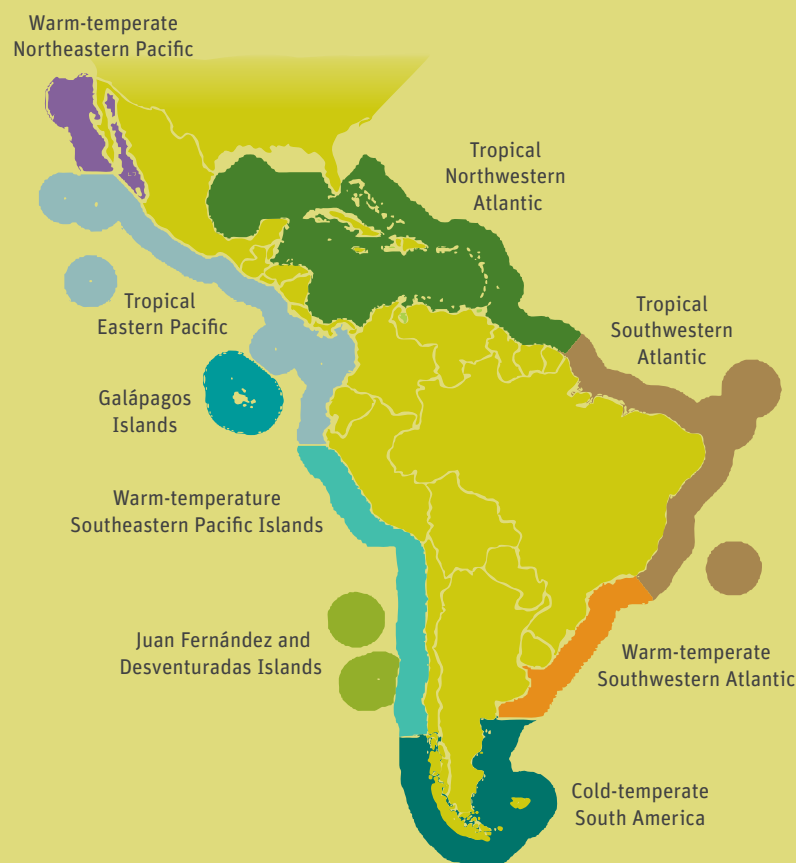
MARINE AND COASTAL ECOSYSTEMS UNDER PRESSURE

LAC contains six main coastal and marine regions, or biogeographic provinces (see Figure 2.2). They represent a wide range of mangrove, seagrass, and coral ecosystems, from the rich and highly endemic warm marine environments of the Caribbean to the cold temperate waters of the Southern Cone to the productive south and tropical East Pacific regions. The varied temperature and biophysical characteristics are reflected in each province's diversity. The Caribbean alone is particularly rich, hosting 12,000 recorded marine species, more than any other in the region (Miloslavich *et al.*, 2011).

LAC boasts more than 30 distinct mangrove eco-regions along 37,000 square kilometers of tropical and subtropical coasts, representing one-quarter of the world's total mangroves (Siikamaki *et al.*, 2012). Like mangroves, salt marshes are often found in grassy estuaries, deltas, and low-lying coasts that experience low wave energy. Seagrass meadows comprise different flowering species that provide shelter for aquatic animals and breeding ground for various fishes (Kennedy and Bjork, 2009). They also stabilize sediments coming off the land and can provide important links between coral reefs and terrestrials systems such as mangroves.

The marine environment also supports highly diverse coral reefs and associated ecosystems. The Caribbean coasts of Mexico, Belize, Guatemala, and Honduras hold the second-

FIGURE 2.2 Coastal biogeographic provinces



(Source: Sullivan-Sealy, and Bustamante, 1999)

largest reef system worldwide. It provides habitat for an estimated 10,000-plus species and plays a central role in the broader regional environment. Coral reefs are critically important to fisheries, which become even more productive in ecosystems where mangroves, seagrass beds, and coral reefs co-exist. A number of other ecosystems, such as rocky reefs and seamounts, have been subjects of increasing research for their contribution to fisheries and other services.

Nearly half of LAC's entire population lives within 100 kilometers of the coast (Chatwin *et al.*, 2007). This concentration places direct and indirect demands on coastal and marine systems, resulting in habitat loss and degradation as well as overexploitation (Halpern *et al.*, 2008). For example, the extent of mangroves has declined 40% since 1980, due primarily to coastal development (Valiela *et al.*, 2001). Reports also suggest 66% of the region's coral reefs are damaged and have declined almost a third of their historical range (Sherman *et al.*, 2009).

Catch fisheries in LAC have exhibited the same dynamic pattern over the past several decades as in the rest of the world. Despite increases in the number and capacity of fishing vessels, production has reached a plateau and may be

in decline (FAO and World Fish Center, 2008; Worm *et al.*, 2009; FAO, 2010; Salas *et al.*, 2011). Close to 80% of the 49 commercial fish stocks for which data are available have been classified as either moderately to fully exploited (UNDP, 2010).

The introduction of invasive species and the effects of climate change, especially ocean acidification and sea level rise, add further pressure on coastal and marine ecosystems. In addition, pollution from agricultural, industrial, and urban sources presents an important driver of biodiversity loss. Agricultural non-point pollution and municipal wastewater is a particularly pressing problem in LAC, as some 85% of all municipal waste is discharged without any treatment (Blackman *et al.*, 2012). Increased sediment flow due to land use changes and industrial processes also contribute to water pollution.

GROWING PRESSURE

Climate change, including fluctuating temperature and precipitation, is expected to put added stress on LAC's terrestrial and freshwater biodiversity (Blackman *et al.*, 2012; Strayer and Dudgeon, 2010). It may lead to changes in

species ranges, increases in disease and pest outbreaks, and variability in populations and habitat conditions. These impacts are likely to occur faster than some species can adapt, especially in conjunction with stressors such as habitat loss and fragmentation (Thomas *et al.*, 2004; Pounds *et al.*, 2006). It is likely that climate change will cause a 20% to 30% loss of at-risk species (IPCC, 2007), with those in the narrower southern hemisphere expected to have more difficulty adapting than those in the north (ICSU-LAC, 2010).

Global climate change is also considered a substantial threat to LAC's marine biodiversity (IPCC, 2007). Potentially serious impacts on coastal and marine biodiversity include habitat loss, expansions or contractions of natural species ranges, increases in disease transmission and pest infestations, and unpredictable fluctuations in populations and habitat conditions. Sea level rise and ocean acidification are seen as the main climate change-related threats to coastal and marine biodiversity (Miloslavich *et al.*, 2011). Changes to ocean currents and precipitation regimes could also have adverse effects.

CHAPTER 3

Challenges for Leveraging Natural Capital

**LAC GDP grew 87%
between 1990 and 2010,
while its GDP per capita
grew by 40%.**

The LAC region is changing at a rapid rate. Between 1950 and 2010, the region's population grew by more than 250% (ECLAC, 2011). Its GDP grew 87% between 1990 and 2010, while its GDP per capita grew by 40% (ECLAC, 2011). The poverty index, which reached nearly 41% in 1980, had been reduced to 32% by 2010. Economic growth and a growing middle class have also led to increased demand for food, forest products, land minerals, and energy. Globalization and technological progress have both accompanied and contributed to this pattern of growth (Moreno, 2011).

How does the region's richness of ecosystems—or natural capital—affect this economic development? Why is biodiversity an essential asset to sustainable growth? Biodiversity and ecosystem services are direct and indirect inputs for many economic activities, as well as a life support system for people throughout LAC, including its indigenous and traditional peoples. They also provide important global public goods, such as carbon storage and regulation and habitats for species with high cultural value.

LAC's economic dependence on biodiversity can lead to a number of important tradeoffs that will have to be understood and carefully weighed when making decisions about the region's future. Presented below are four challenges for leveraging the Natural Capital that LAC will face on its continued path of rapid economic growth, expanding population, and increasing trade. Additionally, Box 3.1 showcases one example of how these challenges play out for a particular ecosystem.

ACCOUNTING FOR BIODIVERSITY'S ECONOMIC VALUE

A large portion of ecosystem services are considered to have direct, indirect-use, or non-use values that are not reflected through markets as many direct-use values from tradable goods and services are. Additional non-use values of biodiversity, such as aesthetic and cultural heritage assets, are also hard to assess. The failure to reflect the total economic value of ecosystems, meaning the sum of all these social values, leads to inefficient resource allocation and under-provision of these goods and services to society. Creating markets and price-based tools to correct these failures is fundamental if values beyond those generating direct private wealth are to be preserved.

BOX 3.1. NATIONAL ENVIRONMENTAL ACCOUNTING TAKES HOLD

In the late 1980s, Costa Rica and Mexico were the first LAC countries to implement national environmental accounting through pilot projects. Since then, 10 other countries—all but one in Latin America—have implemented pilot projects (Table 3.1). Today Peru, Colombia, Mexico, and Guatemala all have active full-fledged programs. However, few countries in LAC or any other developing region have experimented with environmental accounts that include data on ecosystem services outside of land use and land cover (Edens, 2012).



**Between 1950 and
2010, the region's
population grew by
more than 250%.**

There is a growing recognition that businesses depend directly and indirectly on ecosystem services to produce the goods and services they provide to the economy.

Identifying, valuing, and quantifying ecosystem services are challenging but necessary for assessing tradeoffs between alternative uses of ecosystems. Although decision-support tools, expanded economic valuation methods, national environmental accounting (see Table 3.1), and increased access to ecosystem status and trends are helping overcome this barrier, much effort is still needed for this to be a mainstream practice. Furthermore, capturing economic value through pricing is particularly complex as 1) it requires a strong institutional and legal basis to support the corrective mechanisms needed for values to be reflected in a marketplace, 2) often a particular ecosystem provides a bundle of services making it difficult to capture the price of a single service, and 3) many services, such as cultural values, cannot be priced.

ENABLING PRIVATE INVESTMENTS IN BIODIVERSITY CONSERVATION

There is a growing recognition that businesses depend directly and indirectly on ecosystem services to produce the goods and services they provide to the economy (TEEB, 2010). Identifying how these services can become business opportunities is challenging, but market-based options for doing so are emerging. Such options include the use of biodiversity performance standards for investors; biodiversity-related certification, assessment, and reporting schemes; and incentive mechanisms including bio-prospecting contracts, payments for water or carbon, and biodiversity offsets (TEEB, 2010 and Blackman *et al.*, 2012).

Barriers to developing these new business opportunities include limited information on ecosystem services, lack of technical or managerial expertise, high transaction costs relative to upfront investment sizes, lack of access to finance, and long-term project payback periods. Uncertainty or risks surrounding biodiversity investments result in unnecessarily high-risk premiums, significant collateral requirements, and short loan tenors. Inadequate policies and regulations that favors an enabling environment to help businesses carve

TABLE 3.1. LAC countries with environmental accounting programs in 2012

Country	Pilot	Regular Program
Chile	■	
Costa Rica	■	
Argentina	■	
Peru		■
Colombia	■	■
Brazil	■	
Bolivia	■	
Dominican Republic	■	
Venezuela	■	
Panama	■	
Mexico		■
Guatemala		■

(Source: Edens, 2012)



opportunities from biodiversity conservation and ecosystem services maintenance emerges as an important roadblock to continued sustainable growth.

The impacts of businesses on biodiversity and ecosystem services—negative and positive—are also increasingly acknowledged and understood within the business community, but more is needed. Failure to recognize such impacts can ignore important opportunities for making a steady stream of profits (TEEB, 2010). In fact, loss and degradation of ecosystems can present serious risks to businesses, ranging from operational (disruptions due to scarce water resources or reliance on a wetland for wastewater treatment) to reputational (related to markets and products) to financial (diminished profits and market opportunities). Businesses across the world are starting to pay attention and understand that biodiversity loss is not just an ecological concern. The challenge is thus to integrate the real value of the services ecosystems provide into business models to internalize and account for those hidden values.

PAVING THE WAY FOR EFFECTIVE GOVERNANCE

Governance is the exercise of economic, political, and administrative authority to manage a country's affairs. Good governance is needed to develop and enforce regulatory approaches—both mandated and incentive-based ones—to environmental and natural resource management. Weaknesses in governance become major obstacles for effective ecosystem management and the application of the rule of law. Improving governance requires strengthening transparency and accountability mechanisms, enhancing public service delivery, establishing enforcement procedures, allowing for stakeholder participation, and ensuring adequate coordination among different government and administrative agencies.

Most LAC countries still need to develop institutional capacity to regulate the interactions between markets and ecosystems. More work is needed, for example, in the areas of allocating and enforcing property rights, resolving conflict, establishing cooperation, and promoting stronger stakeholder involvement in decision-making processes. A lack of political will; limited financial and human resources; insufficient technical and personnel capacity to monitor environmental regulation compliance; jurisdictional, procedural, and interagency inefficiencies; and a preponderance of hard-to-monitor small-scale firms and farms make enforcement an especially tough challenge in the region (Blackman *et al.*, 2012).

BOX 3.2.
CERRADO'S AGRICULTURAL
DEVELOPMENT INCREASES—
AND RAISES CONCERNS

The Cerrado, or savanna woodland ecosystem in central Brazil, is the second-largest biome of tropical South America, originally occupying almost 24% of the Brazilian territory. It has been estimated to contain approximately 5% of the world's biodiversity, including nearly 12,000 vascular plants (MMA, 2011). This richness makes the Cerrado one of the world's biodiversity hotspots (CI, 2012). It is also an important headwater region of major river basins of eastern South America and thus an important supplier of water services to many communities.

A drive towards modernization of western Brazil, coupled with technological innovation, road construction and growing national and international markets have promoted agricultural expansion in this area—at the expense of the its wild savannas and native forests. Though the full consequences of biodiversity loss associated with these changes are difficult to gauge, more visible is the impact on the ecosystem's regulatory services, such as higher rainy season flows and increased pollution from run-off and sediments affecting downstream water users (WB, 2007). At current land-use change rates, this biome's annual carbon emissions to the atmosphere are close to 275 million tons (WWF, 2011).

With increasing world market demand and subsequent commodity prices upward pressure of Cerrado's agricultural products—beef, soybean, charcoal, ethanol—the threat of habitat loss due to agricultural expansion is even more relevant today (WWF, 2011). This transformation, combined with projected climate changes, could lead to the extinction of species (IPCC, 2007), as well as the degradation of soil quality, water availability, and production conditions. Crop diversification, increased conservation units, and effective enforcement are required to reverse these trends and ensure sustainable practices. Without such action, the future livelihoods and development of the more than 18 million inhabitants who directly and indirectly benefit from this ecosystem's economy would be compromised.



**With rapid deforestation,
the world's largest
continuous forest is
expected to lose **30%** of
its original cover by 2050.**

Management systems led by indigenous and traditional peoples are essential to protecting biodiversity. Latin America is a world leader in legislation on natural resource management for traditional and indigenous peoples and has the highest percentage of governments guaranteeing indigenous peoples' access and natural resources management rights. However, despite substantial increase in the amount of land owned or controlled by traditional and indigenous peoples in Latin America, bureaucratic procedures and licensing often limit the exercise of these rights in practice. (Rights and Resources, 2012)

MANAGING ECOSYSTEMS IN A CONTEXT OF UNCERTAINTY

Unpredictable consequences can result from ecosystem changes, which are speeding up as a result of climate change. When multiple threats are at play, the process of degradation

and loss can be amplified or set on a course difficult to manage or reverse. Consider the Amazon forest. With rapid deforestation, the world's largest continuous forest is expected to lose 30% of its original cover by 2050 (IPCC, 2007), significantly increasing the biome's susceptibility to fires.

Recent observational evidence indicates that drier and warmer post-deforestation climates may also be likely, along with alterations in regional rainfall. This could lead to the Amazon forest dieback, a phenomenon in which this tropical humid forest could turn into a savanna-type ecosystem. Climate change may greatly amplify this process (IPCC, 2007). The impacts on carbon storage, water regulation, and primary production of biomass could be significant. Monitoring and understanding these multiple causes of change—and crafting policies that can resolve them—emerge as a challenge not only at the regional but at the international level.

CHAPTER 4

Opportunities for Sustainable Growth

Agriculture, fisheries, forestry, and tourism together represent an average of 15% of GDP in the LAC economy.

Although the Latin America and the Caribbean (LAC) region faces challenges in accommodating the growth projected in the coming decades, unprecedented opportunities also exist to make this growth socially and biologically sustainable. These opportunities—made possible by developing sustainable business models, encouraging sustainability within productive sectors, and increasing investments in the protection of its natural resources—take many forms and cross all economic sectors. Given the wealth of the region's physical, biological, and human capital, LAC has a comparative advantage to leverage many emerging opportunities including those outlined in this chapter.

OPPORTUNITY 1: SUSTAINING PRODUCTIVE SECTORS

Dependence on ecosystems can come at many points in the supply chain. In some sectors, final products such as forestry, fisheries, and tourism rely on healthy ecosystems and rich biodiversity. Unfortunately, ecosystem-based inputs can be exhausted. If used unsustainably, ecosystems will be unable to recover, and their direct inputs will be lost over time. Still, these sectors are critical for economic growth. Agriculture, fisheries, forestry, and tourism together represent an average of 15% of GDP in the LAC economy, employing an average of 17% of the region's labor force. Exports from agriculture, fisheries, and forestry represent an average of 50% of the region's total export value.

LAC has an opportunity to maintain these sectors as important economic contributors—but only through more sustainable use, which often involves sustainable governance, renewable resources and extraction, and protection of the biodiversity and ecosystems that drive these sectors. Below are examples of how sustainable use can help support productivity in sectors that depend directly on ecosystem goods and services.


FISHERIES

Fisheries represent a considerable portion of GDP in many countries across LAC. To avoid or reverse the trend that would leave 85% of the world's fisheries either fully exploited, overexploited or depleted (FAO, 2010), the region needs to invest in comprehensive governance of its coastal and marine resources focusing on both the ecosystems upon which the fisheries depend as well as the fisheries themselves. Evidence suggests that where this has been done, such as in New Zealand, fisheries can not only recover but economic benefits to individual fishers can also increase (World Bank, 2009). The key elements for comprehensive governance are: 1) allocation of rights (for both industrial and smaller-scale fisheries), and 2) habitat conservation. Allocation of rights in fisheries essentially gives fishermen property rights over fish catch. Just as on land, such rights provide fishers

BOX 4.1

VALUE OF HEALTHY REEFS IN THE CARIBBEAN

An assessment done by Burke and Maidens (2004) looked at the difference in productivity between a healthy and conserved coral reef ecosystem and a degraded one in the Caribbean. From this study it was estimated that a healthy reef in the Caribbean can support a maximum sustained yield of 4 tons of fish per square km per year while degraded reefs could only support about .7–.9 tons per square km per year. If fish harvesting continues at current rates and coral reefs are continually degraded estimates suggest that there could be 30–40% declines in yield. Translating into dollars, healthy reefs would generate estimated gross revenues of US\$625 million a year while revenues from degraded reefs will decline by US\$190 million to US\$250 million by 2015

An aerial photograph of a coral reef in the Caribbean. The reef is a complex, branching structure of green and brown coral, surrounded by clear, turquoise water. A white boat is visible in the upper right, leaving a long, white wake that curves across the water. The overall scene is a vibrant display of marine biodiversity.

**The income generated
from 80 million visitors
annually depends on the
region's biodiversity.**

BOX 4.2 BENEFITS OF BIODIVERSITY TO TOURISM

Costa Rica provides a great example of a country that has capitalized on tourism as a lasting economic opportunity by sustaining the elements that underpin the opportunity: namely biodiversity and ecosystem services. As a result, Costa Rica receives almost 2 million tourists that spend an average of US\$1000 per day, one of the highest tourist expenditures in LAC.

with an incentive to harvest fish sustainably. Increasingly, information on sustainable fishing yields is becoming known. This knowledge, coupled with improvements in fishing techniques and technologies, makes incentives the last critical component in making fish harvest sustainable (see Blackman et al. 2012 for more details).

Fish habitat conservation—the other critical component—maintains the ecosystems that support fish recruitment. Preserving and maintaining ecosystems—including coral reefs and mangroves—can be relatively cheap when compared to the consequences of their degradation. Comprehensive fishing management means improved governance for coastal and marine ecosystems. It requires managing not only the economic resource—fish—but also the surrounding ecosystems.

If fishermen receive incentives to ensure sustainable harvest and the fishery habitats are protected through no-take zones and marine protected areas, fisheries can recover, maintain ecosystem services, and provide a sustainable stream of economic benefits.

TOURISM

At close to US\$60 billion per year, tourism revenues have become an increasingly significant portion of the LAC economy. Tourists come from around the world to scuba dive in coral reefs, hike through rainforests, and enjoy beaches, particularly in Central America and the Caribbean. The income generated from an average of 80 million annual visitors to LAC is directly dependent on the region's biodiversity and ecosystems (UNWTO, 2010; CTO, 2011). LAC has an opportunity to sustain this source of

economic growth by encouraging tourism that minimizes ecological impacts and engages local communities in tourism management.

For Small Island developing states, such as those in the Caribbean, coastal tourism is the leading economic, cultural, and socioeconomic activity, generating US\$15.1 billion in revenue per year and directly contributing 4.5% to the GDP (World Travel Tourism Council, 2011). Coastal tourism requires coastal development and beaches. Coral reefs, mangroves, and other coastal and marine ecosystems naturally protect and stabilize the terrestrial systems that they surround. In the Caribbean, for example, the shoreline protection services that coral reefs provide are valued at up to US\$2.2 billion annually (Ramsar, 2010)

BOX 4.3

BENEFITS OF POLLINATION FOR COFFEE GROWERS

According to Ricketts *et al* (2004), in Costa Rica coffee yields have increased 20% and quality improved in farms located in less than one kilometer of proximity to forest fragments (46 Ha and 111 Ha in size). The value of pollination services on these coffee farms was estimated to be \$60,000/year from 2000–2003, this representing 7% of farm income.

AGRICULTURE

Agriculture depends directly on biodiversity and ecosystem services, but it can also be a major source of degradation. This dual relationship presents opportunities in the agricultural sector for small-scale subsistence farmers and large-scale private industrial farmers alike. The opportunities lie in sustaining agro-diversity to improve food security, reforming agricultural governance to fully account for ecosystem benefits and production costs, and avoiding unnecessary costs by maintaining ecosystem services.

With 28% of the world's arable land and one-third of its renewable water resources, the LAC region will benefit from the increase in world food demand. This opportunity to take

full advantage of its productivity potential will only be achieved if agricultural landscapes are managed effectively. LAC has the chance to reform agricultural policies that have led to the overuse of land, water, and chemical fertilizers in the expansion of the agricultural frontier. Long-term economic growth and agricultural sector sustainability can be attained only with an appropriate set of policy instruments that maintain ecosystem services and improve land management (Blackman *et al.*, 2012).

For example, green agriculture practices such as natural fertilizers, ground cover, hedgerows, agroforestry, and riparian buffers can protect the ecosystems and biodiversity upon which agriculture depends and maintain yields and production (see Blackman *et al.* 2012). Providing incentives to farmers across all scales—private

to indigenous groups—to implement such practices can be self-reinforcing. Through time, on-farm benefits can help reduce costs and improve production.

Finally, maintaining agricultural diversity presents an opportunity to reduce risk in the agricultural sector and to support subsistence of the poor (Heal, 2000; Jackson *et al.*, 2007; Pascual and Perrings, 2007; Smale and Drucker, 2008). Of particular importance is the cost-effective insurance policy agro-biodiversity provides the poor (Heal 2000; CBD, 2010). LAC has a rich agricultural base with the ability to secure food and nutrition for the growing LAC population and the international markets.

OPPORTUNITY 2: SUPPORTING LIVELIHOODS AND WELL-BEING

Ecosystems and their biodiversity help support the poor by providing them livelihood options and otherwise sustaining their well-being. Ecosystem services and other non-marketed goods are estimated to account for 47% to 89% of the so-called “GDP of the poor” (that is, the effective GDP or total source of livelihood of rural and forest-dwelling poor households) (TEEB, 2010). In LAC, 43% of the population is classified as poor, including 19% who are living in extreme poverty (UN, 2005). In addition, according to the Millennium Ecosystem Assessment (2005), degradation of ecosystem services is sometimes the principal factor causing poverty—making biodiversity preservation critical to meeting millennium development goals.


A key opportunity for supporting livelihoods for the poor includes creating and maintaining protected areas and the biodiversity they contain. Benefits from protected areas include, but are not limited to, food, shelter, and employment. While protecting human well-being, these protected areas have also been shown to reduce deforestation and thereby conserve native ecosystems (Andam *et al.*, 2008; Andam *et al.*, 2010). Indigenous peoples for instance rely heavily on the forests as a source of subsistence and income generation. Further, the quality of life for indigenous peoples is often directly correlated with the health and well-being of the forest lands where they reside.

Risk reduction is another key social benefit from biodiversity protection, particularly among the poor. In general, the poor are the least able to shelter themselves from natural hazards,

and ecosystems can provide them with natural protection. For example, mangroves provide an effective buffer against waves for people living along the coast. One study found that a six-year-old forest of 1.5 kilometers in width can reduce 1-meter-high open sea waves and .05-meter coastal waves (Kathiresan and Rajendran, 2005). Food security risks can also be mitigated through non-timber forest products that provide insurance against unexpected changes in agricultural yields. This was an especially significant value among the poorest segments of the Brazilian Amazon (Pattanayak and Sills, 2001; Takasaki *et al.*, 2002; CBD, 2010).

BOX 4.4 FORESTS AS SUBSISTENCE NETS

Forests in general also support the poor. The World Bank (2001) estimates that about 25% of the world’s poor—and 90% of the poorest strata—depend substantially on forests for their livelihoods (Bovarnick *et al.*, 2010). Moreover, non-timber forest products (NTFPs) can play a critical role in supporting subsistence of the poor (Neumann and Hirsch, 2000; CBD, 2010) and can prevent a deeper decline into poverty (Angelsen and Wunder, 2003; CBD, 2010). Brazil nut production chains in Brazil, Bolivia, and Peru, for example, provide jobs to 15,000 people (FAO, 2009; Bovarnick *et al.*, 2010), and the nut export is valued at US\$70 million a year in Bolivia (CIFOR, 2008a; Bovarnick *et al.*, 2010)



The Maya Biosphere Reserve employs more than 7,000 people in the Petén region of Guatemala.

**BOX 4.5
PROTECTED AREAS TO
BENEFIT THE POOR**

Ferraro and Hanauer (2010) demonstrated that Costa Rica's protected areas can achieve environmental gains in high-poverty areas without exacerbating poverty, and in many cases, can alleviate poverty. The net impact of ecosystem protection in these areas was to alleviate poverty (Andam et al., 2010). Protected areas can also be a valuable source of income and employment for local communities. For example, the Maya Biosphere Reserve employs more than 7,000 people in the Petén region of Guatemala, generating an annual income of US\$47 million. The reserve has also been credited with doubling local family incomes (Dudley *et al.*, 2008).

By 2030, demand for energy in LAC is expected to increase by 50%.

OPPORTUNITY 3: PROVIDING RELIABLE SUPPLIES AND BASIC SERVICES

In addition to underpinning productive sectors and sustaining livelihoods, biodiversity and ecosystem services offer opportunities for reliable supplies of basic services (e.g., energy and water) upon which people depend.

ENERGY PRODUCTION

By 2030, demand for energy in LAC is expected to increase by 50% (Moreno, 2011). Ecosystems, if managed appropriately, can meet much of that demand. For example, the region's numerous watersheds can be a source of hydropower by providing clean reliable flows of water for energy production. The lifespan of hydropower dams depends on low levels of sediments in the water. Sedimentation in reservoirs is directly related

to erosion rates in the watersheds above the dam, and removing sediments once settled in reservoirs is costly.

DRINKING WATER

Water consumption in the region is expected to increase 25% by 2030—a demand that will need to be met through services provided by forests, wetlands, and other ecosystems. Unpredictable water flow regimes combined with heavily polluted water can cause disease and water shortages and can increase costs to water providers. Like hydropower companies, water utilities need to maintain clean reservoirs, with similarly prohibitive dredging costs. Maintaining ecosystem function through biodiversity preservation can decrease such costs while providing a natural purification mechanism for other chemicals and nutrients and helping stabilize flow regimes within a watershed.

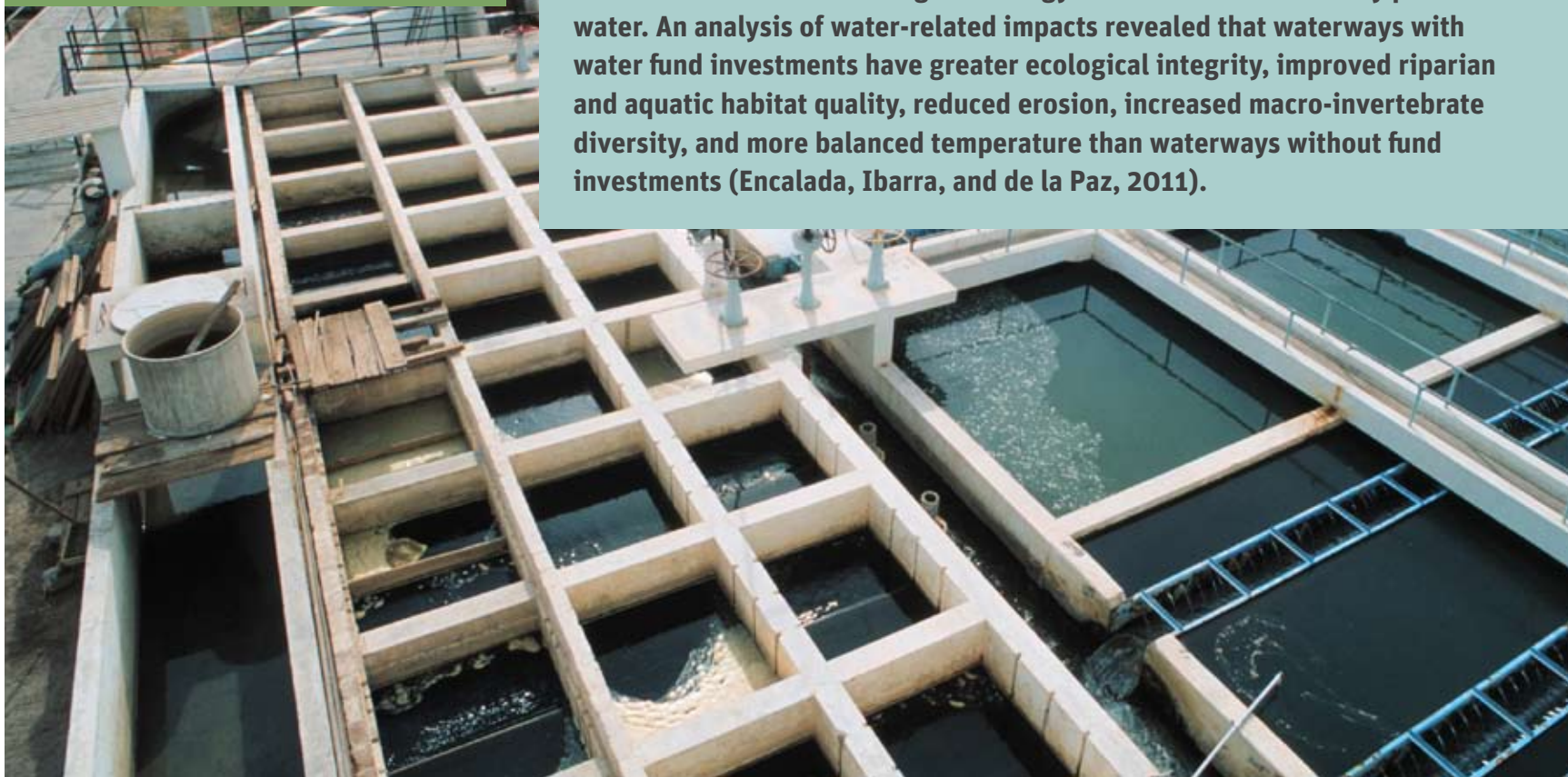
BOX 4.6 COST SAVINGS THROUGH WATERSHED PROTECTION

In Costa Rica's Reventazon watershed, more than US\$2 million is spent each year to only partially remove sediments and to provide energy through alternative sources during sediment removal. To understand potential cost reductions from conserving the watershed, a modeling study estimated the benefits of soil-conservation practices in high-priority areas. Doing so was found to reduce erosion by 97%, which translated into US\$1 million annual cost savings to the hydropower company. In addition, farmers in the watershed experienced more fertile soils (Bovarnick *et al.*, 2010).

BOX 4.7
WATERSHED CONSERVATION
FOR RELIABILITY AND LOWER
COST OF WATER SUPPLY

IDB recently joined a partnership with the Global Environment Facility (GEF), FEMSA, and The Nature Conservancy to launch 32 water fund projects throughout LAC (Regional Policy Dialog, 2012). Water funds are financial models built on the premise that it is less expensive to pay for conservation measures—such as improved agricultural management, restoration of vegetative cover, and increased protection of national parks—to maintain predictable water supplies than to pay for large reservoirs that require regular dredging and cleaning.

In other words, users can save by investing in nature to provide clean regular water flows rather than using technology to clean and treat heavily polluted water. An analysis of water-related impacts revealed that waterways with water fund investments have greater ecological integrity, improved riparian and aquatic habitat quality, reduced erosion, increased macro-invertebrate diversity, and more balanced temperature than waterways without fund investments (Encalada, Ibarra, and de la Paz, 2011).





OPPORTUNITY 4: BALANCING INFRASTRUCTURE, INDUSTRY, AND BIODIVERSITY

Economic growth often requires tradeoffs. Sectors important to LAC's economy such as mining, oil and gas, and transportation often provide necessary building blocks for economic development. Consider for example regional infrastructure initiatives to create transportation corridors that will pave LAC's path to continued growth. Such projects can often come at the expense of biodiversity, which has tradeoffs for other sectors and peoples (e.g., clearing a forest for a road means degrading resources that surrounding communities may have depended on). Countries have an opportunity to add value to such projects by ensuring biodiversity conservation best practices beyond the "do no harm" approach of mitigating impacts.

A review of several infrastructure projects (including roads, gas pipeline, hydroelectric dams, and water-supply projects) generated positive biodiversity benefits by not only minimizing and avoiding impacts but compensating them through preservation of other critical areas or strengthening management of existing protected areas

(Quintero 2007). IDB has also worked on a number of projects, such as the Acre project in Brazil (see Annex 1), that recognize the importance of maintaining biodiversity into the future and provide mechanisms for ecosystem conservation while undertaking important development actions. Similarly, IDB's worked with the Smithsonian Institution on the Camisea project's no-road approach to minimize biodiversity impacts (see example in Chapter 5).

Decision-support tools are being built that will enable better decision making by providing spatially explicit biodiversity information to improve the process of licensing and concessions for infrastructure projects, minimizing their biodiversity impacts. Understanding the distribution of biodiversity and high-priority preservation areas can help countries' capitalize on the opportunity to minimize and avoid ecosystem impacts inherent in many infrastructure projects and provide a means to ensure adequate compensation for impacts that do occur. Coordinating and streamlining mechanisms to account for ecosystem services both qualitatively and quantitatively is equally important.

CHAPTER 5

IDB Sustainability Mandate and Experience

**The Bank aims to
increase lending in the
areas of climate change,
renewable energy,
and environmental
sustainability by
20% by 2015.**

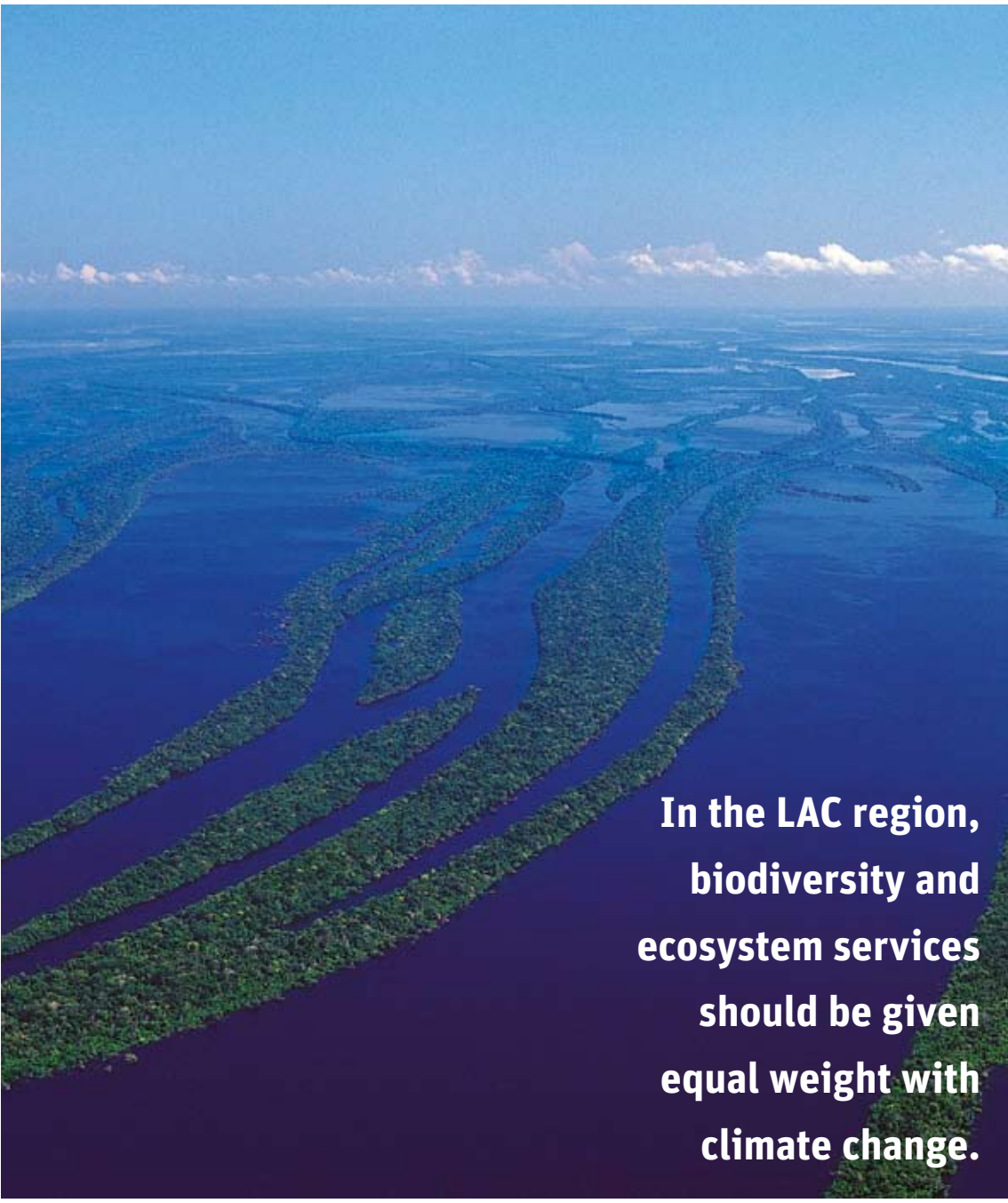
The Bank's Ninth General Capital Increase (GCI-9) gives IDB a clear mandate to work on sustainability issues toward two overarching objectives in the Latin America and the Caribbean (LAC) region: *reducing poverty and inequality* and *sustainable growth* (IDB, 2010). This institutional strategy includes achieving global environmental sustainability and dealing with climate change.

Under the Bank's mandate to protect the environment, respond to climate change, promote renewable energy, and ensure food security, the Bank aims to increase lending in the areas of climate change, renewable energy, and environmental sustainability from 5% to 25% and to support regional public goods in the area of the environment.

The GCI-9 also charges the Bank to increase the terrestrial and marine areas under conservation protection through doubling the number of projects for improved management of protected areas (from 15 to 30) by 2015. More focus has been given to smaller and vulnerable countries, including several countries with substantial biodiversity heritages. Finally, the GCI-9 strategy recognizes the role of the private sector in sustainable growth and equal opportunity in the LAC region; it aligns with a private-sector development strategy geared toward markets and products with positive developmental benefits, such as innovation and social inclusion (IDB, 2011).

The Environment and Safeguard Compliance Policy (OP-703)(IDB, 2006) also calls for the Bank to support client countries through the promotion of conservation, the sustainable use of natural resources, and ecosystem services (Directive A.2). This includes using innovative financial and market-based instruments to enhance the value of environmental goods and services.

The early 2011 findings of an Independent Advisory Group on Sustainability (IAG) reaffirmed the GCI-9 mandate. According to IAG, while the Bank's performance in ensuring compliance with environmental and social safeguards has been good, the Bank needs to mainstream sustainability considerations more into its work (IAG, 2011). Furthermore, in the LAC region, biodiversity and ecosystem services should be given equal weight with climate change. In response to these recommendations, the Bank has committed to an increased focus on biodiversity and the possibility of a Biodiversity Initiative (IDB, 2011).



**In the LAC region,
biodiversity and
ecosystem services
should be given
equal weight with
climate change.**

IDB'S PAST EXPERIENCE FINANCING BIODIVERSITY CONSERVATION AND ECOSYSTEM SERVICES⁴

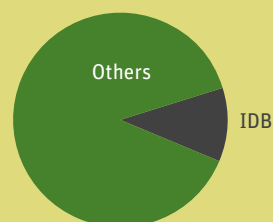
Over its long history in biodiversity conservation and ecosystem services, IDB has developed a large and diverse portfolio. The Bank has supported biodiversity both as stand-alone operations supporting protected areas and through mainstreamed operations in which biodiversity is a component of projects that address numerous sectors in rural and urban landscapes. IDB has experience working with public and private actors and is well positioned for opportunities to address climate change and biodiversity loss simultaneously. This depth and breadth of experience enables the Bank to support countries in mainstreaming biodiversity considerations at every stage in the project cycle:

- **Programming stage (country dialogue):**
During this stage, the Bank develops Country Strategies which establish an overarching framework for future support in priority sectors. Country Strategies, which are the result of the policy dialogue between the Government and the Bank, provide the basis for identifying new loans and grants. These strategies and the accompanying sector notes (including on environment) can be used to assess condition and trends for priority ecosystem services and drivers of change, identify priorities for biodiversity

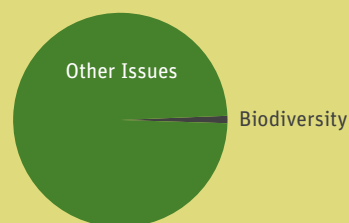
⁴ For a further review of IDB's experience, see Castro, 2012.

FIGURE 5.1.
Relative Importance of IDB
Biodiversity Funding (Castro
and Locker, 2001; Carrizosa
and Westphal, 2007).

Proportion of all Biodiversity Funding in LAC (%)



Proportion of all Biodiversity Funding within
the Bank's Portfolio (%)



mainstreaming as well as potential risks, and can propose indicators for measuring progress in the overall country program of the Bank.

- **Preparation stage:** This stage includes the design and appraisal of direct budgetary support through loans tied to policy reforms and specific investments in economic development sectors such as infrastructure and basic services. These are sometimes accompanied by parallel Global Environmental Facility (GEF) financing for biodiversity conservation. As required by its Environment and Safeguard Compliance Policy (OP-703), the Bank conducts environmental and social analyses on investment loans and grants to assess project opportunities and potential risks. This is to ensure for example that Bank programs do not significantly convert or degrade natural habitats unless circumstances are unavoidable or justifiable.
- **Execution stage:** For each project, the Bank supervises compliance with environmental and social safeguards and monitors progress towards Biodiversity and Ecosystem Services (BES) targets against a baseline that is established at the project's outset.
- **Evaluation stage:** At a project's completion, the Bank works with a client country to assess its efficiency and effectiveness. This can include biodiversity impacts, a quantitative analysis of project impacts against the baseline, and how and to what extent a specific policy or investment contributed to BES.

While the project cycle offers these potential entry points for the consideration of biodiversity and ecosystem services, the Bank has not yet adopted a systematic approach for accounting for biodiversity and ecosystem services in the project cycle (Watkins and Hawken, 2012).

TRENDS IN FINANCING

IDB is one of the main biodiversity players in the LAC region, contributing funding that has amounted to 60% of that provided by the World Bank, the largest LAC biodiversity funder (Carrizosa and Westphal, 2007). The only comprehensive funding survey of LAC biodiversity conservation in the 1990s reported that IDB provided 11% of all biodiversity funding in the region, slightly behind the World Bank's 16.7%, and well ahead of bilateral cooperation sources, private foundations, and NGOs (Castro and Locker, 2001).

A 2007 analysis found that the Bank has played an important role in financing biodiversity-related projects in LAC (Carrizosa and Westphal 2007). The total amount of financing invested in the 240 biodiversity projects approved from 1995 through May 2006 was US\$773 million, including US\$485 million in IDB loans and grants, US\$13 million in GEF grants, and US\$274 in co-financing from IDB client countries. Approximately one third of the biodiversity investments represented the "production landscapes" category, which includes agro-biodiversity, forestry, and fisheries.

BOX 5.1 BIODIVERSITY AND FORESTRY

The Acre Sustainable Development Program in Brazil aimed to reverse the impact of illegal logging and deforestation implementing best practices in land use planning and land tenure.

From 2003 to 2008, Acre's real GDP increased over 44% while deforestation declined about 70%. In 2011, the Bank evaluated the impact of the strategy to create protected areas to avoid deforestation. The results showed that the creation of protected areas with sustainable use alongside roads to be improved coupled with monitoring and law enforcement was an effective strategy to avoid deforestation (Pfaff, et al., 2011).

Since 2009, the Bank has invested over US\$211 million in loans within the natural disaster, natural resource, and agriculture sectors. In addition, the Bank has mobilized nearly US\$30 million in grants from GEF funds directed to projects benefiting biodiversity, land degradation, sustainable forest management, and avoided deforestation (IDB, 2012).

Although IDB may be considered a major player in LAC, funding for biodiversity conservation still represents less than 1% of all IDB funding. An analysis of IDB's sustainability investments between 2006 and 2011 (ESG, 2012,) confirms that loans targeting biodiversity and conservation of protected areas, sustainable forest management, and coastal resources management remain consistently low relative to the overall portfolio. This suggests that significant room exists to further mainstream

biodiversity and ecosystem services—a goal this Platform aims to advance.

A review of the Bank's experience in biodiversity-related projects related to small and medium enterprises found that the Multi-Lateral Investment Fund (MIF) has invested \$39.0 million since 1993, leveraged by an additional \$31.8 million in counterpart contributions, in 36 technical assistance grant projects that improved biodiversity. In comparison to MIF's overall portfolio, approximately 1.7% of MIF spending has gone to biodiversity projects. Additionally, the MIF has approved 19 projects, totaling \$17.3 million and \$14.6 million in counterpart funding, which are still under execution and have not generated final results (Gromko *et al.*, 2012).

TYPES OF BIODIVERSITY-RELATED PROJECTS

As shown in Annex 1 and the examples that follow (Boxes 5.1, 5.2, 5.3), IDB's past interventions in biodiversity conservation and ecosystem services vary greatly in terms of sustainable development objectives, biomes targeted, threats addressed, and actors involved.

Lessons learned included the need to select appropriate biodiversity and ecosystem quality indicators, the importance of monitoring to adaptive management, and the value of addressing uncertainties and long-term changes (Brito, 2011). Indigenous communities in the project area are benefiting from development projects financed by the operation and negotiating skills they can use with other energy companies.



BOX 5.2 BIODIVERSITY AND HYDROCARBONS

In 2003, IDB approved a US\$75 million loan for building and operating natural and liquid gas pipelines that would tap the Camisea gas fields in the Peruvian Amazon. The project pioneered the development of environmental and social standards that could be applied to infrastructure projects across the Amazon and other sensitive areas. Its Biodiversity Action Plan is considered a best practice in the oil and gas industry and focuses on:

- **Minimizing the project footprint and impacts on biodiversity**
- **Identifying opportunities for biodiversity conservation during the route selection process**
- **Using specific construction methods to cross the unavoidable and extremely environmentally sensitive high-Andean wetlands**

BOX 5.3 BIODIVERSITY AND TRADITIONAL KNOWLEDGE

In Bolivia's northern Potosi and southeastern Oruro, this project promotes the conservation of agrobiodiversity and the sustainable use of soil and water in Andean vertical ecosystems (EVAs) where endangered native species and plants play a role in food security. It is expected to demonstrate that the ayllu adaptive management model advances agrobiodiversity and sustainable soil and water use in the area's municipal territorial planning and family agriculture. The project aims to raise awareness of traditional local soil and water conservation practices among beneficiaries of other agricultural development projects.

WHY INVEST IN IDB BIODIVERSITY PROGRAMS?

Many elements of IDB's success to date are directly relevant to the Biodiversity Platform, including the following:

- Most biodiversity projects to date have been mainstreamed within regular Bank operations. This demonstrates both internal Bank capacity to mainstream and high potential for leveraging and scaling up biodiversity-related interventions.
- Biodiversity projects to date have used an excellent combination of funding instruments, such as loans, TC, GEF, the Private Sector Windows such as MIF and Structured Corporate Financing, and Climate Funds.

- The number of sectors through which biodiversity can be addressed has been large and diverse.
- The Bank has been able to customize interventions to the needs of large and small client countries.
- Environmental Safeguard Policies have become increasingly effective in generating positive biodiversity outcomes, even though implementation remains challenging.

LESSONS LEARNED

IDB's experience to date in investing in biodiversity conservation and ecosystem services has yielded valuable lessons for moving forward.

- **Indicators (metrics) to measure biodiversity results and impacts must be improved:** For biodiversity investments to

make a difference, consistent biodiversity indicators need to be applied to country strategies and operations (Castro, 2012; Gromko *et al.*, 2012). This involves strengthening in-country monitoring and analysis capacities, establishing reliable baselines, and collecting data during and after project execution. The Bank also needs to improve its classification and tracking of biodiversity investments.

- **Biodiversity must be broadly mainstreamed:** The Bank has successfully mainstreamed biodiversity conservation and ecosystem services projects in the areas of productive sectors and to a lesser extent in infrastructure. Yet opportunities for consistent mainstreaming remain untapped for the great majority of IDB's portfolio as a way of addressing the main drivers of change.
- **Latent demand must be transformed into effective demand:** To generate client interest for introducing the sustainability agenda into country programming, IDB needs to provide convincing quantitative evidence, based on sound economic analyses, of biodiversity's advantages and embed country strategies and programming

dialogue with updated approaches to economic analysis.

- **The benefits of biodiversity conservation, ecosystem service maintenance, and mainstreaming need to be promoted:** Awareness of biodiversity conservation's economic benefits tends to be limited to environmental professionals. Professionals across all productive sectors, infrastructure and services need relevant information and training in the field.

IDB: A STRONG LEADER WITH MANY AVAILABLE PARTNERS

A regional assessment commissioned by IDB found that, in addition to Ministries of Environment and national protected area agencies, more than 100 organizations—from foundations to research centers—have well-established biodiversity conservation programs in the LAC region (RFF, 2010). However, with the exception of the World Bank and some UN agencies, few of these organizations have the hemispheric scope and in-country presence, direct access to national policy makers, and public-private institutional structure provided by IDB.

The Bank offers several organizational strengths that support the Platform's sustainability and biodiversity conservation goals:

- A strong presence in LAC countries and direct access to those setting the national development agenda
- Development approaches that are market-based and encourage financial sustainability
- The ability to leverage public and private sector opportunities, particularly in emerging biodiversity and ecosystem markets
- A wide mix of financing tools, including loans and a variety of grants
- Experience in relevant areas such as regional land management, green agriculture, and protected areas
- Existing programs in complementary areas, such as the IDB Climate Change Initiative which offers for example opportunities to capitalize on the role that biodiversity and ecosystems have to play in dampening the impacts of climate change

CHAPTER 6

IDB Platform: A Proposal

Biodiversity means the diversity of ecosystems, species, and genes, encompassing ecosystem goods and services that support cycles fundamental to the planet and social welfare, such as the water cycle.

To consolidate and renew our commitment to sustainable and socially inclusive development, IDB has begun to develop a Platform for biodiversity conservation in the Latin America and the Caribbean (LAC) region. Multiple stakeholders from across all Bank departments as well as externally have weighed in on this Platform which is meant to be a proposal from which a fully endorsed Biodiversity Initiative will be crafted and released in 2013. Now, we take this proposal to the larger audience for discussion at Rio+20 and beyond.

GOAL

To enhance the contribution of biodiversity and associated ecosystem services to the sustainable and inclusive development of Latin America and the Caribbean.

This goal fulfills the mandate of IDB under its Ninth General Capital Replenishment. It recognizes that the region's natural capital is a unique competitive advantage that when combined with its human capital holds promise for sustained growth and social equality. We define biodiversity as the diversity of ecosystems, species, and genes, encompassing ecosystem goods and services that support cycles fundamental to the planet and social welfare, such as the water cycle. The goal speaks to the Bank's intent to establish new ways of doing business designed to improve human well-being and social equity, significantly reduce environmental risks and ecological scarcities, and leverage positive biodiversity outcomes.

How do we get to this goal? The Bank has set the following objectives:

OBJECTIVES

- **Promote a full understanding of the value and the potential associated with managing the natural capital of Latin America and the Caribbean for sustainable and inclusive growth;**
- **Support countries of Latin America and the Caribbean to achieve more effective policies and investments in biodiversity conservation and the maintenance of associated ecosystem services;**
- **Create new economic, financial, and business opportunities that enhance the value of the Region's natural capital as a contribution to sustainable development.**

At the end of our discussions, together we will create a final Initiative based on sound economic thinking, one that seeks measurable results, and one that engages both the public and private sectors.



MEETING THE CHALLENGES: THEMES TO GUIDE ACTION

Action on the Platform must be strategic to succeed. It must address documented threats; be proven effective; build on past investments; and address pervasive institutional obstacles to conservation. Although there may be lines of action that comply with all these criteria, most will only be effective under specific circumstances, considering the exceptional diversity of the region.

Resources for the Future examined a range of policies in terms of status, issues such as coverage gaps, and effectiveness, including the availability of empirical evidence of positive impacts on conservation (Blackman *et al.*, 2012) (see Annex 2). That helped us develop four broad thematic areas where the Platform could support investments, knowledge development, and capacity building. The themes are not mutually exclusive and are provided here as a structure around which Bank support could be organized. The following delineates these themes, with examples of actions that could be taken and ideas on how to measure progress.

The worth of biodiversity—and the costs of failing to preserve this value—must be clearly and practically determined and included in decision making across all sectors.



THEME 1: MAINSTREAMING BIODIVERSITY IN ECONOMIC SECTORS AND ACCOUNTING FOR THE VALUE OF ECOSYSTEMS

DEFINING THE THEME

How do decision-makers value and incorporate the benefits of ecosystems—and what are the costs to ecosystems of producing goods and services? As demonstrated by IDB's experience (Chapter 5), there are many opportunities to significantly scale up investments in biodiversity and ecosystem services within the project cycle as well as in the initial project criteria, i.e. there are opportunities to mainstream ecosystems and their benefits in decision-making for many economic sectors of development such as agriculture, energy generation, transport and tourism (see examples below). Benefits from and costs to ecosystem services can occur at many points along the production chain for a good or service across all sectors. Rapidly developing and evolving markets for ecosystem services, such as for carbon and water, can have profound positive effects on biodiversity conservation, as they help demonstrate, quantify, and internalize (i.e. account for) values associated with ecosystems. A strong case has been made in the past few decades for supporting conservation by taking advantage of the business opportunities that can be derived from new and sustainable uses of biodiversity. The underlying notion of this approach is the flow of goods and services

provided by biodiversity and ecosystems provides economic benefits and this can be true across all sectors. As such, if the value of ecosystems and their services can be accounted in the investment decisions, even in sectors that might harm or degrade ecosystems biodiversity mainstreaming can yield significant national, regional, and global benefits.

CHALLENGES AND OPPORTUNITIES

As described in Chapter 4, valuing, quantifying, and accounting for the benefits ecosystems provide is a developing field of knowledge and a challenging one. Valuation of a single service is highly complex, and bundled services often can be undervalued.

All the same, this process can confer many advantages—including engaging stakeholders in ecosystem preservation, making it possible to incorporate ecosystem values into decision making, and reducing costs of production by measuring ecosystem service benefits. Examples of these opportunities include understanding the value of coastal ecosystems for protection from natural hazards and that of forests for flood mitigation protection. Key lines of action in this area could include:

- Realizing cost savings from ecosystem investments for reducing risk of natural disaster impacts and for ecosystem-based adaptation (using biodiversity and ecosystem services as a part of an overall

- adaptation strategy to help people adapt to the adverse effects of climate change)
- Valuing the on-farm ecosystem service benefits of planting patches of native vegetation
- Quantifying the supply chain impacts from production of food
- Mapping ecosystem service flows to determine least-damaging placement of infrastructure projects and thereby reducing, avoiding, and mitigating impacts to these resources

Beyond these potential lines of action, the Bank can also actively pursue an agenda of systematically mainstreaming biodiversity and ecosystem services in that part of its portfolio that until now has not internalized these considerations. Much of the future growth in agriculture, energy, and infrastructure these sectors will occur either in small and vulnerable countries or in frontier areas where there is little capacity for strategic sectoral planning or the management of the cumulative negative environmental and social consequence. This raises unique and excellent opportunities for Bank support to use ecosystem services analysis for example in all stages of its project cycle (see next Section). The Bank has the experience and a substantial private and public portfolio in these sectors and has already been working toward ensuring sustainability in these sectors. The

Bank could establish a niche in providing model energy generation, agriculture, extractives, and infrastructure and by providing private sector with financial incentives and technical support to ensure “sustainable and inclusive” growth with a strong biodiversity component. This would take full advantage of the Bank’s capacity to work with both public and private sector and provide a mix of financing options for projects.

THE THEME IN ACTION: EXAMPLES

Create indirect biodiversity benefits for roads:

Protecting and restoring biodiversity can have unexpected benefits for sectors that don’t directly depend on biodiversity. For example, maintaining and restoring vegetation on steep slopes can greatly reduce erosion and mitigate flood impacts. As countries continue to expand transportation networks, these ecosystem services can be crucial cost-cutting methods. A road project through a mountainous region could cut future costs by providing incentives for communities living in and around the hillsides near the road to re-vegetate or maintain native vegetation on their lands. This is often cheaper than restoring, repairing, and/or rebuilding the road after rainstorms. Hillside vegetation would reduce erosion, water speed, and volume reaching the roadway.

Example indicators

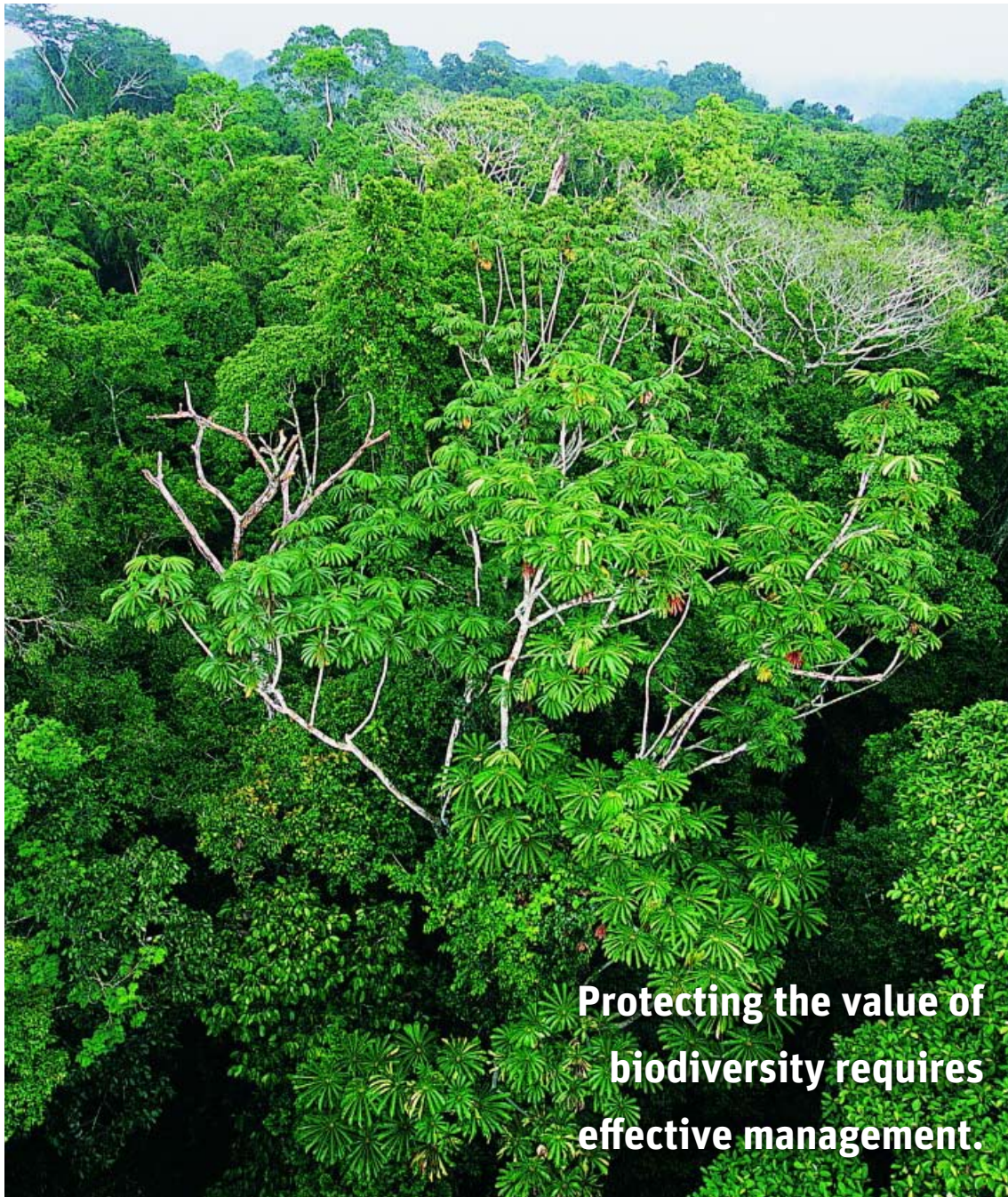
- Cost savings comparison (US\$/year)
- Hectares of hillsides re-vegetated (ha/yr)
- Soil erosion index

Extract payment through tourism:

Tourists come from around the world to enjoy the coral reefs in LAC’s Caribbean and Central American region. They pay for food, lodging, and fuel for the boat that takes them snorkeling, but rarely is there a charge for the maintenance and protection of the ecosystem they are enjoying. Yet, these tourists attach a value to these ecosystems and the biodiversity they support. An analysis to quantify this value would provide a means to extract a payment that could go to support protection of the ecosystem by helping communities that work with tourists, improving/restricting harmful tourism practices, and strengthening stewardship of marine protected areas.

Example indicators

- Revenue obtained from Payments for Ecosystem Services (US\$/yr)
- Visitors to ecosystems (people/yr)
- Fish species richness (species/unit area)



**Protecting the value of
biodiversity requires
effective management.**

THEME 2: MAINTAINING THE BIODIVERSITY ENDOWMENT

DEFINING THE THEME

How do we protect and maintain the areas that serve as refuges for biodiversity? Protected areas (PAs) and their buffer zones and the more extensive biological corridors that link areas into networks have long been relied upon as a solution to protect biodiversity in LAC. One way to effectively manage them has been to share the responsibility with communities, including indigenous communities and traditional users such as artisanal fishers. Over the past 20 years, hundreds of new terrestrial protected areas have been established in LAC so that today, 20% of the region's land is protected—the highest share in the world (IUCN and UNEP-WCMC, 2011). In addition to leading the developing world in coverage of PAs, LAC also leads in establishing multiple-use PAs as well as those co-managed by indigenous peoples (Nelson and Chomitz, 2011). In LAC, 86% of protected forest areas are in fact inhabited by indigenous or traditional peoples (Kemf, 1993; Amend and Amend, 1992, IUCN, 2010). Marine PAs now cover 11% of territorial waters less than 12 nautical miles from the shore.

CHALLENGES AND OPPORTUNITIES

Although evidence suggests some PAs are effective at conserving biodiversity and protecting ecosystem services in LAC (Nelson and Chomitz, 2011), a large proportion are fragmented, poorly managed, and underfunded (De Fries *et al.*, 2005; Brandon *et al.*, 1998; Dudley and Stolton, 1999; Leverington *et al.*, 2010; Bruner *et al.*, 2004; Bovarnick *et al.*, 2010). As in the rest of the developing world, financial resources devoted to PAs in LAC are far short of what is needed for effective management (Bruner *et al.*, 2004; Bovarnick *et al.*, 2010). On average, LAC governments allocate just 0.01 % of GDP to PAs and only 1% of national environmental budgets, which amounts to US\$1.18 per PA hectare. The impacts of climate change on PAs and the capacity of the species found within them to adapt to change is an added concern.

Forest co-management, including that of indigenous territories, extractive reserves, and community-managed concessions, has proliferated rapidly in LAC over the past 20 years. Today, it covers 22% of LAC forests. There is very little hard data to indicate that forest co-management is generally effective. Rather, its effectiveness depends critically on site-specific factors (Blackman *et al.*, 2012).

As described in Chapter 4, PAs and other types of areas under special management provisions can provide economic benefits for local communities. But to get to the benefit-producing

stage, these areas have to be managed effectively. This points to a wide range of action areas for the Platform, including support for sustainable financing, consolidation of networks and biological corridors (such as through incentives for private reserves) that mainstream climate change, supporting regional ecosystem-based biodiversity conservation initiatives (such as for biological monitoring), and enhancing enforcement capacity.

THE THEME IN ACTION: EXAMPLES

Consolidate and establish more biological corridors:

Large-scale trans-boundary corridors can make a significant contribution to biodiversity in LAC through existing initiatives, such as those for the Amazon, the Chaco, the Andean Piedmont, the Guiana Shield, and the Meso-American Corridor (land and marine), as well as new initiatives accompanying regional infrastructure corridors. Other opportunities lie in helping to establish regional governance structures; mapping ecosystems and conducting biological inventories; assessing status and trends such as soil degradation, water scarcity, or fire; establishing monitoring networks; promoting private reserves and co-management, and strengthening surveillance and enforcement.

Example indicators

- Fragmentation (edge/area ratio)
- Connectivity (total area of connected PAs/ total area)

Expand marine protected area networks:

Many marine ecoregions and ecosystems of LAC are underrepresented in networks of protected areas or areas with special management provisions, such as fisheries reserves. Lines of action can include ecological baseline studies for expanding networks, socio-economic assessments, development of management plans, mainstreaming of climate change considerations in the design of networks, establishment of basic monitoring, and creation of enforcement networks.

Example indicators

- Percent marine national territory under protection
- Percent of country's major marine biomes protected

A close-up photograph showing a person's hand, wearing a pink long-sleeved shirt and a silver ring, resting on a large, green, bumpy coconut. The coconut is placed in a woven basket filled with many bright orange citrus fruits, likely grapefruit or orange. The background is slightly blurred, focusing attention on the hand and the fruit.

**New business models
and valuation can spur
private investment
in biodiversity.**

THEME 3: PROMOTING PRIVATE SECTOR INVESTMENT IN BIODIVERSITY

DEFINING THE THEME

How can the region increase support for biodiversity? This thematic area focuses on catalyzing business models that rely on sustainable use of natural capital for the purposes of development, including reducing poverty and inequality, recognizing that such sustainable use enhances the value of the biodiversity and ecosystem services upon which it depends. This includes, for example, promoting innovation in biodiversity-related products and biotrade and scaling up financing for viable green industries such as agriculture, forestry, and bioprospecting. Notably, this theme calls for increasing the genuine engagement of the private sector in LAC as a key player in the sustainable and equitable use and conservation of biodiversity and ecosystem services. It also promotes new business models that increase their value by avoiding risks from the impacts on ecosystem services caused by their operations.

CHALLENGES AND OPPORTUNITIES

As mentioned in Chapter 3, a key challenge to private sector investment in biodiversity-related businesses and green industries is the need for a transparent, enabling environment with clear rules and procedures. One example: policies for access and benefit sharing (ABS) in bioprospecting. In this field, the public sector

across the region has to work with companies, individual or collective land owners (in the case of indigenous peoples), and traditional resource users to resolve conflicts and reach equitable arrangements.

Success also requires instruments in place to help with compliance with national and international requirements for quality, market access, and sustainability (UNCTAD, 2012). Regional initiatives along these lines are under way, for example, in the Andean countries (Blackman *et al.*, 2012). Clear policies are also needed for the private sector to increase its engagement in Payment for Ecosystem Services schemes (see Theme 1). Additional significant challenges include venture capital requirements and risks.

As part of the Platform, the Bank could increase its involvement by following up on these four opportunities:

- Directly supporting policy and a regulatory environment for private sector investments in sustainable use of biodiversity and ecosystem services
- Directly supporting biodiversity-related and biodiversity-enhancing businesses through technical assistance
- Providing incentives for innovative applied research and early-stage investments in emerging opportunities capitalizing on biodiversity and ecosystem services in a sustainable and equitable manner
- Providing financing (including guarantees) to scale up investments

In addition, support could be provided to companies adopting approaches defined as “beyond compliance” behavior, or Corporate Social Responsibility (CSR), including CSR aimed at conserving biodiversity (such as reforestation, adoption of resource-efficient practices in agriculture, expansion of traditional knowledge or practices, and restoring degraded wetlands) (Blackman *et al.*, 2012). Incentives could be provided for other voluntary measures such as biodiversity offsets, conservation easements,

biodiversity banking, and biodiversity action plans, measures which have been successfully adopted by mining and other industries to strive for no-net-loss or net-positive impacts on biodiversity and ecosystem services. Scaling up positive results achieved through these tools offers a niche for IDB engagement with the private sector.

THE THEME IN ACTION: EXAMPLES

Promote biodiversity-enhancing business:

Non-reimbursable technical assistance funds can identify profitable opportunities to invest in biodiversity. Information on new business models and best practices for enhancing and capitalizing on biodiversity is relatively scarce. Moreover, the private sector needs bankable feasibility studies to enable investment. IDB can provide technical cooperation and other non-financial instruments and lower risks from biodiversity investment that justify increased allocations for biodiversity.

Example indicators


- Number of businesses involved in tracking the impacts of their supply chain on biodiversity
- Number of new biodiversity businesses developed

Expand development of “banking for the future”:

The incorporation of biodiversity opportunities and risks into financial analysis could strengthen the financing system and help expand private investments for biodiversity conservation and sustainable use through the financial sector in LAC. This approach, which includes aspects such as climate change mitigation and adaptation, is already under way with the “beyond banking” program at IDB. It could be expanded to address biodiversity and ecosystem services within the environmental footprint of financial intermediaries.

Example indicators

- Number of medium- and long-term loans for biodiversity considerations for financial intermediaries in LAC
- Funds in technical assistance for pilot projects that help financial intermediaries incorporate biodiversity considerations



Governmental policies and regulations serve to protect the value of biodiversity and further enable investment.

THEME 4: STRENGTHENING GOVERNANCE AND THE POLICY FRAMEWORK

DEFINING THE THEME

How can the public sector provide sound policies and regulations and offer services for biodiversity conservation? Efforts to improve environmental governance usually focus on increasing the voice of stakeholders, accountability, public service delivery, transparency, security, and political stability (Blackman *et al.*, 2012).

CHALLENGES AND OPPORTUNITIES

As explained in Chapter 3, a significant gap remains in LAC between the circumstances under which public institutions operate today and the effective operations needed to reverse the trends in biodiversity loss observed in the region. Hence, this thematic area is meant to address challenges such as:

- The weak capacity to implement regulations, including monitoring and enforcement for the full range of policy instruments ranging from protected areas, land-use planning, and property rights to incentive-based policies such as bio-prospecting and Payments for Ecosystem Services
- The lack of knowledge and information about the environmental and natural resource issues and the social, economic, and ecological benefits of biodiversity conservation for specific economic development sectors

- The need for planning and evaluation of conservation policies in recognition that financial, human, and technical resources in LAC are scarce and interventions must be targeted to generate the greatest benefits relative to costs
- The lack of coordination and integrated policy and planning across sectors that impact biodiversity

Improving environmental governance holds the promise of significantly contributing to opportunities to capitalize on the region's natural capital in a sustainable manner. For example, public institutions can create an enabling environment for the private sector to invest in biodiversity conservation and ecosystem services by strengthening the security of land tenure and improving land administration services. Improved monitoring and enforcement in protected areas helps maintain the valuable services provided by these areas, whether it is the provision of water resources for downstream urban areas or adaptation to climate change. Building capacity of government officials to apply existing indigenous and traditional natural resources management legislation can ensure effective participation of indigenous and traditional peoples in measures that promote development with identity and the conservation of biodiversity. Support for the integration of policies (e.g., for economic sectors, biodiversity and climate change) can lead to better coordination which in turn can translate into tangible results for biodiversity conservation.

As presented above, each thematic area is fairly broad, relates directly to the challenges and opportunities presented in earlier chapters, and has the potential to include a wide line of action range.

The next step for IDB will be to select the most promising lines of action in order to articulate expected results, targets, and indicators the goal of eventually being able to monitor and report on impacts.

THE THEME IN ACTION: EXAMPLES

Cultivate human capital:

Building knowledge about and expertise in biodiversity conservation and ecosystem services can enhance both the ability and willingness of government institutions to protect the environment. A new approach to building capacity for environmental management and governance is needed beyond the traditional focus on public environmental regulatory institutions. This new approach would include institutions responsible for setting the development agenda and economic sector policy and citizens. Lines of action in this area could include awareness campaigns; targeted training (in environmental economics, for instance); adjusting requirements for hiring, promotion, and professional certification; modifying academic curricula; and supporting networks of regional research centers and professionals.

Example indicators

- Percent staff with specialized training in environment-related field by economic development sector
- Government budget for environmental management campaigns (\$/annually)

Enhance fisheries management and governance:

Improving fisheries management and governance can lead to the recovery of fisheries stocks and coastal and marine ecosystems. A line of action for large-scale commercial fisheries can be to support policy reforms granting fishers individual or collective rights, and improving planning, monitoring, and enforcement to facilitate rights-based regimes. For small-scale artisanal fisheries, a portfolio of measures is needed, including granting rights to fishers, co-management, participatory planning and management, individual and community quotas, and coastal and marine protected areas. In the case of both large- and small-scale fisheries, implementing these policies will entail raising public awareness and building capacity among regulators and fishers.

Example indicators

- Landings by species normalized by fishing effort
- Number and % of fish stocks classified as overexploited or fully exploited



THE PLATFORM IN ACTION

The Biodiversity Platform is meant to transform the way the Bank does its business and achieves its sustainability and biodiversity conservation goals. New resources, tools, and procedures are needed to make this work. What follows is a brief description of operational components of the Platform the Bank is considering.

SUPPLY THE FUNDS TO GET IT DONE

Experience with other Bank initiatives, such as those created for disaster risk management and climate change, has demonstrated that financing mechanisms such as a dedicated fund serves as an effective incentive for mainstreaming emerging issues into the country dialogue and into projects.

In the case of the Biodiversity Platform, potential uses of the financing mechanism could include preparation of loans and loan components that support policy reform and investments in the thematic areas. This preparation would include studies for improved environmental management in high-risk sectoral investments and support for capacity building for environmental governance; economic and sector analyses and research; co-financing (for instance, with GEF projects); and evaluation of the economic benefits of biodiversity conservation and the maintenance of ecosystem services in specific projects. Depending on the availability of resources, the fund could

also finance innovative investment projects for regional ecosystem-based initiatives. The dedicated fund would be accessible to both the public and private sector windows of the Bank. Other financing mechanisms could include guarantees to support long-term biodiversity investments of the private sector.

BUILD AWARENESS, KNOWLEDGE, AND CAPACITY

There is a need to raise awareness, support knowledge development, and increase capacity both within the region and the Bank. Much research is taking place in the economics field of biodiversity conservation and ecosystem services, and we must expand access to this knowledge. In addition, policy makers and professionals working in the energy, agriculture, infrastructure, and extractive industry sectors require a basic understanding of biodiversity conservation and ecosystem services benefits in their sectors, access to case studies that show impact, and the know-how to apply methods and tools for mainstreaming within their sector.

Training, recruitment of environmental economists and biodiversity specialists, strengthening of regional professional networks, and establishing of monitoring systems are also needed. Attention should be given to IDB country offices to enable deeper incorporation of sustainability considerations into the country strategies during regional dialogues. Finally, an effective communications

strategy should complement knowledge development, clearly conveying the message that biodiversity conservation and maintenance of ecosystem services are integral parts of the Bank's mandate.

MAINSTREAMING IN COUNTRY PROGRAMMING AND SECTOR WORK

One of the findings of the Independent Advisory Group (IAG – see Chapter 5) was that country dialogues and strategies are developed in the absence of a sustainability framework. Such a framework is needed to understand how all potential economic development sectors, including non-traditional ones, relate to the full spectrum of sustainability considerations, including biodiversity and ecosystem services, natural resources management, climate change, and risk management. To address this need, resources and training could be provided to prepare Country Environment Assessments and sector studies, and notes could be developed using a framework to inform country strategies.

The framework could also inform analyses of all sectors (i.e., agriculture, tourism, energy, transport, extractive industries, and infrastructure), which could be supported by large-scale land use and marine spatial planning to enable both the Bank and the client country to visualize the spatial connections between

priority sectors, priority eco-regions, and their footprint as well as alternative development scenarios. Other potential tools—some of which are currently being piloted by the Bank—include public environmental expenditures assessments, analyses of public revenues, environmental accounting, and environmental management performance reviews.

ENHANCE USE OF SAFEGUARD POLICY

IDB can strengthen the proactive use of its Environment and Safeguards Compliance Policy (OP-703) by enhancing the practical application of the concept of ecosystem services. This can involve quantitative and monetary ecosystem services analyses to be included in the cost-benefit analysis of alternatives, baseline analyses of ecosystem services, and scenario modeling of impacts on ecosystem services. As mentioned earlier, there are opportunities to generate lasting biodiversity outcomes including the use of biodiversity offsets, creation and strengthening of protected areas, and large scale land-use planning.

STRENGTHEN STRATEGIC PARTNERSHIPS

Many stakeholders in and outside the region have expressed interest in supporting IDB in the implementation of the Biodiversity Initiative. Strategic partnerships between IDB and regional

institutions, governments, bilateral donors, foundations, private sector companies, the scientific community, NGOs, and civil society can help solidify endorsement of the Initiative, create new knowledge, bolster resources for implementation, disseminate results, and ensure transparency. As work progresses in the upcoming months, the Bank will seek opportunities for strategic partnerships for the Initiative.

EVALUATE FOR IMPACT AND ACCOUNTABILITY

The Bank is committed to measuring progress toward achieving the targets of the GCI-9 and evaluating the impacts of its interventions. The Bank intends to develop a Results Framework for the Biodiversity Initiative to ensure results can be reported and that there is overall accountability to our Board and member countries. Each line of action will be matched with achievable indicators and targets. The Bank will develop results frameworks at the project scale for biodiversity-targeted and mainstreamed operations and will promote the use of impact evaluation in accordance to guidelines to be developed in 2013.

CHAPTER 7

Call for Engagement

WE NEED YOUR IDEAS

The IDB Biodiversity Initiative will succeed only if we receive input, support, and active participation from you. IDB is launching an unprecedented effort to gather your feedback and expertise to ensure our Platform, the first step in defining a fully-endorsed Initiative, reflects the best thinking, innovative solutions, and concerns of all stakeholders.

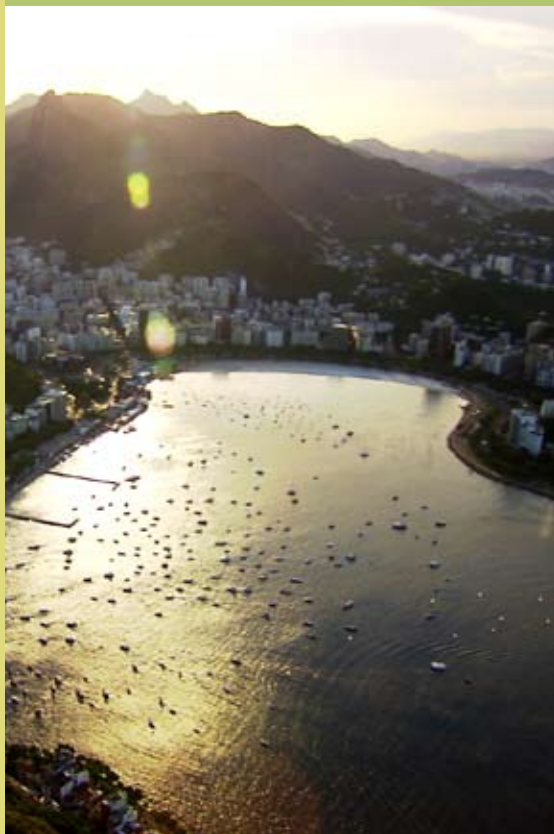
Call to Engagement

IDB's commitment to biodiversity is unparalleled and reflects a top priority of the President and Bank leadership.

WHEN IT COMES TO BIODIVERSITY, IDB RECOGNIZES THAT:

- **We have much to learn from you.** Many Latin American and Caribbean (LAC) region countries, NGOs, corporations, researchers, and scientists are tackling issues around biodiversity and economic development and have best practices, case studies, and lessons learned to share. We want to hear about them.
- **We cannot do this alone.** Fundamentally transforming the Bank's approach to biodiversity will require input and active participation from member countries, the private sector, the NGO community, and local communities. We need your help.
- **We are undertaking an extraordinary effort.** Our commitment to biodiversity is unparalleled within the IDB, and it is a top priority for our President and leadership.
- **We have room to improve.** We have taken the time to identify lessons learned in biodiversity, and we are seeking ways to better the process.
- **We can make a difference.** The Bank is uniquely positioned to take on a greater role in the region. We have longstanding and diverse experience in biodiversity conservation in the context of sustainable development and poverty alleviation. We have a good track record, we've mainstreamed many of our biodiversity efforts across a wide range of sectors, and we have the portfolio to do much more in the context of our dialogue with member countries. We plan to build on our strengths.
- **We must listen to succeed.** Your input will serve as our guidepost as we finalize and launch the Biodiversity Initiative at the Bank's Annual Meeting in Panama in March 2013.

Call to Engagement



HOW ARE WE COLLECTING FEEDBACK?

To date, the Bank has:

- Commissioned two studies to review what we've learned from prior biodiversity conservation efforts and to identify emerging opportunities
- Hosted a workshop in April 2012 at the IDB headquarters, where we asked more than 50 participants from academia, NGOs, the private sector, and the government to give us their input about the vision, rationale, and focus of the Platform
- Asked five experts to conduct a peer review of the Platform to make sure we've captured the latest thinking on biodiversity and IDB's role

Call to Engagement



IMMEDIATE PLANS INCLUDE:

- **Presenting the Biodiversity Platform at the Rio+20 Conference on Sustainable Development and garnering feedback.** We'll introduce the Platform at [the IDB's Climate Change and Sustainable Development](#) session on June 20th. A panel of international experts will discuss the Platform in order to spark engagement and participation among attendees.
- **Collecting feedback from our member countries.** We will be conducting four regional stakeholder meetings in the Caribbean, Central and South America, and Washington, DC in the fall of 2012. We plan to have 30 to 40 participants at these highly interactive workshops, which will focus on the unique challenges of central and regional governments.
- **Consulting with the private sector, public sector, scientific community, and NGO community,** as well as representatives of civil society, via one-on-one consultations, online forums, and other interactive methods.

Call to Engagement



What do we need from you?

We need your guidance and best thinking as we prepare the Bank's Biodiversity Initiative. Some of the things we'd like to know include:

- If you are a **Public Sector partner**, what themes identified in the Platform are most compelling to you and why? Which themes are not? And what kind of governmental policies and regulations that protect the value of biodiversity and enable investment could the Bank be most helpful with?
- If you are a **Private Sector partner**, what market prospects do you see for biodiversity-based commercial products and services? And what are the enabling conditions and incentives that would help promote private investments in these areas?
- If you are a **NGO, foundation, or civil society representative**, how could the IDB adequately address the needs of the poor and of local communities when addressing conservation of biodiversity? And how could the Bank best engage civil society and get input on specific areas, programs, and projects as the Initiative is finalized and implemented?
- If you are a member of the **Scientific Community or a Research Institute**, what research priorities in regards to biodiversity do you feel the Bank should support, and why? And how could we best partner with you to tackle those priorities?

Call to Engagement

Share your ideas and stay informed.

We have created several convenient ways for you to share your ideas directly and stay informed of our progress.

Please visit our website at www.iadb.org/biodiversityLAC to view an overview of the Platform, a list of frequently asked questions and additional background.

We want to hear from you! To make things easier for you, we've created a simple **online survey**. Or, you can **send us your feedback** by emailing your comments to **biodiversity@iadb.org** (you may also send questions and comments directly to this email address).

This Platform depends on your unique perspective to succeed. Please become an ongoing part of this evolving effort.

WHY SHOULD I GET INVOLVED?

The LAC region is among the richest in biodiversity regions—and biodiversity is one of our most valuable assets. Recognizing this can help us overcome poverty and attain a long-term sustainable development model for the region. We need your ideas and input to help value and account for this unparalleled biodiversity and associated services, improve how they are managed engaging both the public and private sector and in turn drive economic growth and social well-being.

Call to Engagement



WHAT COMES NEXT?

- **Present–December 2012:** The Bank will capture your comments, suggestions, and ideas via our website and online forums.
- **September 2012:** Regional consultations will take place in the Caribbean, Central America, Andean Countries, and Southern Cone.
- **December 2012:** The Bank will present a revised Biodiversity Initiative—one that integrates your participation—to the Bank’s Board of Directors for approval.
- **Early 2013:** The Bank will launch the IDB Biodiversity Initiative.

Your guidance is vital at every step in this process. The Bank is grateful for your interest and input. Together, we will develop a Biodiversity Platform that will achieve sustainable and socially inclusive growth in the LAC region.

REFERENCES

- Andam KS, Ferraro PJ, Pfaff A, Sanchez-Azofeifa GA, Robalino JA . 2008. Measuring the effectiveness of protected area networks in reducing deforestation. *Proc Natl Acad Sci USA* 105:16089–16094.
- Andam, K.S., Ferraro, P.J., Sims, K.R.E., Healy, A., and Holland, M.B. 2010. Protected areas reduced poverty in Costa Rica and Thailand. *Proceedings of the National Academy of Sciences* 107: 9996–10001.
- Angelsen, A. and Wunder, S. 2003. *Exploring the Poverty-forestry Link: Key Concepts, Issues and Research Implications*, CIFOR Occasional Papers No. 40, CIFOR, Bogor, Indonesia.
- Blackman, A., Rebecca Epachin-Niell, Juha Siikamaki, Daniel Velez-Lopez. 2012. Prioritizing Policies for Biodiversity Conservation in Latin America and the Caribbean: A Rapid Assessment. Final draft report. Washington DC: IDB.
- Bovarnick, A., F. Alpizar, C. Schnell, Editors. 2010. The Importance of Biodiversity and Ecosystems in Economic Growth and Equity in Latin America and the Caribbean: An economic valuation of ecosystems, United Nations Development Program.
- Brandon K., S. Sanderson, K. Redford. 1998. *Parks in peril: People, politics, and protected areas*. Nature conservancy. Island Press.
- Brito, E. 2011. Biodiversity Monitoring: The Role of the Private Sector in Implementing Responsible Infrastructure Development. IDB Environmental Newsletter. Volume 3.
- Bruner, A., R. Gullison, and A. Balmford. 2004. Financial costs and shortfalls of managing and expanding protected-area systems in developing countries. *Bioscience* 54(12): 1119–1126.
- Burke, L., and J. Maidens. 2004. “Reefs at risk in the Caribbean.” Washington DC., USA: World Resources Institute
- Campbell, N.A. 1996. *Biology*, 4th Edition. The Benjamin/Cummings Publishing Company, Inc., Menlo Park, California
- Caribbean Tourism Organization (CTO). 2012. Tourism statistics. <http://www.onecaribbean.org/statistics>.
- Carrizosa, S., and M. I. Westphal. 2007. Biodiversity Investments in the Latin American and Caribbean region: The Inter-American Development Bank’s Contribution (1995–2006).
- Carrizosa, S., and R. Quiroga. 2007. The role of ecosystems in enhancing economic growth and social development. Inter-American Development Bank. SDS/ENV.
- Castro de la Mata, Gonzalo. 2012. Biodiversity Conservation and Ecosystem Services: A Review of Experience and Strategic Directions for the IDB. Final draft report. IDB.
- Castro, G., and I. Locker. 2001. Mapping Conservation Investments: An Assessment of Biodiversity.
- Chatwin, A., (ed). 2007. Priorities for Coastal and Marine Conservation in South America. The Nature Conservancy, Arlington, Virginia.
- CIFOR. 2008a. *Best Brazil nut practice in Bolivia*. Bogor, Indonesia. www.cifor.cgiar.org/Publications/Corporate/NewsOnline/NewsOnline43/brazil_nut.htm.
- Chomitz, Kenneth M .2007. At loggerheads?: agricultural expansion, poverty reduction, and environment in the tropical forests. The World Bank, Washington, DC.

Conservation International (CI). Biodiversity Hotspots: In: http://www.conservation.org/where/priority_areas/hotspots/south_america/Pages/south_america.aspx. Accessed May 2012.

Convention on Biological Diversity (CBD). 2010. Linking Biodiversity Conservation and Poverty Alleviation: A State of Knowledge Review. Commissioned by the International Institute for Environment and Development (IIED) as a contribution to a symposium “Linking Biodiversity Conservation and Poverty Reduction: What, Why and How?” Published by the Secretariat on the Convention of Biological Diversity, Quebec, Canada.

DeFries, R., A. Hansen, A. Newton, and M. Hansen. 2005. Increasing isolation of protected areas in tropical forests over the past twenty years. *Ecological Applications* 15: 19–26.

Dudley N, and S. Stolton. 1999. Conversion of paper parks to effective management: Developing a target. Report to the WWF-World Bank Alliance from the IUCN/WWF Forest Innovation Project.

Dudley, N., Mansourian, S., Stolton, S., Suksumn, S. 2008. *Safety Net: Protected Areas and Poverty Reduction*. A research report by WWF and Equilibrium. World Wildlife Fund for Nature.

Economic Commission for Latin America and the Caribbean (ECLAC). 2011. Statistical Yearbook for Latin America and the Caribbean 2011.

Edens, B. 2012. Lessons learned from environmental accounting, The World Bank. DRAFT

Encalada, A., Ibarra, L.C., and de la Paz, M.C. 2011. Diagnóstico de la integridad ecológica y la calidad del agua de los ríos en las zonas de manejo del FONAG. Informe Final, Laboratorio de Ecología Acuática de la Universidad San Francisco de Quito. The Nature Conservancy, 2011.

Environment Safeguards Unit (ESG). 2012. The Evolution of IDB Sustainability Investments. Environment and Safeguards Unit. Unpublished working paper. IDB.

FAO. 2009. *Contribution of the forestry sector to national economies 1990–2006*. By A. Lebedys. In *State of the World's Forests 2009*. Rome: FAO.

FAO. 2010a. *Global Forest Resource Assessment 2010*. Rome: FAO, UN.

FAO, 2010b. *The State of World Fisheries and Aquaculture 2010*. Rome: FAO, UN.

FAO. 2011. *State of the World's Forests*. Rome: FAO, UN.

FAO and World Fish Center. 2008. Small-scale capture fisheries: A global overview with emphasis on developing countries. http://www.worldfishcenter.org/resource_centre/Big_Numbers_Project_Preliminary_Report.pdf

Ferraro, P. and Hanauer, M.M. 2010. Protecting Ecosystems and Alleviating Poverty with Parks and Reserves: “Win-Win” or Tradeoffs? *Environmental and Resource Economics* 48:269–328.

Gromko, D., J. Baldwin and S. Wilson. 2012. Biodiversity and Small Business: Lessons Learned from Two Decades of Biodiversity Projects at the Multilateral Investment Fund (draft). Washington DC: IDB.

Halpern, B.S., *et al.*, 2008. A Global Map of Human Impact on Marine Ecosystems, *Science* 319, 948.

Heal, G. 2000. ‘Biodiversity in the marketplace’, *World Economics*, 1(4): 149–177.

IDB, 2006. Environmental and Safeguard Compliance Policy (OP-703).

IDB, 2010. Report on the Ninth General Increase in the Resources of the Inter-American Development Bank.

IDB, 2011. Private Sector Development Strategy: Fostering Development Through the Private Sector. Vice-Presidency for Private Sector and Non-Guaranteed Operations.

IDB, 2011. Management Response to the Final Report of the Independent Advisory Group on Sustainability: From Managing Risks to Embracing New Opportunities.

IDB, 2012. Sustainability Report 2011.

IDB-ECLAC-WWF. The Climate and Development Challenge for Latin America and the Caribbean. Forthcoming.

Independent Advisory Group on Sustainability (IAG). 2011. Final Report to the Inter-American Development Bank.

Intergovernmental Panel on Climate Change (IPCC). 2007. Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

International Council for Science Latin America (ICSU–LAC). 2010. Science for a Better Life: Developing Regional Scientific Programs in Priority Areas for Latin America and the Caribbean. Volume 1. Kalin T. Arroyo, M., Dirzo, R., Castillas, J.C., Cejas, F., and Joly, C.A. Biodiversity in Latin America and the Caribbean: An Assessment of Knowledge, Research Scope and Priority Areas. Rio de Janeiro and Mexico City: ICSU–LAC / CONACYT.

IUCN and UNEP-WCMC. 2011. The World Database on Protected Areas (WDPA): January 2011. Cambridge, UK: UNEP-WCMC

Jackson, L.E., Pascual, U. and Hodking, T. 2007. 'Utilizing and conserving agrobiodiversity in agricultural landscapes', *Agriculture, Ecosystems and Environment*, 121: 196–210.

Kathiresan, K. and Rajendran, N. 2005. Coastal mangrove forests mitigated tsunamis. *Estuarine, Coastal, and Shelf Science* 65: 601–606.

Kennedy, H., and M. Bjork. 2009. Seagrass meadows. In D.d'A. Laffoley and G. Grimsditch (eds), *The management of natural coastal carbon sinks*. Gland, Switzerland: IUCN.

Klink C.A and A. Moreira . 2002. Past and Current Occupation and Land Use. Chapter 5. In: Paulo S. Oliveira and Robert J. Marquis (eds.), *The Cerrados of Brazil: ecology and natural history of a neotropical savanna*. Columbia University Press. New York.

Leverington, F. K. Lemos Costa, J. Courrau, H. Pavese, C. Nolte, M. Marr, L. Coad, N. Burgess, B. Bomhard, M. Hockings. 2010. *Management effectiveness evaluation in protected areas—a global study*. Second edition 2010. The University of Queensland Brisbane Australia.

Miloslavich, P. *et al.*, 2011. Marine Biodiversity in the Atlantic and Pacific coasts of South America: Knowledge and Gaps. *PLoSone* 6(1): e14631.

MINISTÉRIO DO MEIO AMBIENTE (MMA). 2011. Plano de ação para prevenção e controle do desmatamento e das queimadas. MMA. Brasília.

Moreno, L. A. 2011. The Decade of Latin America and the Caribbean: A Real Opportunity. Washington, D.C.: The Inter-American Development Bank.

Nelson, A., and K. Chomitz. 2011. Effectiveness of strict vs. multiple use protected areas in reducing tropical forest fires: A global analysis using matching methods. *PLoS One* 6(8): e22722. 1

Neumann, R.P. and Hirsch, E. 2000. *Commercialization of Non-timber Forest Products: Review and Analysis of Research*, CIFOR, Bogor, Indonesia.

Olson, D.M., E. Dinerstein, E. Wikramanayake, N. Burgess, G. Powell, E. Underwood, J. D'Amico, I. Itoua, H. Strand, J. Morrison, C. Loucks, T. Allnutt, T. Ricketts, Y. Kura, J. Lamoreux, W. Wettengel, P. Hedao, and K. Kassem. 2004. Terrestrial ecoregions of the world: A new map of life on earth. *BioScience* 51:933–938.

Pascual, U. and Perrings, C. 2007 'Developing incentives and economic mechanisms for in situ biodiversity conservation in agricultural landscapes', *Agriculture, Ecosystems and Environment*, 121: 256–268.

Pattanayak, S.K. and Sills, E. 2001 'Do tropical forests provide natural insurance? The microeconomics of non-timber forest products collection in the Brazilian Amazon', *Land Economics*, 77: 595–612.

Pfaff, A. Robalino, J, Herrera, L.D., Lima, E. Sandoval, C. 2011. Estimating Avoided Deforestation by Protection Type: Can Governance plus Location Equal Forest plus Livelihoods? Unpublished manuscript.

Pounds, J., M. Bustamante, M., L. Coloma, *et al.*, 2006. Widespread amphibian extinctions from epidemic disease driven by global warming. *Nature* 439: 161–167.

Quintero, J. 2007. *Mainstreaming Conservation in Infrastructure Projects: Case Studies from Latin America*. World Bank Report. World Bank, Washington DC.

Ramsar. 2010. *Wetland Ecosystem Services: Shoreline Stabilization and Storm Protections*. Ramsar secretariat Factsheet series. Wetland ecosystem services factsheet 3 in a series of 10. http://www.ramsar.org/pdf/info/services_03_e.pdf

Ranganathan, J., F. Irwin and C.Procope Repinski. 2009. Banking on Nature's Assets: How Multilateral Development Banks Can Strengthen Development by Using Ecosystem Services. World Resources Institute.

Regional Policy Dialog on Water and Climate Change in the Americas (RPD). 2012. Water and Climate Change Adaptation in the Americas: Solutions from the Regional Policy Dialog.

Ricketts, T. H. Daily, G. C., Ehrlich, P. R. Michener, C. D. 2004. "Economic value of tropical forest to coffee production." *Proceedings of the National Academy of Sciences* 101(34): 12579–12582.

Rights and Resources Initiative. 2012. What Rights? A Comparative Analysis of Developing Countries' National Legislation on Community and Indigenous Peoples' Forest Tenure Rights. Washington DC: Rights and Resources Initiative.

Salas, S.; Chuenpagdee, R.; Charles, A.; Seijo, J.C. (eds.). 2011. Coastal fisheries of Latin America and the Caribbean. FAO Fisheries and Aquaculture Technical Paper. No. 544: 430. Rome: FAO

Scherr, S.j. 2009. Mainstreaming Biodiversity and Ecosystem Conservation in the Agricultural Investment Portfolio of the Inter-American Development Bank: Review and Recommendations. Ecoagriculture Partners. Washington, DC.

Sherman, K. and G. Hempel. (eds.). 2009. The UNEP Large marine ecosystem report: A perspective on changing conditions in LMES of the world's regional seas. UNEP Regional Seas Report and Studies No. 182. Nairobi, Kenya: UNEP

Siikamäki, J., J. Sanchirico, S. Jardine, D. McLaughlin, and D. Morris. 2012. Blue Carbon: Global Options for Reducing Emissions from the Degradation and Development of Coastal Ecosystems,' RFF Report (forthcoming).

Smale, M. and Drucker, A. 2008. 'Agricultural development and the diversity of crop and livestock genetic resources: a review of the economics literature'. In Kontoleon, A., Pascual, U. and Swanson, T. (eds) *Biodiversity Economics: Principles, Methods and Applications*, Cambridge University Press, Cambridge.

Strayer, D. and D. Dudgeon. 2010. Freshwater biodiversity conservation: Recent progress and future challenges. *Journal of the North American Benthological Society* 29:344–358

Sullivan Sealey, K. and Bustamante, G. 1999. Setting geographic priorities for marine conservation in Latin America and the Caribbean. The Nature Conservancy, Arlington, Virginia.

Takasaki, Y., Barham, B.L. and Coomes, O.T. 2004. 'Coping strategies in tropical forests: floods, illnesses, and resource extraction', *Environment and Development Economics*, 9(2): 203–224.

TEEB (The Economics of Ecosystems and Biodiversity). 2010. *Marinstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*.

Thomas, C.D., A. Cameron, R. E. Green, *et al.*, 2004. Extinction risk from climate change. *Nature*, Vol. 427, pp. 145–148.

United Nations (UN). 2005. THE MILLENNIUM DEVELOPMENT GOALS: A LATIN AMERICAN AND CARIBBEAN PERSPECTIVE. United Nations Publication Santiago, Chile.

United Nations Conference on Trade and Development (UNCTAD). 2012. Trade and Biodiversity: The BioTrade Experiences in Latin America. UNCTAD.

United Nations Development Program (UNDP). 2010a. A Policy Brief. Latin America and the Caribbean: A Biodiversity Super Power, UNDP.

UNDP. 2010b. *Accelerating Progress Towards the Millennium Development Goals: UNDP's Work in Environment and Sustainable Development*. United Nations Development Programme; Environment and Energy for the MDGs.

United Nations Environment Program (UNEP). 2009. *Sustainable Coastal Tourism: An integrated planning and management approach*. United Nations Environment Programme France.

UNEP. 2010a. Atlas of Our Changing Environment: Latin America and the Caribbean, UNEP.

UNEP. 2010b. Latin America and the Caribbean: Environment Outlook. GEO LAC 3. Panama City, Panama: UNEP.

UNEP. 2010c. State of Biodiversity in Latin America and the Caribbean. Panama City, Panama and Nairobi, Kenya: UNEP Regional Office for Latin America and the Caribbean.

United Nations Framework Convention for Climate Change .2007. Climate change: Impacts, Vulnerabilities and Adaptation in Developing Countries. Climate Change Secretariat, Bonn.

United Nations World Tourism Organization (UNWTO). 2010. Turismo en IberoAmerica: Panorama Actual 2010. UNWTO.

Valiela, I., J.L. Bowen, and J.K. York. 2001. Mangrove forests: One of the world's threatened major tropical environments. *BioScience* 51(10): 807–15

WORLD WILDLIFE FUND (WWF).2011. Soya and the Cerrado: Brazil's forgotten Jewel. Available at: http://assets.wwf.org.uk/downloads/soya_and_the_cerrado.pdf. Accessed May 2012.

Watkins, Graham G. and Iona F. Hawken. 2012. Incorporating Ecosystem Service Analysis in IDB Projects. Draft Technical Note. ESG, IDB

World Bank. 2001. *Recommended Revisions to OP 4.36: Proposals for Discussion*. Washington, DC, USA: World Bank.

World Bank, 2009. The Sunken Billions: The Economic Justification for Fisheries Reform. Washington, DC, USA: World Bank.

World Bank Report. September 2011. Latin America and the Caribbean's Long Term Growth: Made in China? http://siteresources.worldbank.org/LACEXT/Resources/Annual_Meetings_Report_LCRCE_English_Sep17F2.pdf

World Resources Institute. 2008. *Belize's Coastal Capital: The Economic Contribution of Belize's Coral Reefs and Mangroves*.

World Travel Tourism Council (WTTTC). 2011. Travel & Tourism: Economic Impact 2012 (Caribbean and Latin America). WTTTC.

APPENDICES

ANNEX 1: BIODIVERSITY PROJECT TYPES AND IMPACTS

Types of projects	Examples of IDB projects	Activities and impacts
Protected areas		
Terrestrial	Guatemala: Establishing Cadastral Registry and Strengthening Legal Certainty of Protected Areas (GU-L1014)	Established land rights, limits, and protected zones in projected areas.
Coastal and marine	Ecuador: Coastal and Marine Biodiversity Conservation (EC-X1004)	Consolidated the MPA network, collected biodiversity data for science-based decision making, and implemented shark protection measures.
Environmental management	El Salvador: National Environmental Protection Program (ES-0024)	Maintained watershed soil services through soil conservation and agroforestry, consolidation of protected areas, and a water pollution monitoring program.
Mainstreaming in rural sectors		
Agriculture	Costa Rica: Sustainable Development of the Binational Watershed Rio Sixaola (CR-O150)	Implemented productivity-enhancing, less environmentally aggressive production techniques and alternatives to banana and plantain monocultures.
Mainstreaming in traditional production systems	Bolivia: Sustainable management highland ecosystems Northern Potosi (BO-X1001)	
Integrated rural development	Nicaragua: Environmental Program for Disaster Risk Management and Climate Change (NI-L1048)	Supported producer adoption of environmental restoration systems in watersheds by prioritizing these watersheds according to vulnerability.
Tourism	Bolivia: National Community-Based Tourism Program (BO-L1039)	Enhanced environmental services in protected areas for local communities living in the buffer zones.
Mainstreaming in urban landscapes	Brazil: Macambira-Anicuns Urban Environmental Program (BR-L1006)	Restored riverbanks, recovered vegetation and created public use areas that have both leisure and environmental functions.
Application of safeguards	Peru: LNG Project (PE-L1016)	Strengthened management of protected areas, co-management and enforcement, and established a biodiversity monitoring program.
Private sector financing		
SME	Regional: Eco Enterprises Fund I (TC9703332)	Implemented a financing mechanism that supports small- and medium-sized businesses in sectors that can protect fragile ecosystems and generate sustainable livelihoods.
Corporate financing	Uruguay: Estancias del Lago (UR-L1059)	Supported dairy production through a Biodiversity Action Plan that includes habitat mapping, ecological easements, and the conservation of high-value species and habitats.
Climate change	Regional: Potential impact of climate change in Latin America and the Caribbean mountain forest ecosystems (RG-T1837)	Determined the potential impact of climate change through forest monitoring and developed an adaptation proposal for high mountain forest ecosystems.

ANNEX2: STATUS AND EFFECTIVENESS OF POLICIES IN LAC

Themes	Policy	Definition	Status & Trends	Issues/Challenges/Considerations
1, 3	Payments for ecosystem services (PES)	Cash transfers from users of services to providers of services, conditional on continued provision	<ul style="list-style-type: none"> LAC leads world in PES. Many PES schemes are nascent or never launched. Many programs are relatively new so results not measured rigorously. Most programs are local. 	<ul style="list-style-type: none"> PES is a simple and more cost effective manner to implement conservation. There are numerous hurdles for effectiveness including additionality, leakage, and enforcement. Scale of problem depends on scale of PES. Conditionality is based on implemented action (that should deliver the service) rather than delivered service. Market failures can compromise PES. PES has fixed costs that are difficult to cover. Lack of property rights makes PES more challenging.
1, 2, 3	Ecotourism	Travel to natural areas that aims to secure environmental well-being and improve welfare of local people	<ul style="list-style-type: none"> Tourism in general is one of the largest and fastest growing sectors in LAC. Nature is of reported major interest to the majority of international travelers to many LAC countries. Eco-lodges are increasingly prominent, especially in highly biodiverse countries in LAC. 	<ul style="list-style-type: none"> Evidence about success of ecotourism is lacking because standards vary widely. Tourism can promote the creation of new public and private protected areas and improve their management. Ecotourism creates economic incentives to conserve biodiversity and raise awareness about it. Ecotourism can destroy habitats and introduce invasive species. Ecotourism increases human presence in natural areas.
1, 3, 4	Eco-certification; eco-labeling;	Program that accredits goods and services that meet defined standards to protect social and environmental welfare	<ul style="list-style-type: none"> Increasingly popular worldwide, particularly in agriculture LAC's role is unclear. It is potentially a global leader, but data is limited. 	<ul style="list-style-type: none"> Eco-certification is thought to carry a higher price in niche markets. Programs encourage green practices throughout the supply chain There is a need to set and enforce standards throughout supply chain to produce a desirable effect on certification. Price premiums need to be obtained. Few to no studies on actual impacts of eco-certification programs exist.
1, 3, 4	Bio-prospecting	Systematic collection of biological samples of plants and animals in their natural environments to use their genetic and biochemical properties for new and improved products and processes	<ul style="list-style-type: none"> Few firms dedicated to bioprospecting operating in LAC; requires heavy capital costs LAC research institutions have internal capacity due to partnerships with bioprospecting organizations, though they are not keeping up with the newest technologies Access and benefit sharing rules vary widely across LAC countries. 	<ul style="list-style-type: none"> If benefits from bioprospecting are shared with local land managers, incentives for conservation can be created. Disputes arise between bioprospectors (usually large companies), land owners, and inhabitants of the land, leading to ABS (access and benefit sharing) agreements ABS is not very successful at solving conflicts Evidence shows in situ plants and animals are a valuable source of new products and processes. Economic benefits from bioprospecting alone are likely insufficient as an incentive for biodiversity preservation. New products alone not enough to encourage conservation.

ANNEX2: STATUS AND EFFECTIVENESS OF POLICIES IN LAC

Themes	Policy	Definition	Status & Trends	Issues/Challenges/Considerations
1, 4	Fisheries management through “rights” distribution	Management of fisheries for livelihoods and contribution to economy by granting individual or collective rights to fisheries	<ul style="list-style-type: none"> About 1.3 million jobs linked to fisheries Up to 6% of GDP in some countries Fishing employment continues to increase Dominated by small vessels with largely domestic consumption 	<ul style="list-style-type: none"> Comprehensive approach is needed to rebuild fisheries. Distributional issues (how to determine rights) Market issues: tradable or not tradable?
1, 4	Subsidy reform	Government monetary action that targets a specific economic sector. Can be payments, transfers, or relief of opportunity costs. Boosts and spurs economic activity.	<ul style="list-style-type: none"> Agriculture subsidies are significant and growing. Biofuels are increasingly subsidized. There was a recent boom in transportation infrastructure Many countries subsidize water for drinking and irrigation. Fishing subsidies contribute to overfishing. 	<ul style="list-style-type: none"> Subsidies spur economic activity which impact biodiversity and ecosystems. Agriculture subsidies can provide incentives to deforestation. Subsidies to agrochemicals can cause pollution. Subsidies to transportation can lead to land use change. Causal links between subsidies and resource degradation are well-documented. In general, subsidies negatively impact biodiversity and ecosystems
1, 4	Greening agriculture	Prevent habitat loss from agricultural extensification and minimize environmental impacts from	<ul style="list-style-type: none"> Intensification an extensification can have negative impacts on biodiversity and ecosystems. Fertilizer use and intensity is rapidly growing in LAC. More area cleared for agriculture 	<ul style="list-style-type: none"> Reducing extensification requires land use planning, reforming perverse subsidies, better forest management, and strategic road planning. Best management practices can help minimize impacts from intensification (e.g., increasing application efficiency of agrochemicals, using natural fertilizers and insecticides, and maintaining diverse crop species and remnant habitat patches on the landscape). Agricultural water pollution and sedimentation can be reduced by location point sources of pollution away from water bodies and using natural vegetation to act as barriers along waterways. Best management practices can be adopted through investing in training, information initiatives, modifying agrochemical subsidies, abolishing policies that require use of intensive agriculture practice to gain land rights, among others. Agroforestry and silvopastoral systems can maintain crops while also benefiting biodiversity and ecosystem services. Biofuels should be pursued cautiously.

ANNEX2: STATUS AND EFFECTIVENESS OF POLICIES IN LAC

Themes	Policy	Definition	Status & Trends	Issues/Challenges/Considerations
3	Corporate social responsibility (CSR)	Actions that farms and firms take to improve environmental quality, worker health and safety, and/or community welfare not required by law	<ul style="list-style-type: none"> • Suggestions that CSR is spreading but no comprehensive data • LAC is <i>not</i> leading the CSR effort 	<ul style="list-style-type: none"> • CSR has potential to overcome well known obstacles to top-down approaches for biodiversity conservation. • CSR does not depend on public sector to issue mandates. • Consumers can drive much of the incentive. • Some CSR is privately profitable. • CSR is unlikely to become widely entrenched in LAC because of weak domestic drivers. • Niche markets are relatively weak in LAC. • Regulatory pressures not strong • Small-scale firms are more prevalent in LAC, so less susceptible to CSR-related pressures • Evidence suggests CSR might not have all benefits suggested.
2, 3, 4	Mitigation offsets and banking	Improvements to ecosystems land managers undertake in order to compensate for ecosystem damages	<ul style="list-style-type: none"> • Regulations in LAC to reduce impacts, usually through licensing, could link mitigation offsets to this • Mitigation banking not yet implemented though potential has been documented 	<ul style="list-style-type: none"> • Potential to reduce conflict between economic development and biodiversity conservation particularly in a market based approach • Passes conservation requirements to those with greater ability to meet them • Need particular policies and institutions to be able to implement (e.g., policies to reduce biodiversity loss due to infrastructure projects, integration of banking into land use planning, demand for mitigation credits, government and third-party management of the bank, among others)
2	Protected area (PAs)	Officially/legally designated area managed to achieve long-term nature preservation	<ul style="list-style-type: none"> • 2010 PAs = 20% of terrestrial area (only 11% in Caribbean) • LAC leads the world in multi-use PAs. • Many biomes are not included. 	<ul style="list-style-type: none"> • Coverage gaps • PAs too small and fragmented • Poorly managed • Only .01% of GDP goes to PAs • PAs get about US\$1.18 per hectare • Ensure local communities benefit and are not harmed • Positive impacts from PAs on reduction in land cover change and fire incidence is location dependent.
4	National environmental accounting; green accounting	Systematically collecting and disseminating data on environmental quality and natural resources, preferably incorporated into national income measures	<ul style="list-style-type: none"> • First implemented in LAC in late 80s • All but one country in Latin America piloted this • Four countries with fully fledged program • Few countries experimented with environmental accounts that include ecosystem services 	<ul style="list-style-type: none"> • Considerable debate about how to measure sustainable income • Views differ on how to adjust conventional aggregate income accounts to reflect use of natural assets • Controversy around appropriate treatment of defensive and restorative expenditures • Some debate on best method for structuring sustainable income accounts

ANNEX2: STATUS AND EFFECTIVENESS OF POLICIES IN LAC

Themes	Policy	Definition	Status & Trends	Issues/Challenges/Considerations
4	Targeting, data, and evaluation	Targeting conservation investments, prioritized projects, and location with the highest net expected benefits (biggest bang for the buck)	<ul style="list-style-type: none"> Lack of information on species, biodiversity, and ecosystem services makes this challenging. Even basic species knowledge has gaps. Little information on ecological production functions 	<ul style="list-style-type: none"> Enormous heterogeneity in LAC in both biodiversity and in what we know about it Limited information, particularly in marine and freshwater systems Need improved biodiversity inventories, better climate change impact knowledge, improved understanding of impacts of threats on biodiversity, increased information on invasive species, improved understanding of ecosystem service production, valuation studies for ecosystem services, development of standardized biodiversity indicators, and improved centralized information on existing environmental policies
4	Wastewater treatment	A process of treating and cleaning waste water before it pollutes other environments including removal of sediments, pollutants, and chemicals	<ul style="list-style-type: none"> In 2000, 86% of wastewater in LAC was not treated. Wastewater treatment often only in select cities 	<ul style="list-style-type: none"> What exists of LAC wastewater treatment attempted to use highly industrialized, expensive processes Many existing treatment plants are inefficiently or intermittently run. Forty percent of existing plants fail to treat wastewaters to minimum regulatory standards. Need to investigate effective but less expensive options
4	Forest co-management	Property rights to forests are given to local communities or collectives from national or regional government.	<ul style="list-style-type: none"> Significant increase in the last couple of decades As of 2002, about 195 million hectares in co-management (22% of forests) Particularly prominent in Central America (about 19% of forests) 	<ul style="list-style-type: none"> Can help stem forest loss through property rights No limit on amount that can be co-managed (are limits to PAs) Community co-management can spur deforestation.
4	Land use planning	Identify and promote land uses that meet the needs of local people while safeguarding future resource availability	<ul style="list-style-type: none"> In the 1990s, some countries began including environment in land use planning. Increasing trend to include environment 	<ul style="list-style-type: none"> Local weak governance including lack of capacities Uncertainty, enforcement, tenure, and participation Distributional issues

Source: Blackman et al., 2012.



www.iadb.org/biodiversityLAC