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ENVIRONMENT AND BIODIVERSITY SECTOR FRAMEWORK DOCUMENT

ENVIRONMENT, RURAL DEVELOPMENT, AND DISASTER RISK MANAGEMENT DIVISION

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ABBREVIATIONS

ADB	Asian Development Bank
BIO	Special Program for Biodiversity and Ecosystem Services
DEM	Development Effectiveness Matrix
EIA	Environmental impact assessment
EKC	Environmental Kuznets curve
EPI	Environmental Performance Index
ESMR	Environmental and social management report
ESS	Environmental and Social Strategy
FAO	Food and Agriculture Organization of the United Nations
GCI-9	Ninth General Increase in the Resources of the IDB, or Ninth General Capital Increase
GDP	Gross domestic product
GEF	Global Environmental Facility
IAG	Independent Advisory Group on Sustainability
IAIA	International Association for Impact Assessment
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
KNL	Knowledge and Learning Sector
LAC	Latin America and the Caribbean
OECD	Organization for Economic Cooperation and Development
OVE	Office of Evaluation and Oversight
PES	Payment for ecosystem services
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SEA	Strategic environmental assessment
SEEA	System of Environmental-Economic Accounting
SFD	Sector framework document
SMEs	Small and medium-sized enterprises
SSF	Safeguard screening form for classification of projects
UNEP	United Nations Environment Programme
WHO	World Health Organization

I. ENVIRONMENT AND BIODIVERSITY IN THE CONTEXT OF THE BANK'S SECTOR STRATEGIES

A. The Environment and Biodiversity SFD as part of existing regulations

- 1.1 This Environment and Biodiversity Sector Framework Document (SFD) has been developed in accordance with document GN-2670-1, "Strategies, Policies, Sector Frameworks, and Guidelines at the IDB," which governs the strategies, policies, sector frameworks, and guidelines for the Bank's knowledge generation activities, country dialogue, and operational work concerning the environment. This SFD is aimed at providing specific yet flexible guidance to accommodate the diversity of challenges and institutional contexts faced at different levels by the Bank's 26 borrowing member countries on environmental issues, applicable to Bank financing for sovereign guaranteed and non-sovereign guaranteed operations.
- 1.2 This SFD is based on the mainstreaming principles and guidelines of the: (i) Environment and Safeguards Compliance Policy (Operational Policy OP-703); (ii) Indigenous Peoples Policy (OP-765); and (iii) Disaster Risk Management Policy (OP-704). Whereas these are policy documents applicable to all Bank interventions, this SFD is not a normative policy paper. This paper offers strategic guidance in setting operational and analytic priorities.
- 1.3 As indicated in document GN-2670-1, once the Environment and Biodiversity SFD has been approved, the "Strategy for Coastal and Marine Resources Management in Latin America and the Caribbean" (document GN-1906-2) will cease to be in effect. The relevant content of that strategy has been incorporated into this SFD as indicated in Annex II of document GN-2670-1.

B. The Environment and Biodiversity SFD as part of the Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy

- 1.4 This SFD falls within the framework of the "IDB Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy" (document GN-2609-1), particularly in the area of sustainable management of natural resources. The response to the phenomenon of climate change requires mitigating the damage already caused (global warming) and controlling greenhouse gas emission levels in order to achieve global climate stabilization goals and locally adapt to the potential impacts of warming, to minimize loss and damage. All adaptation and mitigation measures forming part of this strategy are necessary and considered priority environmental management measures. This SFD comprehensively addresses environmental challenges that, irrespective of climate change, are determining factors for sustainable development and quality of life in the countries of the region. These challenges include air pollution from noxious gases, in addition to greenhouse gas emissions; water pollution from wastewater disposal and industrial discharges; unchecked exploitation and degradation of natural capital resulting in biodiversity losses beyond the capacity to regenerate; and persistent presence of solid and hazardous waste in the environment.
- 1.5 This SFD is also associated with the "Sustainable Infrastructure for Competitiveness and Inclusive Growth: IDB Infrastructure Strategy" (document GN-2710-5), which highlights natural capital and environmental quality

as factors contributing to competitiveness, revenue generation, green infrastructure development, and a better quality of life for the population, particularly for vulnerable groups.

- 1.6 In operational terms, this SFD relates to the following sector framework documents: (i) Agriculture and Natural Resource Management (GN-2709-2), which addresses the role of sustainably harvested natural resources as inputs to agricultural, forestry, and fisheries sectors; (ii) Tourism (GN-2779-3), which identifies development of the natural resource endowment and biodiversity as a factor for tourism competitiveness; (iii) Water and Sanitation (GN-2781-3), which outlines priority actions for water resource management; (iv) Transportation (GN-2740-3), Energy (in preparation), and Climate Change (in preparation), which set priority actions consistent with the reduction of carbon footprints and adaptation to climate change; (v) Integration and Trade (GN-2715-2), which recognizes the importance of environmental sustainability in the area of international integration and trade agreements; and (vi) Gender and Diversity (GN-2800-3), which identifies gender equality and development as crosscutting themes for sustainable natural resource management, risk management, and effective responses to climate change.
- 1.7 This SFD reflects environmental sustainability principles consistent with the multilateral agreements, conventions, or international treaties on environmental sustainability to which the region's countries have acceded. For purposes of this SFD, and consistent with the Environment and Safeguards Compliance Policy (Operational Policy OP-703), the term "environment" is defined in its broadest sense, to include natural (physical/biotic) factors as well as associated social factors. Similarly, the term "natural capital" refers to the ecosystem components, including biodiversity, that contribute to the generation of valuable goods and services for humankind now and in the future (Guerry et al. 2015). Thus, the SFD supports sustainable development by integrating biodiversity and ecosystem services into economic sectors, mainstreaming and applying sustainability criteria in all Bank financing sectors, based on principles of competitiveness, social inclusion, and global and regional scope.
- 1.8 In implementing this SFD, the Bank will seek to adapt interventions to the specific needs, national policies, and demands of each country, as well as to the special features of each client, taking into account the geographic, social, and cultural heterogeneity of the Latin America and the Caribbean (LAC) region. Thus, the intention of this SFD is not to set limits, rather it is a strategic and indicative document. The specific nature of the interventions will be determined as outcomes of dialogue with the countries.
- 1.9 This SFD has five sections. Section II presents the main findings of analysis of the international empirical evidence on the effectiveness of policies and actions in management of the environment and natural capital. Section III offers a diagnostic of LAC, identifying the environmental challenges faced by the region. Section IV summarizes lessons learned from the Bank's work on environmental issues, based on the recommendations of the Office of Evaluation and Oversight (OVE) and project completion reports (PCR), and highlights the Bank's comparative advantages. Lastly, Section V presents the goals, principles, dimensions of success, lines of action, and priority activities to orient future Bank programming in the environment and biodiversity.

II. INTERNATIONAL EVIDENCE ON THE EFFECTIVENESS OF ENVIRONMENT AND BIODIVERSITY POLICIES AND PROGRAMS AND IMPLICATIONS FOR THE BANK'S WORK

2.1 This section presents empirical evidence regarding the necessary and essential actions for good environmental performance in three key dimensions: (i) policy frameworks, governance, and management instruments; (ii) mainstreaming across sectors and enabling private-sector competitiveness; and (iii) social inclusion. It begins with an account of the debate on growth, competitiveness, and the environment, to demonstrate that investing in infrastructure and economic development while conserving the environment and natural capital is a viable and intelligent strategy for sustainable development.

A. Competitiveness, growth, and environment

2.2 Some policy-makers and segments of society in LAC continue to adhere to the conventional belief that environmental regulations impose significant costs and hinder growth in productivity, and thus undermine the ability of businesses to compete in international markets. This position is reinforced by a literal interpretation of the Environmental Kuznets curve (EKC), popularized in the 1990s by various economists who argued that the relationship between environmental degradation and a country's per-capita income follows an inverted U-shaped curve. According to this theory, environmental degradation initially increases with economic development but then, starting at a certain level of income per capita, the rise in income brings about an improvement in environmental quality (Grossman and Krueger 1995). The common interpretation is that countries falling into the initial segment of the EKC are more interested in generating jobs and income than in a clean environment, leading some policy-makers to take the position that first the country needs to grow and only later address the degradation.

2.3 Copeland and Taylor (2004), among others, in their research on trade, growth, and environment, using a simplified general equilibrium model, find ample evidence confirming that a country's income growth has a positive effect on environmental quality and performance. However, their extensive theoretical and empirical review of the EKC makes them skeptical of a simple and predictable relationship between pollution and income per capita. Similar conclusions are reached by Dasgupta et al. (2002) and Stern, Common, and Barbier (1996), who point to fundamental problems with the EKC hypothesis, particularly in that it assumes that there is no feedback between environmental quality and productive potential and that international trade has a neutral effect on the environment. In fact, Stern (2004) finds that the EKC is built on a weak statistical foundation and that some developing countries have been successful in adopting the environmental standards of developed countries and achieving strong economic performance. Panayotou (1997) argues that there are smart ways of achieving economic growth while flattening the EKC curve and lowering the cost of environmental degradation. Specifically, this requires effective institutions and policies. Similarly, Lin and Liscow (2012), in a study on the EKC, conclude that political institutions have a significant effect on environmental degradation and consequently on the shape of the EKC. Consistent with this empirical evidence, the study "Better Growth, Better Climate," prepared by The New Climate Economy (2014), concludes that countries of all income levels now have the opportunity of building long-term economic

growth models while reducing the risks of climate change and environmental degradation.

- 2.4 From the standpoint of business competitiveness, Margolis and Walsh (2003), in an exhaustive review of the literature, examine 109 quantitative studies published between 1972 and 2002. They find that 54 of these studies point to a significant positive relationship between environmental responsibility and competitiveness, seven of them show a negative relationship, and the rest do not lend themselves to a categorical judgment. Similarly, Jaffe et al. (1995), in a study on the impact of environmental regulations on the competitiveness of the United States manufacturing industry, conduct an exhaustive review of the empirical evidence to find that environmental regulations can not only be beneficial in terms of their impact but also have a positive effect on the competitive position of industries. The study finds no evidence that environmental regulations and the costs associated with pollution abatement have had an adverse effect on competitiveness. However, it indicates that achieving this outcome requires implementing flexible and cost-effective economic and political instruments. Managi and Kaneco (2009) reach similar conclusions in the context of China.
- 2.5 A similar study by Albrizio et al. (2014) on the empirical evidence of the effects of environmental regulation on European productivity growth also concludes that the enforcement of strict environmental policies has had no adverse effect on factor productivity growth. The authors highlight, among other things, the fact that corporate economic activity can benefit from environmental improvements resulting from regulation. For example, industries that use water as an input benefit from clean production processes also reduce the resources required to purify it. Similarly, employees become more productive once air pollution and its impact on health are reduced. At the macroeconomic level, the study observes that, while an increase in environmental regulations initially leads to a drop in productivity, this is followed in subsequent years by positive productivity momentum. In terms of labor productivity, findings show that air quality standards have a significant effect on productivity in the United States as well, and that environmental protection, rather than being perceived as a tax on producers, can be viewed as an investment in human capital and as a tool for promoting economic growth (Berman and Bui 2001, Graff Zivin and Neidell 2012).
- 2.6 Porter and Linde (1995), in a study that changes the paradigm of the trade-off between environment and competitiveness, examine hundreds of case studies to show that competitive international companies are not those using cheaper inputs or producing at larger scales, but those with the ability to continually innovate and improve. According to the authors, well-designed environmental standards can lead to this type of innovative development. They argue that visionary and innovative entrepreneurs have come to appreciate the fact that regulations based on effectiveness and efficiency criteria make them more competitive in the global marketplace. Examining the European Union, Testa, Iraldo, and Frey (2011) confirm that environmental regulations favor investments in advanced technologies and bolster corporate economic performance.
- 2.7 **One of the central topics of debate in the area of environmental management is how to assign economic value to the environment and biodiversity.** It is important to recognize that, aside from market events and the way in which the prices of goods and services are revealed, forming the basis for production and consumption decisions, the actual economic value of the environment and

biodiversity has several dimensions. According to Pearce (1993), total economic value is usually divided into use value and passive-use (or nonuse) value. **Use value** is associated with private or quasi-private goods, for which market prices normally exist. Use value tends to be divided into: (i) direct use value, which is associated with direct benefits (e.g., timber or food harvest); (ii) indirect use value, which may be approximated by public services that are not reflected in the market (e.g., the regulation of soil erosion that a forest can provide); and (iii) option value, which may be approximated by the willingness to pay for a potential future use (e.g., the value that the genetic material of a species may have for pharmaceutical use). **Passive value** reflects satisfaction from (willingness to pay for) a good simply by knowing that it exists. Passive value is difficult to quantify, since it stems from moral, religious, or ethical considerations. Typically, passive value components include existence value (keeping a good in existence), altruistic value (the good in question should be available to all members of the same generation), and bequest value (the good in question should be available for future generations). Effective environmental performance requires societies, policy-makers, and businesses to recognize and internalize these values. The following sections provide examples of conditions or contexts that incorporate or internalize these values as part of environmental management.

B. Environmental governance, policy framework, and management instruments

2.8 **The quality of environmental governance, based on the use of effective and efficient management of regulations and instruments, is at the core of the conditions necessary to improve environmental performance and achieve sustainability goals.** According to the United Nations Environment Programme (UNEP 2012), environmental governance requires the smooth functioning and interrelationship of the following components: (i) the institutional framework at its various levels; (ii) the regulatory framework in its normative and policy aspects; (iii) the management instruments used to implement institutional actions and enforce the policy and legal framework; (iv) financing and sufficient resources to provide the necessary means for management; (v) information systems and their accessibility; (vi) oversight and accountability; and (vii) participation and collaboration mechanisms that include civil society engagement, as well as mechanisms for collective action. Esty and Porter (2005), after examining the environmental performance of more than 50 countries, conclude that environmental performance is directly related to the development of the regulatory system, institutional capacity, and the social and economic context in which they operate. Similarly, several studies conclude that effective environmental management in terms of performance requires a harmonious and balanced institutional structure and coordination with sufficient sectoral and local presence, as well as solid regulatory and planning capabilities (Larson et al. 2006, Mahon et al. 2011, Mazur 2011, Wever et al. 2012, Castro et al. 2015).

2.9 Margulis and Vetleseter (1999) and Burtraw (2013) identify capacity and technology transfer to the subnational levels as essential elements for success. On the other hand, following an analysis of 90 developing countries, Fredriksson et al. (2006) find that decentralized institutional structures appear to lead to less rigorous and weaker enforcement of environmental policy that is more susceptible to external pressures; nevertheless, whether the management structure in place is

centralized or decentralized, strengthening of skills and capabilities is in all cases found to be a basic necessity.

- 2.10 **Degradation of the environment and natural capital is rooted in market failures in terms of allocation and use of resources. It is essential for environmental and sector policies to develop the right signals and incentives to correct these failures.** Sterner (2003) highlights several reasons why economic development models can lead to a decline in environmental quality and a loss of social welfare as a result of market failures: (i) the existence of negative externalities, such as damage to public health resulting from pollution generated by productive activities; (ii) the nature of environmental assets, such as ecosystem services, as a public good; and (iii) the absence of clearly established property rights to commons, such as fishery resources or water. This requires public policy instruments that can correct these market failures and internalize cost and benefit considerations in production and consumption decisions.
- 2.11 There is a vast economic literature on the environment in this area. In practice, countries have used a number of instruments to correct market failures, including command and control measures, market-based economic instruments, and voluntary and flexible instruments (Blackman and Rivera 2011, Coria and Sterner 2011). In general, the literature is conclusive in showing that the mere application of command and control mechanisms imposes unnecessary costs and can lead to inefficient solutions from a social and economic standpoint. Within an effective governance framework, economic and market instruments and incentives, if used correctly, make it possible to achieve quality goals more flexibly and at a lower cost (Russell and Vaughan 2003, Tietenberg 1990).
- 2.12 In this context, Goulder and Parry (2008) review the various economic instruments for environmental management and arrive at the following conclusions: (i) no single environmental management instrument is superior to others when all relevant dimensions and circumstances are taken into account; (ii) there are significant trade-offs when considering various instruments, with equitable distribution and political feasibility implications; (iii) depending on the context, it is advisable to design hybrid instruments that combine features of several different instruments; (iv) more than one market failure may be at the source of many environmental problems, justifying the use of more than one instrument; and (v) it is important to consider the potential for counterproductive interactions and effects between different environmental management instruments when they are implemented without proper interagency coordination. In addition, it should be acknowledged that these economic instruments are not necessarily a panacea and that their effective use depends on the specific context in which they are being applied and on their relationship with the governance mechanisms in effect, particularly in terms of monitoring and oversight capacity (Tietenberg 1990, Stavins 2001, Goulder 2013).
- 2.13 Examples of the successful use of economic instruments include the use of: (i) emissions taxes and fees in the Netherlands, Spain, Portugal, United Kingdom, and Finland, where the introduction of vehicle registration taxes based on emissions capacity has spurred the purchase of less polluting vehicles (Potter and Parkhurst 2005); (ii) taxes on wastewater discharge, which Colombia applies with some positive results, showing that authorities can be incentivized to improve their oversight and companies can be incentivized to manage their waste (Blackman 2009, INECE 2009); (iii) credit incentives in Finland, Japan, and France that

- encourage the adoption of clean technologies (OCDE 2009), or targeted subsidies that promote the adoption of conservation practices in the agricultural sector of the European Union (Laukkanen and Nauges 2014); and (iv) tradable rights and negotiable permits, used successfully to reduce air pollution, such as by the Regional Clean Air Incentives Market (RECLAIM) program in the United States, the world's first complete market program allowing companies to comply with air quality and emission standards (Goulder 2013). In the case of LAC, the use of public information campaigns on air pollution has proven helpful in supplementing public vehicle restriction measures and reducing human exposure during environmentally critical periods (Mullins and Bharadwaj 2014).
- 2.14 In LAC countries, the use of market instruments to control pollution and manage natural resources is still limited. However, the concept of payment for ecosystem services (PES) has become popular as a mechanism aimed at reinforcing biodiversity conservation policies, particularly with regard to water (protection of sources in hydrologically important ecosystems) and preservation of forests and biodiversity conservation (Balvanera et al. 2012). In general, the results obtained by instituting PES mechanisms have been mixed (Pattanayak et al. 2010). Cases reported as successful include PES applications in: (i) United Kingdom and Australia, having succeeded in stopping mining activities in favor of the creation of protected areas (TEEB 2010); (ii) Vietnam, China, and Japan, to prevent the destruction of forests by promoting the maintenance of watersheds and the traditional landscape (Hayashi and Nishimiya 2010, Adhikari and Boag 2013, Zheng et al. 2013); and (iii) Nicaragua, Mexico, and Peru, to protect groundwater recharge in forest areas (Pagiola et al. 2007, Muñoz-Piña et al. 2008). In addition, several studies indicate that some PES mechanisms have helped to empower local communities and organizations and contributed to institutional strengthening. These include the Forest Partner Conservation Incentive Program in Ecuador, the CONAFOR Program in Mexico, and the FONAFIFO Program in Costa Rica (Larson et al. 2006, Corbera et al. 2007, Asquith et al. 2008, de Koning et al. 2011, Constantino et al. 2012, Kothari et al. 2013, Bremer et al. 2014).
- 2.15 According to a study of nine countries (Tacconi et al. 2013), the primary reasons why PES mechanisms have not been successful include financial management shortcomings and conflicts in the allocation and sharing of benefits. There is a generalized view that insufficient governance, particularly a lack of regulatory and legal frameworks, weak institutional development, and lack of information on the value of environmental services jeopardize the success of PES mechanisms due to problems such as rent-seeking, unequal bargaining power of buyers and sellers, intermediation costs, payment volatility, opportunity costs or verification and monitoring problems, allocation of property rights, and absence of credible audits (Clements et al. 2010, Kronenberg and Hubacek 2013, Mahanty et al. 2013).
- 2.16 **Clearly defined property rights and legal certainty as to land tenure can contribute to better management of natural resources and biodiversity and to private and public investment, as long as they are accompanied by supplementary management action and the right incentives.** Several studies on the problems of deforestation and overexploitation of fishery resources in LAC have emphasized the absence of property/resource rights and security of tenure as one of the primary causes of this situation (Castilla and Defeo 2001, Larson et al. 2006, Pacheco et al. 2008, Blackman et al. 2014, Locatelli et al. 2014). These studies highlight the premise that property rights and tenure security promote a

- more productive and sustainable use of resources and foster long-term investments to improve the state and value of the territory and its resources (Kaimowitz 1996, Triana et al. 2007, Barbier et al. 2011). In addition, there is evidence that legal recognition of land tenure generates opportunities for access to resources from Reducing Emissions from Deforestation and Forest Degradation (REDD+), PES, and conservation incentive programs (Bruce et al. 2010). The empirical evidence shows cases that appear to confirm this assertion, such as the land titling program in Peru (Aldana and Fort 2001, Antle et al. 2003, Torero and Field 2005), as well as cases in the area of artisanal fishing, where regulating resource access rights or implementing territorial use rights fisheries (TURFs) has made it possible to recover fisheries and control illegal activities by setting quotas and bans, among other measures, for artisanal fishermen (Castilla and Defeo 2001, Pomeroy et al. 2001, Grafton et al. 2006, Wilen et al. 2012, Orensanz and Seijo 2013).
- 2.17 Nevertheless, assigned property rights alone do not guarantee the conservation of natural resources and natural capital. For instance, Liscow (2013), in a quasi-experimental study that uses an instrumental variables approach to examine the relationship between property rights and deforestation in Nicaragua finds that property rights have led to higher deforestation rates by increasing productivity and agricultural returns. Similarly, in a review of 131 cases (56 of them in Central and South American countries) on forest management results under various land tenure conditions, Robinson et al. (2011) find that, while important for achieving better forest management, land tenure security does not ensure forest conservation. Therefore, as with any other management instrument, secure tenure and land title cannot in themselves be considered a universal panacea. Instead, they must be joined by effective complementary mechanisms, solid institutions, and economic instruments that eliminate the characteristics of open access to resources and reconcile individual interests with the public interest. Furthermore, in the case of indigenous peoples, recognition of the various forms of ancestral land tenure would seem to contrast with the effects of land privatization, which not only fractures the social structures and collective rights of these peoples but fosters habitat fragmentation and land use change (Plant and Hvalkof 2001, Appendini and Torres 2008, OVE 2014b).
- 2.18 The management instrument most commonly used in LAC for biodiversity conservation is the creation of protected areas, whose performance is described in greater detail in Section III. Various studies present evidence showing that establishing protected areas throughout the world has had a positive effect on certain deforestation indicators in their respective areas of direct and indirect influence (Joppa and Pfaff 2010) including in LAC (Andam et al. 2008, Nelson and Chomitz 2011, Blackman 2013). While the protected areas established prior to 1990 appear to have yielded somewhat more effective results in this regard, some studies suggest that offering to turn management over to the indigenous communities could be a more efficacious means of combating deforestation than creating protected areas (Miranda et al. 2014). Similarly, Nelson and Chomitz (2011) find that in LAC the incidence of fires (used as an indicator of deforestation) has been reduced between 3% and 4% in the comprehensive protection areas where all extractive activities have been prohibited, between 5% and 6% in multiuse protection areas, and between 16% and 17% in protected areas within indigenous territories. Nevertheless, protected areas are generally not properly managed and the biodiversity and ecosystem quality indicators are sharply

deteriorating, which suggest the need for a more comprehensive approach for biodiversity management (DeFries et al. 2005, Dourojeanni and Quiroga 2006, Bovarnick et al. 2010, Leverington et al. 2010, IUCN and Biodiversity Indicators Partnership 2010).

- 2.19 In conclusion, success in using specific economic instruments and policies on property rights, land tenure, and access to resources depends on: (i) strong local and national institutions capable of enforcing compliance with regulations and territorial limits as well as respect for established rights; (ii) transparent legal frameworks; and (iii) policies that foster and strengthen community management (Larson et al. 2008, Bruce et al. 2010, Cronkleton et al. 2011, Robinson et al. 2011, Pacheco 2012).
- 2.20 **Environmental impact assessment (EIA) systems are necessary to ensure the transparency of investment decision-making processes and key management instruments. However, using them effectively requires avoiding practices that can turn them into a costly licensing instrument.** After examining the EIA procedures adopted by 22 LAC countries, Acerbi et al. (2014) find that the use of this instrument is generally deficient and EIAs have become a de facto substitute for biodiversity conservation, pollution control, and soil-use planning regulations, prioritizing an approach focused on managing negative impacts and relegating the reinforcement of decision-making processes to secondary status. Similar conclusions are reached in a study by Triana and Enríquez (2007), who find that EIAs in Latin America are not yet as efficient as in developed countries and fail to comply with the principles established by the International Association for Impact Assessment (IAIA). This is partially attributable to the fact that the public participation and interagency coordination processes are given little importance and are generally implemented when the key decisions have already been made, as well as to the lack of a real evaluation of alternatives for reaching the solution that responds best to the environmental concerns (Ahmed 2012).
- 2.21 In contrast, a European Commission review (2009a) of the use of this instrument in European Union countries over the course of almost three decades highlights several essential factors for its success, notably including: (i) capacity to set thresholds that will be adopted; (ii) implementation of simplified procedures and development of classification criteria; (iii) regulations against project fragmentation; (iv) improvement of technical institutional support for implementation of procedures and publication of practical cases and guides; (v) use of this instrument as a basis for open dialogue and common concern; and (vi) strengthened monitoring and surveillance of the proposed measures, which will help improve forecasts for the future.
- 2.22 **The availability of appropriate and sufficient information is one of the primary determining factors for effective environmental management and natural capital use and allocation, being a necessary condition to enable policy-makers, businesses, and society as a whole to take the appropriate management actions.** Unlike the case in the economic and social areas, information on the environment and natural capital in LAC is dispersed. This prevents any systematic monitoring of quality and quantity or effective use of regulatory and economic instruments that require this information (Awe et al. 2015). Some studies identify the absence of environmental information as one of the factors that generate overexploitation of resources, particularly fishery and

forest resources, and biodiversity in general (Swan and Gréboval 2004, Arroyo et al. 2010, Miloslavich et al. 2011, FAO 2012, UN-ECLAC 2012), and lead to shortcomings in land use planning (Chomitz et al. 2006). Furthermore, the Organization for Economic Cooperation and Development (OECD 2006) reports that investment in monitoring networks and information systems has been essential to strengthening environmental management in developing countries.

- 2.23 **The credibility and success of a national environmental management system require effective implementation of monitoring and enforcement mechanisms.** The empirical evidence shows that the same countries that have good environmental performance also exercise their capacity to monitor and penalize violations in line with the environmental damage (INECE 2009, OECD 2009). For example, a study by Shimshack and Ward (2008) indicates that the imposition of economic sanctions reduces violations, even if they occur in other industries, and the randomness of inspections improves the outcome. The study concludes that an optimal inspection and sanctions system markedly improves the environmental performance of companies at a low investment cost. Similar conclusions are reached by Escobar and Chávez (2013), Dasgupta and Wheeler (1998), and Dasgupta et al. (2000), who point out that inspected facilities exhibit a better environmental behavior than non-inspected facilities. Countries are increasingly adding environmental offenses to their criminal legislation in an effort to improve environmental compliance in serious cases. In the United States this has become a generalized practice, but some question the excessive cost involved in legal proceedings. In view of this, it is important to balance policies that require a certain degree of command and control with economic instruments and appropriate incentives (Almer and Goeschl 2010, Oposa Jr. 1998).
- 2.24 **The involvement of society in managing the environment and using its natural capital contributes to an acceptance of the regulatory framework and promotes regulatory compliance.** The requirement that all stakeholders and all affected parties be well informed and duly consulted is a consolidated and proven good practice. In general, participatory processes in communities allow projects to be duly accepted and supported, which in turn leads to better execution outcomes (Seymour et al. 2005). Social involvement based on a good information system generally yields good environmental management results, as in the case of seeking citizen collaboration to reduce air emissions. In this regard, one example is the policy, applied in Santiago de Chile, of providing the population with short-term forecasts of critical environmental pollution episodes. This practice has led to a 20% reduction in the concentration levels of particulate matter on the days when critical conditions occur (Mullins and Bharadwaj 2014).
- 2.25 Comanagement systems¹ for protected areas in Central America are also examples of active participation by the local population. These arrangements can be successful under certain conditions, especially if they have suitable institutional and economic backing, as in the case of the Maya Biosphere Reserve (Guatemala) or El Imposible National Park (El Salvador). However, studies by Blackman et al. (2014) and Bowler et al. (2011) indicate that comanagement has

¹ In a comanagement system, two or more social actors (public and/or private) negotiate, identify and mutually guarantee a fair distribution of management of their functions, rights, and responsibilities in terms of the administration of a territory or natural resource. Comanagement is also known by the terms participatory management or collaborative management, among others.

not been shown to offer clear advantages with respect to other management models. In general, these comanagement models are required to operate under an integrated governance and institutional coordination system with clear rules regarding financial and operational management (PROARCA et al. 1999, Constantino et al. 2012). This type of participatory model is frequently used in Spain in national parks and generally in protected areas of potential conflict, where advisory and accountability bodies are established under the names of Patronatos [Boards of Trustees] or Juntas Rectoras [Governing Boards] (EUROPARC-Spain 2010). In addition, various studies have confirmed the effectiveness of including the civil population or the community itself in the processes of monitoring compliance with environmental requirements (INECE 2009). Examples include training and using volunteers to monitor forestry, hunting, and fishing activities in Estonia (Casey-Lefkowitz et al. 1996), or training and using volunteers from fishing communities to perform monitoring tasks in the Philippines (GTZ 2003).

- 2.26 In this context, the evidence also shows that women can perform an active role in environmental management due to the unique nature of their interaction with the environment and their access to the natural capital on which their communities depend, despite the fact that they are still to a large extent absent from the decision-making and political processes (Shanley et al. 2011, Matthews et al. 2012, FMAM 2013, Harper et al. 2013). The evidence shows that women in LAC perform a critical role in water supply, management, and protection by striving to ensure its provision and the wellbeing of the family, as well as in caring for forests and in managing the natural capital in their communities (UN-ECLAC 2012). Another illustration is the case of a fisheries management project in Senegal, which succeeded in consolidating a trained group of 200 women fish processors who require that purchasers abide by size regulations and bans, among other standards, thus forcing fishermen to improve their fishing practices in order to be able to sell their catch (Coastal Resources Center 2014).

C. Mainstreaming, multisector approach, and competitive private-sector participation

- 2.27 **Investments in infrastructure and productive development, while necessary for economic growth, can better serve and have a greater impact on society if the benefits and added value of the environment and natural capital are harnessed and reinforced.** The notion of mainstreaming and the multisector approach associated with environmental sustainability are recognized and reflected in the strategic and operational vision of international cooperation and finance organizations such as the IDB, the World Bank, the Organization for Economic Cooperation and Development (OECD), the Asian Development Bank (ADB), and the Global Environmental Facility (GEF).
- 2.28 Seymour et al. (2005), Dalal-Clayton (2009), the European Commission (2009b), and Research and Resources for Sustainable Development (RIDES) (2008), among others, examine cases and propose guidelines for effectively integrating environmental sustainability and human capital within development goals and activities carried out in various productive and industrial sectors. This integration generally requires the use of strategic environmental assessments (SEA) at the earliest stages of investment and public policy planning. Specifically, the concept of environmental mainstreaming acknowledges that: (i) the environment is not a sector and sustainability goes beyond implementing safeguards, mitigating damage, and applying controls; and (ii) investments in infrastructure and

productive development in various sectors have the potential to create and maximize environmental benefits, reduce costs, and prevent reputational risks, if these investments are conceptualized, designed, and carried out with a strategic and multisector vision. The European Commission report concludes that the SEA as an instrument has contributed to a systematic and structured consideration of environmental concerns in the planning processes and has imbued the planning procedures with greater formality and structure, thus helping to bring about a more transparent, participatory, and effective decision-making process.

- 2.29 Various examples of infrastructure projects provide evidence of a successful integration of natural capital. By way of illustration, a modeling study of the Reventazón river basin in Costa Rica concluded that the strategic decision of the hydroelectric power company to finance and implement specific soil conservation practices at upstream basins reduced erosion by 97%, yielding the company an annual cost savings of US\$1 million by eliminating the need to remove sediments (Bovarnick et al. 2010). In addition, through a partnership with the Smithsonian Institute, the Camisea project succeeded in using a pioneering approach to implement the project without building new roads in order to minimize the impact on biodiversity in the Peruvian Amazon (Mata 2012). IDB's Tourism, Agriculture, Water and Sanitation, Energy, and Transportation SFDs suggest specific actions to internalize environmental sustainability in their respective sectors, including, among others, tourism development of protected areas, soil conservation, and reduction of carbon emissions.
- 2.30 **Corporate competitiveness is becoming increasingly tied to a business climate that rewards environmental performance. The private sector plays a vital role investing and innovating in favor of the environment and conservation of natural capital.** In a study based on a meta-analysis of 52 empirical studies published between 1972 and 1997, Orlitzky et al. (2003) conclude that, in most cases, companies that take responsible environmental steps obtain positive economic benefits. They further conclude with a reasonable degree of confidence that, for the companies under review, the relationship between social/environmental performance and economic performance is not negative. In this regard, there is a growing number of studies concluding that the relationship between companies on one hand and the environment and biodiversity on the other can give rise to opportunities to create value and make these companies more competitive (Porter and Linde 1995, Esty and Winston 2009). For example, specific studies report benefits in the form of lower operating costs arising from savings in the use of water and energy (Berchicci and King 2007); improved corporate prestige and access to markets (TEEB 2012); and access to better financing terms (Hanson et al. 2008, TEEB 2010, Houdet et al. 2012). A growing number of companies are voluntarily opting for integrating environmental management systems into their productive procedures and processes. These systems represent a commitment to a continuous improvement of environmental performance and contribute multiple financial and economic benefits. Implementation of these systems and alignment with standards such as ISO 14001 can open the door to new markets while reducing risks, potentially leading in turn to lower costs associated with insurance and threatened litigation (Berchicci and King 2007, Ahmed 2012). There is also growing consumer concern and environmental awareness worldwide. This has created incentives and opportunities for innovative businesses that differentiate their investments and

- products based on their sustainability attributes (Mulder and Koellner 2011, TEEB 2012).
- 2.31 Nonetheless, there is also evidence pointing to the need for caution as to the potential effects of voluntary agreements on environmental management in the industrial sector. After examining 64 voluntary agreements in Colombia, Blackman et al. (2009) found that limited environmental results have been achieved, particularly in terms of helping to improve the environmental management capacity of companies. These voluntary agreements are complementary instruments and under no circumstances replace the need for a comprehensive public policy management system.
- 2.32 In addition, there is growing recognition that businesses directly and indirectly depend on ecosystem services to produce the goods and services they provide to the economy. According to a recent report on TEEB in Brazil (Conservation International 2014), the global market for certified or “green” products is growing. Organic farm products are increasing their market share and have grown at an annual rate of 20%, although they still account for less than 2% of the market. However, information on ecosystem services and technical or management expertise continue to be limited. A failure to recognize the effects of businesses on biodiversity and ecosystem services could result in missed opportunities for obtaining a steady flow of income (TEEB 2010). Throughout the world, companies are beginning to pay attention and understand that the loss of biodiversity is not simply an ecological concern. Consequently, the challenge consists in integrating the value of biodiversity and ecosystem services into the business models so that these hidden values can be taken into account. For example, it is known that biodiversity can have significant economic potential for biogenetic studies and the manufacture of medicinal products, helping to attract large investments in biotechnology research and development. This is the case with herbal medicines, which now have a global market estimated at more than US\$60 billion (UN-ECLAC 2012).
- 2.33 The creation of the Equator Principles,² which have been voluntarily adopted by 65 of the largest private financial institutions in the world, including in LAC, is also aimed at strengthening the business community’s commitment to the environment. Aside from the voluntary mechanisms, several financial institutions in the region, including national development banks, have established mandates and procedures that promote financial risk management mechanisms associated with carbon footprint reduction and environmental sustainability (de Olloqui et al. 2013, Smallridge et al. 2013, Nolet et al. 2014). For example, the Central Bank of Brazil has integrated social and environmental risk management into its bank regulatory requirements, which indicates that the quality of a bank’s environmental risk management systems will increasingly be taken into account when assessing risk exposure and financial portfolio quality. Initiatives promoting good environmental practices in the capital markets have also been recognized at the local securities exchanges in Chile, Brazil, Mexico, and Colombia (Sustainalytics and BVC 2014, BM&FBovespa 2015, Bolsa Comercio Santiago 2015, BMV Group 2015).

² The Equator Principles are an environmental risk management framework adopted by financial institutions worldwide, to serve as a common baseline and framework in order to ensure that projects financed by the financial institutions are conducted in an environmentally and socially responsible manner and apply best practices in environmental management (www.equator-principles.com).

D. Environment and social inclusion

- 2.34 **There is interdependence between many local communities, particularly indigenous communities, and their ecosystems and biodiversity, which are their source of livelihood and form the basis of their identity. As a result, these groups are key managers and administrators of ecosystems and environmental services.** The empirical evidence for this assertion is documented in several specialized studies of international scope (Vedeld et al. 2004, Grafton et al. 2006, Stoll-Kleemann and Welp 2006, Lemenih and Bekele 2008, Boelee et al. 2011, Andrade and Rhodes 2012, Kothari et al. 2013, FAO 2014c). These studies show that inclusion and empowerment of resource users provides a variety of social benefits that reinforce their commitment to conservation and the success of their efforts. A study commissioned by 30 leading international environmental and development organizations on the relationship between poverty and environment in communities that are dependent on natural resources confirms and documents cases of communities that have succeeded in increasing their income and improving their quality of life by linking their productive activities more closely to local and national markets (Pearce 2005). In general, the likelihood of success for interventions of this nature increases when the following are considered: (i) inclusion of marginalized communities and groups from the start of the decision-making process (Reed 2008, Armstrong 2012); (ii) institutional strengthening (Bray and Velazquez 2009, McGrath et al. 2004); (iii) strong leadership and community cohesion (Berkes 2010, Gutiérrez et al. 2011, Armstrong 2012); (iv) proper dissemination of information and training of local stakeholders (Galvin and Haller 2008, Arévalo and Ros-Tonen 2009); (v) trust between the resource users and the management authorities (Grafton et al. 2006, Chhatre et al. 2012); (vi) reduction of transaction costs that can limit community participation (Pagiola et al. 2007); and (vii) respect for the relevant social and cultural context, customs, and rights at all stages of the intervention (Stonich 2005, Larson et al. 2006).
- 2.35 **The most marginalized populations in urban, coastal, and rural areas are also the most exposed and vulnerable to environmental degradation and disasters. Consequently, environmental management based on social inclusion and local empowerment helps to reduce these risks and vulnerabilities.** Environmental management and disaster risk management are intertwined. In many cases, prioritizing disaster risk identification and reduction has relied on implementing environmental measures and good practices in specific territorial contexts (Benson et al. 2007). Environmental degradation intensifies disaster conditions when a natural phenomenon strikes, as in the cases of the earthquake in Haiti and Hurricane Mitch in Honduras, hitting poor and vulnerable groups, such as indigenous peoples, particularly hard and affecting their food security, livelihoods, way of life, and sources of income (Dalberg Global Development Advisors 2010). Examining the effects of clear land use planning policies, institutional strengthening, and empowerment of local management capacities, a series of studies (Becker and Ghimire 2003, Arévalo and Ros-Tonen 2009, Radel 2012, Wever et al. 2012) report cases of success in reducing vulnerability and risk through risk identification and reduction processes involving active community participation.

III. KEY CHALLENGES FOR THE REGION AND PROBLEMS THAT THE BANK SEEKS TO ADDRESS

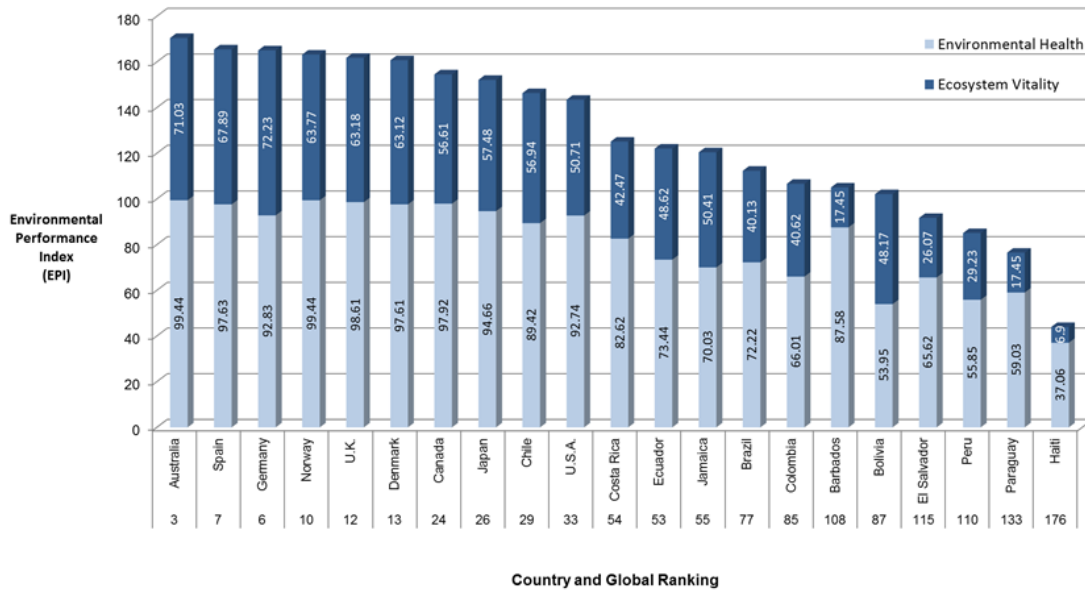
- 3.1 This section describes the main challenges facing the region in terms of environmental performance in general, as well as the current state of natural capital and the principal factors threatening its sustainability, the principal environmental threats in terms of pollution of major environmental resources, and the challenges of governance as the underlying factor affecting environmental performance in all sectors.
- A. The Latin American and Caribbean region is rich in natural capital, but its environmental performance is relatively modest despite legal and institutional advances in recent decades**
- 3.2 The countries of Latin America and the Caribbean (LAC) have made significant strides in terms of positioning the issue of environmental sustainability as a public policy responsibility, creating institutional and legal frameworks for this purpose, and fostering greater citizen awareness. This priority has gained momentum and taken on a new dimension in the context of the United Nations Framework Convention on Climate Change and growing evidence of the severity of global warming as indicated in the Reports of the Intergovernmental Panel on Climate Change (IPCC).
- 3.3 LAC projects an image of relative abundance of natural capital. Regarded as a biodiversity powerhouse, it has the greatest diversity of species and ecosystems on the planet. In global terms, the region accounts for 40% of all biodiversity (Bovarnick et al. 2010); and it is home to 11 of the Earth's 14 biomes (Blackman et al. 2014), six of the world's 17 megadiverse countries, and seven of the world's 25 biodiversity hotspots (UNEP 2010a). It is estimated that the region has close to nine million km² of natural forests, including one fourth (37,000 km²) of the world's mangrove forests (FAO 2010, Siikamäki et al. 2012). In addition, more than 30% of available freshwater and approximately 40% of water resources are located in LAC (UNEP 2010a). The region contains 700 million hectares of potentially arable land, 570 million hectares of grasslands, and more than 800 million hectares of virgin forests (Bovarnick et al. 2010).
- 3.4 In terms of coastal marine ecosystems, LAC contains regions that encompass a wide variety of mangrove forests, seagrass beds, and coral reefs. The Caribbean region by itself is particularly rich, hosting 12,000 recorded marine species, more than any other part of LAC (Miloslavich et al. 2011). It has more than 30 different mangrove ecoregions along 37,000 km² of tropical and subtropical coastline (Siikamäki et al. 2012). The Caribbean coasts of Mexico, Belize, Guatemala, and Honduras harbor the world's second largest reef system.
- 3.5 This abundance of natural capital in LAC is at odds with the reality of a process of environmental deterioration and growing threats to environmental sustainability resulting in part from the region's demographic and economic growth, which requires ever-increasing exploitation of its natural resources. Between 1990 and 2013, the population of LAC grew 38.5%, and the region's gross domestic product (GDP) rose 106%, while GDP per capita rose 49% (ECLAC 2014). Should this trend continue, demand for energy and water is expected to increase 50% and 25%, respectively, by 2030; demand for food, fiber, forest products, farmland, minerals, and other resources is also expected to rise (IDB 2013b). The growing

demographic concentration in cities also affects the demand for resources and aggravates already uncertain environmental conditions (ECLAC 2014). This growth entails increasing needs for investment in large infrastructure projects of all types, including ports and roads, wastewater treatment, energy and mines, and others.

- 3.6 The environmental deterioration has a real, but not always accounted for, economic cost for the region's countries. This cost is illustrated, for example, in the country environmental assessments (CEA) performed by the World Bank for Colombia, Mexico, and Peru. These CEAs provide conservative estimates of the costs associated with environmental degradation processes that can be locally prevented, including damage to public health, loss of productivity due to soil erosion, and the cost of remediation of certain specific environmental liabilities. The findings of these studies put the economic cost of environmental degradation at around 3% of GDP (World Bank 2006, 2007). These real costs incurred by society are not reflected in the national accounts, making it difficult for governments to prioritize public investment in this area.
- 3.7 The Environmental Performance Index (EPI) (Yale University 2014)³ is the only measurement that has been systematically monitoring the relative performance of countries since 2002, which makes the 2014 EPI particularly illustrative. A breakdown of the index shows that, while LAC countries benefit from having a relatively abundant natural capital, their low environmental governance levels and growing environmental deterioration are factors in their relatively low ranking in relation to countries considered benchmarks of good performance. Figure 1 compares certain selected countries in terms of environmental health and ecosystem vitality, clearly highlighting a significant gap between the countries of the region and benchmark countries. In general, there is great disparity in environmental performance among LAC countries, resembling the situation in Asia, where countries such as Singapore and South Korea are ranked relatively high while countries such as China, India, and Vietnam fall into the underperforming group (see [EPI](#) Report).

³ See [EPI](#) for more information on the index and its components.

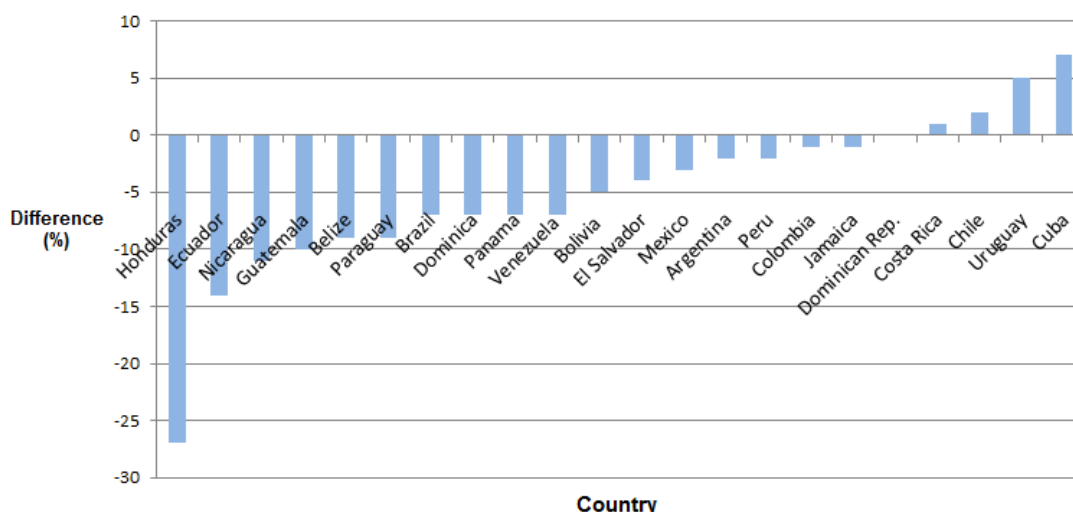
Figure 1. Environmental Performance Index for 2014



B. The current state of natural capital shows an increasing deterioration in terms of the condition of forests, biodiversity, and both land and coastal marine ecosystem services

3.8 The loss of forest areas and the pressures to expand the agricultural frontier continue unabated. In recent years, most of the region’s countries have adopted new forestry policies and/or updated their forestry legislation, introducing environmental and sustainability criteria in forest use. Examples include the creation of incentives to stop deforestation through the REDD+ program and the implementation of community forest management systems, which have yielded favorable results (Cronkleton et al. 2011). Nonetheless, the region continues to face an increasing change in land use. Between 1990 and 2005, LAC lost an estimated 7% of its forest cover (ECLAC 2015). Since the 1960s, more than 150 million hectares were added to agricultural production (Kaimowitz et al. 2004). Between 2000 and 2010, the annual rate of forest loss in the region was 0.46%, twice the global rate, representing a loss of 4.2 million hectares per year, although this rate appears to have slacked off slightly in recent years (ECLAC-FAO-IICA 2012). Figure 2 shows that, while certain countries, such as Cuba, Uruguay, Chile, and Costa Rica, increased their forest cover (virgin forests and timber stands) between 1990 and 2010, forest losses in most countries have accelerated, even in relation to prior five-year periods. This was particularly the case in Honduras, Ecuador, Nicaragua, Guatemala, Belize, and Paraguay.

Figure 2. Change in percentage of forested national territory from 1990 to 2010



Source: http://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/estadisticasIndicadores.asp

3.9 The loss of forest cover is attributable to a combination of direct and indirect factors. The direct factors include: (i) pressure to expand the surface area available for industrial and export forest products, especially given the growing demand for biofuels (bioethanol and biodiesel); (ii) expansion of livestock farming, a sector that accounts for 45% of the expanded agriculture GDP in LAC and represents 13% of world production, with a 4% annual growth rate; and (iii) expansion of road and infrastructure systems (UN-ECLAC 2012). The indirect factors are: (i) weakness in environmental and institutional governance responsible for forestry management; (ii) uncertainties regarding land title and property rights; (iii) legislation and economic incentives to shift land use toward agriculture and livestock farming in the form of tax credits, subsidies, and allocation of land possession rights; and (iv) failure to take the value of the environmental services of forests into account in economic decision-making on the part of government and the private sector (Geist and Lambin 2002, Kaimowitz et al. 2004, UN-ECLAC 2012). The loss of forests is just one of the factors directly affecting biodiversity and ecosystem vitality, as described below.

3.10 **Terrestrial and marine ecosystems and biodiversity are under severe threat, with high rates of loss and degradation.** The land ecosystems of the various regions of LAC, including Mesoamerica, the Amazon, the Los Llanos plains, the Chaco wilderness, and the Andean regions contain a wealth of biodiversity and environmental services provided by their wetlands, forests, aquifers, lakes and rivers, mountains, prairies, and natural deserts. However, more and more pressure is being put on all these ecosystems. For example, biodiversity in the Pantanal and Cerrado regions in Brazil is threatened by conversion of the natural vegetation to accommodate livestock farming and agriculture, pollution from agrochemicals and mining, introduction of invasive species, and urban waste from neighboring cities (Alho 2011, WWF 2011). In addition, the retreat of Andean glaciers and the drying up of wetlands and heathlands as a result of climate change are substantially altering stream flow patterns, posing a threat to water supply and power generation (Parry 2007, Anderson et al. 2011). Similarly, wastewater, agricultural production,

and mining are directly affecting water life in the Orinoco River, which harbors more than 1,000 species of fish (Barletta et al. 2010).

- 3.11 One half of the Caribbean population lives less than 100 kilometers from the coast (Chatwin 2007). In terms of coastal marine ecosystems, this population concentration creates direct and indirect demands that lead to increasing livelihood losses for coastal communities as a consequence of habitat destruction and degradation of mangrove forests, coastal wetlands, and coral reefs (Halpern et al. 2008). For example, the expanse of mangrove forests in LAC has shrunk by 40% between 1980 and 2001, primarily due to coastal development (Valiela et al. 2001), including agricultural activities, construction of aquaculture farms, and in some cases urban-tourism projects (Yáñez and Lara 1999, UNEP 2010b). Furthermore, 66% of the region's coral reefs are damaged, and their value has been reduced to almost one third of their historic value (Sherman et al. 2009). Close to 30% of Caribbean coral reefs has been destroyed, and another 20% in LAC is expected to be lost over the next 20 years (UNEP 2010d), particularly in the west coast of South and Central America, the Gulf of Mexico, and the Caribbean coasts (Burke and Maidens 2005, UNEP and CATHALAC 2010, Jackson et al. 2014). In addition, between 1992 and 2008, indicators of overexploitation of fishery resources in LAC have risen from 24% to 33% (FAO 2012). According to the United Nations Food and Agriculture Organization (FAO) (2014b), the LAC seas supplied roughly 20% of the global catch in 2012. However, catches fell over the past decade by an average of 8.5% per year, from 20.06 million tons in 2000 to 12.3 million tons in 2010.
- 3.12 A comparison of threatened species in 1996 (IUCN 1996, 1997) and today (IUCN 2015) shows that the current situation is critical. The LAC region includes 5 of the 20 countries with the largest number of threatened or endangered animal species and seven of the 20 countries with the largest number of threatened plant species (UNEP 2010c). The number of extinguished animal species in nature has increased from 99 in 1996 to 128 in 2014. During that period, the number of critically endangered species has increased from 255 to 1,065 and the number of endangered species has risen from 500 to 1,624. In total, the number of endangered species has tripled in less than two decades, with intense increases in Central America in particular. In addition, as tends to be the case worldwide, information on the state of continental aquatic species in LAC is very limited. As a result of biodiversity losses, the region's genetic reserve is quickly declining. Approximately 40% of medicinal plant species in South America is endangered, and close to 75% of the genetic diversity of the region's agricultural crops has been lost in the past century (UNEP 2010c, CBD 2014).
- 3.13 To one degree or another, the region's countries have established various types of legal instruments aimed at protecting biodiversity, particularly including protected areas and national parks (Dourojeanni and Quiroga 2006). Thus, the protected surface area in LAC has grown to exceed 20% of the territory, from 1,966,400 km² in 1990 to 4,634,067 km² in 2014 (UNEP-WCMC 2014). The increase in the declaration of protected areas, including the number of laws and regulations associated with biodiversity, does not appear so far to have resulted in better biodiversity indicators, as described below.
- 3.14 According to the International Union for Conservation of Nature (IUCN) and the Biodiversity Indicators Partnership (2010), the LAC region obtained a score of 0.51 (on a scale of 0 to 1) in management effectiveness of protected areas, surpassing

- only Africa (0,49). In addition, 46% of the protected areas in the region are subject to clearly inadequate or seriously deficient management, and only 16% are under management that has been rated as acceptable. Several studies show that protected areas are in large part fragmented, poorly managed (Brandon et al. 1998, Dudley and Stolton 1999, DeFries et al. 2005, Leverington et al. 2010), or insufficiently financed (Bruner et al. 2004, Bovarnick et al. 2010). Less than half of LAC countries have completed a review of their national biodiversity strategies. According to Flores (2010), it is estimated that of the 1% of GDP that LAC countries allocate to environmental protection, less than 0.01% is used to protect natural protected areas. This is equivalent to US\$1.18 per protected hectare per year. These budget allocations plus funds from international sources cover less than 54% of the minimum financial needs of existing protected land areas in LAC, or 34% of what would be needed for optimal management.
- 3.15 In terms of global financial needs for managing already existing protected areas in LAC, it is estimated that approximately US\$317 million in additional investments would be required per year to address the minimum operating needs of these areas and US\$700 million per year to ensure they are properly managed (Bovarnick et al. 2010). In addition, close to US\$22 million would be required per year to expand the protected area network so as to cover gaps in the representativeness of ecosystem types found in many countries of the region (TNC 2007).
- 3.16 Interventions such as public-private comanagement arrangements for natural protected areas, comanagement by indigenous peoples, PES (payment for ecosystem services) mechanisms, development of non-timber resources, and nature tourism have high potential for contributing to the sustainability of biodiversity and ecosystems but are not sufficient if countries fail to comprehensively address the need for public policies and long-term investment programs (Blackman et al. 2014). Current public policies generally fail to prioritize or internalize the importance of biodiversity and ecosystems. As a result, countries are still unable to stop or counteract the main threats: (i) economic pressures leading to overexploitation of resources, accompanied by infrastructure and settlements lacking proper controls and environmental regulations; (ii) unrestricted access to natural areas and habitats, due in part to an absence of property rights, insecure tenure, and weaknesses in protected area systems; (iii) environmental pollution, particularly affecting the main bodies of water; and (iv) climate change, among others (UNEP 2010d, Müller et al. 2014).
- 3.17 **In environmental terms, the long-term availability of water for its various uses is a challenge, especially considering that water distribution is very unequal throughout LAC.** Two thirds of the region is classified as arid or semiarid, including central and northern Mexico, the northeast of Brazil, and several Andean regions of Argentina, Chile, Bolivia, and Peru. According to the FAO, water is primarily used for: agriculture (73%), domestic consumption (18%), and industry (9%) (FAO 2014a). The growing needs for irrigated land, large hydroelectric projects, and increase in urban population point to potential use conflicts among the various sectors and greater environmental pressures in general (Mahlknecht and Pastén Zapata 2013). By 2050, according to OECD (2012) estimates, demand for water will rise 55% and 40% of the population will be occupying river basins under severe water stress. For example, in 2010, 4 of Mexico's 13 hydrologic regions (CONAGUA 2015) were subject to water stress,

affecting 59.8 million inhabitants.⁴ In the case of Chile, according to the National Water Resources Strategy 2012-2025 (MOP 2012), 5 of the country's 13 regions had high levels of water stress.

- 3.18 In view of this, countries have in recent years initiated significant legal and institutional reforms regarding water resource management. These countries include Mexico (2014), Peru (2009), Uruguay (2009), and Paraguay (2007). Nevertheless, legislation and policies on water resources are still insufficiently developed and inadequate in many countries (Dourojeanni 2010). In addition, one of the main difficulties for sustainable water management is the lack of sufficient information. In most countries, if data exist at all, they are incomplete, heterogeneous, isolated, and in many cases collected by sector entities with very specific objectives that are of little use to other users or managers (Mahlknecht and Pastén Zapata 2013, UN-ECLAC 2012). Moreover, an institutional mapping of water management shows great disparity in the various ministries and levels of government, with overlapping functions and contradictory applications of sector policies. A long-term resolution will require functional systems of integrated management built on three core pillars: (i) strengthening of governance; (ii) use of economic and financial instruments; and (iii) improved information on the quality and quantity of water resources (UN-Water 2008, UNEP 2010d).

C. Environmental pollution levels in LAC remain high in relation to desirable international parameters

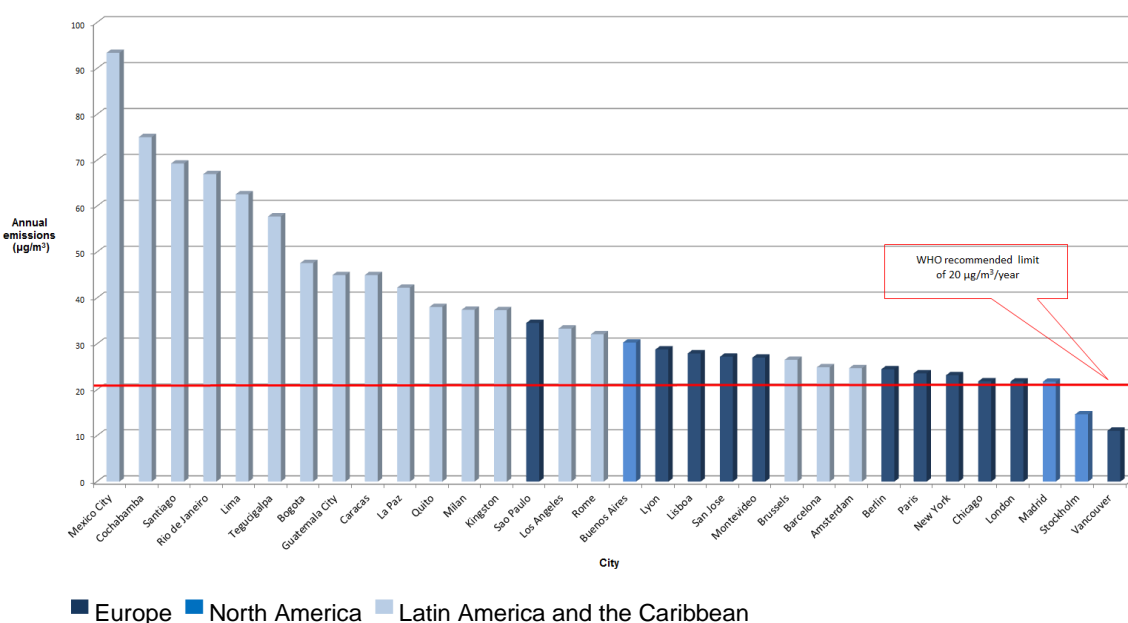
- 3.19 **The pollution of bodies of water from untreated wastewater discharge and the growing levels of water stress pose significant challenges to the region due to their impact on human health, ecosystem quality, and economic development.** In terms of water pollution, LAC is in critical condition, as reflected in the level of degradation of important aquatic ecosystems, whether land-based (rivers, wetlands, lakes) or coastal marine. While the region has improved its wastewater coverage indices, it is estimated that more than 70% of wastewater in LAC is discharged untreated into rivers, lakes, or the sea (Jouravlev 2014). Chile is approaching a level of urban wastewater treatment of close to 100%, but in the other countries of the region, the levels are very low: Mexico (48%); Brazil and Uruguay (35%); Belize and the Caribbean (20%); Colombia, Peru, and Bolivia (20%); Ecuador, Argentina, and Venezuela (10%); and Central America (5%) (Mahlknecht and Pastén Zapata 2013).
- 3.20 Adding to the above is the pollution caused by agriculture-related substances (chemicals and pesticides) and by mining effluents, particularly from dispersed and informal mining and other industries. For example, while Chile has high domestic wastewater treatment levels, the official water quality index (ICA) reports water in poor condition in 8 sections of 33 basins, highlighting the high levels of chemical pollution from metals in certain areas of the VI Region (Mahlknecht and Pastén Zapata 2013). In addition, in El Salvador, 20% of riverbeds are catalogued as being in poor environmental condition, with indicators of pollution from the discharge of organic materials and pathogens (coliform bacteria) well in excess of acceptable levels. This is associated with an infant mortality rate from

⁴ Baja California (1,250 m³/inhab./year), Río Bravo (1,144 m³/inhab./year), Lerma-Santiago-Pacífico (1,527 m³/inhab./year), and Valle de Mexico (160 m³/inhab./year).

gastrointestinal diseases of 16 per 1,000 live births (Ministry of Environment and Natural Resources (MARN) 2014).

3.21 Urban centers in LAC have very high air pollution levels, in excess of World Health Organization (WHO) recommended standards. Despite the strides made in recent years in many LAC cities, such as Mexico City, Bogotá, Sao Paulo, and Santiago, at least 100 million people in the region are exposed to air pollution levels exceeding WHO guidelines (Green and Sánchez 2013). In 2012, there were 3.7 million deaths worldwide due to causes directly associated with air pollution, and 4% of these deaths occurred on the American continent (WHO 2014). The presence of particulate matter⁵ (PM₁₀) is of particular concern, since LAC cities far exceed the WHO annual average standard of 20 µg/m³, as may be observed in Figure 3 below.

Figure 3. Annual PM₁₀ (µg/m³) emissions in LAC, European, and North American cities



Source: (ECLAC 2015)

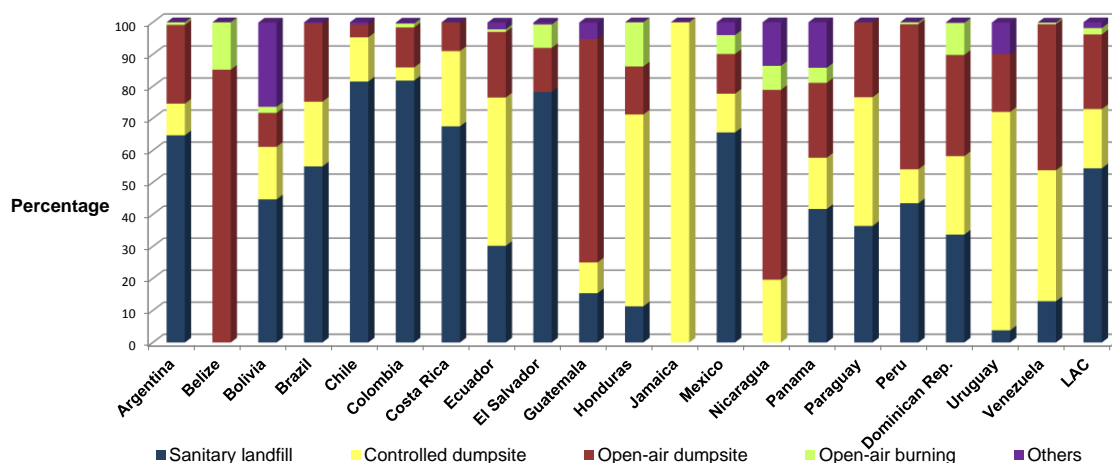
3.22 Since 1990, greenhouse gas emissions in LAC have grown steadily at an average annual rate of about 1.2%, which is similar to the world average (UN 2010). Emissions of carbon dioxide (CO₂) have gone from 1.006 billion tons in 1990 (2.3 t/inhabitant) to 1.701 billion tons in 2010 (2.9 t/inhabitant). Various studies point to motorized transport and the sustained increase in the vehicle fleet as the main causes of air pollution in cities (CAF 2011). In response, the countries of the region have increased their investments in infrastructure and their transportation

⁵ Particulate matter is a suspension of small solid and liquid particles in the air. Particulate matter pollution has a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles.

and mobility systems with a view to reducing their carbon footprint (Li and Colombier 2009). Examples include the implementation of mass public transport systems in Brazil, Mexico, and Colombia. In addition, the region has developed a cleaner supply of energy by tapping its potential for renewable energy sources (Galindo 2009). All these efforts are necessary and will help considerably in reducing the current pollution levels. However, significant changes in policy and economic behavior will still be required in the energy and transportation areas, along with greater public and private investment (UNEP-ECLAC 2010).

3.23 **Open-air dumps are still predominant as a form of final waste disposal, and they continue to be an unresolved environmental and public health challenge.** Solid waste management is one of the biggest environmental challenges for the LAC region. This is due to significant final disposal shortcomings in both urban and rural municipalities, and the resulting direct impact on public health and ecosystem pollution. Despite the progress made in garbage collection coverage, which now averages 93.4% (IDB 2010), the core environmental problem is in the final disposal of solid waste. As shown in Figure 4, solid waste in most LAC countries is disposed of in controlled dumpsites or open-air dumps or through open-air burning.

Figure 4. Percentage of the population with access to solid waste disposal systems



Source: Regional Evaluation on Urban Solid Waste Management in Latin America and the Caribbean – 2010 Report. IDB-AIDIS.

3.24 It is estimated that 55% of the population in LAC can dispose of urban solid waste in sanitary landfills (IDB 2010). However, this figure is probably overstated, since some municipalities tend to report controlled dumpsites as if they were sanitary landfills. Dumpsites (whether controlled or uncontrolled) are not always located in appropriate areas, and are often found in sensitive areas such as hillsides, ravines, and riverbanks. Furthermore, they are not always properly operated, creating problems in the form of improperly controlled gas emissions and leachate and generating propitious conditions for the development and proliferation of disease-

bearing vectors (Díaz, 2009). The absence of planning instruments and capacities at the municipal level is one of the main obstacles encountered in facing the problem of waste. Barely 19.8% of municipalities in LAC have solid waste management plans, and only in Uruguay (73.9%), Argentina (74%), Peru (57.2%), and Chile (53.4%) do more than 50% of municipalities have such plans. It is estimated that only 2.2% of waste in LAC is recovered and recycled, although some countries and cities have started to implement these practices (IDB 2010, UN-ECLAC 2012).

D. The gains made in LAC in enacting environmental laws and establishing governing institutions and governance structures have not resulted in effective conditions for performance.

3.25 In terms of institutional structure and legal frameworks, all countries of the region have some type of general (not sector-specific) framework law for environmental management, and many have sector-specific laws and regulations, including environmental impact assessment (EIA) regulations, as shown below.

Table 1. Proportion of LAC countries with specific legislation on priority environmental issues

Legislation	Framework law on environmental management	Urban waste	Water	Public information	Forestry	Protected areas
Proportion of countries	25/25	13/25	15/25	7/25	23/25	20/25

Legislation	Air	Biodiversity	Soil	Environmental impact	Fishery resources	Land-use planning
Proportion of countries	11/25	19/25	6/25	20/25	12/25	13/25

3.26 Notwithstanding the foregoing discussion, several diagnostic assessments and studies of this issue (Gómez et al. 2006, INECE 2009, Bovarnick et al. 2010, Acerbi et al. 2014, Blackman et al. 2014) highlight the following challenges and weaknesses:

- a. **Weak environmental institutions.** Within the hierarchic and budgetary structures, environmental institutions are generally weak in terms of budget and technical equipment and have limited ability to attract first-rate, qualified technical staff. These weaknesses, which are evident at the national and central government levels, become accentuated at the local levels (provinces and municipalities).
- b. **Limited development of environmental capacities at sector institutions.** While environmental initiatives have emerged in recent years in productive and infrastructure sectors such as transportation, energy, agriculture, tourism, housing, and others, the intersectoral coordination needed to implement environmental legislation continues to be dispersed and isolated. In addition, many sector policies are inconsistent in their approach to a specific resource (e.g., water) or territory.

- c. **Low levels of environmental investment and public expenditure.**⁶ Several studies have attempted to determine the levels of public spending aimed at protecting the environment and the natural capital, using various methodologies (Eurostat 2005, OCDE 2007b, etc.) as well as the United Nations System of Environmental-Economic Accounting (SEEA) (European Commission et al. 2012, Oleas-Montalvo 2013). The findings of these studies show that environmental investment and public expenditure in LAC equal less than 1% of GDP. Only Brazil, Mexico, and Costa Rica exceed 0.6% of GDP, far from the OECD average, which is in the vicinity of 1% of GDP (IDB 2012, European Commission et al. 2012, UN-ECLAC 2012, IDB 2013a). This situation suggests how difficult it is to have the necessary resources available to face the environmental problems and threats affecting LAC.
- d. **Shortcomings in the use of EIA and environmental permitting systems.** While the use of EIA procedures is now well established in most LAC countries and the pertinent authorities have ample experience, there are evident shortcomings and limitations (Triana and Enriquez 2007, Acerbi et al. 2014). Particularly noteworthy is the lack of institutional capacity for project monitoring, which often is not performed after the relevant license or permit is issued (Astorga 2006). All this has affected the credibility of the EIA process. The inclusion of environmental aspects at the strategic level in the design of policies, plans, and programs continues to be subject to significant limitations and gaps and is in most cases insufficiently developed in the legislative framework (ECLAC and MINAMBIENTE-Colombia 2009, OECD 2007a, IUCN-ORMA 2007, VBRFMA 2007, CAF 2010, Utrilla 2011).
- e. **Noncompliance with laws.** All of the foregoing weaknesses create a relatively generalized situation in which the regulatory and legal provisions are not fully complied with and/or compliance is not verified. In many cases, companies prefer to pay fines rather than comply with environmental requirements (Russell and Vaughan 2003, Akella and Cannon 2004). In this context, permitting systems become transaction costs with little added value for the companies or for environmental conservation.
- f. **Insufficient use of economic instruments.** The use of economic and market instruments in LAC as part of the environmental management toolkit has taken place in varying contexts, such as in introducing tradable property rights to fisheries or implementing disposal fees. However, the management emphasis continues to be primarily on administrative and command-control systems based on systems of permits and fines that are generally inefficient or poorly managed.
- g. **Lack of information and environmental accounts.** In the LAC region, there is a notable absence of systematized environmental information at the sector level. As a result, the natural capital cannot be properly considered in the national accounts or when setting economic policy. The greatest information deficit concerns the terms of supply and demand of ecosystem goods and

⁶ Environmental public expenditure is defined as spending by public institutions on significant activities directly aimed at preventing, reducing, and eliminating environmental pollution or any other degradation of the environment resulting from human activity, as well as on natural resource management activities not aimed at the development of resources or production.

services and their ecological production functions in relation to their economic contribution, particularly in the case of aquatic, coastal and marine systems (Ferraro and Pattanayak 2006, Pullin and Knight 2009, Arroyo et al. 2010, UN-ECLAC 2012, Blackman et al. 2014).

- h. **Very limited private-sector participation in environmental initiatives.** While companies in LAC are increasingly adopting environmentally friendly practices, especially in the form of carbon footprint reduction and clean production initiatives, despite the nonexistence of financial incentives in the region, major challenges and gaps remain in comparison with companies in Europe, Canada, and United States. For example, although ISO 14001 certifications in LAC have grown from 711 in 2000 to 10,996 in 2013 (ISO 2015), they account for only 3.6% of total certifications worldwide.
 - i. **Vulnerability to disaster risks.** The severity of disasters triggered by natural phenomena (e.g., hurricanes, droughts, floods, earthquakes) in LAC has in all cases been shown to have been primarily determined by inadequate environmental conditions, especially with regard to land occupancy and use, where the impact is greatest on the poorest and most unprotected population groups, including indigenous peoples, Afro-descendants, and women (World Bank 2006, 2007, UNEP 2010d, UN-ECLAC 2012).
 - j. **Need to strengthen local communities and indigenous and Afro-descendant groups.** Some progress has been made in strengthening the role of the local communities in managing the environment, but current arrangements are incipient and fragmented (Pacheco et al. 2008, Bowler et al. 2011).
- 3.27 The region's environmental challenges, associated with gaps in governance and institutional structure, largely reflect the fact that environmental public policy and allocation of investments for natural capital conservation have yet to become enough of a political and economic priority. This is due in part to growth and environment trade-offs, as examined in Chapter II, as well as to investment needs that are prioritized in a context of short political cycles, whereas environmental investment generally involves long-term needs and requires a long-term vision. In this regard, as shown by the empirical evidence in this SFD, it is essential for countries, regardless of their income level, to develop appropriate management and governance instruments at both the public and private levels that can allow the contribution of natural capital and a cleaner environment to be fairly valued as a basis for better economic development and better living conditions.

IV. LESSONS FROM THE BANK'S EXPERIENCE IN ENVIRONMENT AND BIODIVERSITY

A. Reports of the Office of Evaluation and Oversight (OVE)

- 4.1 The background paper "Midterm Evaluation of IDB-9 Commitments: Environmental and Social Safeguards" (OVE 2013) reviews to what extent and how effectively the Bank is implementing the IDB-9 requirements pertaining to the Environment and Safeguards Compliance Policy (Operational Policy OP-703) and policies addressing social and cultural concerns: involuntary resettlement (OP-710), indigenous peoples (OP-765), and gender equality (OP-761). The document examines how the Bank has responded to the results and recommendations of the 2011 report by the Independent Advisory Group on Sustainability (IAG), which

reviewed the progress made in implementing policy OP-703 and provided advice on possible ways to improve the policy and its implementation. Specifically, the OVE evaluation reviews the progress made and the effectiveness of Bank measures responding to the issues raised in the IAG report on the mainstreaming of social and environmental sustainability and the application of environmental and social safeguards in IDB financed operations.

- 4.2 The OVE evaluation confirms the IAG report's findings that, at both the corporate programming and country strategy levels, the mainstreaming of sustainability concerns remains a work in progress. Efforts in this area continue to be fragmented, and the report recommends focusing greater attention on the social aspects of sustainability by promoting intersectoral dialogue and coordinating targeted new approaches to enhance the environmental benefits of projects.
- 4.3 The thematic evaluation "Climate Change at the IDB: Building Resilience and Reducing Emissions" (OVE 2014a) examines Bank interventions that can bring benefits for climate change in terms of both mitigation and adaptation. With regard to addressing climate change mitigation, the document highlights advances in several of the Bank's sectors, but indicates that work still needs to be done on forest protection and management, as a necessary strategy to help reduce greenhouse gas emissions, by adopting a more systematic program of forest investment. With regard to progress in addressing climate adaptation, the document underscores the Bank's long history of providing support on a closely related issue: management of natural disaster risks, which are aggravated by climate change. In this respect, the Bank's portfolio is well aligned with country vulnerability levels. However, support for climate risk assessment has been limited and the Bank must continue to develop knowledge and experience in order to build stronger links between climate adaptation strategy and disaster risk management.
- 4.4 The document "Analysis of the IDB's Action in Watershed Management Programs 1989-2010" (OVE 2012) underscores, in general terms, the difficulties of evaluating progress in this area due to a lack of indicators, and highlights the following challenges: (i) absence of integrated projects for watershed management, with watershed management usually addressed as a secondary component within sanitation or agricultural infrastructure projects; and (ii) difficulty in building consensus on implementing crosscutting programs due to the lack of an integrated intervention strategy.
- 4.5 OVE has also performed specific evaluations on environmental mitigation measures associated with specific projects. An example of this work is the "Ex post Evaluation of the Impact of the Environmental Mitigation Measures for the Porce II Hydroelectric Power Plant Project" (OVE 2010). This evaluation underscores the importance of enforcing a strict methodological approach to monitoring to identify environmental quality trends for each environmental criterion. This approach will enable a multi-temporal analysis, with indicators that make it possible to verify the effectiveness of mitigation measures for achieving the proposed environmental quality objectives.

B. Lessons learned from projects

- 4.6 This section addresses the Bank's recent experience in dealing with the themes of environment and natural capital, using recent Bank reports on the issue and analyzing a relevant sample of operations aimed at promoting environmental sustainability.

- 4.7 An analysis of the Development Effectiveness Matrix (DEM) is not included, due to the crosscutting nature of environmental issues and the various types of operations framed in different Bank operational sectors. Most of the investments in the environment and biodiversity financed by the Bank are primarily activities or components of operations in various productive and infrastructure sectors aimed at generating development outcomes specific to each sector. Since the DEM was first implemented in 2009, only three loan operations have had objectives and goals focused solely on environmental issues. In view of this, the evaluability percentages to be included in a DEM summary table would not contribute representative or relevant information.
- 4.8 The IDB Sustainability Report for 2014 highlights that one third of the loans approved during the year, totaling US\$4.4 billion, include environment-related activities in areas as diverse as: renewable energy, energy efficiency, environmental governance, climate policy, wastewater treatment, solid waste, sustainable infrastructure, urban recovery and resilience, clean production, climate change adaptation in agriculture, green credit lines for financial institutions, sustainable tourism, and disaster risk management. In addition, safeguard policies are increasingly being used to create direct positive effects on the environment and biodiversity. Examples include the Reventazón Hydroelectric Power Project (CR-L1056), the Program for Institutional Strengthening and Environmental and Social Management Support for the Camisea Gas Project (PE-0233), and the Project for Conservation and Development in High Biodiversity Areas of the Pasto-Mocoa Corridor (CO-T1142).
- 4.9 In addition, an analysis of the Bank's experience in biodiversity-related issues (Mata 2012) points out that the Bank has proven experience in: (i) biodiversity and protected area conservation; (ii) mainstreaming at the policy level (institutions, environmental management, land-use planning, and crossborder cooperation); (iii) mainstreaming in rural sectors (natural resources, wetland management, disaster prevention, tourism, and agriculture); (iv) management of coastal-marine zones and fisheries; (v) urban landscapes and sanitation; (vi) application of the environmental and social safeguards policies; (vii) private sector participation; and (viii) climate change. In this context, the Bank has used various instruments (loans, technical cooperation funds, operations with GEF funds, climate funds, and private sector windows, among others). However, a review of the portfolio between 2006 and 2011 shows that the number of loans targeting biodiversity-related issues, including sustainable forest management and coastal resources management, remained low in relation to the Bank's overall portfolio. Furthermore, the study offers some recommendations for improving the Bank's work. These include: (i) developing clearer quantitative indicators for monitoring and evaluation in terms of biodiversity and environment; (ii) increasing the scope of mainstreaming in the project cycle; (iii) stimulating demand for environmental projects in member countries; (iv) developing environmental accounting systems; and (v) strengthening public policy formulation processes.
- 4.10 In this context, in 2012, the Bank established the Special Program and Multidonor Fund for Biodiversity and Ecosystem Services (now BIO) (document GN-2703). The objective of this program is to stimulate the generation, dissemination, and use of knowledge aimed at improving the effectiveness of policies and programs informed by valuations of biodiversity and ecosystem services. Through this program, the Bank seeks to increase and expand its technical and financial

assistance to member countries as well as enhance its own technical capacity to integrate biodiversity and ecosystem services in line with its mandates on sustainable development, poverty alleviation, and private sector investment.

- 4.11 Since its approval by the Bank's Board of Executive Directors in 2013, the BIO program has helped to generate knowledge and capacities in the following areas: (i) valuations of ecosystem services and tools to guide and promote investment in natural capital in the form of private sector loans; (ii) development of databases on biodiversity, environmental services, and threats to priority ecosystems with a regional scope; (iii) training of professionals; (iv) economic analyses applicable to development through pilot projects integrating natural capital into loan design and feasibility; and (v) dissemination and exchange of knowledge on ecosystem-based, climate resilient integrated coastal zone management in the Caribbean.
- 4.12 A sample of projects was taken from which to extract relevant lessons learned. Included in the sample were operations either fully disbursed or at advanced stages of execution. The sample of loans and nonreimbursable investment projects financed by the GEF included projects supporting protected area conservation and environmental management, as well as various projects in rural and urban environments that include environmental management and protection as components. Interviews were conducted with the project team leaders of the operations identified in the sample, as well as with specialists in environmental management strengthening, biodiversity, environmental safeguards, sustainable cities, climate change, private sector, and disaster risk management.
- 4.13 **Strengthening environmental management and governance systems requires continuous efforts to enable institutions to provide timely and flexible responses to a growing and changing demand driven by growth in public and private investment in member countries.** Since the 1990s, the Bank has supported various countries in strengthening policy frameworks and environmental governance systems, initially by fostering the creation and strengthening of national environmental authorities (ministries or environmental agencies), accompanied by regulatory frameworks. Subsequently, the emphasis of support has evolved toward formulating and implementing economic-financial instruments in environmental management and conservation. More recently, the Bank seeks to modernize the systems with a view to optimizing environmental management and thereby contribute to competitiveness and sustainability.
- 4.14 The environmental institution-strengthening programs carried out in Uruguay (UR-L1033; UR-L1083), Panama (PN0122; PN-L1013), and several other countries, particularly in the 1990s, are examples of successful operations in creating environmental institutions and legislation and in some cases in establishing and consolidating management instruments, primarily environmental licensing and Environmental Impact Assessment (EIA) systems. These programs have produced mixed results in terms of their sustainability and political support as well as in terms of their effectiveness. In general, the lessons of this type of operation point to certain important aspects that affect the success of their execution: (i) their characteristics require a maturation process that exceeds the length of the normal execution periods of investment projects; (ii) maintaining environmental management as a priority public policy is essential for ensuring the success and sustainability of the institutional reforms; (iii) there is a need for intra- and

- interagency coordination mechanisms, as well as transparency and governance mechanisms, to improve the performance of both regulatory entities and public and private enterprises; (iv) environmental management should be strategically integrated into the infrastructure policies, programs, and projects, seeking not only to mitigate impacts and make works feasible but to generate greater benefits and added value; and (v) to strengthen environmental management, it is essential to understand the perspective of the users and beneficiaries (ministries of transportation, energy, and others, and the private sector) and obtain their support and commitment. These aspects should be considered in new modalities and innovative forms for designing and implementing future operations in environmental institutional strengthening, so that this strengthening succeeds in consolidating national systems that can facilitate sustainable and globally competitive development.
- 4.15 **It is possible to reconcile economic development objectives, reduce pressure on natural capital, and benefit local communities (traditional communities and indigenous peoples) that are directly dependent on environmental services.** The Bank has been supporting a number of environmental management and biodiversity conservation initiatives under productive and sector projects.
- 4.16 For example, the Acre Sustainable Development Program (BR-L0313) succeeded in making significant investments in road rehabilitation in compliance with strict environmental regulations, supplemented by the creation of protected areas and by verifiable monitoring and oversight systems. The program's final evaluation indicates that activities carried out under the program were properly aligned to help reduce deforestation while enhancing the competitiveness of several productive sectors in the program's area of influence.
- 4.17 Similarly, the Petén Development Program in Guatemala (GU-L0081, GU-L1002) aimed to promote conservation of the Mayan Biosphere Reserve and improve the living conditions of the local population by encouraging sustainable alternatives for using biodiversity resources and cultural heritage in protected areas and their surroundings, including tourism activities, and strengthening local participation in the protection and management of protected areas. The evaluations of these programs suggest that they have made a positive contribution by increasing tourism and raising household income through more profitable agricultural and forestry activities.
- 4.18 Various projects show that conservation and sustainable management of natural resources in local communities and indigenous territories in line with their community demands and cultural values lead to improved income and living conditions. This was the case in Acre, Petén and other programs for conservation, forest development, risk reduction, and climate change adaptation in Nicaragua (NI0141; NI-L1048). The benefits include improving the socioeconomic conditions of the population and reducing the impact of disasters on priority watersheds, including strengthening risk management at the municipal level, as well as creating synergies with agricultural producers for climate change adaptation.
- 4.19 In addition, with support from global funds and partners such as GEF, the Bank has succeeded in initiating various operations focused on biodiversity and on incorporating the value of environmental services into decision making. For example, the project Conservation and Sustainable Use of Land and Andean

- Vertical Ecosystems (BO-X1001) in Bolivia is a good example of the traditional adaptive management model of the Ayllus people (essential farming practices of indigenous Andean communities) for agrobiodiversity conservation and sustainable use of soil and water. This project shows that models combining traditional management with new technologies can be successful at low cost. One of the lessons learned is that models using demonstration plots make it possible to test appropriate tools and disseminate technology that addresses the demands of the communities.
- 4.20 Furthermore, coastal marine biodiversity conservation projects, such as Protecting Biodiversity in the Southwestern Caribbean Sea (CO-X1004), provide lessons on the importance of reconciling protection of marine ecosystems with the use of biodiversity in the productive sectors. These projects also show that ecosystems and biodiversity provide highly valuable services and resources to local communities (for artisanal fishing, subsistence, tourism, and coastal protection) and to countries (primarily through tourism and industrial fishing), fostering innovative mechanisms for business integration and social development.
- 4.21 Nevertheless, with the exception of operations financed by the GEF, **most projects lack the adequate metrics needed to measure their impact on the environment and on biodiversity**, indicating the need for a greater effort to develop indicators to measure impacts on natural capital and to be included in the strategic outcomes under the operations' results matrix.
- 4.22 **Rational land-use planning and management that takes into account vulnerability factors and environmental challenges with a high social and economic impact is an important tool for the sustainability of productive activities and local livelihoods.** An example of this approach is the Emerging and Sustainable Cities Initiative (ESCI). With more than 40 participating cities, ESCI provides very relevant experiences in prioritizing land-use planning and management, disaster risk management, climate change adaptation, and green space management issues, among others, thus strengthening the link between urban development and environmental sustainability. Projects such as those for the Bay Islands in Honduras (HO-0198; HO-X1003) succeeded in laying the technical and planning foundations needed to foster sustainable tourism and conservation of the land and marine ecosystems.
- 4.23 **The private sector is key to developing initiatives that are innovative and effective in achieving results that improve environmental performance.** Projects and initiatives involving the private sector have been shown to improve environmental performance. The Reventazón (Costa Rica) and Chaglla (Peru) hydroelectric power projects are examples of success in this regard. Aside from generating renewable electric energy, these projects included environmental management plans with offsets to compensate for the loss of natural habitats in rivers, as well as partnerships with local nongovernmental organizations (NGOs) to create a biological corridor. In addition, non-sovereign guaranteed operations have provided ecosystem services appraisals for their clients. Examples include a silvopastoral analysis in Uruguay and palm oil certification in Ecuador. To support mainstreaming environmental aspects into client businesses, the Bank has used technical assistance to perform cost-benefit and feasibility studies, providing management instruments and grants to reduce risks and/or absorb the additional costs inherent in these projects.

4.24 **Prevention-oriented public policies for environmental management support the use of more sustainable practices by the productive sector.** Operations such as the Environmental Management Program for Sustainable Production in the Productive Sector (AR-L1026) in Argentina show that positive financial and environmental results can be achieved also when working with small and medium-sized enterprises (SMEs) on cleaner production processes. These SMEs succeed in reducing consumption of raw materials, waste production, and energy, water, and other resource demands, thereby shrinking their carbon footprint and improving environmental quality, while at the same time lowering their operating costs, increasing income, and gaining access to markets on a more competitive footing. **An important lesson learned is that the environmental authorities found a way to work with businesses not only as regulators but as partners to improve environmental conditions.** Thanks to support from the program, many businesses that were on the verge of being fined and closed down have been able to reinvent themselves as clean enterprises, creating employment and income in their communities.

C. The Bank's comparative advantages in environment and biodiversity

4.25 The Bank's main comparative advantage is its proven capacity to incorporate environmental and biodiversity issues into its regular lending operations, both public and private. The Bank has provided support on the environment and biodiversity through its diverse portfolio, from specific projects in protected areas to operations in which environmental management and biodiversity are a component in projects from different sectors, and in both rural and urban environments. This shows the Bank's internal capacity to integrate these issues into its work. It also illustrates the Bank's great potential for leveraging resources and scaling-up its operations, in view of its ability to resort to a variety of economic instruments to satisfy the different needs of member countries both large and small.

4.26 As a result of its direct relationship with the ministries of finance and its role in the private sector, the Bank enjoys a comparative advantage in promoting policy dialogue that can improve environmental management and incorporate the value of natural capital into economic policy priorities. Similarly, the Bank's capacity to promote cooperation between the public and private sectors is a significant comparative advantage that distinguishes the IDB from other entities working in the area of the environment and biodiversity. This capacity creates room to undertake coordinated actions to face challenges related to infrastructure, for example by strengthening public capacity to make infrastructure planning more effective, while supporting private investment for its implementation.

4.27 In addition, the Bank has been reinforcing its strategic positioning on these subjects, helping to generate knowledge and strengthening the establishment of strategic partnerships with both the academic community and the private sector.

4.28 The Bank will prioritize its actions on the environment and biodiversity based on its positioning and comparative advantage in member countries as a source of development financing. Such comparative advantages are reflected in the following aspects: (i) governance, policy framework, and institutional development; (ii) competitiveness, infrastructure, and private sector development; and (iii) social inclusion. In general, the Bank will not take on a leading role on issues that are in the direct purview of specialized environmental agencies and entities.

V. GOALS, PRINCIPLES, DIMENSIONS OF SUCCESS, AND LINES OF ACTION TO GUIDE THE BANK'S OPERATIONAL AND RESEARCH ACTIVITIES

A. Goal and principles of the Bank's work in environment and biodiversity

- 5.1 The goal of the Bank's work is to help the countries of the region achieve high levels of environmental performance, reflected in: (i) the continuity and functionality of land and marine ecosystems and their ability to supply goods and services to the economy and contribute to the livelihoods of the population, especially the most marginalized; and (ii) improved health and quality of life of the population by means of reducing environmental pollution.
- 5.2 For purposes of this SFD, the guiding principles for future Bank interventions are as follows:
- a. **Mainstreaming**, considering that the environment is not a sector and that the Bank's actions require interventions that cut across all sectors, with shared responsibilities in all areas, both public and private.
 - b. **Competitiveness**, recognizing that natural capital, whether in terms of quantity or quality, is a competitiveness factor in productive sectors and the basis for future economic growth, providing opportunities for development and income generation.
 - c. **Social inclusion**, recognizing the importance of ecosystems and their biodiversity for the livelihoods of local populations, rural communities, and indigenous peoples.
 - d. **Global and regional (transboundary) scope**, emphasizing that the environment and biodiversity do not acknowledge borders and take the form of biological corridors, cross-border rivers, and transnational regional ecosystems, both land and marine, requiring joint and integrated action among countries as well as global action, as in the case of climate change.

B. Dimensions of success, lines of action, and activities

- 5.3 To achieve the environmental sustainability goals, three dimensions of success are being proposed, each with its own recommended main lines of action and activities. These proposed dimensions of success and actions are based on the empirical evidence and the challenges faced by the LAC region, as well as on evaluability criteria. The aim is to ensure that the proposed interventions rely on proven models or are piloted to guarantee their effectiveness in the specific contexts in which they are carried out. In addition, the proposed priority actions will enable the Bank to promote innovation and best practices and support member countries in fulfilling their commitments under international agreements.
- 5.4 **Dimension of success 1. Environmental governance systems, including public policies and environmental investment programs, operate efficiently and effectively.** The evidence presented and the diagnostic of the environmental challenges facing the region indicate that environmental performance is determined essentially by the quality of governance institutions and structures, public policies, and allocation of the government budget to protect natural capital.
- 5.5 The proposed lines of action for this dimension of success are in response to these needs:

- 5.6 **Line of action 1.1.** Strengthen and improve: (i) the performance of environmental governance systems at the national and subnational level, with efficiency and effectiveness criteria regarding the application of environmental regulations and standards, strategic management, and monitoring, oversight, and enforcement of the law; and (ii) the performance of regional (transboundary) and global environmental management systems.
- 5.7 To implement this line of action, it is proposed that the Bank prioritize the following **Operational Activities:**
- a. Strengthening of environmental management capabilities at the local level and sector-specific entities responsible for legal and regulatory compliance, including municipalities and provincial and/or regional governments.
 - b. Formulation and development of environmental and natural resource policies, including sector-specific policies that include the right sustainability incentives and reduce private investment disincentives.
 - c. Implementation of the appropriate economic and financial instruments to internalize or correct market failures that generate environmental externalities.
 - d. Strengthening of technical and analytic capabilities for natural capital valuation in member countries, including sector development planning processes, and in the financial and capital market systems.
 - e. Development of national environmental accounting systems to measure, monitor, and compare the status of, and developments affecting, natural capital, including information systems based on modern monitoring technologies.
 - f. Modernization of the national Environmental Impact Assessment (EIA) processes and environmental permitting systems, and capacity-building for the performance of Strategic Environmental Assessments (SEAs), to make them effective management instruments generating value-added for sustainable economic and social development.
 - g. Strengthening of mechanisms for civil society and local community participation in the processes of environmental management and use of natural capital.
 - h. Strengthening of governance entities and mechanisms with mandates to manage priority regional ecosystems (e.g., international territorial waters, shared watersheds, coastal marine areas, biological corridors, and protected areas).
- 5.8 **Line of action 1.2.** Promote investments to reduce pressure on the environment and natural capital within the specific context of each country's needs and demands.
- 5.9 To implement this line of action, it is proposed that the Bank prioritize the following **Operational Activities:**
- a. Strengthening of institutional management arrangements and viable financial mechanisms to expand conservation efforts and effective management of threatened protected areas, biological corridors, and ecosystems, including

large-scale crossborder ecosystems and regionally significant biological corridors.

- b. Integrated management of coastal areas for productive and economic development of coastal resources, building their resilience in the face of risks associated with natural disasters and climate change.
 - c. Remediation and recovery in coastal and land ecosystems.
 - d. Soil remediation in the context of integrated solid waste management.
 - e. Urban environmental management, promoting development of urban greenspace and ecosystems, air decontamination in all its forms, and reduction of disaster risks and climate threats.
- 5.10 **Dimension of success 2. Sector-specific competitiveness in both the public and private sectors grows through interventions focused on environmental mainstreaming and development of the natural capital.** The empirical evidence and the diagnostic show that, once the environment is mainstreamed, the actions with the greatest impact on the use of natural capital and the quality of the environment take place in the context of sector-specific economic interventions. Thus, environmental mainstreaming is a necessary condition for sustainability.
- 5.11 The proposed line of action for this dimension of success is in response to these needs:
- 5.12 **Line of action 2.1.** Promote systematic mainstreaming of the economic value of environmental goods and services in productive and infrastructure sectors, including opportunities for public and private investment in innovative initiatives aimed at reducing the carbon footprint, protecting the environment, and conserving and developing the natural capital.
- 5.13 This line of action requires crosscutting, multisector interventions tied to more than one specific sector, both within the Bank and at the interagency level in the countries, on issues such as environmental urban sanitation, security of tenure, natural resource management, water availability, and climate change, etc. To a large extent, these actions are prioritized in the recently approved SFDs: Agriculture and Natural Resource Management (GN-2709-2), Water and Sanitation (GN-2781-3), Transportation (GN-2740), Tourism (GN-2779-3), Gender and Diversity (GN-2800), and Integration and Trade (GN-2715); and those to be approved: Energy and Climate Change.
- 5.14 This SFD prioritizes the following **Operational Activities** that were not identified in the aforementioned SFDs and significantly contribute to Dimension of success 2:
- a. Implementation of sustainability strategies in sectors with a high environmental and social impact, including mining, hydrocarbons, hydroelectric power, urban development, and others.
 - b. Promotion of the development of medium- and long-term environmental financing mechanisms in the context of programs to structure public and private financing.
 - c. Development of strategic partnerships with private and nonprofit entities to promote investment, training, and innovative mechanisms for the protection of natural capital.

- d. Support for innovative business, financial instrument, and green infrastructure models.
 - e. Encouragement and creation of green markets for goods and services with a high social and environmental impact, including incentive mechanisms through financing and the capital markets.
 - f. Fostering of environmental certification programs linked to national and international market access and other sustainability protocol systems.
 - g. Fostering of cleaner production processes at SMEs, with environmental quality improvement targets and profitability criteria.
 - h. Leveraging of private investment through innovative financing mechanisms for environmental sustainability.
 - i. Promotion of business and corporate reporting on environmental sustainability, within both public and private sectors.
- 5.15 **Dimension of success 3. Marginalized populations and indigenous communities reduce their vulnerability and exposure to environmental degradation and disaster risk factors, and improve their income and quality of life based on their natural capital.** The evidence and diagnostic assessments show that urban and rural vulnerable populations in LAC, including indigenous peoples and communities dependent on their natural resources (e.g., fisheries, forests), are those most affected by disaster events and most exposed to degraded environmental conditions. In addition, the evidence also shows that the quality and availability of natural capital are essential to the livelihoods of traditional communities and indigenous peoples.
- 5.16 The following two proposed lines of action are in response to this:
- 5.17 **Line of action 3.1.** Implement land and human settlement use and planning arrangements that improve local environmental conditions and the physical security of the population in the face of disaster and environmental degradation threats and vulnerabilities.
- 5.18 To implement this line of action, it is proposed that the Bank prioritize the following **Operational Activities:**
- a. Implementation of integrated disaster risk management measures, incorporating priority risk identification and reduction and climate change adaptation actions.
 - b. Strengthening of environmental management capabilities at the municipal and local levels, reinforcing participatory processes for local and community empowerment.
- 5.19 **Line of action 3.2.** Foster natural capital conservation and management practices in local communities and indigenous territories that enable them to improve their quality of life and income generation in keeping with their cultural wishes and values.
- 5.20 To implement this line of action, it is proposed that the Bank prioritize the following **Operational Activities:**
- a. Support for interventions to protect the ecosystems and livelihoods on which the indigenous peoples depend.

- b. Identification of markets, business opportunities, and opportunities to join value chains, including integration of traditional and indigenous communities with the private sector in developing and sharing the benefits of environmental services.
 - c. Financing of priority projects with a high environmental and social impact.
 - d. Empowerment of women, ensuring that they share in the benefits of natural capital management and participate in the decision-making process.
- 5.21 Lastly, it is proposed that the Bank prioritize the following **Analytical and Knowledge Generation Activities** for the three dimensions described above:
- a. Undertake analytical studies to measure the quality of environmental governance and performance in LAC, providing indicators that are comparable among the countries of the region and can help in prioritizing the Bank's environmental management strengthening activities.
 - b. Undertake and disseminate economic assessments of the impact and effectiveness of economic instruments used in the region, identifying best practices and the key determinants of success in their use.
 - c. Undertake studies on climate change resilience in the context of the integrated management of coastal areas and their ecosystems, focusing on the development of policy instruments, impact assessment models, and monitoring systems.
 - d. Development of a natural capital accounting methodology, incorporating it into the impact assessment systems for Bank projects and identifying the appropriate measurement and evaluation indicators.
 - e. Expanded use of methodologies that incorporate environmental and other factors to support the sustainability of projects in infrastructure and other sectors.

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