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SYNOPSIS OF THE EXECUTIVE PROFILE OF ENVIRONMENTAL MANAGEMENT: Mesoamerican Subregion

W O R K I N G P A P E R

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ABBREVIATIONS

CBM: *Corredor Biológico Mesoamericano* (Mesoamerican Biologic Corridor)
CCAD: *Comisión Centroamericana para Ambiente y Desarrollo* (Central American Commission for Development and the Environment)
CINPE: *Centro Internacional sobre Política Económica, Universidad Nacional*, Costa Rica (International Center for Economic Policy, National University)
CLACDS: *Centro Latinoamericano para la Competitividad y el Desarrollo Sostenible* (Latin American Center for Competitiveness and Sustainable Development)
CST: Certification for Sustainable Tourism
DGMA/CCAD: *Dirección General de Medio Ambiente, Comisión Centroamericana de Ambiente y Desarrollo* (General Office for the Environment, Central American Commission for Development and the Environment)
ECLAC: Economic Commission for Latin America and the Caribbean
ECO-OK: Forest Certification Program managed by Rainforest Alliance
FAO: Food and Agriculture Organization (United Nations)
GDP: Gross Domestic Product
IDB: Inter-American Development Bank
INCAE- *Instituto Centroamericano de Administración de Empresas* (Central American Business Administration Institute)
IPCC III: Third Round of the Intergovernmental Panel on Climate Change
IUCN: The World Conservation Union
NAFTA: North American Free Trade Agreement
NGO: Non-Governmental Organization
NOM: *Normas Oficiales Mexicanas* (Official Mexican Regulations)
PACADIRH: *Plan Centroamericano para el Desarrollo Integrado de los Recursos Hídricos* (Action Plan for the Integrated Management of Water Resources in the Central American Isthmus)
PARCA: *Plan Ambiental para la Región Centroamericana* (Central American Region Program for the Environment)
PROARCA-CAPAS: *Programa Ambiental para la Región Centroamericana*-Central American Protected Areas System, USAID (Central American Region Program for the Environment)
PROSIGA: *Programa de Sistemas Integrados de Gestión Ambiental, CCAD* (Environmental Management Integrated Systems Program)
RUTA: Regional Unit for Technical Assistance, The World Bank
UNDP: United National Development Program
UNEP: United Nations Program for the Environment
USAID: United States Agency for International Development
WB: World Bank
WRI: World Resources Institute

I. BACKGROUND

The eight Mesoamerican countries –Mexico, Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama- have accomplished important legal and institutional advancements in environmental management issues over the past ten years. It is true that for many decades there have been institutions in these countries that regulated water and forest resources. However, after the Rio de Janeiro summit in 1992, an intense institutional development process started on the issue of environmental management. At the beginning of the nineties only two countries in the region has a ministry of the environment. In contrast, today every country has a Ministry of the Environment, and a statutory or General law that regulates its functions.

From this positive global balance, the environmental challenge faced by the region is considerable. The Mesoamerican countries face high population growth rates –especially in urban areas-, a rapid deterioration in the quantity and quality of available natural resources, and a growing impact of natural threats. In the coming decades these countries will face the difficult challenge of reconciling their needs of water, energy and forest needs with the demands of conserving their environment and use their resources in a sustainable manner.

The executive profile summarized here was prepared by INCAE-CLADS by commission of the IDB to identify the great environmental challenges of the region, highlight the achievements of the last decade and point out the future course that will guide the region's environmental management advancements. These issues have been grouped according to three conceptual cores: natural resources management, environmental impact of urban and industrial development and the relationship between the environment and competitiveness.

II. PRIORITY ISSUES IN ENVIRONMENTAL MANAGEMENT

II.1. Priority Problems: Natural Resources

Mesoamerica is one of the regions with the richest **land biodiversity** in the planet, and one of the most important origins for ((domesticated)) species of economic significance. To preserve the region's natural and cultural heritage, most of its countries have created private and public protected areas. Also, importance is starting to rise for *ex situ* biodiversity conservation: gene banks, *in vitro* tissue collections, collections of animals in captivity, etc. In spite of these efforts, of the 24 identified eco-regions in Mesoamerica, 11 are in critical state and 11 are threatened to disappear.

While **deforestation** in the world decreased 20% between the eighties and the nineties, in Mesoamerica the deforestation rate remained constant. In the nineties, an average of 113,000 hectares of forest was lost each year, at a yearly rate of 1.5%. The priority problems that provoke the loss of natural forests in the region are: a) transformation of forestlands into agricultural, grazing and urban areas; b) deforestation and unsustainable use of forests in lumber production; c) degradation of the forest ecosystem and its

fragmentation; and d) forest fires. Fortunately, forest plantations are increasing in the region and, with them, the pressure on the forests decreases. New incentives and payments schemes for environmental services are stimulating this tendency.

Mesoamerica has an exceptional endowment of **water resources**, but they are unequally distributed. While Belize, Panama and Nicaragua have between 13 and 7 times the minimum amount of water per inhabitant necessary so that a country does not suffer supply problems, El Salvador and Mexico have less than that amount. In addition, the larger population concentrations of the region are not located in the areas with more water accessibility. The situation worsens due to improper water management, its over-exploitation and its degradation. Among the factors that affect the environmental management of water resources are the following: a) inadequate legal framework; b) lack of planning in the use of the resource under the ecosystem concept; c) lack of awareness of the water situation in the region; and d) lack of participation by the local population in the decisions on water use.

The region's rich **marine and coastal biota** significantly contributes to the economy and livelihood of many people. The Central American fishing activity generates an annual product of US$ 750 million and provides direct jobs to over 200,000 people. In Mexico, this sector provides almost 2.5 million direct and indirect jobs and generates exports of almost US$ 800 million each year. Aquaculture, especially that of shrimp, is growing in importance in the region; even though it reduces pressure on marine resources, it also provokes pollution in mangroves.

II.2. Priority Problems: Urban, Agricultural and Industrial Development

Population in Mesoamerica quadrupled between the fifties and the year 2000, and is still growing at relatively high rates. But the greatest demographic change of the last decades has been an explosive growth in **urban population**, which represents 67% of the total population. This phenomenon has deeply varied the relationships between population and the environment in the region, as cities concentrate and greatly increase natural resources consumption and generate greater volumes of solid wastes, wastewaters and air pollution.

Coverage of **sanitation and potable water** services is still relatively low, especially in rural areas. Sanitation coverage reaches 76%, but in rural areas it dips to 37%. Potable water coverage reaches 80% of the total population in the region. Water quality is at risk due to uncontrolled extraction of coastal aquifers, and to wastewaters, industrial and agricultural discharges.

A high proportion of the region's **solid waste** is not treated properly. Two examples: in Mexico City, only half of the waste is deposited in sanitary landfills, and in Guatemala City 80% of the waste is collected, but all of it is deposited in open dumps.

The growing **pollution of surface and groundwater resources** due to sewage and industrial wastewater is threatening public health and is already felt in coastal marine ecosystems.

In the entire region, the **loss of soil** is worsened by the reduction of the available area, the deterioration of soil quality of and increased pollution due to excessive or improper use of agrochemicals. The loss is due to erosion, changes in agricultural use and concentrations in land possessions. The intensification in land use and the increase in irrigated lands have aggravated soil degradation. There are productivity and yield decreases, especially on hillsides.

The movement of the **agricultural frontier**, which occurred during the nineties in Mexico, Guatemala, Honduras, Nicaragua and Panama, contributed to deforestation and watershed deterioration. Many agricultural frontier lands are located on hillsides or slopes where the greatest concentrations of rural poverty and the highest risks from natural disasters are found.

Chemical pollution of soils is becoming increasingly important in Mesoamerica. In the region, the intensity of use of insecticides is high, particularly in Costa Rica. It seems that the problems generated by agrochemical abuse outweigh the economic benefits attributed to the agricultural sectors in some countries of the region.

There is a loose regulatory framework regarding spills and emissions from the region's growing **industrial sector**. Few countries in the region have developed land use and pollution control regulations and procedures in the industrial sector.

Mesoamerica is particularly exposed to **natural threats** mainly of climatic and tectonic origin. Weather phenomena include *El Niño*, droughts, hurricanes, cyclones, tropical storms, floods, swells, avalanches, mudslides and fires. Tectonic phenomena include earthquakes, tsunamis, and volcanic eruptions. There also are environmental disasters that originate from technological factors, such as mining, oil, and water pollution. Water-related meteorological threats, by both floods and droughts, are the major cause of loss of human lives, productivity and infrastructure in the region. The combination of soil degradation in mountain regions and of accelerated urbanization in densely populated cities downstream produced the ideal context for a disaster of Hurricane Mitch's dimensions.

The IPCC III **climate change** scenarios estimate a very likely escalation of drought and cyclone impacts. Disasters such as Hurricane Mitch are linked to this tendency. There is another risk associated to climate change: the foreseen sea level rise that affects coastal populations.

In general, indicators demonstrate that **urban environmental quality** in the region is declining.

II.3. The Environment and Competitiveness

The environment is and will continue being the primary basis of the region's **competitive**

position. This position will remain vulnerable as long as natural resources are used as low cost materials in production processes, or as waste dumps. The result is a loss of economic value and of a great deal of opportunities in environmentally friendly markets. To reverse this tendency, it is crucial to link environmental performance with economic competitiveness in the region. This is vital to accomplish higher economic growth levels and social equality, and indispensable to increase the supply, quality and economic importance of the region's natural resources. A tighter link between competitiveness and the environment will create a more attractive business climate for foreign investors, protect the resources the region needs to survive in the future, and relate its productive sectors to more valuable market opportunities, such as ecotourism, climate change markets and handcrafts.

Mesoamerica has the **double challenge** of ensuring its environmental stability by preserving its natural resource base and improving its competitiveness through an adequate management of its basic resources. To face this challenge, three significant steps must be taken: a) minimize waste of scarce resources and environmental pollution; b) adopt flexible production schemes, whether in agricultural or tourism, in order to adjust to changing conditions in world markets and increase the country's competitive advantages; and c) direct part of the profits generated by successful businesses back to production, restoration and improvement of the natural resource base that supports productivity and profits.

III. ACHIEVEMENTS

III. 1. Legal and Institutional Framework

During the nineties there has been a great increase in **institutional capacity** for environmental management in Mesoamerica. As an example of this, there are Environmental Ministries in every country of the region. Among the most important environmental laws passed during the nineties are the General Law of Ecologic Equilibrium and Environmental Protection in Mexico (*Ley General de Equilibrio Ecológico y Protección al Ambiente*), the Statutory Law of Environment in Costa Rica (*Ley Orgánica del Ambiente*), and the General Law of Environment in Panama (*Ley General de Ambiente*).

There have also been improvements in **institutional capacity building** in the environmental sector. After Mexico's adhesion to NAFTA, the country became integrated to the North American environmental management systems. And with the creation in 1989 of the CCAD, there has been a great advancement in integrating the region's environmental management. In 1999 the DGMA/CCAD launched the Environmental Plan for Central America (the *PARCA*, or *Plan Ambiental para la Región Centroamericana*), which for the first time proposes a strategic articulation between economic and social development objectives and the conservation of the natural heritage. One of its main projects is the PROSIGA, which aims to develop a certification and accreditation system, with the support of complementary norms and voluntary

mechanisms.

Also during the nineties there has been and extension in the countries' adhesion to the main **conventions** emanating from the Rio Summit. An example is the signature of the Treaty for the Conservation of Biodiversity and Protected Areas in Central America (*Convenio para la Conservación de la Biodiversidad y Protección de Áreas Silvestres*). This in turn prompted specific agreements on forests, protected areas, and more recently climate change. Also, the technical organisms in charge of supervising the agreements were established.

There has been progress in formulating **strategies, plans and programs** for conservation and sustainable use of biodiversity. Costa Rica and Mexico already have National Biodiversity Strategies, and have created innovative mechanisms to appraise environmental goods and services. Today the word "biodiversity" belongs to the regional political vocabulary.

The region's most significant contribution in the area of **environmental norms and standards** stems from the experience of the national Mexican regulations (*NOMs*, or N*ormas Oficiales Mexicanas*), which are federal compulsory regulations applicable nationwide. Between 1985 and 1990, 81 NOMs relating to wastewater discharge, hazardous and municipal waste management, automotive vehicles and industrial sources, and natural resources, were passed.

Notwithstanding important legal and institutional voids, it must be recognized that Mesoamerica has innovated during the nineties by creating instruments that permit an integration of the environment in macro policies as well as sectorial policies. But the main voids are in the execution of those policies by the main public decision-making bodies.

The increase in environmental commitment is contrasted with the inertia and the regression in **allocating resources** for environmental ministries. One example: in some countries the creation of protected areas and their growing attraction of tourists over the course of the last ten years have not brought more resources to entities that administer natural heritage.

There are remarkable experiences of **national environmental funds** in Mexico, Guatemala and Panama. In some cases they have become a unique source of funding for conservation projects. It is possible to extend these experiences to the other countries in the region.

The experiences in Mexico and Costa Rica regarding the **internalization of environmental costs** in public services (vehicle and gasoline taxes, payments for environmental services, water discharge fees, etc.) demonstrate the ability of generating new resources without depending on public budgets.

III.2. Environmental Management of Natural Resources

During the nineties, more **conservation areas** were created than during all preceding decades. However, in most cases protected areas have been created legally, but are not enforced in reality nor are supported by the necessary management plans. In addition, most of the region's protected areas face serious threats, deriving from the advance of the agricultural frontier, the expansion of large-scale monocultures, and unsustainable land use.

The global boom in biotechnology-related techniques, by tissue cultures, *in vitro* propagation and cryogenic **conservation of genetic materials**, is producing positive effects in Mesoamerica. However, germplasm banks are still scarce.

The **Mesoamerican Biological Corridor** (*Corredor Biológico Mesoamericano*) is a strategic regional planning and land use framework that aims at maintaining ecological continuity between North and South America, and establishing an engine for social and economic development for the populations it encompasses. Its formulation and style are an exceptional achievement.

III.3. Environmental Management of Urban, Agricultural and Industrial Development

The problems of **water supply and quality** are the most important ones for environmental management in Mexico and Central America in the 21st century. Several initiatives aim to overcome the historical defects and voids of this area. Some are regional, such as the *PACADIRH* (*Plan Centroamericano para el Desarrollo Integrado de los Recursos Hídricos*, or the Integrated Water Resource Management Action Plan for Central America) and the activities of the Global Water Partnership, which operate in collaboration with the IUCN's Water and Nature Initiative (*Iniciativa de Agua y Naturaleza*). Other initiatives are national in nature, such as El Salvador's Integrated Water Resource Management Action Plan (*Plan de Acción para la Gestión Integrada de los Recursos Hídricos*), and Mexico's Water, Sewerage and Sanitation Program in Urban Areas (*Programa de Agua Potable, Alcantarillado y Saneamiento de Zonas Urbanas*), which propose new legal frameworks and alternative sources of finance.

There are improvements throughout the region regarding the application of measures to improve the **environmental performance of businesses**. For example, every country has programs that promote organic production, and nearly all of them have collaborated with multilateral institutions to establish programs that foster cleaner production. Several countries have launched efforts to ration water and energy costs and rates. There are new initiatives to compensate forest owners so that the water capture provided in wooded areas provides benefits for urban users. Other programs compensate those who provide services in mitigating climate change. These initiatives are in the pilot stage, but their results are promising.

III.4. National Promotion, Standards and Incentives Policies

The creation of national **environmental standards** authorities that supervise local accreditations and compliance with international conventions such as ISO, seems to be a future step in several countries of the region. Even though this sort of body exists in almost every country, it is only functioning properly in Mexico.

In some countries, the Ministry of the Environment grants **environmental awards** to businesses that fulfill environmental conservation requirements. The experiences gained by national cleaner production centers indicate that the businesses that have joined environmental and energy audit programs have accomplished not only a reduction in polluting emissions, but also important savings in energy, materials and processes.

III.5. Linking Competitiveness and Environmental Management

There are valuable experiences that clear the road towards a new integration stage between competitiveness and environmental management. Some of the **institutional instruments** involved in these experiences are: environmental impact assessments, decontamination plans, voluntary agreements, audits and economic appraisals of resources and regulations, tradable emissions permits, emissions and environmental quality standards, and information systems.

At different stages of development, there are forerunning experiences in the application of **instruments directed towards domestic and international markets**, for example: certification standards, "green seals," adoption of international regulations, environmental insurance, promotion of equity accounts that serve as incentives mechanisms for environmental sustainability, clean production mechanisms, citizen participation, environmental budgets, and private protected areas.

In order to link competitiveness to the environment, it is necessary to extend the **institutional** improvements previously mentioned, in the areas of prevention, protection and environmental quality enhancement. The achievements obtained are a valuable baseline to overcome persisting voids.

In order to improve the competitiveness-environment, it is fundamental that environmental authorities incorporate a new strategic orientation that emphasizes environmental performance of the **business sector** of environmental performance. In all the countries there already are noticeable improvements in this direction, both in responsible resource management and in taking advantage of the commercial opportunities available to Mesoamerican businesspeople.

From the business sector there has been a tendency towards adopting **environmental self-management** instruments that seek to create differentiating opportunities for the enterprises. The ISO-14000 **international certification** has allowed 27 Mexican and 2 Costa Rican businesses to stand out for their environmental management systems.

There has been a boom in **forest certification**, especially in associative enterprises (cooperatives and ejidal businesses). Mesoamerica possesses one quarter of the world's certified forests. In this the work of the Forest Stewardship Council (*Consejo Mundial de Manejo Sostenible de Bosques*) has been crucial, a global organization established in Oaxaca, Mexico, which grants environmental certifications to forestry exploitations.

Less than 5% of the region's exportable agricultural production is certified **organic**. Other environmental certification experiences include shade-grown coffee, joint coffee growing-bird protection programs, ECO-OK for coffee, citric fruits, and others. These practices are rapidly expanding.

In Costa Rican Tourism Institute (*Instituto Costarricense de Turismo*) has created and implemented the "**Certification for Sustainable Tourism**" (CST, or *Certificado de Sostenibilidad Turística*), whose objective is to evaluate hotels (and in the future other tourism enterprises) according to environmental and social performance parameters. The Central American Ministers of Tourism already have agreed to adopt this program, and there is a pilot plan in Mexico. The goal is to make it the universal standard on sustainable tourism, which would give the region a competitive advantage in sustainable tourism.

IV. CHALLENGES AND GOALS

IV.1. In Environmental Management of Natural Resources

1.1.Challenges

The main challenges that environmental entities in charge of environmental management face to fulfill their growing commitments are their financial, technical, human resources and information limitations. To overcome these limitations those entities must strengthen the **participation** of local governments, NGOs and the business community through creative, flexible and efficient means.

Also, they must create new **fiscal and financial mechanisms** to support environmental management and protection of conservation areas.

The experiences in **payment for environmental services** seem to offer flattering perspectives for some countries, particularly Costa Rica. In the mid-term it is necessary to expand this practice to other countries of the region.

The **Mesoamerican Biologic Corridor** (*Corredor Biológico Mesoamericano*) represents an important opportunity to reinforce integration of protected areas with local communities through a bioregional approach.

It is also necessary to systematize and promote an extensive use of **forestry certification.**

It is necessary to regain and value the **traditional knowledge** on fitogenetic resources of native peoples and farmers.

1.2 Short- and Mid-Term Goals

- Consolidate the Mesoamerican Protected Areas System, through strengthening governmental and private conservation systems and incorporating new management and finance mechanisms to support demarcation and conservation operations.

- Find more mechanisms to transfer part of the benefits provided by conservation areas (scenic beauty, watershed protection, biodiversity refuge, reduction of vulnerability, carbon sequestration) back to these areas for financial sustainability.

- Articulate the Mesoamerican Biological Corridor with *in situ* and *ex situ* conservation initiatives in the region.

- Develop a system of national indicators on protected areas performance, stemming from a differentiated baseline by management category.

- Strengthen public and private *ex situ* conservation initiatives, with knowledge and *sui generis* intellectual property systems, to strengthen the participation by native peoples in safeguarding agrobiodiversity.

IV.2. In Environmental Management of Urban, Agricultural and Industrial Development

2.1. Challenges

There are several challenges related to **risk management and land use/regional planning,** especially regarding mitigation of impacts from urban, agricultural and industrial activity. In particular, mitigation of risks of flooding and droughts remains an urgent environmental management challenge in the 21st century in Mesoamerica.

Much of the existing wastewater treatment **infrastructure** is deteriorated and obsolete. An important challenge is to install sewer systems and treatment plants in main cities and tourism development areas.

It is required to integrate risk **prevention and mitigation** measures in order to lower the future effects of natural phenomena and disasters, by means of environmental management actions. A range of tools must be introduced, including forecasting, monitoring, land use controls, regional planning mechanisms and integrated watershed management.

2.2 Mid-Term Goals

- Define priority actions for watershed management, maintenance of riverbeds with good hydraulic capacity, and control of clogging and blocking levels in the main rivers, lagoons, lakes and dams.

- Strengthen land ecosystems and highland protection, including rainforests, gallery forests and palustrine, estuarine and marine wetlands, keeping in mind the importance of these actions in reducing vulnerability to natural disasters.

- Analyze the population's geographic distribution, including human settlement formation and urban growth patterns in the region. This is necessary to guide disaster prevention programs.

- Identify the infrastructure that is most vulnerable to natural disasters, keeping in mind that the degree of exposure to calamity greatly depends on a population's location and construction patterns.

- Involve every national authority level, coordinating entities and local organizations, in natural disaster prevention and recovery.

IV.3. Competitiveness and Environmental Management

3.1. Challenges

There must be a **change in environmental and resource use policies** to overcome the strict regulatory approach, and establish a process for promoting and inducing investments in environmental infrastructure, creating markets and financing for sustainable development. In this way, economic growth will be compatible with environmental protection.

In the area of **certification**, high priority should be given to institutional schemes for the adoption of standards for the supervision of local accreditation and administration of international conventions such as ISO.

Another challenge is the promotion and financing of **certification of critical industry**. To take advantage of existing opportunities, it is necessary to provide business owners with correct information on advantages and risks, as well on financing mechanisms for adaptation and certification.

3.2 Mid-Term Goals

- Ensure that environmental enforcement programs are transparent and equitably applied to domestic and foreign companies, based on coherent and comprehensible regulations.

- Promote the development of critical environmental services industries. Priorities include: certification and reference laboratories, a market for audits and impact assessments, and certification and verification services.

- Expand international standard adaptation programs, especially in agriculture, tourism and ISO 14001 (with an emphasis on medium-size export companies).

- Establish programs to finance adaptation and transition programs in products and industries when benefits are known. This can occur through ministries of economy or agriculture, or through the financial sector (design of specialized instruments).

- Strongly promote the use of CST, to take advantage of its condition as the most internationally recognized tourism sustainability standard, and materialize its potential.

APPENDIX

Some Methodological Aspects

1. Sources of Information

The main information sources used by INCAE-CLACDS to prepare this report are the following:

- Interviews with specialists throughout the region, mainly with "Dialogue" participants. Several of them provided quantitative and qualitative information of variable relevance and quality.
- Publications by multilateral organization such as the IDB, the WB, ECLAC, FAO, UNDP, UNEP and WRI, they were looked up for the analysis on the region's state of the environment, they were consulted.
- Review of electronic sources (websites, databases).
- Literature prepared by regional and national entities on the state of the environmental in Mesoamerica. In particular, documents from CCAD, INCAE, IUCN, RUTA, CINPE, PROARCA-CAPAS, PROSIGA, the Mesoamerican Biologic Corridor, and the UNDP on the State of the Region and State of Nation Reports were used.

2. Indicators to Monitor "Green" and "Brown" Agendas

In order to identify the natural resources management tendencies in the region (**"green agenda"**), a set of compound indicators that synthesize the state of natural resources was put together. Based on this information, a matrix was created, that allows an analysis of the countries' behavior with respect to forest surface area percentage, forestry products growth rates, percentage of national territory in protected areas, percentage of the total forests in forestry management, and forest area in *per capita* hectares. These indicators aid in identifying priority issues and detecting environmental policy effects.

And to analyze tendencies related to the environmental impact of urban and industrial developments (**"brown agenda"**), six resources and conditions categories were defined: urban environmental quality, water resource management, foodstuff resources, energy sources, pollution and vulnerability; this matrix was built from a more complex series of indicators. Some tendencies stand out, for example the wanting state of disaster risk management and urban environmental pollution.