

**Forest Carbon Partnership Facility (FCPF)
Readiness Plan (R-Plan) Template**

***Country submitting the R-Plan : Panama
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R-Plan General Information:

The National Environment Authority (ANAM) was established by Law No. 41 of July 1, 1998, also known as the General Environment Law. It lays down the principles and basic standards for the protection, conservation and recovery of the environment, promoting the sustainable use of natural resources. It also promulgates rules for environmental management and relates it to social and economic goals, in order to achieve sustainable human development in Panama.

As early as 1999, the first National Environment Strategy (NES) was adopted for the period 1999-2006. This resulted in two GEO Panama reports: one issued in 1999 and one in 2004. The Strategy also includes the Participatory Strategic Plan (1999-2004). The Strategy was adjusted in 2004: the focus is on “Conservation for Sustainable Development” for the period 2004-2009, with the vision of constructing with Panamanian society a country characterized by a healthy environment and a culture of sustainability promoting attainment of a high level of human development.

The mission is to spearhead, facilitate, oversee and administer environmental management for sustainable development, with the goal of conserving, protecting, restoring and improving the environment and the natural resource base, and promoting Panama’s environmental competitive advantage.

In order to achieve our proposed mission, institutions and agencies with environmental mandates are guided and coordinated; policies, laws, standards and instruments for environmental management are proposed; environmental information is provided and a culture of sustainability and capacity-building is promoted; new styles of development are defined and encouraged; advice is provided on the best use of resources; controls, follow-up, oversight, incentives and sanctions are provided. All this is for the benefit of the Panamanian State, society and ecosystems.

In accordance with this concept, our entire National Environment Strategy is clearly focused on an environmental management program in collaboration with the communities for the protection of our forest ecosystems and sea coasts. Our Strategy therefore obviously includes among its components the following objectives of a strategy for the reduction of emissions from deforestation and forest degradations:

Development objective: Incentives for increasing technical assistance and revenue for rural communities through environmental businesses, thus promoting adaptation to change, forest conservation, and biodiversity, thereby contributing to mitigation efforts.

National environment objective: To establish a link between adaptation and mitigation activities that help to improve the quality of the environment, to prevent deforestation (REDD) and to promote true sustainable development. In other words, shared global stewardship based on a watershed management program that will allow us to restore forest cover and reduce the deforestation rate in strategic alliance with the communities.

Global environment objective: Conservation of internationally important biological diversity, protection of mountain and coastal forest ecosystems (REDD) and mitigation of climate change.

As noted above, the REDD strategy for Panama is incorporated in our National Environment Strategy, which also promotes a style of shared environmental management, in which each of the social actors plays a motivating or executing role, in proportion to the efforts and resources that can be provided by the individual or within some type of organization. Accordingly, for REDD the main thrust of the work will be to provide opportunities for organized grassroots groups, so that they can develop community investments and environmental business that enable them to coexist with the forest/ecosystem and to engage in productive/daily activities compatible with the potential of the natural resources around them.

One of the main goals of our REDD strategy is to involve the indigenous farming communities living in ecosystems of interest for conservation and provision of environmental services. In order for this participation to be effective, resources are needed to encourage productive activities compatible with conservation goals and with human development needs, so that these population groups can be fully incorporated in a green economy at the local, national, and global green economy, in order to achieve efficient and sustained management of natural resources. And also changes in technology and production methods in small, medium, and large firms.

Following the guidelines of the Millennium Development Goals and implementing the international commitments made at the Conferences of the Parties to the United Nations Framework Convention on Climate Change, ANAM has initiated a direct dialogue with the country's farming and indigenous inhabitants in order to keep the various rural communities informed of the problems and opportunities connected with the work of adaptation to and mitigation of climate change. In 2008, nine forums on climate change and desertification, which dealt with the subject of REDD, were held in Panama: Chiriquí (2), Los Santos (1), Veraguas (2), Herrera (1), Coclé (1), Bocas del Toro (1) and Darién (1).

As regards the indigenous population, two information meetings were held with the traditional authorities, in two of the five indigenous comarcas of the Republic of Panama. The first was held on the day on which the new authorities were selected for the Congress of the Comarca Emberá Wounaan. The newly elected cacique (chief) Betanio Chiquidama invited ANAM to explain the general principles and the status of negotiations on REDD and it was agreed to hold a follow-up meeting (**See Annex 1**). At the second meeting, the authorities gave ANAM a REDD scenario, which they had asked the firm Brinkman y Asociados Reforestadores de Centroamérica, S.A. to prepare. The procedure to be followed with this indigenous community will be defined at a workshop to be held in January with representatives of each of the 40 villages in the comarca.

In the Comarca Kuna Yala, the General Cacique requested ANAM support for his participation in the Fourteenth Conference of Parties (COP 14) in Poznan, Poland (**See Annex 2**) and a meeting in the Comarca to explain the status of the negotiations to Congress and its technical advisers, before he left for the Conference. This meeting reached important agreements on the supervision, control and joint management of the Protected Area within the Comarca (**See Annex 3**). It should be mentioned that, since COP 14, a REDD advisory workshop was held in Panama, sponsored by the Smithsonian Tropical Research Institute in cooperation with ANAM. At this event, all the indigenous groups of Panama were given information on our REDD strategy. Many of the indigenous groups' doubts about REDD, due to misinformation, were dispelled. The formal consultations with all the indigenous comarcas are described in the environmental culture component of this R-Plan.

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c) **Describe any technical assistance received from outside experts or organizations in producing this R-Plan. Is any technical assistance planned on REDD over the next year or so? (e.g., technical consulting, analysis of deforestation or forest degradation in country, etc., and by whom):**

The National Environment Authority has used its own resources to perform its activities for the implementation of this R-Plan.

2. Current country situation: brief stand-alone summary of the current situation regarding the forest and land use sector, deforestation and degradation of forests in your country.

The Republic of Panama occupies a narrow isthmus measuring 75,717 km², located in the far south of the Mesoamerican Biological Corridor, in Central America. It is bordered on the west by the

Republic of Costa Rica and on the east by the Republic of Colombia. Its territory, located in the planet's region of greatest diversity among the six known global centers of diversity¹, has wide altitudinal variations which, in tropical climate conditions, promote a diversity of ecosystems that are home to 12 of the planet's 30 Holdridge Life Zones (Tosi, 1971)². According to the WWF classification system, which uses the concept of ecoregions to promote large-scale conservation, using an ecosystemic approach, 8 of the 200 internationally recognized ecoregions are in Panama³ (Dinerstein, 1975).

The country's vegetation is classified in 24 categories (Berger, 2000) recognized by UNESCO, which include forests, savannas, , swamps, salt marshes, mangroves, formations of floating and submerged aquatic plants, plateau vegetation, systems producing ligneous vegetation, homogenous and heterogeneous forest plantations, and seven others not covered in the UNESCO system, including production systems and coral reefs. For example, the Chocó-Darién moist forests, shared with the Republic of Colombia, have exceptional biological value at the global level, and the Talamanca moist forests, shared with the Republic of Costa Rica, are outstanding at the regional level, together with the moist forests of the Pacific. Thus, despite its small surface area, Panama is among the countries most rich in biodiversity, water and opportunities for development of the bioprospecting industry, ecotourism and scientific research, to name only the most important.

Together with forest cover, Panama has a large number of water sources flowing into the Atlantic and the Pacific, which create suitable conditions for the survival of a wide variety of species of aquatic and terrestrial flora and fauna. The Atlantic region, corresponding to the Mesoamerican Biological Corridor project, has the highest forest cover in Panama, as well as the sites with the greatest diversity of ecosystems and flora and fauna species in a relatively intact and healthy state of conservation.

Panama has 21 times more plant species per square kilometer than Brazil; more species of vertebrates than any other country in Central America and the Caribbean; 3.5 percent of the flowering plants and 7.3 percent of the ferns and related plants in the world (ANAM, 2002)⁴; 10 percent of all the planet's bird species (930 resident and migratory species)⁵; 5 percent of the planet's 4,327 known species of mammals⁶; 4 percent (172 species) of the world's total diversity of amphibians, and 3.5 percent (228 species) of the world's reptile diversity. In addition to species also found in other regions of America, there are between 1,300 and 1,900 plants (Garibaldi, 1998; Correa and Valdespino, 1998), 23 amphibians, 24 reptiles, 8 birds and 10 mammals (Araúz, 1998)

¹ ANAM "Primer Informe de la Riqueza y Estado de la Biodiversidad de Panamá". Panama, 2000.

² The Life Zones possessed by Panama are, in order of cover: tropical moist forest (32%), premontane very moist forest (18%), tropical very moist forest (13.4%), premontane rain forest (12.6%), tropical dry forest (7%), premontane moist forest (3.5%), low montane rain forest (3.2%), premontane dry forest (3%), low montane moist forest, lower montane very moist forest, montane very moist forest and montane rain forest. See Panama Environment Report 1999.

³ The ecoregions recognized for Panama are: 1) Ecoregion of Talamanca moist forests, considered to be regionally outstanding, relatively stable, with high conservation priority regionally; 2) Ecoregion of Chocó moist forests, globally outstanding, with high conservation priority at the regional level and considered vulnerable; 3) Ecoregion of moist forests of the Caribbean, bioregionally outstanding, with medium conservation priority; 4) Ecoregion of the mangrove complex of the Caribbean, Pacific and Panama Blight, considered relatively stable, with medium conservation priority at the regional level; 5) Ecoregion of moist forests of the Panamanian Pacific, considered to be endangered, bioregionally outstanding with high conservation priority at the regional level; 6) Ecoregion of dry forests of the Pacific, in critical condition, locally important with medium conservation priority at the regional level; and 7) Ecoregion of montane forests of central Panama...

⁴ Project on the Mesoamerican Biological Corridor of the Panamanian Pacific, Information Pamphlet, ANAM, 2003.

⁵ For 19 consecutive years, National Sovereignty Park in the Panama Canal Basin set world records, culminating in 1996 when on a single day 325 species of birds were counted. These included the endangered crested eagle (*Morphnus guianensis*), the spectacular red-lored Amazon (*Amazona autumnalis*) and various species of colorful trogons such as the violaceous trogon (*Trogon violaceus*).

⁶ ANAM "Primer Informe de la Riqueza y Estado de la Biodiversidad de Panamá", Panamá 2000.

which are unique or endemic to Panama.

Recent biological studies (ANCON, 2004) in protected areas of the Mesoamerican Biological Corridor⁷ confirmed the existence of new endemic species and of other endangered species. In addition to resident species, Panama shares with other American countries almost 122 species of regular migratory birds and another 60 species of casual migratory birds (Ridgely and Gwynne, 1989): between one and two million beach birds arrive in Panama Bay each year. On both shores, there is diversity of mangroves and coral reefs. On the Atlantic shore, Bocas del Toro has 33 species of stony corals, representing almost 53 percent of the total known diversity for Panama, and in the Comarca Kuna Yala there are 49 species forming reefs and another 20 species in 11 vertical coral settlement zones, at one of the largest reefs in the Caribbean (Ventocilla et. al., 1995).

In 2000, the percentage of forest cover in the territory of Panama was 44.91 (International Tropical Timber Organization-ANAM 2003), excluding modified forests, and 41,321 hectares were deforested in the period 1992-2000. In 2000, Panama had 43 official protected areas, representing 26 percent of the national territory under some form of protection.⁸ In 2006, the report of the Protected Areas System mentioned 65 official protected areas, equivalent to 34.43 percent, and in 2008 there were 70 official protected areas, covering nearly 35.81 percent of the national territory.

Ecotourism makes direct use of the countryside, flora, fauna, water resources and related cultural aspects and now accounts for 30 percent of tourist visits to Panama. In 2007, revenue from tourism amounted to US\$ 1,735 million, exceeding the revenue of the Panama Canal Authority and the Colón Free Zone. This illustrates the potential of ecotourism as a means of mitigating the poverty afflicting rural communities connected with natural environments that have undergone little modification.

With regard to scientific research, since the 1920s Panama has been host to the Smithsonian Tropical Research Institute (STRI), which is the most important tropical ecology research center in the world. The Smithsonian works directly with public and private agencies interested in the effects of climate change and in conservation of the ecosystems that are home to native species.

Bioprospecting projects have been implemented in Panama in terrestrial and marine zones which are part of the National System of Protected Areas, with the participation of national and foreign institutions. For example, the cooperation agreement between STRI and ANAM, signed on April 8, 1999 and valid until April 9, 2009, has allowed research on tropical forest resources of medical value under the program of the International Cooperative Biodiversity Groups (ICBG), in cooperation with the National Secretariat for Science, Technology and Innovation (SENACYT), through the Institute of Advanced Scientific Research and High-Technology Services (INDICASAT) of the Gorgas Commemorative Institute for Health Studies and the University of Panama.

The General Environment Law of 1998 made ANAM responsible for managing access to all the country's genetic resources except the human species. This was regulated by Executive Decree No. 257 of 2006, establishing the Contract of Access to Genetic Resources, as a way of guaranteeing fair and equitable distribution of the benefits of biotechnology research.

Law No. 44 of 2002, creating the system of integrated management of water basins, gave ANAM the task of monitoring and managing these territorial planning units. There are 52 water basins in Panama, divided into 5 hydrological zones⁹, of which two drain into the Caribbean and three into the Pacific. Since social and economic development has been concentrated in the Pacific Western

⁷ See socio-environmental studies of La Amistad International Park, Volcán Barú National Park, Palo Seco Forest Reserve, San-San Pond Sak Wetland Reserve, prepared by ANCON for the Atlantic Mesoamerican Biological Corridor Project and ANAM in 2004.

⁸ *Informe de la Riqueza y Estado de la Biodiversidad de Panamá*, 2000.

⁹ The country's five hydrological zones were defined while preparing the National Plan for the Integrated Management of Hydrological Resources (*Plan Nacional de Gestión Integrada de Recursos Hídricos*) which is at the final stage of development.

Central Pacific region, the environmental situation in this watershed has required greater attention in order to halt environmental deterioration. Even so, there is starting to be pressure for the Caribbean watershed to become a new development horizon, and this is already creating a need for planning to avert environmental problems and strengthen the core of conservation existing there.

In order to generate productive employment and opportunities for thousands of people to prosper, it will be essential to encourage grassroots organizations and to develop small and medium-size community enterprises for the sustainable use of natural resources. An approach that is as communal as possible to the opportunities for prosperity and well-being offered by our natural potential will allow us successfully to meet the challenges of conservation for the sustainable development of provision of environmental goods and services.

Panamanian legislation recognizes carbon capture as an environmental service, and it clearly establishes authority to the State in the management and administration of such services, as they are derived from goods that integrate its heritage.

In addition, and to facilitate administrative tasks, the legislation places such administration and related matters within the spheres of competence, functions and responsibilities of the National Environment Authority (ANAM). Furthermore, it establishes that projects derived from carbon capture-related activities shall be shared with the indigenous peoples, be they inside or outside the *comarcas* governed by a special regime, and with non-indigenous communities living in poverty or extreme poverty who live in protected areas or in buffer zones.

This creates the jurisdictional platform which allows the legal development of the REDD strategy in Panama, through its execution through the State, being the subjects required in the content of the strategy itself more than regular, an entity responsible for its conformity is directly established.

3. Definition of objectives, approach, and responsibilities for the R-Plan process:

Briefly define the major objectives of the R-Plan: What is it designed to achieve?

The objective of our REDD strategy is to recover and/or increase our forest cover in relation to a national base line, so that it can be a source of ecosystem services and enable us to invest in environmental services providing innovative sources of financing for communities and strengthening Panama's environmental management schemes.

Specific objectives:

- Capacity-building for implementation of specific activities under the REDD strategy.
- Development of a system of intensive monitoring of forest cover allowing calculation of carbon stock and the degree of modification of the country's forests.
- A process of supervision, control and oversight to guarantee implementation of the REDD strategy.
- Creation of a training program for participation in environmental management and environmental business to promote the REDD strategy.
- Design of a financing mechanism to promote fair, equitable and transparent distribution of revenue generated by the provision of environmental goods and services, with direct benefits for communities.
- Proposal of adaptation measures to guarantee the availability of natural resources for future generations, through production of environmental goods and services that promote positive changes in land use.

How would the result of the process change current land use and other sectoral behavior, policies, or governance, so that reductions in deforestation and degradation can occur?

For which aspects of the R-Plan does the country seek external support? (This builds on question 6 in the R-PIN template.)

Component 1: Land use, forest policy and governance quick assessment

Quick assessment

In 1947, the first national survey of the forest resources of the Republic of Panama (Garver, R.D.) estimated a forest area of 5,245,000 hectares, equivalent to 70 percent of the national territory. In 1970, the national forest inventory conducted by FAO estimated this area to be about 4,081,600 hectares, equivalent to 53 percent of the territory, indicating that between the two dates 1,880,409 hectares were deforested. The Final Report on Forest Cover and Land Use in the Republic of Panama: 1992-2000 indicates that during this period forest cover decreased to 330,569 hectares. This is equivalent to a reduction of 8.5 percent in eight years, which represents an annual loss of 41,321 hectares and an annual reduction of 1.12%. The reductions were larger in the Comarca Ngobe Buglé (21.77 percent), Darién (13.89 percent) and Panama City (12.21 percent), where the main pockets of deforestation still persist.

Deforestation by systematic use of the slash-and-burn method started in Panama with the transition to agriculture of the first complex societies on the Isthmus, some seven thousand years ago. At the beginning of the sixteenth century, at the time of the European Conquest, alluvial land in the low and mid-level basins of the main rivers and savannas in the Western Central region of the Pacific watershed were deforested. The Conquest, for its part, resulted in elimination of over 90 percent of the indigenous population and concentration of the European presence in the Western Central region of the Pacific watershed, which became an agricultural and pastoral hinterland for the inter-ocean communication axis linking the new port cities of Portobelo, on the Atlantic, with Panama City, on the Pacific. In addition, this territorial reorganization was accompanied by the creation of internal frontiers excluding the entire Atlantic coast and Darién from direct European control.

The main consequences of these events for the later development of interactions between social systems and natural systems in Panama were the following:

- Abandonment of mixed farming combined with intensive harvesting practices - including, for example, use of savannas and mangroves as sources of protein - which was the focus of the productive activity of the aboriginal societies.
- Predominance of extensive livestock farming as the focus of agricultural activity, organized on the basis of the work of African slaves, which became the principal source of wealth, social prestige and political power.
- Persistence of indigenous methods of preparing land for farming, facilitated by the adoption of metal tools.
- Displacement of the indigenous population and other marginal groups to more degraded land in the Pacific Western Central region, to the high water basins and to territories located on the other side of the internal frontiers.
- Spontaneous reforestation of the territories on the other side of the internal frontiers, which became occupied by indigenous groups from Mesoamerica and Chocó.

Basically, this development model became a lasting structure, subordinating development of the agricultural sector to the requirements of an economy organized around the transit of cargo through the inter-oceanic region, offering as a bonus access to cheap land and manpower. This structure was

at its most developed stage between the 1940s and the 1970s, with access by Panamanian agricultural production to the United States national enclave then known as the Canal Zone, which in particular generated a high demand for meat.

The cycle of extensive livestock raising gave way to increased herding, through expansion of grazing following, firstly, concentration of ownership of the most productive land in the Pacific Western Central watershed and, secondly, transformation of the forests located beyond the internal frontiers of the colonial period. In this second phase, an important role was played by migration to these territories of farmers displaced by the concentration of land ownership on the Pacific coast, which in the late 1960s had already opened up fronts of growing livestock raising in the Atlantic Western and Central regions and in Western Darién.

A correlation exists - still awaiting detailed investigation - between the forms of organization of the official United States presence in Panama and the evolution of the link between agricultural activity and forest cover. This is also important because the negotiation and application of the Torrijos-Carter Treaties occur, particularly as of the mid-1980s, in a context marked by institutional transformations (such as the creation of the Institute of Renewable Natural Resources, the immediate precursor of ANAM), the construction of important hydroelectric facilities, the creation of a number of Protected Areas and of important indigenous comarcas, and the transfer to the Panamanian State of operation of the Panama Canal and management of the watershed that provides water for the inter-ocean watercourse.

In addition, these transformations coincided with important changes in the national development model. For example, while the former canal enclave became the central element of a modern hub of transnational services, the old internal frontiers were transformed into areas for the development of resources of a new kind - water, biotic and ecotourist, for example - which in turn required new and more complex forms of environmental management. At the same time, however, the age-old structures described above persisted. Consequently, the conflict between the old tendencies and the new demands and opportunities became the most pressing issue for environmental management in Panama.

The government response to this situation was the policy of conservation for sustainable development reflected in the National Environment Strategy, which in turn embodies synergistically the REDD strategy. In the short term, the Strategy has to deal with a series of consequences of the old development model which are still negatively affecting deforestation in Panama. Among these, mention may be made of the following:

- An Agrarian Code (in the process of being amended) that in fact encourages the producer to deforest in order to sustain functional land use.
- The tendency of agricultural credit to favor the extensive livestock raising traditional in the Panamanian economy.
- The limited effectiveness of title deeds as a means of achieving territorial stabilization of the farming population
- The low opportunity cost represented by forests for the productive activities of the indigenous and farming communities.
- The takeover of land and speculation by agribusinesses and other firms, which take advantage of weaknesses in the current legislation.
- The persistence of an environmental culture geared to livestock raising and hostile to forests, and.
- The consequences of policies of settlement of agricultural frontiers in the 1970s, in the Central Atlantic region and Darién

These problems have generally been tackled by a series of initiatives designed to facilitate the change process in environmental management, by the organization of a well-structured market for

environmental goods and services, as the best way of developing natural capital by developing social capital. With this aim, the government, in partnership with the private sector and with indigenous and farming grassroots organizations, is taking measures to:

- Improve the transfer of sustainable technology to rural communities, in order to boost and diversify production for personal consumption and for the market in areas already equipped and to limit the expansion of such activities to forest areas.
- Organize a system of payment for environmental services that encourages the preservation and appropriate use of forest resources and biodiversity.
- Delimit the forest heritage of the State.
- Create the necessary socio-economic instruments for implementing the country's environmental land use plans.
- Introduce a policy of infrastructure development incorporating plans for conservation of forest cover.
- Improve oversight capacity to control tree felling.

In this connection, ANAM has designed a Sustainable Forest Model (SFM), following the principles and basic outline of the NES and of the Forest Policy of Panama¹⁰. The SFM gives the population forestry alternatives such as: promotion of reforestation on a commercial and community scale; conservation and restoration; reduction of emissions from deforestation and degradation of forests; research and education on forests; and institution-building and job creation to increase the forest sector's exports and competitiveness, thereby generating benefits for the population and foreign exchange for Panama.

Accordingly, the SFM focuses on three main programs: the Ecosystem Restoration Program; the Forest Administration Program and the Training, Research and Dissemination Program. This illustrates the need to build the national forest history as suggested in chapter 7 of this document.

These programs use watersheds as a unit of management, thus including the protected areas, to encourage industrial and community reforestation on lands with a forestry potential and to improve the social, economic and environmental indicators of Panama. They all provide for responsible participation by all sectors and stakeholders in the conservation and sustainable use of forest ecosystems, in order to decrease vulnerability and promote mitigation through carbon capture and adaptation to the effects of global warming.

Panama has a Plan of Action to Combat Drought and Desertification, meeting the requirements of the United Nations Convention to Combat Desertification, which was ratified by Law No. 9 of 1996. The zones with the greatest degradation identified in the Plan are the Veraguas Savanna, Cerro Punta, Arco Seco and the Comarca Ngobe Buglé, where land has been degraded by the effects of deforestation and use of unsustainable agricultural practices.

The environmental legislation in force establishes that promoters of development projects must submit to ANAM as part of their Environmental Management Plans a reforestation program to offset the environmental impact caused by their project in forests or vegetation cover. In the environmental legislation, environmental compensation is viewed as a management tool applicable to development projects at the national level.

The country has funds to finance environmental business and investment. These funds provide direct support to 250 rural grassroots organizations, through the program of community environmental business and investment, benefiting about 12,600 people directly and 71,000 indirectly.

¹⁰ Executive Decree N° 2 of January 17 2003, "By which the principles and general guidelines of the Panamanian Forestry Policy are approved" ("*Por el cual se aprueban los principios y lineamientos básicos, de la Política Forestal de Panamá*"), which serves as a base for the development of plans and programs that contribute to the improvement of the forestry sector.

Environmental business and investment are therefore an important means of supporting the economic development of rural communities, as well as a tool for achieving the goals of sustainable use and conservation of natural resources, and particularly natural forests, through the communities themselves.

This program develops social capital through the creation of cooperatives and small community businesses allowing the incorporation into economic activity of vulnerable groups living in poverty or in extreme poverty in various regions of the country. This includes, for example, the projects for watershed restoration, for the Mesoamerican Biological Corridor of the Panamanian Atlantic and for Conservation of the Lake Alajuela basin. In addition, the Cleaner Production Program incorporates sustainable forest management in the management of medium-size and large agricultural holdings.

Forest Policy

ANAM, promulgated Executive Decree No. N° 2 of January 2, 2003, establishing the basic principles and guidelines of Panama's forest policy, the strategic guidelines, the scope of the forest policy, the strategic objectives, and the strategic actions of Panama's forest policy.

The principles and guidelines of the forest policy are covered in the National Environment Strategy and are an integral part of policies for the economic and social development of the country. This includes several aspects, the most outstanding of which are the following: it is the duty of the State to provide a healthy and suitable environment for life and sustainable development, exploit and manage in a sustainable manner the forest heritage of the State, develop the national plan for forest plantations, promote and support forest protection, among others.

Aspects for promoting the contribution of forestry resources in the national sustainable development model; social and market valuation of the goods and services generated; fostering the sustainability of forest resources exploitation; promotion of shared participation and responsibility; and institutional strengthening are included under the strategic guidelines.

Forest policy is divided into the intersectoral, sectoral, and subsectoral aspects, in which the forest theme transcends the traditional limits of the forestry subsector to become a part of the decision-making process, the harmonization of forest activity with the set of policies and strategies designed to manage different institutions in the primary user of natural resources sector and seeks to strengthen forest management from the point of view of both ANAM and civil society.

The strategic objectives aim to: promote and facilitate the inclusion of civil society, promote a flexible and indicative land use planning, promote the adoption of forest land use planning for the country, and create centers and subcenters for training and forest management training.

The strategic actions include the following: support the National Environment Council in order to incorporate the Forest Policy in the National Economic Development Model; formulate and establish a national reforestation plan that guides and defines, according to the specific objectives, areas, species and the market; establish an effective system of technical assistance in all spheres of forest activity; establish a forest certification system that facilitates the marketing process, among others.

Political Constitution

The Political Constitution of the Republic of Panama lays down the Ecological Regime in Title III, Chapter 7, which establishes four fundamental principles which must be interpreted in harmony with each other: the principle of environmental health, the principle of sustainable development, the principle of the rational use of renewable resources, and that corresponding to non-renewable natural resources.

The first states that it is the fundamental duty of the State to ensure that the population lives in a healthy environment free from pollution, in which the air, water and food meets the requirements

for the proper development of human life.

The second principle points out that the State, just like all inhabitants of the country have a duty to facilitate social and economic development and avoid polluting the environment, should maintain the ecological balance, and prevent the destruction of ecosystems.

The third principle provides that the State shall regulate, have oversight of, and enforce in a timely manner, the measures necessary to ensure that the use and exploitation of terrestrial, riverine, and marine fauna, as well as forests, land and water is carried out efficiently, in such a way as to avoid plundering and ensure their preservation, renewal, and continued existence. Finally, the fourth principle has the same provision with respect to non-renewable resources.

The Ecological Regime of the Political Constitution does deal exhaustively with important environmental provisions; there are provisions elsewhere on the topic under discussion.

In this regard, Title III, Chapter 8, the Agrarian Regime, provides that the State will pay special attention to the comprehensive development of the agriculture and livestock sector, promote optimum land utilization, ensure it is sensibly distributed, and properly exploited and conserved, so that it is productively maintained and will guarantee every farmer's right to a decent life. Article 259 provides that grants of forest and land concessions are based on the welfare of the community and done in the public interest.

This very important legal instrument also provides that the State will pay special attention to rural and indigenous communities in order to encourage their economic, social and political participation in national life; and that the State will ensure that indigenous communities are provided with the necessary land under collective ownership so that they can achieve economic and social wellbeing. Article 90 of the Constitution acknowledges the ethnic identity of indigenous communities and will implement programs for the development of their physical, social, and spiritual development.

In addition to the above, Article 5 of the Constitution has similar provisions, which allows for the division of the country into provinces and other legal divisions such as the indigenous comarcas.

Legal Framework

The National Environment Authority (ANAM) was established by Law No. 41 of 1998, as an autonomous governing State entity in matters of natural resources and the environment, to ensure compliance with and enforcement of the laws, regulations, and national environment policy. It provides that the national environment policy is the array of measures, strategies and actions employed by the State that direct, prescribe, and determine the behavior of the public and private sector, the decision-makers in the economy, and the population in general in the conservation, use, and exploitation of the natural resources and the environment. Despite being an autonomous entity, in the scope of its functions ANAM is represented on the Executive Board through the Minister of Economy and Finance (MEF).

Article 4 of this law establishes the principles and guidelines of the national environment policy, including "stimulating and promoting environmentally sustainable behavior, the use of clean technologies, the establishment of a market for recycled and reused goods as a way to reduce levels of waste accumulation and environmental pollution".

The National Environment Authority has institutional permanence, territorial coverage, and a budget to carry out the duties entrusted to it. Among its many functions ANAM has to promote and facilitate the execution of environmental projects through public and private sector agencies.

Law 41 of 1998 provides that public sector institutions with environmental jurisdiction shall form part of the Inter-institutional Environmental System [*Sistema Interinstitucional del Ambiente SIA*] and shall establish coordination, consultation, and execution mechanisms among themselves,

following the parameters of the National Environment Authority, provided ANAM is in charge of the System, in order to harmonize their policies, prevent conflicts or lack of skills, and respond coherently and efficiently to the aims and objectives of abovementioned Law 41 and the national environment policy guidelines.

Title VII of the Law sets out the relationship between the national authorities and the comarcas and indigenous people. Panama is currently divided into nine provinces and five indigenous comarcas: Ngöbe-Buglé, Emberá-Wounann, Kuna Yala, Madugandí and Wargandí, the lands comprising its comarcas, are collectively owned.

Title VII of Law 41 of 1998 lays down the constitutional principle that the State will respect; preserve, and maintain the knowledge, innovations, and practices of local indigenous communities and their traditional lifestyles with respect to conservation and the sustainable use of biological diversity, by fostering their widest application with the participation of those communities, and by advocating that the profits derived therefrom be shared with them equitably.

Likewise, Law 41 of 1998 states that studies on the exploration, exploitation, and development of the natural resources that are authorized on the lands occupied by comarcas or indigenous communities should not result in a deterioration in their cultural, social, economic integrity and spiritual values; that in the case of activities, works, or projects carried out in the territory of the indigenous communities, consultation proceedings shall be aimed at concluding agreements with the representatives of the communities in relation to their rights and customs, as well as providing compensatory benefits for the use of their resources, knowledge, or land; that to grant any type of authorization with regard to the exploitation of the natural resources in the comarcas or the lands of indigenous communities preference shall be given to projects submitted by their members provided that they comply with the requirements and procedures demanded by the competent authorities.

In addition to the above, Law 41, provides that in the case of activities aimed at developing the natural resources in lands of the comarcas or indigenous people, the latter shall have the right to share in the profits deriving therefrom, when said profits are not provided for in current laws. This is consistent with the principles arising from the Biological Diversity Convention of 1992, incorporated into Panama's Law No. 2 of 1995.

Chapter V of Title VI of Law 41 of July 1, 1998, General Environment of the Republic of Panama, regulates Air Quality, and provides that the air is a public good, whose conservation and use are of social interest.

ANAM, and the competent entities are charged with setting standards for everything relating to air quality, by establishing controlled follow-up programs, the permissible levels and parameters in order to protect health, the natural resources, and environmental quality; the State recognizes that carbon capture is an environmental service of the forests, and it will establish the mechanisms to marshal the financial and economic resources through agreed-upon joint international implementation programs.

Law 1 of February 3, 1994, "Establishing Forest Legislation in the Republic of Panama and laying down other provisions" sets out in Title I, Chapter II the forest heritage of the State. Article 10 specifies that the forest heritage of the State consists of all the natural forest¹¹ the land on which such forests are growing and the State lands with mainly forest potential. Forest plantations established by the State on State-owned land are also part of this heritage.

Article 13 of the aforementioned law indicates that administration of the forests and land constituting the forest heritage of the State is the responsibility of ANAM, which by dint of that

¹¹ Natural Forest: *Any ligneous vegetable formation, native, predominantly of arboreal species, or that by its function or composition, must be considered as such. Article 5 of the Law N° 1 of February 3 1994, Forestry Law.*

provision and its Executive Board Resolution 05-98 of January 22, 1998 (regulating enforcement of Law No. 1 of February 3, 1994) establishes management and development rules governing the forest heritage of the State.

Executive Board Resolution JD-05-98 of January 22, 1998, pursuant to that law, specifically authorizes ANAM to adopt measures that foster and promote the establishment of plantations and natural forest management, designed to capture and fix CO₂ and contribute positively to the global and national balance of green house gas emissions.

Panama, by Law 10 of April 12, 1995, adopts all parts of the United Nations Framework Convention on Climate Change, done in New York of May 9, 1992. Subsequently, by Law 88 of November 30, 1998, it adopted all parts of the Kyoto Protocol of the United Nations Framework Convention on Climate Change, of December 11, 1997.

In compliance with the above, Resolution AG-0040-2001 of January 14, 2001 was issued through which the National Program on Climate Change (NPCC, was created as the entity responsible for supporting ANAM in the executing activities and commitments assumed as a result of Panama's ratification of the United Nations Framework Convention on Climate Change, and it will be headquartered in the Water Center for the Humid Tropics of Latin America and the Caribbean [*Centro del Agua para el Trópico Húmedo para América Latina y El Caribe* (CATHALAC)]. Under this program four subprograms were created with the objective of covering the principal activities generated at the international level for national application. The subprograms are: compliance, vulnerability and adaptation, mitigation, and public awareness.

The functions of the National Program on Climate Change include: to promote, on a national scale, the development of vulnerability studies, policy measures, and projects for adaptation to climate change in the different natural ecosystems and socio-economic sectors; to manage the necessary resources with the corresponding agencies; and to use mechanisms linked to the abovementioned Convention for the creation and/or strengthening of national capacity in the area of climate change and the heightening public consciousness and awareness.

Executive Decree 35 of February 26, 2007, adopted the National Climate Change Policy, its principles, objectives, and guidelines. For purposes of implementation, this policy was inspired by the principles emanating from the CMNUCC, the Kyoto Protocol, Law 41 of 1998, and Panama's General Environment Law. Among the principles are a recognition of the commitment to implement measures for adaptation to, and mitigation of, the adverse effects of climate change, taking into account particularly the areas of poverty so that economic, social, and environmental development will not be compromised; and the acknowledgement that the policy and topics related to climate change at the national level will be coordinated through ANAM as the designated National Authority and Focal Point in dealings with UNFCCC.

Among the specific objectives and policies contained in Executive Decree 35 of 2007, are the following:

1. Formulate, agree on and implement a participatory action plan that covers all the initiatives of the public sector, civil society and academic institutions aimed at enforcing all the commitments undertaken by the country to the UNFCCC.
2. Exercise the right granted by the UNFCCC to obtain financial resources and technical cooperation from developed countries that would make it possible for us to confront climate change by employing adaptation measures.
3. Promote the development of support programs to the poorest vulnerable communities, so that they can adapt to the effects of climate change.
4. Develop the national strategy for the promotion and implementation of projects under the Clean Development Mechanism, as an instrument that will contribute to the sustainable development of the country.

5. Promote and manage financial resources internationally through field organizations in industrialized countries that commit to reduce emissions, in order to establish of projects under the Clean Development Mechanism.

The Executive Decree 1 of January 9, 2009 created the Panama National Climate Change Committee [*Comité Nacional de Cambio Climático en Panamá* CONACCP](Annex 6) to support ANAM in the implementation and monitoring of the National Climate Change Committee. According to the aforementioned Decree, the National Climate Change Committee (CONACCP), must ensure the implementation of the inter-institutional coordination system necessary for compliance with the provisions of the international agreements on the topic of climate change of which Panama is a signatory, especially in the context of the two major action pillars: adaptation and mitigation.

The CEO of the CONACCP is permanently employed by it or the legal representative of the National Environment Authority. For all the above reasons, the REDD Panama strategy is a mitigation project that supports the adaptation of humans to climate change based on a legal framework which we believe should not be modified and that on the contrary it should be enforced so that lessons can be learned in accordance with the results that are being obtained over time, results that have been positive for Panama up to now.

Land Use, Forest Policy, and Governance Quick Assessment

The analysis of change in forest cover between 1992 and 2000 shows a decline of 330,369 hectares, equivalent to an annual average loss of 1.12%. It also points to three critical areas (See Annex 2 - Map of Changes in Forest Cover in the Republic of Panama, 1992-2000):

- The indigenous comarca of Ngöbe-Buglé, located in north-east Panama, with a deforestation area of 81,793 ha, or 2.7%;
- The province of Darién, in the east of the country, with an annual deforestation rate of 1.7% (137,612 ha); and
- The eastern part of Panama Province, which has an annual deforestation rate of 1.5% (60,709 ha).

The study also shows changes in vegetation coverage by type of forest, notably the following:

Category	1992 (Ha)	2000 (Ha)
Mature forest	3,352,072	3,015,002
Mangrove	181,775	174,435
Mixed floodable forest	45,554	37,398

The most serious environmental problem we face is the loss of natural resources, as a result of unsustainable development, based on waste. It is deforestation (at a rate of approximately 48,000 ha per year) that illustrates this most clearly. The problem worsens in the dry season, when slashing, burning and forest fires destroy vegetation and biological diversity, be it in forests, stubble fields, grazing land, or anywhere else, even close to our homes, driven by the society's own irresponsibility and its development style.

Studies carried out by ANAM point to six major causes of deforestation:

1. Traditional and mechanized agricultural practices;
2. Extensive cattle-breeding practices;
3. Unsustainable and disorderly exploitation of forests;
4. Poorly planned urban development;
5. Inappropriate practices in the exploitation of mining resources; and

6. A low level of education and an unsustainable environmental culture in the country.

Contributing factors in deforestation are said to be; an uncontrolled approach to development; extreme poverty, a paddock mentality, and incorrect valuation of forest resources irrespective of the Agrarian Code.

As for the legal provisions specifically addressing this issue, Law 1 of February 3, 1994¹², “Establishing forestry legislation in the Republic of Panama and enacting other provisions”, establishes in Title I, Chapter II, the Forest Heritage of the State.

Article 10, specifies that the forest heritage of the state consists of all the natural forests¹³, the land on which such forests are growing and the State lands with mainly forest potential. Forest plantations established by the State on State-owned land are also part of this heritage.

Article 13 of the aforementioned law indicates that administration of the forests and land constituting the forest heritage of the State is the responsibility of ANAM, which by dint of that provision and its Executive Board Resolution 05-98 of January 22, 1998 establishes management and development rules governing the forest heritage of the State.

Article 15 of Resolution JD-05-98, expanding on the Forest Law, specifically authorizes ANAM to adopt measures designed to capture CO₂:

“INRENARE may establish mechanisms to stimulate and promote the creation of plantations and the management of the natural forest, so as to capture and fix carbon dioxide and make a positive contribution to the national and global balance of greenhouse gas emissions. To that end, it shall establish a promotion, monitoring and control office.”

Even in natural forests on estates governed by private property law, ANAM has a role to play by virtue of the provisions of the Sustainable Use of Forests Regime, Title II of this regulatory resolution.

Indigenous peoples

The General Environment Law establishes -- in title VII on the indigenous comarcas and peoples - the relations between the national authorities and the indigenous comarcas and peoples. Panama is currently divided into nine provinces and five (5) indigenous comarcas: Ngöbe-Buglé, Emberá-Wounann, Kuna Yala, Madugandí and Wargandí. The lands comprising their comarcas are owned collectively under a constitutional mandate.

That law develops the constitutional principle that the State will respect, preserve and maintain the knowledge, innovations and practices of the indigenous and local communities which involve traditional ways of life related to the conservation and sustainable use of biological diversity, promoting their widest application, with the participation of the communities, and will promote equitable sharing with them of the resulting benefits.

The same law also indicates: that any natural resource exploration, exploitation and development studies authorized on land occupied by comarcas or indigenous peoples should not cause harm to

¹² Article 129 of Law N° 41 of 1998, *General de Ambiente*, declares Law N° 1 of 1994 “by which the forestry legislation of the Republic is established” as “complementary” to it, by which both are considered as part of the same code with a general environment hierarchy before a specific one in the forestry aspect.

¹³ Natural Forest: *Any ligneous vegetable formation, native, predominantly of arboreal species, or that by its function or composition, must be considered as such.* Article 5 of the Law N° 1 of February 3 1994, *Forestry Law* (in Spanish original: Bosque Natural: toda formación vegetal leñosa, nativa, con predominio de especies arbóreas, o que por su función y composición, deba considerarse como tal. Artículo 5 de la Ley 1 de 3 de febrero de 1994, Ley Forestal).

their cultural, social and economic integrity or spiritual values.

Thus, for activities, works or projects carried out within the territory of indigenous communities, consultations will focus on concluding agreements with community representatives relating to their rights and customs, as well as on the granting of benefits to compensate for the use of their resources, knowledge or land; that when granting any type of authorization relating to the development of natural resources, in the comarcas or on lands of indigenous communities, preference will be given to projects submitted by their members, provided that they comply with the requirements and procedures laid down by the competent authorities.

Article 103 of Law 41 of 1998 states that for activities, works or projects carried out within the territory of indigenous communities, consultations will focus on concluding agreements with community representatives relating to their rights and customs, as well as on the granting of benefits to compensate for the use of their resources, knowledge or land.

Article 105, for its part, establishes that, in the case of activities involving the development of natural resources on land of comarcas or indigenous peoples, they are entitled to a share in any resulting economic benefits, if such benefits are not covered by existing laws.

Component 2: Management of Readiness

2a. Convene a national REDD working group to coordinate REDD activities, and how REDD will be integrated into the existing land use policy dialogue

Law No. 41 (General Environment Law) states that environmental management should be provided through three main entities:

- ANAM, as coordinating body and creator of environmental public policy
- Civil society, through the Environmental Advisory Commissions, and
- The Interagency Environment System (IES)¹³, as the coordination hub.

All these structures have representatives at the national, provincial, comarcal and district levels.

This environmental management is provided by the instruments specified in title IV of the General Environment Law, which are used in various ways by the institutions in the IES. These instruments are:

1. The Environment Plan for the territory: ANAM has developed this at the national level under the General Indicative Land Use Plan (PIGOT) and various environmental plans have been devised at the regional and local levels. The Land Use Plan is a State policy and a planning instrument designed to achieve the spatial projection of social, economic, environmental and cultural development policies; implementation of measures to guarantee improved living standards for the population and conservation of the environment; development planning using a comprehensive, forward-looking, democratic and participatory approach; strengthening of decentralization, as regards both coordinating and integrating capacity, and distribution and orderly location of activities and sustainable uses of space in harmony with the environment.
2. The process of environmental impact assessment, which is one of the most sophisticated instruments of environmental management and which has been harmonized with land use and endorsed by the general public.
3. Environmental quality standards already implemented include 11 standards in the process of being authorized, including standards for air, environment, interiors, stationary sources, mobile sources, sea and recreational water and bad smells.
4. Supervision, control and environmental oversight, closely linked with all environmental management instruments, to supervise enforcement of rules, monitor activities to ensure that they are performed correctly and correct damage done to the environment by bad practices.
5. Environmental information made available through environmental indicators, environmental statistics, online systems and a Web page used as a portal.
6. Environmental education provided jointly with the Ministry of Education, through formal and non-formal education.
7. The program of scientific and technological research, working with SENACYT to make environmental issues a cross-cutting pillar of the national strategy for scientific and technological development.

¹³ Executive Decree N° 283 of 2006, which regulates Article 16 of Law N° 41 of 1998, about the form of the Interinstitutional System of the Environment (Sistema interinstitucional del Ambiente – SIA).

8. Focus on environmental disasters, from early warning to prevention and mitigation, through an office created for this purpose, which formulates policies for defining a framework of guidelines.
9. Environmental accounting, currently being organized and updated.

The institutional platform for REDD must be more inclusive than the abovementioned institutions because the participation of major stakeholders in the emission reduction process is limited. In this regard, it is important to involve those partners who are primarily responsible for the decisions to eliminate or to preserve the forest cover; likewise the presence of the knowledge managers must be ensured in order that variable technology and technological advances go hand in hand with REDD management, and therefore raises the issue of creating a REDD Steering Committee.

REDD Steering Committee:

The National Environment Authority will encourage the establishment of a REDD steering committee which will act as the technical secretariat for the process. This committee will be responsible for defining and having oversight of the program activities for the implementation of REDD.

It is planned to engage consultants to properly define the way in which each stakeholder group will participate in the process, including the thematic responsibilities of each one and the way in which each subgroup of partners will be elected to membership of this steering committee. This committee will be established by the following major groups of partners:

1. SIA Working Committees:

Traditionally, SIA operates through working committees, and with this in mind, it is important that the following working committees participate through a representative.

1. National Committee for the Integrated Management of Water Resources [*Comité Nacional para la Gestión Integrada de los Recursos Hídricos* CONAGIRH], comprising government institutions who share responsibility at stages for water resources.
2. National Climate Change Committee. A government body comprising SIA institutions whose main responsibility is to define the national climate change strategy and calculate the cost of the actions to be carried out by Panama in the area of mitigation of, and adaptation to, climate change.
3. National Forest Management Committee [*Comité Nacional de Gestión Forestal* CONAGEFOR] establishes the guidelines and sets the objectives to be carried out for economic and social growth of the forestry sector by generating inputs with high value added to be featured in the international market. It has both governmental and non-governmental entities.
4. Social Cabinet, which runs the Network of Opportunities program as part of the national strategy to combat extreme poverty. The Social Cabinet consists of the Ministries and government institutions most directly involved in developing the country's social capital. The Network of Opportunities focuses on the country's extremely poor corregimientos, identified by the Poverty Map, the study of social vulnerability and the 2003 and 2008 Standard of Living Surveys. It will provide important information to provide focus for the actions of government, including REDD. Those persons who have no monetary resources and take decisions to eliminate the forest cover as an alternative to their difficult situation. The main objective of the Network of Opportunities is to support capacity-building and to increase opportunities for access to a productive life by families in a situation of extreme poverty, guaranteeing education, health, and nutrition services and improving their quality of life. This program must be complemented by the REDD program through the support of all stakeholders.

5. The Municipal Association of Panama and the Mayors Association of Panama (AMUPA and ADALPA), comprise 75 municipalities of the Republic and their respective mayors. Their participation is fundamental, given that many of the functions of monitoring, control, and inspection of the different standards, including environmental standards, will be transferred to the municipalities over time.

2. Scientific Committees:

The scientific, technological, and teaching research institutions are a fundamental pillar through which current knowledge can help REDD's steering committee. These are:

- The Smithsonian Tropical Research Institute, For more than 100 years it has been providing research in the area of natural resources to the scientific research world;
- The recently established International Center for Sustainable Development comprises national and international private and public sector institutions;
- National Secretariat for Science, Technology and Innovation: public institutions under the portfolio of the presidency of the Republic managed by the current Government with a view to taking the technological leap into the first world;
- The Panama Council of Chancellors: all chancellors of Panamanian universities are represented on this council; and
- The Humid Tropics of Latin America and the Caribbean (CATHALAC): The Center will make available the technology necessary for measuring carbon in different phases of the GEO process.

3. Indigenous Groups

Aboriginal groups clustered in five comarcas: Emberá-Wounnan, Ngöbe Buglé, Kuna Yala, Wuargandí, and Madugandí and on Teribes collective lands have formed an organization to defend and advocate for the interests of indigenous peoples in Panama. These communities represent a high percentage of forest lands and are key stake holders in the REDD process.

4. Consultative Committees and Watershed Committees

The General Environment Law and the Watershed Law create working advisory committees, established jointly by representatives of the government sector and civil society. They have representatives from civil society up to the district level.

5. Social Fabric

Network of Institutions for Non-formal Environmental Education, Network of Environmental Educators, Environmental Volunteers, NGOs, communities organized in cooperatives and/or micro-enterprises that are building up green businesses. These stakeholders have much to contribute to each of the REDD Strategy components.

6. Private Enterprise

Enterprises that apply cleaner production, enterprises with corporate social responsibility (CSR) are the foundation for production linkages and the main supporters of environmental businesses and investments.

Provincial and Investment Schemes

The political and administrative structure of Panama consists of nine provinces and five comarcas, each of which is headed by a governor appointed by the President of the Republic. In the particular case of the comarcas, decision-making power is exercised by the general congresses, which as the traditional authority coordinate with the respective comarca governor. Each province and comarca is divided into municipalities and each municipality is divided into corregimientos. The mayors are the highest municipal authority, elected by popular vote, assisted by a municipal council composed of corregimiento representatives.

The stakeholders of the proposed structure are represented in those areas where work will be done—the province and the district. For the REDD to achieve success at the local level, an organization similar to the national one will be established. The consultants will explore and complement the work in view of the recently passed Law on Municipal Decentralization. District, comarcal, and provincial organizations shall coordinate with the national organization.

This coordination will be part of the consultancy introduced in establishing the REDD organizational structure.

Activities

Four major activities up to 2012 have been identified: the first is the hiring of a consultancy firm which shall be in charge of identifying the best way of defining, and integrating, committees representing the local point of view with the national and international committees. To this end, procedures and processes shall be identified.

The next action is the upgrading and supplying of physical equipment to the national commission. The third major action that requires resources is the hiring of minimum personnel for the secretariat of the commission, with a coordinator and a secretary.

Finally, it is important to provide funds for communications and not only for the commission, but for procedures and operating manuals; likewise, it is important to allocate funds for establishing the national commission, the provincial and comarcal commissions, as well as district commissions.

Schedule and Budget

Activities	TOTAL	2009	2010	2011	2012
TOTAL	500,000	260,000	50,000	95,000	95,000
Definition of commission	70,000	70,000			
Hiring consultants	70,000	70,000			
Physical Upgrading	190,000	190,000			
Building or upgrading facilities	50,000	50,000			
Purchase of furniture and equipment for work purposes	140,000	140,000			
Personnel for the secretariat	150,000		50,000	50,000	50,000
Setting up the commission	90,000			45,000	45,000

Dissemination, Procedures and Manuals	20,000			10,000	10,000
Establishing the national commission	30,000			15,000	15,000
Establishing the provincial and comarcas commissions	30,000			15,000	15,000
Establishing the district commissions	10,000			5,000	5,000

2b. Prepare a REDD Consultation and Outreach Plan

Social Communication, Public Consultation, and Training

The success of the REDD strategy will, to a large extent, depend on the gradual transformation of the environmental culture of the Panamanian population, a process that has been under way for at least 15 years. That process, in turn, hinges on the ability of the State to foster responsible, shared environmental stewardship among all stakeholders. Key players in that endeavor will be the Inter-Agency Environmental System, local governments, private enterprise, project promoters, environmental NGOs, academic and scientific circles, and, above all, the grassroots of the social fabric being forged in Panama in the form of community-based organization aimed at achieving access to environmental business or investment development opportunities in the form of small and micro enterprises or cooperatives.

The basis for a genuine transformation of the environmental culture lies, indeed, in the possibility of learning from sustainable use of resources and ecosystems, introducing new knowledge and reinforcing environmentally sustainable know-how, while disseminating and applying technology to take pressure off ecosystems and improve living conditions without increasing dependence on the State. Many of the organizations that now call themselves micro or small enterprises began as environmental volunteers because they possessed the awareness and will to work to conserve, recover or protect their natural resources. Today they have learned that through organization they increase their capacity to generate greater economic and social wellbeing and gradually transform their lives and their environmental culture and, at the same time, conserve the ecosystems they defend.

Today it is a fact that Panama has a network of organizations benefiting from ANAM training and advice. Those organizations have attained or are in the process of obtaining the legal status they need to operate and obtain direct benefits from the recovery and restoration of their basins, reforestation of degraded areas, and the protection and development of mangrove forests using nontraditional practices, including the establishment of animal breeding farms, orchid farms, and a whole range of environmental services.

Proposed Model

The success of a REDD strategy depends on its ability to become part of the National Environment Strategy through shared environmental management and to acquire legitimacy through concerted action between all the sectors involved. ANAM has a Department for the Promotion of Environmental Culture, which has a cross-cutting influence on the institution’s other Departments and/or programs, in order to impact on the key topics dealt with by the organization and those to be covered in the NES, including:

- Basin recovery in the country's five hydrological regions.
- Public preparedness to deal with climate change by means of prevention, mitigation and adaptation measures,
- Promotion of the adoption of an environmental culture of sustainability in all senses of the term, ranging from energy conservation to forest, water and biodiversity management.

The Department for the Promotion of Environmental Culture provides the REDD strategy with a work model that involves: research in the service of development (R & D) and extension through the Center for Sustainable Environmental Development (CEDESAM) located in the province of Coclé; service, training and development of space for citizen participation, through the Department of the same name; study of special development projects, such as the mangrove project, and production of supporting audiovisual material of an educational nature, and development of formal and non-formal environmental education programs through the relevant Department, which coordinates implementation of the national strategy devoted to this issue. (See attached organizational chart and maps showing coverage of schools in Panama).

Communications, consultations and workshops: proposed general model

The development of a model supporting the REDD strategy in Panama focuses on the formulation of terms of reference for the organization of a *communication campaign, consultations and training workshops* starting from a base line indicating the vision shared by the various stakeholders - ranging from civil servants to entrepreneurs and project developers, beneficiary communities and groups, scientists and academics, and environmental NGOs - of the uses made of forests and their derivatives and of the needs which they meet. This base line should be the starting-point for a transformation of these environmental habits, attitudes and practices in public production and consumptions patterns which exert pressure on forests.

The model proposed for the country preparation phase has three components:

- Communication campaign, which will be developed from the moment Panama is selected as a pilot country for the preparation and implementation of REDD. It will also employ an international campaign to highlight an early period when the public policies and national strategies made it possible for Panama to be selected for REDD. There will also be a national and local campaign which will underscore the training and the progress made in the country.
- Public consultation, which will determine at regular intervals a country baseline responding to the monitoring and evaluation of the impact of the actions taken and the training of the different and ethnic groups in Panama.

Training through workshops, which will introduce knowledge and best practices to influence the crucial cultural transformation of the age groups and ethnic groups, and the social sectors of the country.

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A. Communication Campaign: Panama, REDD country

Once Panama was accepted as one of the pilot countries in the world to apply a REDD strategy, it became necessary to develop a communication campaign, at least on two levels:

- At the international level, pointing out the qualities of our country and the progress it has made that made it an excellent choice to implement REDD. This applies from the Head of State, government authorities, civil society, enterprises, academics, and international donors, who all together implement policies and strategies that underscore the development of an environmental culture that makes sustainable use of its resources and ecosystems, and raises the quality of life of its population;
- At the national and local levels, bringing REDD to the people in the country preparation phase, focusing on the key stakeholders.

With regard to the international level, it will be shown how the country has developed environmental policies and national strategies that highlight conservation of its natural resources, preservation of its biodiversity and especially supports the population that uses them in a sustainable manner and improve their quality of life. This coincides fully with the cross-cutting themes or issues proposed by REDD, such as:

- Pointing out the areas in which the country must act pursuant to the policies and environmental management instruments which focus on the reduction of deforestation.
- Pointing out how the funds available for the production of environmental goods and services by community organizations in the form in micro- and small businesses have been used by demonstrating that they can improve their living conditions and reduce pressure on the forests and their related resources.
- Pointing out cross-cutting nature of the environmental theme in formal and non-formal education, supporting an environmentally sustainable culture.

At the local and national level, the REDD-focused National Environment Strategy, “Environmental Management for Sustainable Development”, also involves a communication campaign which will support the outcomes and tasks derived from the baseline findings from public consultations. It will be closely geared to the objectives sought and the public targeted, which will determine the right methods for conveying our message to the society in general.

The specific role of this campaign will be:

- To expand knowledge of topics related to the problem caused by deforestation, and their alternatives for solutions, and opportunities;
- To inform about REDD and how to participate in the strategy;
- To influence attitudes in order to create support for personal or collective action; and
- To reiterate or reinforce knowledge, attitudes, or behaviors.

A communication campaign is essential for the execution and effectiveness of the REDD strategy and its components. It will increase awareness among all key stakeholders, ANAM officers, public institutions, and the industrial and business sector involved in the environmental issue, and it will also increase awareness of the public and thus all those participating in the strategy.

If citizens are to participate in communicating information on environmental management, it will be necessary to develop awareness and positive habits among Panamanians to support the process of environmental management. For this reason, a communication campaign must be designed and executed to create the necessary awareness of this topic.

The objective of the communication campaign is to foster widespread focus on the topic of REDD using the mass media. Within the communication campaign specific objectives are also identified, such as:

- Alerting the public to the importance of emissions reduction, stewardship of the environment and conservation of natural resources.
- Demonstrating, through the campaign, the leading role of the National Environment Authority in conservation of natural resources and environmental quality.

It is hoped that the main result of our communication campaign will be that Panamanians will be more aware of their responsibility for stewardship of the environment and of the need to conserve it.

The communication campaign will involve the following activities:

- Development of a creative proposal - campaign theme - to be used for the various media and adapted to the various target audiences.
- Development of designs for the various media (television, radio, magazines with a

national circulation) and for mass publicity materials (videos, documentaries, posters, information leaflets, handbooks, pamphlets, stickers), promotional material (handouts, tee shirts, kits, briefcases, bags, etc) approved by representative population groups before production.

- Presentation of a production plan, including costs to be incurred for each communication instrument:
- Television spots (24 seconds)
- Radio spots (in addition to Spanish as the national language, include the dialects of the different ethnic groups in the country)
- Print media (various announcements and/or supplements in mass circulation newspapers)
- Moopies (cartoons)
- Billboards (highway or outdoors)
- Preparation of the media plan, which in addition to materials to be produced will cover participation in extensive public debate and discussion.

Who are the targeted potentially affected groups that will be involved in the consultations?

The groups identified as those which will have some kind of impact. According to the 2000 map of forest cover, Panama had 45 percent cover. In addition, almost 36 percent of the country's total area is under some type of protection (protected areas). Officially established indigenous comarcas account for 22.20 percent of the territory of Panama. However, of this percentage, only 15.7 percent have forests.

What stakeholder groups would be consulted on what components (monitoring, REDD strategy, reference scenario, etc.)

The groups selected to be consulted for each component are listed below. (See the tables giving the schedule for training under component 2 "Management of readiness")

Monitoring: ANAM, local communities, indigenous groups, national universities, STRI, McGill University, civil society, local governments, the Interagency Environmental System, non-governmental organizations (NGOs), CATHALAC.

REDD strategy: ANAM, local communities, indigenous groups, national universities, STRI, civil society, local governments, Interagency Environmental System, Ciudad del Saber, non-governmental organizations (NGOs), CATHALAC, McGill University.

Reference scenarios: ANAM, local communities, indigenous groups, universities, STRI, civil society, local governments, Interagency Environmental System, Ciudad del Saber, non-governmental organizations (NGOs), CATHALAC, World Bank, FAO, UNDP, UNEP, Coalition for Rainforest Nations.

How are attendees selected?

Attendees will be selected under TORs, for the reference scenario component. For consultations on the other components, they will be selected in accordance with national standards for public consultations laid down in Law 41 of 1998 General Environment Law.

Stakeholder analysis: What are the potentially affected interests of the stakeholders?

The potentially affected interests of the stakeholders will be determined in the various base-line scenarios.

What role would indigenous peoples and other forest dwellers play?

Like rural communities and other users of our forests, indigenous peoples would play a very important role in REDD, since they are involved in most of the components of the strategy, including carbon monitoring and their role in our National Environment Strategy. In addition, they would participate in forest protection work, sustainable management of forests belonging to indigenous communities, development of ecotourism projects and use of non-timber forest products, and in development of agroforestry and reforestation projects

ANAM Actions to support the REDD Communication Campaign

Finally, apart from hiring teams of professionals to conduct and implement the communication campaign, ANAM will have the role of overseeing its implementation, as well as directing its development and making adjustments as required. Additionally, the Department for the Promotion of Environmental Culture will take a series of actions in support of this campaign as part of recognizing the need to intervene on a large scale in the the population by introducing basic knowledge and promoting sustainable practices. The following actions will be initiated:

- Disseminating via the Internet and the mass media the opportunities REDD offers to Panama, and how to make the most of them.
- Introducing REDD in the primary school teachers annual training program and in the next edition of the Teachers' Guide to Environmental Education (Guías Didácticas de Educación Ambiental);
- Holding school competitions in the five water resource zones to elicit different local and cultural perceptions of REDD;

Designing teacher's aids and audiovisual materials directed at the different established categories of "key players," for each phase of training: a practical guide to REDD in Panama, three-page leaflets on applicable environmental businesses, posters, and other materials.

Public Consultations

In this connection, ANAM will use inputs from stakeholder sectors participating in the revision of the National Environment Strategy in order to establish a diagnosis of the state of public knowledge about topics of importance to REDD and to link it with programs being implemented by ANAM. Even so, it will be necessary to hold individual consultations with specific sectors and groups, such as local governments, NGOs, comarcal authorities, indigenous groups and communities which depend on or are located in forests or protected areas or in buffer zones of basic interest for the REDD strategy. Based on an analysis of the results of these consultations, training workshops will be held that focus on identifying the causes of deforestation and forest degradation and the way in which the REDD strategy can contribute to the social and economic well-being of the participants.

In addition to public consultation done by ANAM, the Kuna Yala Institute for Research and Development (IIDKY), representing the Traditional Authorities of Panama's Indigenous Population (AOPIP), will convene 11 meetings in the following locations: Ngöbe-Buglé, Alto Bayano Emberá, Wargandí, Kuna Yala, Congreso Nacional Wounaan, Madungandí, Comarca Emberá, Tierras Colectivas Emberá, and Wounaan, Naso-Teribe Bri-Bri, Kuna de Dakar Kuna Yala. These meetings are designed to increase the awareness and knowledge of indigenous people on the topic of REDD, create a forum for dialogue to establish coordination mechanisms and the rationale for integrating indigenous people into implementation of REDD programs and thereby facilitate their participation in the future in any system of practical gains achieved by REDD. The R-Plan is one of the matters to be reviewed at these meetings. It is therefore hoped that these meetings will facilitate the active participation of the indigenous population in public consultations that ANAM will hold. (These activities will be financed with resources that IIDKY manages directly with the World Bank).

Among the tasks common to the Public Consultations and Training Workshops is the selection of a human team comprising 20 experts in the professions, who will be in charge of implementing TORs designed for both components. (For more details, see the tasks set out below for the workshops).

Objective of Public Consultations

- To establish a base line of information between sectors and interest groups regarding the uses and conservation needs of their forests and related resources.
- To analyze and propose, based on these needs, the best mechanisms for forest recovery and compensation, as well as environmental business and investment that are most acceptable to the various cultures, in order to improve their quality of life and integration into the REDD-Panama strategy.
- To acquire a general knowledge of the living conditions and types of organization of the persons concerned.
- To identify the media that they use and their favorite programs, so that information can be transmitted by that means.
- To evaluate the effectiveness of the training and the adjustments needed for the various sectors and/or groups.

Key players for Public Consultations

- ANAM's own staff (local, regional, national)
- Interagency Environmental System
- National Committee on Climate Change
- Local governments and Environmental Advisory Commissions
- Private enterprise and project developers
- Environmental NGOs
- Academia (universities)
- Scientists
- The social fabric: environmental volunteers, education networks, grassroots organizations, micro and small community enterprises providing environmental investments and services
- Interested groups and key cultural communities, in the sites being monitored and the protected areas.

ANAM has made progress in identifying topics or directions which are cross-cutting in REDD, such as climate change and its impact and opportunities for our population, development policies and energy conservation, and new types of clean production. In this connection, it has created common spaces such as the Sustainability Forum, workshops and discussion groups throughout the country. However, the REDD strategy still needs to be effectively inserted in the NES, by means of initiatives in the area of environmental culture such as:

- Identifying the areas of action of ANAM relating to environmental management policies and instruments geared to the reduction of deforestation.
- Supporting the environmental investment and business programs being implemented by grassroots organizations which affect micro and small enterprises, demonstrating that they can improve living conditions and reduce pressure on forests and related resources.
- Preparing the analysis according to the sectors concerned - public, private, NGOs, academia,

scientists and others - for their incorporation in the REDD strategy, clearly identifying barriers, difficulties and interest in achieving the desired results, reducing levels of poverty and extreme poverty and opening up new opportunities for the creation of new sustainable development models.

- Helping to ensure that the environment is a cross-cutting issue in formal and non-formal education, as part of this REDD strategy.
- Improving and documenting consultation arrangements on the REDD model, for use in other regions and/or countries on the basis of lessons learned in Panama. Documenting successful and unsuccessful methodologies and creating an open process through a Web page. This will establish synergy between the three components: communication campaign, consultation, and training workshops.

C. Training Plan. Environmental Education Workshop aimed at Citizen Participation

Objective:

The objective of the training plan in our REDD strategy is to promote a new environmental culture based on sustainability of human development, with special emphasis on integration of the REDD strategy, which is helping to decrease the pressure on forests and their resources and to create new alternatives for the economic and social well-being of the population.

This is a participatory program, based on the principles of the National Environment Strategy: environmental management for sustainable development, designed to promote shared environmental management, in which each of the social actors plays a motivating or executing role, depending on capacities and resources. The main focus will be on the provision of opportunities to organized grassroots groups, so that they can develop community investments and environmental business allowing them to coexist with the forest/ecosystem, engaging in productive/daily activities compatible with the potential of the natural resources surrounding them.

The Proposed Training for Action

The proposal includes a very large-scale training program targeting population groups, sectors of interest or stakeholders sharing the same vision of their role in the NEA, based on the country's five hydrological regions.

Tasks

- To define the terms of reference to be followed.
- To select a team of 20 facilitators to simultaneously train key stakeholders in each of the five hydrological regions. Each hydrological region will have a three-person team for the planning and execution of its training workshops and monitoring of the learning process, and a five-person team will provide nation-wide supervision and coordinate with ANAM the planning, execution, and monitoring of activities.
- To have the team of facilitators trained by experts connected with ANAM's Environmental Monitoring Unit and other international experts, at the Center for Sustainable Environmental Development (CEDESAM).
- To define the role of CEDESAM in the REDD strategy.
- To determine periodicity and topics by modules.

The training plan will have at least four phases, which it is planned to entrust to those identified as key REDD stakeholders.

First phase: ANAM

- Training of all ANAM staff (2,300 as at November 2008), depending on their operational level, education, and field experience. There is an introduction to the topic of REDD and a description of how it is linked to all relevant ANAM programs: basin restoration, ecosystems, climate change, the Strategic Climate Fund and other REDD-related programs.
- Follow-up and monitoring of the level of knowledge acquired about REDD. At the conclusion of each workshop, an evaluation form will be completed to ascertain the extent to which the information has been assimilated and to make adjustments and/or improvements in the teaching methodology used in the workshops.

Second phase: the Interagency Environment System

- Basic training for the Interagency Environment System and the local Government Environment Units (governors, mayors, representatives).
- Provincial, district, traditional and comarcal Environmental Advisory Commissions.

Third phase: economic groups and opinion makers

- Cleaner Production (CP) firms and firms with social, business and environmental accountability; firms interested in adopting Clean Development Mechanisms (CDMs); firms involved in the Global Compact.
- Developers of projects of interest in each hydrological region, which are required to engage in impact mitigation in areas covered by REDD.
- Ecclesiastical and related groups.
- Major media in each region and those shown during the consultations to be the ones most listened to or the most important.

Fourth phase: the “social fabric” or organized social networks supporting environmental management in Panama.

- Environmental volunteers
- Networks of environmental educators
- Grassroots organizations
- Conservation groups (NGOs)

Micro and small firms or cooperatives engaged in environmental business and investment.

TRAINING SCHEDULE

FROM 2009 TO 2012

Western Block	Staff Phase I				IES/Local Government Phase II				Organized Populations and Social Networks Phase III-IV			
	09	10	11	12	09	10	11	12	09	10	11	12
Bocas del Toro	x	x				x	x			x	x	x
Chiriquí	x	x				x	x			x	x	x
C. Ngobe	x	x				x	x			x	x	x
Monit.	x	x	x	x		x	x	x		x	x	x
Eval.	x	x	x	x		x	x	x		x	x	x

Central Block	Staff Phase I				IES/Local Government Phase II				Organized Populations and Social Networks Phase III-IV			
YEAR	09	10	11	12	09	10	11	12	09	10	11	12
Veraguas,	x	x				x	x			x	x	x
Herrera,	x	x				x	x			x	x	x
Los Santos	x	x				x	x			x	x	x
Coclé	x	x				x	x			x	x	x
Monitoring	x	x	x	x		x	x	x		x	x	x
Evaluation	x	x	x	x		x	x	x		x	x	x

Metro Block	Staff Phase I				IES/Local Government Phase II				Organized Populations and Social Networks Phase III-IV			
YEAR	09	10	11	12	09	10	11	12	09	10	11	12
Panama Metro,	x	x				x	x			x	x	x
Panama East	x	x				x	x			x	x	x
Panamá Oeste	x	x				x	x			x	x	x
ANAM Central	x	x				x	x			x	x	x
Monitoring	x	x	x	x		x	x	x		x	x	x
Evaluation	x	x	x	x		x	x	x		x	x	x

Eastern Block	Staff Phase I				IES/Local Government Phase II				Organized Populations and Social Networks Phase III-IV			
YEAR	09	10	11	12	09	10	11	12	09	10	11	12
Colón,	x	x				x	x			x	x	x
Darién,	x	x				x	x			x	x	x
Comarca Kuna Yala,	x	x			x	x	x		x	x	x	x
Comarca Madugandi	x	x			x	x	x		x	x	x	x
Comarca Embera Wounam	x	x			x	x	x		x	x	x	x
Monitoring	x	x	x	x	x	x	x	x	x	x	x	x
Evaluation	x	x	x	x	x	x	x	x	x	x	x	x

2009 Phase I: In the first quarter of the year, 17 people will be selected to form the training team, according to an agreed profile. The team will submit to staff and traditional governments the training plan to be implemented in the four blocks

Block 1 Eastern	Staff. IES/Local Government, Organized Populations and Social Networks			
2009	I	II	III	IV
Bocas del Toro		x	x	x

Chiriquí		x	x	x
Comarca Ngobe		x	x	x
Monitoring		x	x	x
Evaluation	x	x	x	x

Block 2 Central	Staff. IES/Local Government, Organized Populations and Social Networks			
2009	I	II	III	IV
Veraguas,		x	x	x
Herrera,		x	x	x
Los Santos		x	x	x
Coclé		x		
Monitoring		x	x	x
Evaluation	x	x	x	x

Block 3 Metro	Staff. IES/Local Government, Organized Populations and Social Networks			
2009	I	II	III	IV
Panama Metro,		x	x	x
Panama East		x	x	x
Panama West		x	x	x
ANAM Central		x	x	x
Monitoring		x	x	x
Evaluation	x	x	x	x

Block 4 Eastern	Staff. IES/Local Government, Organized Populations and Social Networks			
2009	I	II	III	IV
Colón,		x	x	x
Darién,		x	x	x
Comarca Kuna Yala,		x	x	x
Comarca Madugandi		x	x	x
Comarca Embera Wounam		x	x	x
Monitoring		x	x	x
Evaluation	x	x	x	x

The mechanisms for participation currently available to civil society to oversee environmental management, including REDD, include the ANAM Web site, citizens' complaint procedures, accountability procedures, environmental volunteers, basin committees, environmental advisory commissions and the participation mechanisms which organized civil society provides through the mass media and as pressure groups.

After the fourth phase of training, each team of facilitators in the five hydrological regions will prepare an evaluation of the knowledge acquired and its usefulness, through consultations specified in the TORs, and for the next cycle will use new information, uses, scenarios and proposed activities.

Each new round of training will take into consideration the results obtained for each of the REDD components, so that feedback can be given to key stakeholders on the results for the six basic components: institutional relations; management of REDD scenarios; environmental monitoring

(forests, carbon stock, biodiversity); regulation and control; environmental investments and investments resulting from the separate environmental culture component. The necessary adjustments can then be made to reflect the results for each hydrological region or ethnic group of major interest, such as populations linked with indigenous comarcas and other economic or religious groups that carry significant weight in the consultation process.

The post 2012 phase

Once the seven REDD components have been put into operation ways to execute them include:

- Establishing a program to strengthen the ability to access REDD of communities, groups, and potentially interested parties ready to initiate projects;
- Providing clear information on the financial mechanisms adopted by the country and on ways to access them;
- Eliciting the interest of international cooperation agencies and identifying seed funds for REDD projects;
- Strengthening the ability of society to monitor, audit and evaluate the development of the REDD Strategy and compliance with objectives; and
- Publishing outcomes and the methodologies applied in the case of Panama and sharing information and experiences with other pilot countries in order to enrich Panama's understanding of REDD.

Other forms of complementing REDD with the cultural environment model

In addition to the part to be played by facilitators in conducting national surveys and training workshops for citizen participation, the Directorate for the Promotion of an Environmental Culture will support REDD by means of the cross-cutting working model it uses to address all key topics and programs for shared environmental management in Panama. The means at its disposal for this purpose are:

- CEDESAM: a research and development center serving the country with its team of professionals qualified to train small farmer and indigenous community groups in matters relating to agroforestry, sustainable use of the mangrove swamp ecosystem, management of watersheds, and so on.
- Environmental education, introducing in the environmental educators network training and support for school activities that bring the local educational community together on the subject of REDD, using the Teacher's Guide to Environmental Education and the GLOBE, Ecological Blue Flag, Connect to Knowledge and other programs in which research is carried out and knowledge applied via the Internet.
- Citizen participation to foster community environmental investments.
- Massive awareness campaigns in all the mass media.
- Dissemination targeting interest groups and sectors through the media and programs with the largest audiences.
- Teaching aids: posters, three-page leaflets, manuals, calendars, and other materials focusing on REDD.

Synergies between community investments, agencies and enterprises to strengthen REDD

- Regional meetings on sustainability. These encounters linking the country's water zones bring the social organizations conducting environmentally sustainable, ANAM-certified businesses or investments into contact with firms with social and/or environmental accountability, and channel funds to strengthen such micro enterprises or cooperatives. By November 2008, two

meetings had taken place, with incipient but important outcomes. REDD can and must use this forum to gain a foothold and attain its goals;

- Strengthen citizen participation mechanisms with entities developing environment projects and services based on mitigation or compensation in REDD, based on the experience with cases such as AES Changuinola, ODEBRECHT, Supermercados Rey, COPA Airlines and the widening of the Panama Canal, and others; and
- Sustainability Forums, in which information of a scientific nature, of research results, and recent discoveries are given to the target population.

Budget

ACTIVITIES	Total	2009
Total	2,500,000	
Implement the training plan. 2009 (PHASE I)	820,000	820,000
<i>Consultations and Workshops: general model proposed. *</i>		100,000
<i>Establish a <u>baseline</u> of information between sectors and interest groups in the country, with regard to the use of, and the need to conserve, the forests and their associated resources.*</i>		50,000
<i>Environmental Education Workshop geared to Citizen Participation.*</i>		350,000
<i>Hire a team of 17 facilitators.*</i>		70,000
<i>Train a team of facilitators by experts associated with ANAM's Environmental Monitoring Unit.*</i>		20,000
<i>Define the Training Plan, schedule, role of CEDESAM, and topics by module. *</i>		50,000
<i>Anam's officers*</i>		50,000
<i>Inter-institutional Environmental System (SIA).*</i>		60,000
<i>The "social fabric" or organization of social networks supporting environmental management of the country</i>		70,000
Communication Plan for the REDD Strategy 2009-2010	400,000	
Implement the training plan. 2010-2012 (PHASE II, III, IV)	680,000	
Communication Plan for the REDD Strategy 2011-2012	400,000	

	Strengthen the role of CEDESAM	200,000		
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Component 3. Design the REDD strategy

Development Objective

Incentives for increasing assistance and revenue for rural communities through environmental businesses thus promoting adaptation to change, forest and biodiversity conservation, which contribute to mitigation efforts.

National Environment Objective

To establish a link between adaptation and mitigation activities that help to improve the quality of the environment, to prevent deforestation (REDD) and to promote true sustainable development. In other words shared environmental management based on watershed management to restore forest cover and reduce the deforestation rate in strategic alliance with communities.

Global environment objective

Conservation of internationally important biological diversity, protection of mountain and coastal forest ecosystems (REDD) and mitigation of climate change.

Specific objectives

- Capacity-building for implementation of specific activities under the REDD strategy.
- Development of a system of intensive monitoring of forest cover allowing calculation of carbon stock and the degree of modification of the country's forests.
- A process of supervision, control and oversight to guarantee implementation of the REDD strategy.
- Creation of a training program for participation in environmental management and green business to promote the REDD strategy.
- Design of a financing mechanism to promote fair, equitable and transparent distribution of revenue generated by the provision of environmental goods and services, with direct benefits for communities.
- Proposal of adaptation measures to guarantee the availability of natural resources for future generations, through production of environmental goods and services that promote positive changes in soil [Patricia: land] use.

Although the REDD is a mitigation strategy, it will help support the processes by which human being change. To that end, the strategy will foster an environmental culture of sustainability based on production patterns that encourage both the “unlearning” of bad practices and the “re-learning” enable us to tackle the effects of climate change. That culture will, moreover, enable us to recover appropriate insights afforded by traditional and modern knowledge, through training, technical advice innovation of environment-friendly technology.

The REDD strategy will be implemented through environmental management geared to economic growth with livelihood benefits, social participation and the conservation of our natural resources, so as to support the establishment of a low-carbon economy and contribute to global mitigation of greenhouse gases, as well as the implementation, at the local level, of measures for adapting to climate change. In this way, the REDD strategy will coordinate core elements of environmental management in Panama, developing natural capital through the development of social capital.

For that purpose, REDD provides an innovative financing mechanism, which will enable the country to have the resources it needs for social investment that is not taxation-based but, rather, achieved through the social participation mechanisms needed for the transfer and effective distribution of resources and relevant information to the community organizations and enterprises directly responsible for maintaining environmental conditions. Thus, Panama has chosen to create collective benefit distribution mechanisms reaching broad segments of society.

The minority sectors that already have land and financial means are also brought into the process through the provision of training in how to adopt sustainable production methods that will bring

them added benefits through sustainable management of their land and how to adapt to climate change. This will facilitate greater participation in the collective establishment of forest reserves, greater capacity to retain CO₂, and the development of an environmental culture that encourages both sustainability and the country's regional competitiveness.

ANAM has attached a high degree of priority to the establishment of protected areas as a conservation initiative for sustainable development. In addition, there are a number of programs and projects to strengthen SINAP, such as the consolidation of the Mesoamerican Biological Corridor on Panama's Atlantic coast, aimed at taking pressure off the priority protected areas and their buffer zones through actions to develop local capacities and local participation in the management of those areas. The National Land Titling Program is also a key factor in efforts to strengthen SINAP, because it allows for legalization of land in protected areas in order to guarantee exploitation of their productive potential, thereby boosting the REDD strategy and its buffer zones, which contain the bulk of the country's vegetation cover.

Zones that require urgent restoration and are most vulnerable to degradation, while still possessing a wealth of natural potential threatened by inappropriate practices, constitute a major problem for sustainable development. These zones should be at the center of the policies and actions outlined in the National Environment Strategy, based on Environmental Land Management according to watersheds, which makes it possible to identify the potential, limitations, and problems associated with the terrain and, with them in mind, to arrange for appropriate use of physical spaces and prevent and mitigate disasters.

The REDD Strategy complies with the objectives of the three Rio Conventions: Conservation of Biodiversity, Climate Change, and Actions to Combat Desertification and Drought. Achieving those objectives requires actions geared to conservation of biodiversity through interconnection of biological corridors as well as the implementation of sustainable land management practices designed to stop soil degradation and mitigate climate change.

As regards the Biological Diversity Convention of 1992, the REDD strategy would ensure connection between the biological corridors being worked on nationwide by producing environmental goods and services in ways that at the same time make it possible to attend to the zones hardest hit by soil degradation. This can best be visualized by looking at the map showing the Atlantic Mesoamerican Biological Corridor areas, the zones being worked on the Pacific side, and the degraded areas that the REDD strategy could recover as a connecting bridge.

The National Plan of Action to Combat Drought and Desertification envisages actions and objectives that coincide with the REDD strategy with respect to stemming environmental degradation in order to preserve the current healthy forest cover. That plan has so far been executed using national funds, by executing the Ecosystems Recovery Project in the most degraded areas of the country, which requires the application of best sustainable land management practices in pilot agroforestry plots; the restoration of gallery forests; and sustainable practices for cultivating timber- and fruit-yielding forest species. The plots were established in farms owned by low-income farmers, who were given a variety of options for raising their income by recovering and conserving their natural resources.

The United Nations Framework Convention on Climate Change set important targets for mitigation and adaptation. In connection with them, Panama is currently preparing its Second National Communication, which includes an update of the National Inventory of Greenhouse Gases (INGEI). The first version of that Inventory revealed that 60% of Panama's greenhouse gas emissions occur in the Change of Soil Use and Forestry sector, within which the forestry sector is analyzed according to soil use. Preliminary INGEI-II figures for 2005 show an increase in emissions in this sector, which is still the largest source of them. The REDD strategy will make it possible to counter this trend by applying the working programs of the integrated water basin management model in order to comply with environmental regulations.

So far, the methodology used to compile the INGEI is that outlined in the 2003 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories, which provides guidelines for identifying types of land use to detect changes over time by category of land

(agricultural, wetlands, forest, pastureland, settlements, and other lands) and subcategories. However, the information generated for identifying land use does not include periodical updates nor does it provide the carbon stock calculations that help measure national emissions,

The activities of the CMNUCC include analysis of sectors vulnerable to global warming with a view to designing adaptation measures to be included in a National Climate Change Strategy. That Strategy aims to direct the country's development toward a low-carbon economy by promoting adaptation measures in key sectors for sustainable development, in such a way as to have REDD actions regarded as useful for both mitigation and adaptation.

With respect to the Millennium Development Goals, Panama has been working on a reduction in the levels of both poverty and extreme poverty. To achieve that, it has carried out activities in a number of critical areas, which have reduced poverty by 8%. The REDD strategy would contribute to this goal, even though poverty is not in itself the main reason for the degradation of national soils. In effect, the coordination arrangements of the REDD entail the equitable distribution of funds to address the issue of reducing deforestation nationwide through implementation of environmental businesses and investments, including businesses and investments by rural communities demonstrating that they have the capacity to conduct them. The same is true of the Promote Panama Program (*Programa Impulsa Panamá*), which provides funding for the development of community businesses, as do other programs in which ANAM participates, such as PRODEC, the Critical Basins Management Program, the Darién Fund, the Chagres Fund, the Ecological Trust Fund of Panama (FIDECO) and the Small Grants Program.

Experience has shown that promoting environmental businesses and investments at the community level can lead to the establishment and consolidation of financially viable environmental enterprises in rural areas, if they make sustainable use of natural resources and pursue conservation activities. Thus, environmental businesses and investments constitute an alternative to conventional slash and burn practices, while enabling forest ecosystems to maintain the supply of environmental goods and services needed for the well-being of the communities. This approach thus reinforces the thrust of Panama's Integrated Water Basin Management Model by helping to achieve the goal of reducing the rate of deforestation and designing and implementing a system for monitoring, overseeing, controlling and verifying flora and fauna.

Description of the REDD Strategy

ANAM has developed an environmental management model based on the Integrated Management of Water Basins (GICH), with two clear aims: to consolidate the arrangements for conservation on the Caribbean side and to curb environmental degradation on the Pacific side. Within that framework, the principal challenges for national environmental policy and strategy are addressed from a planning, management, monitoring and evaluation perspective, in which the basic unit of analysis - both inside and outside the protected areas --is the watershed. This model is based on coordination of environmental, institutional, economic and social factors through the implementation of 24 programs working in concert to improve the country's environmental conditions. These programs are:

- | | | |
|--|---|----------------------------------|
| 1. Environmental Businesses and Community Investment | 9. Decentralization and Deconcentration of Environmental Management | 17. Land Management |
| 2. Environmental Monitoring | 10. International Management | 18. Administration and Finance |
| 3. Supervision, Control and Verification | 11. Institution-Building | 19. Construction and Maintenance |

4. Environmental Culture and Citizen Participation	12. Science and Technology	20. Environmental Information
5. Cleaner Production	13. Outreach - (<i>Comunicación Social.</i>)	21. Environmental Risk Management
6. Biological Corridors / Forest Connectivity	14. Environmental Justice	22. Environmental Quality
7. Restoration of Ecosystems	15. Human Resource Development	23. Public Use of Areas
8. Environmental Planning	16. Land Management	24. Climate Change and Desertification

The operational strategies from which these programs derive are the REDD strategy, the Forest Connectivity and Biological Corridors Strategy, the Climate Change Strategy, the National Plan of Forest Development, the Comprehensive Management of Water Resources Plan, the Strategic SINAP Plan, the Restoration of Degraded Lands Strategy and the Production of Environmental Goods and Services Strategy.

The GICH model proposes integral solutions for the principal environmental problems and risks affecting watersheds (See Annexes). Actions in that model will focus on the following priorities:

- Participatory diagnostic assessment of principal watershed-related problems and solutions, aimed at achieving consensus-based environmental land management;
- Organization and training of selected community groups;
- Strengthening of the social fabric in watersheds in order to implement new forms of production and consumption;
- Prevention and mitigation of environmental risks;
- Restoration and conservation of watersheds;
- Prevention and mitigation of environmental pollution;
- Reduction of soil degradation and protection of forest cover;
- Development of environment-friendly production systems; and
- Fostering of a local economy through community-based environmental investments and businesses.

The GICH model includes a monitoring and evaluation program for measuring the impacts and outcomes of environmental interventions by means of a comprehensive control panel systematizing the information on 115 performance indicators, which may be interrelated to the country's environmental statistics and indicators. The system can also map out and transmit the results by subject matter, via the ANAM website. Users can generate their own analyses using the country's interactive maps production tool. The model also generates its own feedback each year from updates of the analyses of each of the country's 52 watersheds conducted in Panama's 13 administrative regions. The new model is available at the start of each year in order to evaluate the previous year's work programs.

To structure the work of the REDD Plan seven linked components were organized in order to combine the ANAM work programs. They are arranged in accordance with the country's preparation process

and the work dynamic which continues to be successful and to achieve results because of the support of international cooperation. The following table, therefore, sets out the stages proposed under the R-PLAN format as well as ANAM's underlying work ethic.

<i>Panama REDD Strategy</i>	<i>R-PLAN Component</i>
Institutional Interconnection of the REDD Platform	Component 2 ^a / Preparation
Communication, Public Consultation and Training	Component 2b / Preparation
Carbon Sale, REDD Fund, Distribution Mechanism	Component 3 / Design
Supervision, Control and Oversight	Component 4 / Implementation
Production of Environmental Goods and Services	Component 4 / Implementation
Socio-economic Monitoring and Evaluation	Component 5 / Evaluation
Budget (strategic partners)	Component 6 / Evaluation
Construction of the Baseline and REDD Scenarios	Component 7 / Reference Scenario
Environmental, Satellite, Forest Lands, Biological, and CO ₂ Measurement Monitoring	Component 8 / Monitor, Report, and Validate

Administrative Structure

This project will be assigned to ANAM's Directorate of Protected Areas and Wildlife. However, a small executing unit will be hired to take direct charge of preparatory activities. This executing unit will use the administrative unit of the Rural Productivity/CBMAP2 project, since it has been certified by the World Bank as meeting its financial and administrative resource management standards. While each of the national or external partners supporting the strategy will manage the resources it contributes to the strategy independently, ANAM will be responsible for coordinating technical activities.

Cost-Benefit Analysis of Implementation of REDD (ToR's)

The general objective is to study the economic viability of implementing the REDD mechanism in Panama by means of a cost-benefit analysis in order to be informed on the process of adopting the REDD strategy.

Specific Objectives:

1. To outline the main causes of deforestation in Panama;
2. To establish a list of policies, programs, and projects that can potentially tackle these causes, and in fact, effectively reduce deforestation;
3. Calculate the costs (including the opportunity costs, implementation and transaction costs) associated with each of those programs, policies and projects;
4. To select the relevant accounting perspective (country, government, group) to calculate the abovementioned costs;

5. To determine the extent to which benefits may and must be included in the calculation of the opportunity cost;
6. To identify the most promising economic offer (from the policies programs, and / or projects) based on the analysis proposed;
7. To take carbon payment into account, that is, the potential value of the reduction of emissions from the deforestation reduction achieved by Panama that could be paid for from different sources, including capital funding and the markets, and quantify the monetary benefits on this basis;
8. To calculate the net present value, internal rate of return, and cost / benefit of the policies, programs, and/or most promising projects (with and without carbon payments); and.
9. To present the findings of the analysis in a useful way for those charged with formulating policies and other relevant stakeholders.

Evaluation of forest CO₂ prices

The opportunity cost of forest-friendly lands is the minimum amount that must be paid to maintain forest cover on them, regardless of the financing mechanism or source used to achieve that. That is also the opportunity cost on which economic analysis of REDD is based. To convert costs expressed in terms of units of currency per surface area (US\$/ha) into something that is relevant for emissions reduction purposes, the opportunity cost per hectare has to be divided by tons of forest carbon per hectare. That would yield an amount in money per ton of carbon (US\$/tC).

The findings of the opportunity cost analysis submitted by the PSA consulting firm to the Panama Canal Authority point to an opportunity cost of between US\$40 and US\$70 per hectare. If we take US\$60 as the average cost per ha and take an average carbon stock of XXX tC/ha and assume XXX years of foregone economic activity as a result of protecting the forests (applying the methodology described in the foregoing paragraph), the average opportunity cost per tCO₂e works out at approximately US\$0.12 per year and US\$XXX per tCO₂e. This calculation was made for the aerial biomass (trunk, branches and leaves).

For comprehensive implementation of the REDD mechanism, the implementation cost (including the opportunity cost) is estimated as approximately US\$350-500 per hectare, whereby the idea behind the estimate is alleviation of the poverty of the communities in which the different environmental investments are made. It must also be pointed out that, in addition to those implementation costs, there will be other costs associated with the various monitoring activities required for measuring the cost per ton of tCO₂e.

A technical proposal for establishing the carbon prices derived from the REDD mechanism should indicate that final carbon prices will depend on market supply and demand and should not therefore be fixed. However, that does not preclude establishing a minimum price for carbon under the REDD mechanism that is equal or proportional to the opportunity and implementation costs of that mechanism.

Although the inalterable structures of the mechanisms for marketing emission reductions envisage a price calculation based on an opportunity cost of a change from the use of forest-friendly land to other uses, in Panama it transpires that, in order to have an effective impact in the reduction of deforestation, we have to heed the social and economic status of our principal allies and partners in applying emission reduction mechanisms. Practice has taught us that programs to support communities cease to be effective when a program stops lending technical and financial support, due to the fact that past programs did not bring about lasting cultural change in the population.

Thus, historical experience shows that the real costs of inducing incremental and permanent change are much higher than the estimates. At the same time, there is an important qualitative dimension to the assessment of those costs. The policy of conservation for sustainable development maintains, indeed, that to generate a different environment it is necessary to establish a different society. The NES, and REDD as part of it, should be seen in that light: as intended to reduce deforestation and avoid degradation by overcoming the social and cultural conditions that held trigger them. That will only be sustainable to the extent that it translates into a substantive improvement in the way that

the communities residing in areas prone to these problems live, produce and control their environment. Keeping that in mind, there has to be an exhaustive analysis of what would be the minimum cost of carbon enabling us to meet our proposed targets.

Ownership of carbon.

According to the General Environment Law of the Republic of Panama, natural resources pertain to the public domain and are of public benefit, without prejudice to the legitimately acquired rights of individuals. Therefore, carbon is owned by the State, provided that it is related to the air, as a natural resource within the public domain, or to State Forests.

Title VII (on comarcas and indigenous peoples) of the above-mentioned Law No. 41 of 1998 establishes that the State will respect, preserve and maintain the knowledge, innovations and practices of the indigenous and local communities which involve traditional ways of life related to the conservation and sustainable use of biological diversity, promoting their widest application, with the participation of the communities, and will promote equitable sharing with them of the resulting benefits.

Any natural resource exploration, exploitation and development studies authorized on land occupied by comarcas or indigenous peoples should not cause harm to their cultural, social and economic integrity or spiritual values, according to the same law.

Article 103 of Law 41 of 1998 stipulates that for activities, works or projects carried out within the territory of indigenous communities, consultations will focus on concluding agreements with community representatives relating to their rights and customs, as well as on the granting of benefits to compensate for the use of their resources, knowledge or land.

Article 105 of the same Law establishes that, in the case of activities involving the development of natural resources on land of comarcas or indigenous peoples, they are entitled to a share in any resulting economic benefits, if such benefits are not covered by existing laws.

The forest heritage of the State, be it all the natural forests, the land on which they are growing, and state lands with mainly forest potential, or forest plantations established by the State on land pertaining to it, are in the public domain, as stated in the General Environment Law and the Forestry law of the Republic. Applying the legal principle of *accessorium sequitur principale*, whereby the legal status of the principal is transferred to the accessory, this category extends to the composition of the state property: in this case, the carbon associated with the forest resource, be it a complex, such as a forest, or an individual tree.

Panamanian legislation recognizes carbon capture as an environmental service and clearly establishes the powers of the State with respect to the management and administration of said services, since they derive from assets pertaining to its heritage.

In addition, and to facilitate administrative tasks, the legislation places such administration and related matters within the spheres of competence, functions and responsibilities of the National Environment Authority (ANAM). Furthermore, it establishes that projects derived from carbon capture-related activities shall be shared with the indigenous peoples, be they inside or outside the comarcas governed by a special regime.

That provides the juridical platform for legal development of the REDD strategy in Panama by means of its execution by the State. In addition to regulating matters that form part of the strategy itself, the law directly establishes an entity responsible for ensuring compliance.

REDD Fund

A new REDD fund shall be created from the receipts received from REDD for the sale of emissions from deforestation in the market (REDD market). The funds shall be received in the Ministry of Economy and Finance since the property in carbon belongs to the State. The funds shall be managed through a special account at the National Environmental Authority (ANAM), which will administer a

series of distribution criteria as a function of the successful experiences of each one of the 10 environmental funds which the country has and will manage up to 2012, and which are currently calculated at some 35 million dollars.

One of the financing lines that it is hoped to maintain with the REDD is the production of environmental goods and services, which by the year 2012 will have been greatly developed over the type of environmental and/or cooperative businesses that drive the generation of environmental goods and services that put pressure on the forests.

The other financing line that it is hoped to create from the REDD Fund will be to support the management structure for natural resources and environmental management of indigenous comarcas in Panama. After studying beforehand the percentage distribution, these resources shall not be less than 30 percent of the REDD Fund for the fiscal year and monthly income statements shall be submitted. This idea is based on the Program of Decentralization and Deconcentration of Environmental Management proposed by ANAM.

Who will lead and coordinate the design and organization of the REDD-Strategy:

The National Environment Authority is responsible for designing and organizing the REDD Strategy, as part of the NES, with contributions from and participation by organized groups, local communities, indigenous peoples and local governments.

Explain the process how the REDD strategy will be developed, what elements will be analyzed and what stakeholders will be involved:

Our country's REDD Strategy, which contains some activities that are currently being carried out as part of our NES, will cover the whole of the national territory, including the comarcas and territories under a special regime. Our strategy coordinates certain essential features of environmental management in Panama, protects and develops the natural resource base by promoting social capital. Obviously, environmental issues will be evaluated, but, in our proposal, social factors are equally important. Thus, through REDD, Panama seeks to alleviate poverty and extreme poverty in the territories in which its activities will take place. To achieve its goals, the Strategy needs to forge alliances all over the country, which is why ANAM is now looking to continue bringing key players (indigenous groups, local communities, civil society organizations, community groups, environmental volunteers, and so on) into this process, so that they both participate and benefit from it.

Schedule and Sequencing of activities:

The activities are described in the other components.

Component 4: REDD Implementation Framework

Objectives and activities

A- Monitoring, Control, and Inspection

Implementation of the National Environment Strategy's REDD components will largely depend on the monitoring, control and inspection (MCI) processes that ensure that forestry resources continue to fulfill their two functions: conservation and the production of the goods and services they deliver. This activity will prioritize protection of the areas with most forest cover both within and outside protected areas, as well as restoration of areas stripped of vegetation, so that they are included in forestry activity.

This process will require tools, procedures, methodologies, and standardized protocols for appropriate enforcement of current environmental legislation. It will be necessary to formulate and execute monitoring programs that strengthen those already in place and take into account environmental management instruments, such as environmental impact assessments, environmental management plans, environmental adaptation and management programs, resolutions that have been adopted, contracts, and licenses to exploit natural resources¹⁴.

Natural resource laws complementing the General Law on the Environment define ANAM's supervisory, control and inspection function. Thus, Article 18 of the Wildlife Law establishes park rangers and forest and wild life inspectors, while the Forestry Law authorizes ANAM to perform supervisory, control and inspection functions in respect of forestry activities to ensure the rational and sustainable use of forests and grants it the authority to confiscate forest products and to impose sanctions in cases of illegal activity.

Currently, the supervision, control and inspection process focuses on specific actions such as inspections and re-inspections for forest use permits; checkpoints to oversee lumbering; verification and supervision trips; registration of forest plantations and forest industries; forest use statistics; issuance of waybills; and the mobilization of forest products for both domestic and export markets, and so on. However, ANAM has not standardized these monitoring and control activities¹⁵, many of which are responses to citizens' complaints rather than well-defined strategies. In contrast, the resolutions adopting Environmental Adaptation and Management Programs, the Environmental Management Plan, and pollution establish procedures to be followed for environmental inspections. Since 2001, there has been an increase in the number of inspections of projects with approved environmental impact assessments, particularly in the construction, tourism, mining and quarries, agroindustry and energy sectors. These activities are related to pressure on forest areas, although the principal cause of deforestation in the country has to do with the expansion of agriculture and livestock and infrastructure, hydroelectricity, mining and tourism development projects.

Although averages for restoration and recovery of ecosystems related to felling permits for these projects exceed 20,000 ha.¹⁶, no information is available regarding the total area that is to be reforested or has been reforested, and the extent of compliance. For that there would have to be improved mechanisms for integrating data on forest inventory presented by projects, data on the licenses granted based on forest inventory, and data on the area to be reforested established in the reforestation plans approved by ANAM for each project. In addition, these actions need to be directed toward restoration of degraded zones, especially those inside the SINAP and forest-friendly lands for

¹⁴ Which include forest inventories, forest management plans, afforestation and reforestation plans.

¹⁵ ANAM, 2008. Sustainable Forestry Model for the Restoration of Hydrological Watersheds and Protected Areas (*Modelo Forestal Sostenible Para la restauración de cuencas hidrográficas y áreas protegidas*), p.25

¹⁶ Figures provided by the Regional Administrations.

conservation purposes.

Another element to evaluate in the MCI process is the reduction¹⁷ of community felling and subsistence licenses, which at one time were used inappropriately, in a manner at variance with their social purpose. That was what triggered the initiative of promoting Sustainable Forest Management projects in the Embera comarca, with a forestry certification approach.

The effectiveness of these kinds of measures must be analyzed in terms of sustainable exploitation of the resource so as to avoid fostering illegal supply in response to rapidly growing domestic demand caused by the surge in economic development and infrastructure projects¹⁸. For that it is necessary to strengthen technical measures designed to promote the orderly use and management of forest resources inside and outside protected areas and to enhance the effectiveness of MCI activities by linking existing monitoring and inspection activities.

Forest fires are closely linked to forest and soil degradation. Over the past four years, there have been 2,233 registered fires, affecting 33,868.64 hectares. Prevention and control measures managed to cut the number of fires in 2008 to 239, affecting 3,180.45 hectares.

Year	Number of forest fires	Total area affected by the fires (hectares.)	Average area affected per fire (hectares)
2004	439	8,016.24	18.26
2005	355	5,999.70	16.90
2006	446	7,657.77	17.12
2007	754	9,014.48	11.95
2008	239	3,180.45	13.3

Forest fires are increasingly accompanied by environmental disasters (floods and chemical or oil and gas spills), which exacerbate forest resource losses and the degradation of the country's forest zones. ANAM's Environmental Economy Unit, for instance, estimates that "the November 2006 floods and heavy rainfall in the provinces of Panamá, Coclé and Colón wrought environmental damage and loss of ecosystemic services in the amount of US\$2,244, 242.15 in connection with forests and agricultural ecosystems." ¹⁹ Just in the "province of Coclé damage to the environment exceeds US\$1 million, while in Colón it totaled US\$170,855.63, and in Panama province US\$894,359.68." Other natural calamities, like the floods of November 22, 2008 in Chiriquí, Bocas del Toro, Veraguas and Colón, illustrate the vulnerability of the protected areas and of riverside forests and draw attention to the need to implement mechanisms for estimating the value of damage as well as restoration activities in such zones.

Environmental Impact Assessments should include risk assessment, natural resource inventories using standardized methodologies, flora and fauna rescue and relocation plans, and technically designed mitigation, restoration and compensation measures which prioritize the protection of natural resources. The effectiveness of these measures must be monitored through standardized procedures that relate compliance with measures approved in environment management instruments (EIAs, and the Environment Adaptation and Management Programs, or PAMAs) to the protection and restoration of ecosystems.

The process of implementation of rules and regulations needs to take into account, inter alia, the impact of applying them on the human, technical, material and financial resources available in the

¹⁷ A Junio de 2008 se otorgaron 4,698 permisos de aprovechamiento forestal, que representa una disminución del 67% con respecto al año 2004, donde se otorgaron 14,097 permisos, según datos del Informe de estadísticas ambientales 2004-2008, ANAM.

¹⁸ Ver anexo mapa de infraestructuras

¹⁹ ANAM – UNECA. 2006. Informe de Valoración Económica sobre los Daños Ambientales por inundaciones en las Provincias de Panamá, Coclé y Colón. (Ver Anexo)

entities competent in environmental MCI. The whole process of ongoing improvements attaches importance to the scheduling of actions; prior establishment of the processes needed for the application of mechanisms; monitoring, control and evaluation of the scheduled actions; and measurement of their effectiveness. Currently, compliance with the measures is gauged according to the administrative sanctions imposed by ANAM for failure to heed studies of the environmental impact on forests, flora and fauna, protected areas, water and soil. For instance, there was an increase in the number and amount of fines, which totaled B/. 2,014,525 between January and June 2008. However, it would be worth evaluating other ways of measuring compliance and effectiveness with respect to the prevention or control of environmental damage to natural resources.

Decentralization of environmental management in connection with environmental MCI activities and coordination and strengthening of the bodies responsible for public order, such as the provincial, district and comarca governments, are essential for protecting the environment. Such bodies have policing powers and the authority to correct breaches of law and order without having to go through the lengthy and complex proceedings typical of, say, the administrative and judicial spheres. Article 32 of the Constitution grants them the necessary powers and, even though they are bound by Administrative Law, decisions taken at this level are more expeditious than those handed down in other proceedings.

The process of decentralization of environmental management in Panama commenced when ANAM concluded agreements with comarca Kuna Yala and with the municipalities of Bocas del Toro, David, Las Tablas, San Miguelito, Arraiján and Santiago. In addition funds were earmarked for the implementation in three pilot areas: the municipalities of David in Chiriquí, Las Tablas in Los Santos, and the three districts in the province of Bocas del Toro commencing with the creation of the Municipal Environmental Unit and assessment of the municipality's capacity, in order to define the function to be transferred or the capacity to be strengthened, a key element for promoting the environmental supervisión, control, and oversight that REDD needs in order to operate.

The process of strengthening at the municipal level will require the gradual deconcentration of functions from the central level to the regional level. The strengthened regional administrations will be responsible for providing technical support to the municipalities during the process, so that both bodies can obtain ISO 14001 certification.

Another valuable facet of the environmental MCI process is citizen participation. Over the past four years, that participation has been constant, in the form of complaints regarding breaches of environmental regulations (631 had been detected as of June 2008) to the authorities and to the Office of the Attorney General (Ministerio Público). Properly channeled, such citizen participation could strengthen and significantly support the environmental MCI process conducted by Public Administration officials.

Protection and monitoring activities are complicated, difficult and costly. Without the active, committed, informed and responsible participation of the communities, the local authorities, and inter-agency coordination, they would be impossible. Therefore, developing this component will help to improve environmental MCI tools and thereby reduce pressure on the country's forest areas and diminish deforestation and forest degradation.

Monitoring, Control, and Inspection Objective

The objective of this component is to establish a framework for carrying out all the activities needed to implement our National Environment Strategy that are covered by REDD. It will establish how the success of the strategy will be ensured by strengthening our officials' oversight, monitoring, and inspection capabilities, as well the capacity of indigenous groups, local communities and civil society to establish environmental businesses.

Expected Outcome:

Implementation of this component is expected to generate the capacity at the institutional and local level needed to ensure the success of our REDD strategy. In that sense, the most important achievement of this component would be to have all those taking part in the implementation of this strategy feel that they “own” it.

Activities

- Strengthening ANAM’s agencies and park rangers through training, certification, and the provision of technical and security equipment for monitoring and environmental surveillance, and establishing protocols defining spheres of competence and oversight/control functions;
- Developing mechanisms and criteria for joint undertakings with inter-institutional bodies (customs, police authorities), through integrated programs for monitoring the extraction, transportation, and illegal exploitation of natural resources;
- Designing and implementing protection and oversight programs for the conservation of forest lands, giving priority to protected areas and zones performing production functions;
- Developing Technical Guidelines to govern the monitoring, control, and inspection (MCI) methodology associated with the Natural Resources Administration Program in the exploitation of forests and biodiversity;
- Establishing information and analysis systems that make it possible to determine the degree of compliance of regulated activities;
- Establishing procedures for the approval, verification and registration of ecological restoration and compensation measures. Those procedures should generate the approved projects with environmental impact assessments, environmental adaptation and management programs, and penalties for damage to the environment and illegal felling, and applicable norms;
- Strengthening mechanisms for following up on environmental MCI programs by measuring the quality and state of the environment, compliance rates, progress made in getting offenders to mend their ways, number of inspections, number of administrative and judicial actions, means of providing technical assistance, sanctions and penalties imposed;
- Carrying out operations both to prevent, control, respond to, monitor and evaluate environmental disasters and to restore and recover areas affected by them;
- Strengthening regional, sectoral, and territorial capacity for the MCI process through the Environmental Justice Program for environmental justice operators, NGOs, the private sector and the general public;

Promoting and implementing mechanisms and procedures for training, sensitization, dissemination and access to public information both for the regulated community and for the authority applying the regulations, while giving priority to organizing communities in participatory environmental watchdog committees.

Budget

Monitoring, Control, and Inspection.					
ACTIVITIES	Total	2009	2010	2011	2012
(1) Strengthening ANAM’s human resources, giving priority to agencies and park rangers	140,000	20,000	50,000	50,000	20,000
(2) Developing mechanisms and criteria for joint undertakings with inter-institutional bodies	40,000	10,000	30,000	-----	-----

(3) Designing and implementing protection and oversight programs for the conservation of forest lands, giving priority to protected areas and zones performing production functions	100,000	25,000	25,000	25,000	25,000
(4) Developing technical guidelines to govern the monitoring, control, and inspection (MCI) methodology associated with the Natural Resources Administration Program	60,000	-----	50,000	-----	10,000
(5) Establishing information systems that make it possible to determine the degree of compliance	30,000	10,000	20,000	-----	-----
(6) Establishing procedures for the approval, verification and registration of ecological restoration and compensation measures. for environmental management instruments	60,000	-----	30,000	20,000	10,000
(7) Strengthening mechanisms for following up on environmental MCI programs to verify their effectiveness and make any necessary adjustments	30,000	-----	10,000	10,000	10,000
(8) Carrying out operations both to prevent, control, respond to, monitor, and evaluate environmental disasters and to restore and recover areas affected by them	400,000	50,000	150,000	150,000	50,000
(9) Strengthening regional, sectoral, and territorial capacity (provincial, comarcal, and district) for the MCI process through the Environmental Justice Program;	70,000	10,000	20,000	20,000	20,000
(10) Promoting and implementing mechanisms and procedures for training, sensitization, dissemination and gaining access to public information both for the regulated community and for the authority applying the regulations	70,000	10,000	20,000	20,000	20,000
Total Cost	1,000,000	135,000	405,000	295,000	165,000

OBJETIVE:

To establish a framework for carrying out all the activities covered by REDD that are needed to implement our National Environment Strategy.

To guarantee the success of the strategy by strengthening ANAM's, the SIA's, and the local governments' officials' oversight, monitoring, and inspection capacities, as well the capacity of indigenous groups, local communities, and civil society to establish environmental businesses

Performance Indicators

- **Forest cover of the national territory increased** (Total surface of provincial or comarcal forest cover) / total surface area of the territory
- **Reforested surface area increased** (hectare) S (Reforested Surface R1 + Rn-1) STp national)100

- **Natural forest area under sustainable management increased** (Total Surface of Natural Forest sustainably managed /Total forest surface of the woodland identified for forest development)100
- **Number of persons trained in environmental stewardship increased.**

ACTIVITIES:	Result
(1) Strengthening ANAM/s human resources, giving priority to agencies and park rangers	Increase in the number of trained officers
(2) Developing mechanisms and criteria for joint undertakings with inter-instituional bodies	Number of mechanisms and criteria for joint undertakings with inter-instituional bodies.
(3) Designing and implementing protection and oversight programs for the conservation of forest lands, giving priority to protected areas and zones performing production functions	Number of protection and oversight programs designed and implemented
(4) Developing Technical Guidelines to govern the monitoring, control, and inspection (MCI) methodology associated with the Natural Resources Administration Program	Methodology standardized, developed, and implemented
(5) Establishing information systems that make it possible to determine the degree of compliance	Information systems established and implemented
(6) Establishing procedures for the approval, verification and registration of ecological restoration and compensation measures. for environmental management instruments	Procedures established and implemented
(7) Strengthening mechanisms for following up on environmental MCI programs to verify their effectiveness and make any necessary adjustments	Mechanisms for following up on environmental MCI programs implemented
(8) Carrying out operations both to prevent, control, respond to, monitor, and evaluate environmental disasters and restore and recover areas affected by them	Operations implemented
(9) Strengthening regional, sectoral, and territorial capacity (provincial, comarcal, and district) for the MCI process through the Environmental Justice Program	Increase in the number of persons strengthened in the environmental MCI process
(10) Promoting and implementing mechanisms and procedures for training, sensitization, dissemination, and gaining access to public information both for the regulated community and for the authority applying the regulations	Increase in the number of persons sensitized in environmental topics Increase in the number of persons trained in environmental management

B- Production of Environmental Goods and Services (Environmental Culture in Action)

The success of the REDD strategy will, to a large extent, depend on the gradual transformation of the environmental culture of the Panamanian population, a process that has been under way for at least 15 years. That process, in turn, hinges on the ability of the State to foster responsible, shared environmental stewardship among all stakeholders. Key players in that endeavor will be the Inter-Agency Environmental System, local governments, private enterprise, project promoters, environmental NGOs, academic and scientific circles, and, above all, the grassroots of the social fabric being forged in Panama in the form of community-based organization aimed at achieving access to environmental business or investment development opportunities in the form of small and micro enterprises or cooperatives.

The basis for a genuine transformation of the environmental culture lies, indeed, in the possibility of learning from sustainable use of resources and ecosystems.

Environmental Investments

The term “natural” or “environmental service” refers to each of the benefits that nature provides for humanity, or a local population, from an economic point of view. It was coined by Robert Costanza and his colleagues in scientific works aiming to appraise nature in a language compatible with standard economics, which shuns the word “value” unless the reference is strictly monetary or transaction-related.

Environmental services are directly dependent upon “healthy” ecosystems and the biodiversity they harbor. When ecosystems are degraded, so too are the services they provide. Nevertheless, while the income from actions that are harmful to nature are recorded in accounts, the indirect costs associated with them are systematically ignored.

The problem stems from the decision taken by academic economists to preclude any concept of value that does not derive from the preferences of economic agents, as manifested in market transactions. While costs and benefits may be more or less clear, despite the asymmetry in the information, for those who voluntarily perform a transaction the indirect costs to others, that is to say, the externalities, are systematically, and more or less deliberately, ignored.

Economic growth supported by uncontrolled productive processes contributes to progressive environmental degradation, so much so that nowadays it is commonplace to interpret environmental pollution and over-exploitation of natural resources, at least partially, as signs of unsustainable and inefficient economies that tend to diminish citizens’ quality of life, instead of enhancing it. Panama recognizes that the signals sent by the recent growth of our economy indicate that we must act immediately to guarantee sustainable generation of the inputs required to meet growing demand and support the productivity of rural communities, especially those living in and dependent upon forests.

Conventional wisdom maintains that there are two financial mechanisms for influencing the behavior of persons in such a way as to avoid deforestation:

- Increasing the value of existing forests by providing periodic financial support, for a limited time, in order to maintain forest carbon reserves; and
- Making deforestation less profitable by increasing the costs associated with it through taxes on change of land use and the marketing of timber.³⁸

Panama’s proposal is based on the premise that, for a lasting impact on deforestation, we need to invest in our principal allies in forest management: rural communities, indigenous populations, and other residents of the forests. In its strategic guidelines for 2004-2008, ANAM proposes establishing capacity for introducing new economic tools for environmental management, such as economic valuation of environmental goods, services and impacts; arrangements for paying for environmental services; pollution command and control instruments; clean development mechanisms; cleaner production; as well as the strategy for developing small and medium-sized enterprises in protected areas to identify environmental services that could be converted into micro-enterprises and cooperatives managed by vulnerable groups (small farmers and indigenous communities) living in protected areas and their buffer zones.

Payment for Environmental Services (PES) is a mechanism for economic compensation by which the beneficiaries or users of the service make a payment to the providers or custodians of the service. The environmental services involved may be very specific such as a constant flow of clean water or a predictable supply of firewood. In other cases the environmental services may be something more abstract or may have a global reach: carbon capture or scenic beauty, for example. The environmental services sector at the global level includes, among others, land and water management, protection of

³⁸ Rametsteiner, Obersteiner, Kindermann & Sohngen; *Economics of Avoiding Deforestation*.

biodiversity, reduction and prevention of impacts on ecosystems, and management of climate change.

Compensation schemes to support PES programs may vary depending on the ecological, social, and political environment of the country or region where they will be implemented. Three major types of mechanisms may be distinguished in descending order of government participation:

- a) Public payment schemes;
- b) Freelance agreements with a regulatory ceiling or floor; and
- c) Independent private agreements.

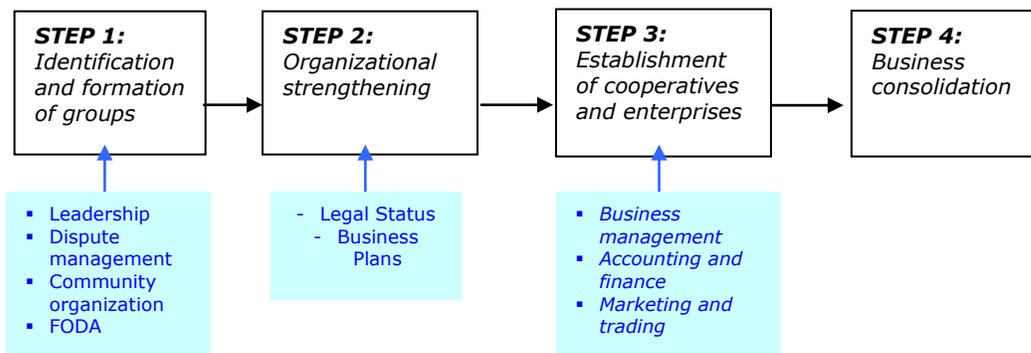
On the other hand, the development of activities for Production of Environmental Goods and Services (EGS) seeks to reduce threats and polluting content in a specific area and, at the same time develop the local capacities of community groups to improve the natural conditions and have access to economic improvements in the development of environmentally sustainable business undertakings.

- **Ecosystem Restoration Program.** This is designed for degraded areas, especially those that are important for watersheds, and to bring sustainable solutions to poor and extremely poor rural communities living in such areas. This is one of the complementary programs we use as a basis for our community-level environmental investments program.
- **Forest Management Program.** This involves various supporting mechanisms for the forest sector, with a particular focus on developing public and private forest management capabilities for productive and commercial purposes. Under this program, forest industry is supported by Law 24 of November 23, 1992: Law on Reforestation Incentives.
- **Training, Research and Dissemination Program.** This is a complementary program aimed at (local and institutional) capacity building and the dissemination of knowledge regarding sustainable forest development.

The purpose of promoting environmental investments is to offer resources to local populations so that they can play an active part in environmental stewardship, by producing environmental goods and services that simultaneously improve people’s living conditions and environmental conditions in their geographical area. This encourages the formation of social capital for the development of natural capital. It does so by: stimulating individual willingness to participate; coordinating groups or associations working in environmental activities generating livelihood benefits; and facilitating initiatives that bring about more extensive economic change in relation to a cooperative or micro-enterprise.

Based on the experience we have acquired, following are some basic steps for establishing and strengthening environmental enterprises:

Figure 1: Logical Process for Establishing Environmental Businesses



Developing these economic environmental management tools helps build the capacity of community

groups and other similar associations to make sustainable use of nature and convert it into natural capital. Building these capacities has three major dimensions - environmental, economic and social - and it focuses on incorporating new techniques and working methods, while respecting their inclusion in existing traditional and cultural productive systems.

In Panamá there are approximately seven environmental investment programs/funds engaged in working with communities in the manner outlined above. To date, using the environmental agenda, they have managed to offer economic resources, technical assistance, training and inputs to develop an annual investment portfolio of at least US\$3 million. Different organizations provide the funds for these initiatives. Some funds come from bilateral agreements with the United States government, such as the Ecological Trust Fund and the Debt-for-Nature Swaps for the Chagres and Darién parks. Others (such as those of the Small Grants Program and the Environmental Investments Fund of the Atlantic Mesoamerican Biological Corridor (CBMAP) Project) come from international organizations, in these two cases from the GEF. Governments are another source of financing, as in the case of the ten Watershed Restoration projects. Funds are also provided by international entities, such as the Andean Development Corporation, to restore and generate biomass in critical basins.

Disponibilidad de Fondos para Inversiones Ambientales 2004-2013

<i>Fuente de Financiamiento</i>	<i>Periodo</i>	<i>Total</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
Fondo de Inversiones Ambientales (CBMAP2)	6 años	8,300,000				1,000,000	1,200,000	2,100,000	2,000,000	2,000,000	-	
ACP - gobierno de USA (cuena del canal)	3 años	1,200,000				400,000	400,000	400,000				
Fideicomiso Ecológico (FIDECO)	anual	6,657,672	319,072	427,500	605,550	805,550	1,000,000	700,000	700,000	700,000	700,000	700,000
Programa de Pequeñas Donaciones PPD/GEF	anual	2,050,000				150,000	150,000	350,000	350,000	350,000	350,000	350,000
Proyecto Adaptación para la cuena de Tabasará	2 años	120,000						60,000	60,000			
Proyecto Adaptación para la cuena de Chucunaque	2 años	120,000						60,000	60,000			
Fondo Darién – Canje de Deuda	2 años	210,000			210,000							
Fondo Chagres – Canje de Deuda	2 años	182,500			182,500							
Proyectos de Gestión Integrada de Cuencas Hidrográficas	2 años	5,029,800			164,600	185,200	930,000	750,000	750,000	750,000	750,000	750,000
Fondo Finlandia/AEA	por concurso	-										
Generación de Biomasa (CAF)	6 años	10,000,000						2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Total		33,869,972	319,072	427,500	1,162,650	2,540,750	3,680,000	6,420,000	5,920,000	5,800,000	3,800,000	3,800,000

[Translation: Key to Table: Funds Available for Environmental Investments, 2004-2013

Source of Financing Period Total 2004

Environmental Investments Fund (CBMAP2)

ACP - U.S. Government (canal basin)

Ecological Trust Fund (FIDECO)

Small Grants Program (SGP/GEF)

Adaptation for the Tabasará basin project

Adaptation for the Chucunaque project

Darien Fund - Debt Swap
Chagres Fund - Debt Swap
Integrated Management of Watersheds Projects
Finland Fund/AEA (Energy and Environment]
Generation of biomass (ADC/CAF)
Total

So far, community environmental investments have generated capacity-building and access to inputs for over 10,000 people living in poverty or extreme poverty and they have led to the formation of more than 180 community groups engaged in such activities as the establishment of timber-yielding, fruit, ornamental, and medicinal plant nurseries, orchid farms and animal breeding farms, in eco-tourism services, waste management, recycling, and reutilization programs, aquaculture, apiculture, the preservation of ancestral traditions and knowledge, the conservation of sea turtles and manatees, production of organic fertilizer, and the establishment of biodigesters. Add to that their impact on the development of capabilities in the areas of deforestation and degradation, such as services for the maintenance and management of forest plantations and the sustainable exploitation of forests; agroforestry and forest pasture programs; community reforestation programs for water sources; restoration of watersheds; reforestation and recovery of gallery forests, and restoration of mangroves.

For the post-Kyoto period, it has been decided to invest the returns yielded by the strategy in the forested areas requiring most attention. That includes attending to activities designed to maintain conditions in the protected areas, which cover approximately 36 percent of the national territory and harbor a population living under the highest level of environmental protection in the country. In second place come the zones containing Panama's indigenous comarcas, which account for 22.2% of the national territory. There, more than 70% of the land is forest. Combined, these two zones cover 58% of the national territory. That might soon increase to 60% because Panama's goal is to protect 40% of the national territory.

Also worth underscoring is the fact that in this component the Terms of Reference (TORs) will be established after our country's lacunae and needs have been identified.

Synergies between community investments, agencies, and enterprises to strengthen REDD

- Regional meetings on sustainability. These encounters linking the country's water zones bring the social organizations conducting environmentally sustainable, ANAM-certified businesses or investments into contact with firms with social and/or environmental accountability, and channel funds to strengthen such micro enterprises or cooperatives. By November 2008, two meetings had taken place, with incipient but important outcomes. REDD can and must use this forum to gain a foothold and attain its goals;
- Strengthen citizen participation mechanisms with entities developing environment projects and services based on mitigation or compensation in REDD;
- Cases: AES Changuinola, ODEBRECHT, Supermercados Rey, COPA and others; and
- Sustainability Forums.

The basis for a genuine transformation of the environmental culture lies, indeed, in the possibility of learning from sustainable use of resources and ecosystems, introducing new knowledge and reinforcing environmentally sustainable know-how, while disseminating and applying technology to take pressure off ecosystems and improve living conditions without increasing dependence on the State. Many of the organizations that now call themselves micro or small enterprises began as environmental volunteers because they possessed the awareness and will to work to conserve, recover or protect their natural

resources. Today they have learned that through organization they increase their capacity to generate greater economic and social wellbeing and gradually transform their lives and their environmental culture and, at the same time, conserve the ecosystems they defend.

Today it is a fact that Panama has a network of organizations benefiting from ANAM training and advice. Those organizations have attained or are in the process of obtaining the legal status they need to operate and obtain direct benefits from the recovery and restoration of their basins, reforestation of degraded areas, and the protection and development of mangrove forests using nontraditional practices, including the establishment of animal breeding farms, orchid farms, and a whole range of environmental services.

Partnerships and organizations involved:

ANAM, Local Communities, Indigenous Groups, National Universities, the Smithsonian Tropical Research Institute (STRI), Civil Society, Local Governments, the Interagency Environment System, Knowledge City [Ciudad del Saber], Nongovernmental Organizations (NGOs), the Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC), McGill University.

Schedule and sequencing of activities:

COMPONENT / ACTIVITIES	Total	2009	2010	2011	2012
Institutional Strengthening (SIA, Municipalities)	100,000	30,000	25,000	25,000	20,000
Hiring of expert staff	50,000				
Hiring of specialized technical advisory service.	50,000				
Strengthening of environmental business groups.	300,000	100,000	100,000	50,000	50,000
Technical training, courses, seminars, workshops, materials.	150,000				
Per diem allowances, fuel, logistical support	100,000				
Hiring of specialized technical advisory services	30,000				
Developing manuals, regulations, and agreements	20,000				
Computer equipment and development of database	100,000	30,000	30,000	20,000	20,000
Purchase of equipment and materials	80,000				
Development of databases	20,000				
TOTAL	500,000	160,000	155,000	95,000	90,000

Component 5. Assess the social and environmental impacts, and potential additional benefits, of candidate REDD strategy activities

What will be assessed?

What will be assessed is whether the REDD Preparation Plan 2009-2012 achieved the socioeconomic and environmental outcomes expected, which means basically whether it brought about a substantial environmental change in the country, putting a halt to deforestation and putting all efforts into conservation of the natural resources, planning and organizing our territory starting with comprehensive environmental management of the watershed, which is shared by all participating stakeholders.

It will therefore be directed to assess if it achieved success in the six relevant aspects proposed in the Preparation Plan, described in Chapter II which refers to capacity building REDD management; intensive monitoring of forest cover restoration; the incorporation of the Panamanian population in the process of monitoring, control and inspection; training programs for participation in environmental management and green businesses to promote the REDD strategy; financing mechanisms that are fair and equitable in distribution of revenue among all the REDD-participating sectors (transparency); and in proposing measures for adapting to climate change that guarantee the availability and conservation of our natural resources for future generations, through production of environmental goods and services that produce promote positive changes in land use.

The key questions in this component corresponds to the issue of governance— whether through effective educational methods and communication media appropriate to the various stakeholders and key sectors of our country the efforts made by the REDD Preparation Plan, the New National Environment Strategy just last year, and all the legal and regulatory framework in environmental matters in the country succeeded in transforming the environmental culture starting with the best land uses, attitudes, and practices on which the conservation of resources depend. ¿Do the indigenous population living in extreme poverty, in effect, reduce deforestation and land degradation, incorporating, instead opportunities for alternative uses of watersheds and with them, the land, forests, and their biodiversity?

Benefits for the country of social, economic, and environmental assessment

Panama has some comparative advantages that make it competitive on the international level that are associated with its water and territorial biodiversity and also some environmental instruments and regulations that allow for the participation and oversight of our society in the environmental management process, such as: the environmental management of its territory (which includes local, national, and regional plans); the processes of environmental impact assessment and strategic environmental impact assessment, promoted recently by the Environmental Management Modernization Program; at least 11 environmental quality standards; environmental information made available through environmental statistics and environmental indicators; ongoing formal and non-formal environmental education programs; scientific and technological research programs in support of the National Environment Strategy; focus on, and prevention of, environmental disasters; and environmental accounting currently being organized and updated.

Panama has made great strides in the last ten years in creating and strengthening social organizations that are now capable of expressing themselves in the form of micro enterprises and cooperatives engaged in environmental business for the conservation of resources throughout its territory, although their outcomes are not sufficiently apparent to enable its members to earn a

livelihood that would allow them to have a better quality of life independently of governments. It has wide cultural diversity exemplified in afros, Asians, Europeans, and native people with five organized indigenous peoples. It has made progress in its efforts to construct mechanisms and clear forms of citizenship participation in conjunction with the local, provincial, and national authorities through environmental consultative committees and others in which their participation is decisive for the conservation and restoration of natural resources, such as the basin committees. It has promoted the cleanest production throughout its territory, and has at least 200 enterprises and a portfolio of more than one hundred MDL projects proposals in the country.

Disadvantages that may be revealed in the social, economic, and environmental evaluation.

It will be necessary to analyze the results obtained from these socio-economic, and environmental assessment processes, with regard to those disadvantages and weaknesses that we as a country have in our relationship with the REDD Strategy. These disadvantages and weaknesses refer to a relatively recent establishment of environmental institutions in the country, which dates from a mere ten years ago, an environmental culture that is just beginning based on waste rather than conservation, which believes that all resources are infinite. Relevant topics such as adaptation and mitigation of climate change are relatively new in the country, even though they have been intensively developed in the last five years. A very recent decentralization of municipal powers allowing for land use planning and opportunities for the development of conservation-based environmental businesses and services. And finally, the Center for Sustainable Environmental Development (CEDESAM) with relatively new programs for the development of I+D in support of the REDD Strategy, which will also allow it to grow with the country.

Relevant aspects to be evaluated

- One of the premises to be evaluated focuses on the fact that if Panama has environmental management based on comprehensive watershed management, it would allow the forest cover to recover, and deforestation would diminish systematically working in cooperation with the communities.
- The implementation of adaptation and mitigation measures in relation to climate change will be evaluated in order to analyze if they assist in improving the quality of the environment by preventing deforestation, promoting natural resources conservation (REDD+).
- Lessons learned.
- Whether a change in the socioeconomic use of land generates a new culture of responsibility in relation to natural resources.
- Major progress made in the habits, attitudes, and environmental practices of the different stakeholders as a result of construction of information baseline on patterns of production and consumption that may or may not put pressure on the forest.
- Whether the uses and conservation requirements for forests and related resources; as well as the mechanisms for forest recovery and compensation suggested by the different key stakeholders in the baseline of public consultation shows any improvement in people's quality of life.
- Has the training and communication media caused the groups to act? Which ones more than others, and why.
- The effectiveness of the communications campaign among the social sectors by age groups,

ethnic groups, and rural or urban groups, where applicable.

- Do they know about REDD and its importance for the country at least in the areas of the 252 parcels in which the strategy is being implemented?
- Do they know about the problems caused by deforestation and the advantages of conservation?
- Have real changes been promoted and obtained in consumption patterns, habits, attitudes, and forest conservation and forest-derived biodiversity practices?
- Have the language and communication media used been satisfactory? Analyze for immediate correction.
- Does the participation of the population by groups and interested sectors have clear channels for communicating with the authorities when they need to? (local governments, Interagency Environment System, organized communities, micro-enterprises and community cooperatives, P+L enterprises, environmental NGOs, scientific and technological organizations).
- Promote the non-timber use of the forest, employing instead conservation practices, such as agro-forestry, ecotourism, the production of environmentally-friendly goods and services, animal breeding farms, orchid farms, and other forest, water and biodiversity conservation measures.
- Evaluate the means used in disseminating information (Ex.: ANAM website, printed material, radio, television, others) and their effectiveness.
- Effectiveness of the actions and programs undertaken by ANAM and SIA as mechanisms for transforming environmental culture (formal and non-formal environmental education programs, competitions, production of educational and other materials).
- Evaluate the effectiveness of the Kuna Yala Research and Development Institute in support of the Traditional Authorities of Panama's Indigenous Population (AOPIP) and development of the actions proposed. Does it have an impact in transforming quality of life and in reducing poverty? Are the groups ready to participate in the REDD Strategy, with clarity and with transparent mechanisms for profiting from the reduction of degradation and deforestation.

Instruments supporting Social Monitoring

To determine the social impact of the REDD strategy, first it will be necessary to identify the government programs focusing on poverty reduction and local capacity building that contribute or add to REDD. For that, Panama recognizes the need to hire a specialist to define and implement the indicators needed for such monitoring.

Objectives and activities

The objective of this component is to determine the efficiency and ownership of the REDD strategy by our principal strategic partners for effectively reducing deforestation, leading to a reduction of emissions, and, in connection with that, for forging the local capabilities required to promote a green economy at the local level (Development of Community-based Environmental Businesses).

Expected Outcome

Strategic partners imbued with and trained in REDD issues, with an adequate grasp of the subject and the capacity to engage in the production of environmental goods and services that will directly benefit communities.

In 2004-2009, one of the major tasks undertaken by the management team at ANAM was to transform the traditional and, in Panama, deeply-rooted notion of protection of renewable resources and the environment into the different, gradually more convincing concept of “conservation for sustainable development.” Essentially, that meant a change from exercising control over the population by telling them “not to touch, not to hunt, not to fish and not to extract” the resources in the protected areas to an approach which meant “the resources may be used but in a sustainable way.” With that it was possible to combat the poverty of the population living in the protected areas or their buffer zones and, subsequently, in the basin as a unit. In the latter approach, the emphasis is on social organization of the communities so that they would learn to relate to the natural resources around them by using them in a sustainable fashion²⁰. In other words, they would not just live but enact their culture, thereby not only conserving the environment and its resources but also fighting poverty, raising their standard of living, and becoming an organized interlocutor.

Methods to be used to achieve outcomes:

In order to develop this component the International Center for Sustainable Development (CIDES), located in Ciudad del Saber, has to be brought in. CIDES will be the agency or entity responsible for hiring the necessary advisory services required to obtain an objective evaluation of the socio-economic and environmental impacts resulting from the Preparation Plan and the corrective measures that it may be necessary to take during a phase in which the entire time is spent in developing the baseline resulting from the first public consultations and training sessions.

Activities and Schedule:

The activities and schedule for this component will be subject to the TORs as well as the hiring of CIDES and its team of experts within the suggested first 18 months. Executing the TORs for this component has to require drafting separate from implementation of the rest of the components. The budget estimate for this activity during the preparation period is 500,000 dollars.

Component 6: Assess investment and capacity building requirements

The design of the investment scheme was based on the premise that with the World Bank they were going to work on components having to do with strengthening of environmental institutions;

²⁰ Esta tarea estuvo a cargo fundamentalmente por las Direcciones de Fomento de la Cultura Ambiental (DFCA), de Gestión Integrada de Cuencas (GICH), la Unidad de Cambio Climático y Desertificación (UCCD) y la Unidad de Economía Ambiental (UNECA).

improving monitoring, control, and inspection; implementing the Production of Environmental Goods and Services strategy; social communication, training, and public consultation; and with the UN-REDD Program we are going to work on the components relating more to scientific and technical development schemes such as the environmental monitoring component and construction of the REDD baseline scenarios.

Objectives for this component

The objective for this component is to convey an idea of the investment needed to build the capacities required for the development of our REDD strategy.

Expected outcome

This component is expected to yield an estimate of investment needs and requirements for generating capacity in all the components of our REDD strategy.

Activities to achieve outcome

The activities are defined in each of the components of this R-PLAN, which indicates cooperation with the World Bank and the UN-REDD Program.

Partners and organizations involved

UNDP, UNEP, FAO, WB, STRI, ANAM, McGill University, CATHALAC, national universities, SIA, and others

Scheduling and sequencing of activities

It is estimated that it will take 18 months to carry out all these activities

Budget of the REDD Strategy

Component	Total	FCPF	UN-REDD	CBMAP2
Total	15,000,000	5,500,000	8,500,000	1,000,000
Institutional Coordination	500,000	500,000		
Public consultation, training, and social communication	2,500,000	2,500,000		
Monitoring, control, and inspection	1,000,000	1,000,000		
Production of environmental goods and services	500,000	500,000		
Socio-economic monitoring	500,000	500,000		
Environmental monitoring				
Satellite	2,400,000		2,000,000	400,000
Forest-Land and biological	5,300,000		4,700,000	600,000
Forest inventory	1,000,000		1,000,000	
Construction of the REDD baseline	300,000		300,000	
Administrative expenses	1,000,000	500,000	500,000	

Component 7: Develop a Reference Scenario

Objectives for this component

The idea of this component is to conduct an in-depth analysis of the processes in Panama that have led to deforestation. In 2000, Panama had a forest cover of 45%, down from the 70% we had in 1947, which means that in that lapse there had been deforestation of approximately 25%. There were numerous causes underlying these processes. The reasons adduced are usually referred to in a very general manner. In our opinion, however, in order to construct reference scenarios, it is necessary to examine in detail all the factors that led to the deforestation and which, undoubtedly, changed over time.

As the document mentions, extensive agriculture, cattle breeding, the growth of urban areas, lack of legislation, the squandering of forest resources, illegal felling of trees are referred to as the principal causes of deforestation. However, to grasp this in greater detail and to see where we stand today, it is necessary to reconstruct the history of the country's forests and to take a detailed look at what was happening in those areas in which, year after year, deforestation was taking place, and to analyze the causes in greater depth. Data on all this are dispersed in a number of agencies, which have yet to put them together.

Once we have achieved this objective, we will be in a position to develop more precise reference scenarios to be discussed by a broader panel, in which the Participants Committee of the Forest Carbon Partnership Facility (FCPF) can express its opinion and hear what Panama has to say. We mention that because these are issues currently being debated among the parties involved, who talk unofficially of historic scenarios and of going back five (5) years before the Conference of the Parties, COP-11 (on climate change) in Montreal, which takes us back to 2000.

Regardless of whether the year 2,000 or an earlier year is taken, the need to reconstruct forest history is imperative, in order to work out reference scenarios.

Once we achieve that, it will be possible to project future scenarios, of which there will have to be several, based on what emerges from the historical reference materials. In other words, we need to project the different paths the country may take depending on its blueprints for development of infrastructure, tourism, energy, housing, food security, economic growth, the impacts of climate change, and other elements, taking into account the effectiveness of current environmental legislation and any legal lacunae that need to be filled.

The work done in developing this baseline will enable us to identify gaps both in information and in the implementation of methodologies for preparing inventories of greenhouse gases and change of land use and forestry.

Panama is currently drawing up its second INGEIS (greenhouse gases inventory), in which the preliminary data suggest that change of land/soil use continues to be the principal source of emissions in Panama, particularly in the agriculture and livestock sector, which is one of the biggest emitters.

The methodology being used to compile the second INGEIS is that recommended in the IPCC Guidelines for National Greenhouse Gas Inventories (2003 edition), which includes identification of the use of land by type of forest and climate zones in order to detect changes over time by category and subcategory (agricultural use, forest, and pastures. Even though the INGEI includes calculation of carbon sequestration and liberation due to change of land use, the information generated lacks sufficient quality and reliability to reduce levels of uncertainty.

In Panama, efforts have been made to estimate forest cover at the national and regional level and in

specific areas. The results can be seen in the historical data on national forest cover for 1992 and 2000; the vegetation map (CBMAP 2000 and 2003); and regional maps, such as the Regional Plan for the Development of the Interoceanic Region of 1996, the Bayano Basin Management Plan of 1998; the Map of Darién Province produced by the Darién Sustainable Development project in 1998; and the map of forest cover in the Panama Canal Basin of 1999. All these maps were prepared using satellite information. A map is currently being constructed of forest cover in 2008, to be published in 2009.

In addition to these data, the Regional System for Visualization and Monitoring (SERVIR) provides access to almost real time data on active forest fires through the fire detection system installed in Panama by NOAA, the National Oceanic and Atmospheric Administration office. This service, which will be made available by CATHALAC, makes it possible to arrive at a very precise assessment of the part played by the frequent forest fires during the dry season in the generation of environmental disasters, harm to human health, the loss and degradation of forests and biodiversity, and greenhouse gas emissions into the atmosphere.

Panama is currently engaged, nationwide, in commercial reforestation projects for ecological compensation purposes, run by communities, NGOs, schools and ANAM itself²¹. Thought is also being given to the possibility of improving the conditions for forest investments by fostering forest businesses, given the high degree of competitiveness of the forest sector in Panama, according to a study the IDB.

Under Forestry Law No. 1 of February 3, 1994, Panama has a Forest Registry, containing information on forest plantation projects and on individuals and corporations engaged in the exploitation, industrialization, marketing, reforestation and production of nurseries. In addition, the forestry statistics system contains information on forestry by type of concession, community licenses, private holding licenses, subsistence permits, waybills, felling permits, land clearance permits, prescribed field burning permits, and registered chainsaws. Altogether, the following information is available:

Forest cover and land use

- 1:250,000-scale Map of National Forest Cover and Land Use. 1992
- 1:250,000-scale Map of National Forest Cover and Land Use. 2000
- 1:250,000-scale Map of National Forest Cover, by altitude. 2000
- Map of Changes in Forest Cover, 1992-2000-2008
- Project to conserve and repopulate threatened area of the Panamanian Pacific mangrove forest (in local areas)

Forest Management / Forestation and Reforestation

- Forest inventories (at the sub-regional level, at the concession level and one at the national level, but carried out in 1970).
- Reforestation projects
- Forestation, reforestation, and deforestation activities

Satellite images

- Landsat satellite images of the entire country for 1988-1992 and 1998-2001
- Aster satellite images

²¹ <http://mapserver.anam.gob.pa/website/reforestacion>

- Ortophotos

Additional information

- National system of protected areas and management plans
- Watersheds
- Environmental Land Use Plans
- Land/Soil and land/soil degradation
- Indigenous territory and communities
- Poverty
- Altitude and gradients
- Climate
- Rainfall
- Temperature
- Vegetation.

Even so, the National Forest Inventory is currently being carried out by ANAM. It should provide reliable information on volumes and biomass by life zone, type of forest, change of land use and type of land. Terms of reference will need to be prepared for this.

Preparation of the baseline will provide an update tool for systematizing and tracking the information and make it possible to underscore the competitiveness of land uses with respect to carbon fixation. That will, first and foremost, require preparation of the terms of reference for analyzing existing information and generating both the base scenario and trends. Accordingly, attention will have to be paid to the following, already identified, lacunae:

- The periodicity with which forest cover has been monitored nationwide has been every eight years. That has to be reduced to three years.
- There are shortcomings with respect to studies of the dynamics and distribution of forest fires based on satellite imagery. For effective monitoring of the problem, affected areas have to be identified, demarcated, and characterized.
- The National Forest Inventory is not up-to-date. The terms of reference for this task have not yet been established.
- There is still considerable uncertainty surrounding the methodologies applied and the information available for calculating carbon based on land use and change in land use, and future projections of those figures. To address this problem, ANAM is now using the 2003 IPCC Guidelines for Greenhouse Gas Inventories and, together with CATHALAC, it is now developing an appropriate methodology for studying and analyzing forest degradation.

Activities to achieve outcomes

1. Researching the information on deforestation processes in Panama to be found in various different agencies. Information is available in FAO, UNDP, UNEP, the National Library of

Panama, and local and foreign universities, above all in the United States (such as Duke University's North American Forest History Society).

2. Putting together a compendium of all forest history, analyzing and describing the causes of deforestation, by deforestation region and over time through to 2000.
3. Comparing, over time and by region, how the enactment of new environmental laws gradually helped reduce those processes.
4. Once the above tasks have been completed, designing the best reference scenario for the baseline: either one for each region based on the analysis of the different proposed deforestation regions or a single baseline for the whole country. This will require prior consultation with the different players in the FCPF and its Participants Committee and in UN-REDD and its board of directors, on which the three regions are represented.
5. Analyzing, at the same time, and in detail, the blueprints for Panama's overall future development, and examining the various scenarios and the speed with which they can be executed, as well as their compatibility with a REDD strategy or the extent to which they would be incorporated into the National Environment Strategy in order to meet REDD targets.
6. Acquiring the extensive knowledge required of the country's economic growth, future infrastructure needs, the tourism master plan, energy needs including possible hydroelectric developments, housing needs, and population growth.
7. Having acquired all that information, arranging for expert analysis to project future scenarios, estimate how REDD's proposed objectives can be met and determine with greater precision the volumes of greenhouse gas emission reductions.

Partners and organizations involved

UNDP, UNEP, FAO, WB, STRI, ANAM, McGill University, CATHALAC, and others.

Schedule and sequencing of activities

It is estimated that it will take 18 months to complete these activities, as follows:

- Points 1, 2, and 3 should be completed in six (6) months;
- Points 4, 5 and 6 should be completed in the following six (6) months;
- Point 7 will be done in six (6) months.

Performance indicators for this objective:

- Compendium of the country's Forest History
- Construction of historical baselines for the country's deforested regions
- Construction of the country's historical baseline if an agreement is reached to construct a single baseline
- Construction of future scenarios based on the country's development blueprints
- Analysis and construction of the different REDD scenarios in accordance with the

country's development plans.

Budget for the Construction of the REDD Baseline

<i>Personnel</i>	Total Amount
Coordinator General	36,000.00
Forestry Expert	25,000.00
Expert Economist	25,000.00
Expert Sociologist	25,000.00
Environmental Expert	25,000.00
Expert Agronomist	25,000.00
Expert Civil Engineer	25,000.00
Expert SIG	30,000.00
Expert Biologist	25,000.00
Administrative experts, materials and inputs	59,000.00
Total	300,000.00

Component 8: Design and Implement Monitoring, Reporting, and Verification System for REDD

Objectives of this component:

The objective of this component is the design and implementation of a system for monitoring, reporting, and verification for the National Environment strategy focusing on REDD, which would facilitate the access to monitoring information for forest cover and land use change.

Terrestrial

With the aim of improving the levels of quality relating to data on volume and biomass of timber- and secondary native forests, considered to be of average reliability currently available in the country a national forest inventory will be taken, the design of which will be done in strict

observance of the technical and statistical criteria, owing to the heterogeneous character of those ecosystems.

This inventory will be taken in layers, by life zones, and type of forests, and will involve the survey of dendrometric information and the floristic composition of the forest, and this, besides facilitating the calculation of volume, will also allow for calculation of biomass and the carbon stock. To this end, diameters will be measured at 1:30 m from the ground (DAP) in trees from 10 cm upwards and those of the commercial height. If it is possible to measure the total height, this is also done; however, in native forests this parameter is very difficult to measure because of poor visibility. Nevertheless, there are allometric equations that allow for an estimate to the total biomass as a function of the DAP. For trees less than 10 cm. in diameter, smaller units within each sample unit will be established, according to statistical criteria.

Data will also be captured of the dead leaves and the biomass of dead wood, where the amount of sample units will be dependent on the statistical criteria and the levels of certainty that are determined prior to the inventory.

The data captured in the field will make it possible to determine the biomass of the trunk, branches, and leaves through the use of allometric functions recognized and validated for mainly tropical hardwood forests. Once this information is obtained, the carbon content of the biomass per tree and per unit of surface (hectare), per zone of life, and types of vegetation (heterogenous mature forests, cativa forests, oreyzales/salt marshes, mangroves and secondary forests, according to the state of development) may be estimated.

Once the national forest survey has been conducted and the biomass and carbon per zone of life, types of forests, and state of development of these has been calculated the carbon stock for each ecosystem and zone of life may be estimated, as well as the national total.

In order to obtain suitably accurate and reliable information, especially with respect to carbon changes over time, permanent parcels will be established in different strata and zones of the country, under strict technical and statistical criteria that will guarantee both the statistical representativity of the strata or allow variables of the ecosystems to be evaluated, such as the creation of value, that will generate high levels of confidence in terms of monitoring and reporting the outcomes and successes of the REDD Strategy (Tier 3). Furthermore, the information will also confer value by strengthening national communications, having regard to the National Greenhouse Gas Inventories, which are reports that the country must submit periodically.

The parcels and data collection shall be adjusted to a strictly statistical design based on measurement models for biomass and carbon stock in natural ecosystems subjected to different levels of human interference. In this context, measurement parcels shall be established in areas with natural mature forests (primary) and secondary forests per zones of life. Likewise, carbon stocks will be measured in soils under forest cover and in degraded lands per type of soil (volcanic, marshy, sandy, and inactive). The components that will be subject to measurement will be: living biomass above ground (trunks, branches, and leaves), dead leaves, dead wood biomass and carbon in the soil. In addition, a review and validation shall be conducted of the information generated in the country and the region on the biomass of roots of arboreal species.

Most of the parcels will be established in the protected areas and indigenous comarcas to prevent risk of loss of the latter, but a need has been identified to establish some outside of these areas. In this regard, commitments in writing shall be entered into between owners of the land in whatever capacity and ANAM, which will ensure that there is access to the lands, that they are measured, and that there is a right to remain during the monitoring process.

To conduct this research, ANAM established synergistic relations with national and international institutions with wide knowledge, experience, and installed capacity in topics related to studies and research on natural resources, such as the University of Panama, the Agricultural Research Institute

of Panama, the Smithsonian Tropical Research Institute, and McGill University. This enabled the “Variations in Carbon Storage in Arboreal Species” methodology to be developed, which accords with the IPCC Good Practice Guidance (2006 edition). A preliminary exercise that applied statistical criteria to calculate the number of sample parcels and provide for a possible distribution thereof per zone of life, stage of forest development, categories of forests, types of soil and their state of conservation, allowed us to estimate approximately 252 parcels to be established in different climatic, ecological, and edaphic conditions throughout the country.

In order to develop the REDD Strategy with respect to monitoring a multidisciplinary team of professional will be built, which ANAM will hire and integrate into its structure. Constituted as an Environmental Monitoring Unit (EMU), this team will supervise the collaboration and support efforts of the aforementioned institutions with knowledge of, and experience in, forestry, soils, and biodiversity studies which will collaborate synergistically.

The definition of the methodologies used shall be adjusted to the comprehensive watershed management model, using the inputs available at ANAM (maps, pictures, aerial photographs, documents, cartographic data, studies, etc.) in order to obtain identification, pre-selection, and location of parcels, which will be represented on the map, and subsequently ascertained in the field. When the office work is finished, the work of location, demarcation, and field marking will begin.

In order to carry out this work a total of six brigades shall be formed each made up of a forest professional, a biologist, a geographer, a technical assistant, two manual laborers to cut trails, a guide, two field assistants, and four persons to carry equipment. The manual laborers shall come from the communities near to the land parcels. On obtaining practical knowledge in the work carried out, they will in one way or another undertake, and inform about, any work to be done on the parcel in question; in addition, they will act as community spokespersons on the importance of the parcels and the work being done there.

After locating the parcel in the field through GPS, the boundaries should be marked with boundary monuments at its four vertices. This work will seek to corroborate and confirm the earlier location of the parcel on the map and confirm that its selection was accurate. If there is biological variability and/or unforeseen geographical difficulties in its location, it will be relocated in the field, geo-referenced, and its location corrected afterward on the map, consistent with statistical and randomness criteria. When the land parcel has been located, boundary-marked, geo-referenced, and the protocol process completed and the type of information and forest components to be evaluated (aerial biomass, dead leaves, biomass of dead wood and soil) have been defined it will be subdivided into parcels of a size that is in accordance with the information sought and the statistical design established.

When the selection process is complete and the personnel comprising the field brigades have been hired, they shall undergo a detailed training program on the procedures and protocols for the measurement and systemization of information for the different components and variables to be evaluated. Duly trained, said personnel will be reassigned to the field to collect data that will be used to calculate the carbon storage in the living biomass above the soil, the dead leaves, the dead wood biomass, and the carbon in the soil. In addition, other variables such as arboreal density, forest species diversity, and natural regeneration (young growth and saplings) will be measured.

Given the diversity of Panama’s climate and soil conditions and their influence on the variations in the growth of the species being developed in the different types of forests (mature and secondary), the frequency of measuring these shall be defined when the statistical design is being established.

In the country there are 12 zones of life, different categories of forest according to structure, composition, and sequential stage, and a very varied topography. Thus, the measurement of climatic variables is extremely important. In order to collect temperature, precipitation, radiation, and wind data the information coming from stations near to land parcel sites is collected as a baseline. To

complement the basic meteorological stations system it is considered necessary to establish approximately 10 such stations on sites where data can be collected with the required periodicity, and these will provide the basic information necessary that will contribute to determining the influence of climate change on the behavior of forests in the country and, consequently, of REDD. Data collection will be done by someone dwelling in the area that will be trained and compensated financially for such service.

To verify if there is a match between the data taken by the field brigades and the established protocol, a control brigade will be formed comprising technical ANAM (EMU and Regional) personnel, supported by personnel to be hired on a temporary basis (one guide, three field assistants, and two manual laborers) who will be answerable to the Environmental Monitoring Unit. As the brigades continue to submit the field information regularly on a random basis, some parcels will be selected for the immediate corresponding control. The percentage of samples to be verified in the field under this quality control procedure shall be determined by a strict adjustment to statistical criteria and will be included in the protocol to be established.

For the systemization of the information that will calculate the carbon stock the EMU shall have the computer equipment and technical staff that is trained to enter and process the information received from the field and analyze the data and the results. Prior to data capture, the field information shall comply with and be subjected to quality control established by EMU.

All members of the EMU team, including the field brigades (permanent and temporary), shall be trained and strengthened in different topics related to the use and management of forestry measurement tools, computer equipment and programs, methodologies for establishing and collecting first aid data, use of communication radios, the collection and calculating of meteorological data, GIS (reading plans etc.), general knowledge in satellite monitoring, and any other deemed necessary.

Given that the established parcels will be permanent, a monitoring, inspection, and control program shall be established to prevent changes of an anthropogenic nature being made. This program shall be implemented by each of the regional administrators and supervised by EMU personnel, who will participate therein in a staggered and programmed manner with personnel from regional administrations. After each monitoring shift a report shall be submitted, which shall comply with the provisions of the current protocol.

The monitoring and inspection of the parcels shall be done with the aim of detecting pockets of deforestation, expansion of the agricultural boundary, areas susceptible to fires, and other activities that put at risk the permanence of the parcels. The frequency of monitoring and inspection shall be determined by different variables, such as climatic seasons, proximity to deforestation fronts, occurrence of fires and natural disasters, accessibility and location (outside or inside protected areas).

Carbon Monitoring

Carbon monitoring will be carried out by quantifying carbon stocks in the biomass of the forests and soils. For that, it will use the information generated by the forest cover and land use survey, the national forest inventory, and the network of measurement plots to be established throughout the country.

These surveys will generate data on biomass by life zone, types of forest, their stage of development, and carbon in the soils. The biomass contents in each of these strata will enable us to determine the stock of carbon in each case. The national carbon stock would be the sum of all those stocks.

The above procedure will be applied in the survey of forest cover and land uses carried out every three years. The difference in carbon stocks between the years in which it is quantified determines

carbon emissions and will allow inferences to be drawn regarding the effectiveness of the REDD strategy.

The network of plots to be established in the country's different strata in order to measure biomass and carbon will, by generating information every three years, allow us to achieve a gradual improvement in the robustness and reliability of data on the carbon stock and changes in it over time.

Once field data on the carbon stocks in the different life zones have been obtained, they should be correlated with the analysis derived from remote sensors, in order to obtain a more precise indication of the carbon stock in the different life zones in Panama.

Specialists will help the ANAM and CATHALAC team to correlate the data.

Panama also recognizes the need to hire an independent auditor to corroborate possible emission reduction certifications.

Monitoring of forest degradation

While, so far, there are no known methodologies for monitoring forest degradation, it is possible, pending the development of monitoring models, to resort to measurement and monitoring of certain variables in forest ecosystems that may furnish valuable information for determining degrees of forest degradation.

From a dendrometric perspective, variables such as basal area, volumes per diametric range, forest density per surface area and floristic composition are some of the variables that, if properly monitored in respect of their changes over time, could permit inferences to be made as to the health and quality of forests and thereby determine whether the forest is being degraded or conserved. Through remote sensor monitoring, it will be possible to identify changes in the spectral characteristics of forests between pictures taken in different periods, which will provide the surface and location data needed for a field evaluation during which, based on statistical criteria, the aforementioned variables are measured. Subsequent analysis of the findings will tell us whether the forest has undergone changes in its structure and composition. We should mention that during the forest inventory all the above-mentioned variables will be measured. That should provide the baseline data allowing us to determine changes in the structure and composition of forests. Those variables will also be measured in the network of plots to be established all over Panama.

Based on the surface determined by remote technology and measurement of the volumes of forest in that area, it will be possible to calculate how much biomass has been affected and the quantity of carbon lost. Once it is established that the forest has been affected, the cause will be identified and appropriate measures adopted to counter them and ensure the recovery of the ecosystem.

Constant remote sensor and terrestrial monitoring of these areas will also make it possible to determine outcomes with respect to their recovery, as a result of oversight and inspection arrangements.

Satellite Monitoring (Remote Sensors)

Technology based on remote sensors, geographic information systems, algorithms and spatial integrated models have made a huge contribution to surveillance of forest ecosystems. That being so, the National Environment Authority helped organize a Regional Monitoring and Visualization System (SERVIR), which was established in Panama, in 2005, at the Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC) and constitutes a platform for observing, predicting and modeling environmental processes in Panama and seven other countries in the region. In that sense, this proposal is backed by recognized expertise in the monitoring of changes in land use (including deforestation, in developing climate change models, and with respect to extreme events that affect ecosystems, which indeed constitute critical elements for reducing the emissions derived from deforestation. For their part, the projects developed through CATHALAC are

scientifically backed by NASA, EPA and NOAA in the United States, the World Bank, the United Nations Development Program (UNDP) and recognized as an “early achievement) of the Global Earth Observation System of Systems (GEOSS).

Considering that IPCC Tier 3 requires countries to use factors based on comprehensive field samples to estimate and monitor forest carbon reserves, through these technologies that combine information derived from remote perception analysis or other kinds of contributions using modern technology, with high resolution, specific kinds of extraction algorithms duly verified in the field, we will be able to use a model that is both efficient and sustainable.

In order to address climate change and deforestation considerations, as well as the transformation of terrestrial cover, in a context in which we want not only to monitor REDD effectively but also to assess the health of forest ecosystems, we propose developing the following methodologies with robust indicators that allow us to monitor conditions and trends in forest degradation.

In that connection, CATHALAC offers Panama a series of very high-tech indicators directly related to ongoing monitoring of the health of our ecosystems. They will enable us to verify with greater precision deforestation and degradation rates directly linked to the carbon stock in our forests at different intervals of space and time and it will facilitate preventive measures such as periodic reports at both the national and international level. These indicators will enable Panama to lower the degree of uncertainty in relation to the data obtained.

Forest Monitoring via Satellite

Remote sensor data, processed and combined with algorithms and integral biometric models, constitute an important working tool for monitoring the country’s vegetation cover, by means of early detection of changes in cover or land use dues to natural processes or human interventions that modify the structure and size of forest ecosystems. Currently, Panama uses this satellite technology via multitemporal analysis derived from different sensors in order to evaluate the state of forest cover and land use, the dynamics of changes in cover at regular intervals, and the occurrence of catastrophic events, particularly during peaks in the rainy season and throughout the dry season.

Monitoring and modeling of Change and the Impact of Forest Cover

The historic reference scenario for forest cover and land use is based on digital interpretation of Landsat satellite images (with 30m spatial resolution) for 1988-1992 and 1998-2001 for monitoring changes in forest cover with a minimum mapping unit of one to five hectares in order to produce the national forest cover maps with a scale of 1:250,000 for 1992 and 2000. The first deforestation scenario was derived from those maps and gave rise to the map of changes in forest cover and land use, 1992-2000.

CATHALAC is currently working on the national forest cover map for 2008, using as an additional input remote sensors with greater spatial resolution. Once its analysis is complete, CATHALAC will proceed to produce the map of changes in cover and land use and obtain the current rate of deforestation.

Monitoring of nationwide changes in forest cover and land use will continue to be carried out at least every three years, hence a proposal to revise the country’s current forest classification system. Satellite images with a very high spatial resolution will be used to provide precise and timely responses to the problems associated with pressure on forest ecosystems.

The methodology for monitoring changes in forest cover includes, first, an evaluation of national circumstances, especially those surrounding the existing data sources used in prior analysis of satellite images; the selection of the satellite images to be used for the study; and the preparation of the monitoring plan and budget, which includes the cost of satellite images, the necessary technological resources (equipment and specialized programs), human resources, the requisite training and field visits.

Next comes digital classification of the images, initially by means of an unsupervised classification, in which an automatic search is conducted for groups of homogeneous values inside the image, and then by means of a supervised classification with prior knowledge of the terrain. To evaluate the results of the classification, in situ verification is carried out using global positioning systems (GPS) and by means of trips (terrestrial forest monitoring) to those sites for which classification is difficult or doubtful.

Once the classification is completed, there is a reclassification process or grouping of classes, in which the classified image is corrected using field data and reclassifications are carried out to take into account observations made during the field visits. Finally, the corrected classified image is automatically vectorized and the different categories are quantified. This product is compared with the previous national map of forest cover so as to obtain the map of changes in forest cover, which reflects the deforested area and the forest recovery area.

This monitoring system goes hand in hand with the forest information monitoring system, so that all reforestation projects and existing forest uses must be surveyed using GPS, so that they can be superimposed on the forest cover map. The monitoring system will also provide appropriate information for monitoring the Republic of Panama's Environmental Indicators, which constitute an essential tool for decision making and for formulating policies, monitoring plans and strategies for environmental conservation. The environmental indicators for forests and biodiversity are Forest Cover of the Territory and the Reforested Area; whereas, for land use, the indicator used is Changes in Land Use.

The monitoring process also comprises the writing of reports and other relevant papers, including the generation of geographic metadata for geospatial information, to be posted on the Internet.

Likewise, the system envisages facilitating access by the general public to geospatial information on monitoring of forest cover and changes by providing on-line map services allowing visualization, queries and searches, as well as the production of printable maps of selected areas of interest. Using this service, it is possible to incorporate other environmental resources information by allowing the superimposition of protected areas, watersheds, demographic information and other elements on to the forest cover map or changes in forest cover map and to perform analyses using different variables.

Monitoring of forest fires and burnt areas

Forest fires occur in the dry season in the different vegetation zones for reasons that range from deforestation and the maintenance of agricultural areas to natural causes. These events affect vegetation cover due to the loss of forest and they contribute significantly to emission of carbon dioxide (CO₂) into the atmosphere.

Middle America and the Caribbean have an innovative on-line interactive system for detecting fires, which functions as part of the Regional Visualization and Monitoring System (SERVIR). It allows manual integration of automated fire detection data with the help of images from the GOES, POLAR and MODIS satellites and the Defense Meteorological Satellite Program. The result is a controlled quality visualization of the location of fires and the smoke plumes detected by meteorological satellites in nearly real time, with a lag of approximately 45 minutes. This will enable the forest firefighters department to take swift action.

Apart from detecting active fires, the forest fire monitoring system must use satellite images with moderate spatial resolution and daily temporal resolution, such as MODIS, in order to obtain a spatial data base meeting ISO 19000 geographic information standards, with the areas affected and the temporal dynamics of the phenomenon. This is in line with REDD objectives regarding estimation of areas of deforestation and degradation caused by fires. The forest fires monitoring system will be the starting point, leading in the medium or long term to a reliable spatial data base that will enable the authorities to take optimal decisions for preventing and controlling fires and for restoring the areas they degrade. The information provided by the system, like that on forest monitoring, will be

available on the Internet through on-line map services in accordance with OGC (Open Geospatial Consortium), so as to guarantee interoperability with national and international systems.

Forest structure

The structure of a forest plays a key role in processes involving the exchange of matter and energy between a plant and the atmosphere. For that reason, describing its state and condition is a core objective in studies of vegetation growth, which in turn is a priority for evaluating and monitoring deforestation and forest degradation. Both the Leaf Area Index (LAI) and Leaf Angle Distribution (LAD) are indicators widely used to represent the vegetative architecture of the aerial part, a process that is enormously facilitated by satellites equipped with optical instruments that indirectly gauge the LAI by measuring photosynthetically active radiation above and below the canopy. Considering the resolution of the images used, daily, weekly, monthly, or annual indicators can be generated, as needed.

Forest biomass

Forest biomass will be monitored using the Normalized Difference Vegetation Index (NDVI), which is a sensitive indicator for estimating development of vegetation based on measurement of the intensity of radiation in certain bands of the electromagnetic spectrum by analyzing the spectral response of the vegetation, which it emits or reflects using remote sensors. This methodology allows us to identify and monitor the areas on a daily, weekly, monthly, or annual basis, depending on the satellites being used.

Monitoring of climate change

In addition to ascertaining the state of the forests, deforestation and forest degradation, it is essential to stop the deforestation and the greenhouse gas emissions associated with it. That in turn means controlling the factors that cause those changes, such as the weather and climate. In Middle America and the Caribbean, the climate exerts great influence on both human development and environmental management. Panama is vulnerable to extreme events, such as floods, a fact that underscores the importance of the SERVIR project in climate surveillance and forecasts in the region.

All these remote sensor indicators need to be strengthened with information generated by forest monitoring and for that Panama will request an expert on the subject.

Biological monitoring

Biological monitoring provides baseline information for understanding the behavior of an ecosystem over time. That makes it possible to describe the dynamics of natural communities and the consequences of human influences, and to predict and/or prevent undesired changes. The basic technical information for this monitoring will be taken from the updated versions of the Forest Cover Map and the Ecosystems Map and from previous studies carried out in Panama.

The biological monitoring component in the REDD strategy will make it possible to verify what changes occur in biodiversity, in order to comply with the conventions on climate change, biodiversity and combating drought and desertification. The biological monitoring component will also permit capacity-building among officials in ANAM's regional administrations, as well as strategic partnerships with specialized NGOs, such as the Herpetological Circle, the Mastozoological Society of Panama, and the Audubon Society, community organizations, local authorities, and academic institutions in Panama and abroad, in order to engage in biological monitoring activities. The biological monitoring findings derived from the information gathered on field trips will be incorporated into a database to be shared through SINIA.

It is common to resort to the use of bioindicators to decipher environmental factors, from species or associations of species to attributes corresponding to other organizational levels of the ecosystem, such as populations and communities. For this process, the use of amphibians and bats of the *Phyllostomidae* family are the recommended indicators. Nevertheless, there is a need to identify other bioindicators, depending on the life zones, in consultation with the national experts in each group. It would exceed the bounds of this paper to describe methodologies for each group. For that reason, it describes the methodologies for these two groups.

As is well known, amphibians show strong ties to their natural habitats, a characteristic that, combined with their sensitivity to change, allows us to interpret the quality of the habitats. That means they can be used as excellent bioindicators for detecting changes in ecosystems brought about by human intervention or climatic disturbances.

Monitoring amphibians will be done using the transect method, which consists of moving by day and by night along a predetermined stretch and at a uniform speed, while attempting to detect the presence of individual amphibians or groups of them. The transects will be placed inside a homogeneous sample unit or in such a way that they pass through representative portions of the environmental heterogeneity of the area being studied. The species are identified essentially by means of visual and auditory observations, supplemented with recordings of the sounds they make, which are later examined with the help of computer programs designed to analyze monograms. Samples will also be collected when there are doubts as to the species. The amphibians are registered on field trip forms, which contain, in addition to the species, data on climate conditions, the time an observation was made, type of habitat (dead leaves, underbrush, canopy), and the type of activity (daytime, nighttime) of the species.

Bats of the *Phyllostomidae* family are, ecologically, highly diverse, because their six sub-families include approximately 123 species with a wide range of feeding habits: carnivorous and insectivorous (*Phyllostominae*), frugivorous (fruit-eating) (*Carollinae* and *Stenodermatinae*), nectarivorous (*Glossophaginae* and *Phyllonycterinae*), and hematophagous (*Desmodontinae*, vampire bats). That means they are promising indicators of alterations to a habitat brought about by human activity.

The chiropters will be monitored by capturing them in six 12m by 2.5m mist nets, placed parallel to one another with some 10m between them, depending on the area to be evaluated. Two nets will be hung in each of the five stations in the sample: one to capture the species flying at the underbrush level (0 to 2.5 m above the ground and the other to capture the species flying at the sub-canopy level (6 to 10m depending on the size of the forest and availability of the area). These will be opened at 5:00 p.m. until 1:00 a.m., with one night being evaluated for each sample site.

Although it is true that this paper mentions only two large groups that will be used as indicators, our proposal envisages broader sampling. As part of our National Environment Strategy focusing on Conservation for Sustainable Development, other bioindicators will be identified, depending on the life zones, as was mentioned earlier.

It is to be noted that REDD preparation funds will also help Panama meet some of its commitments under other Conventions, such as that on Biological Diversity.

Social Monitoring

To determine the social impact of the REDD strategy, first it will be necessary to identify the government programs focusing on poverty reduction and local capacity building that contribute or add to REDD. For that, Panama recognizes the need to hire a specialist to define and implement the indicators needed for such monitoring.

Expected outcomes

The availability of an environmental and social monitoring system, complete with reliable and verifiable indicators.

Activities to achieve outcome

Activities to be carried out in order to achieve the expected outcome include:

- Enhancing ANAM’s nationwide capacity for biological and forest monitoring
 - Purchase of software and hardware
 - Training in technical capacity building
 - Establishment and equipping of the Environment Monitoring Unit.
1. Design and selection of the subjects of biological monitoring and implementation of the monitoring
 - Workshop consultations with specialists on identifying indicator species.
 - Definition of criteria for prioritizing the items to be monitored inside the established plots.
 - Identification and selection of indicator species and the monitoring protocols that apply to them.
 - Performance of monitoring activities inside the plots.
 2. Establish and begin operating the biodiversity database
 - Prepare terms of reference (ToRs)
 3. Establish strategic partnerships to develop biodiversity monitoring activities.
 - Formalize agreements or strategic partnerships for biological monitoring.
 - Strengthen the familiarity of institutions, organizations, and local organizations with biological monitoring methodologies.
 4. Prepare and disseminate periodic reports on the findings of the biological diversity monitoring.
 5. Design and conduct quality of life and social impact surveys in the project implementation areas.

Partners and organizations involved

Partners and organizations working with ANAM on this component include: the University of Panama, the Autonomous University of Chiriquí, CATHALAC, the Smithsonian Tropical Research Institute, McGill University, local communities, indigenous communities, NGOs, and the Ministry of Social Development.

Schedule and Sequencing of activities

It is estimate that it will take 18 months to complete these activities, as follows

SATELLITE MONITORING OF FOREST COVER AND LAND USE IN PANAMA

Description	Monitoring of forest cover and land use	Development of a Map of Reforestation Projects	Training for ANAM staff	TOTAL
Rental of equipment	6,000.00			6,000.00
Other rentals			1,000.00	1,000.00
Mail	300.00			300.00
In-country per diem allowances	18,000.00	12,000.00	25,000.00	55,000.00
Printing and binding	21,500.00	300.00	1,000.00	22,800.00
Special services	252,500.00	30,400.00	12,100.00	295,000.00
Other Maintenance and repairs	1,000.00	1,000.00		2,000.00
Food for human consumption			25,000.00	25,000.00
Diesel	1,200.00	900.00	400.00	2,500.00
Gasoline	900.00	500.00	350.00	1,750.00
Lubricants	130.00	500.00	170.00	800.00
Other paper and cardboard products	1,300.00	300.00	350.00	1,950.00
Other chemical products (satellite images, inks, etc)	1,520,000.00	3,200.00	800.00	1,524,000.00
Other tools and equipment	7,500.00		500.00	8,000.00
Spare parts	425.00	275.00	200.00	900.00
Computer equipment (workstations, GPS)	50,000.00			50,000.00
Unforeseen	2,000.00	1,000.00		3,000.00
TOTAL	1,882,755.00	50,375.00	66,870.00	2,000,000.00

Monitoring of Forest Lands and Biodiversity

Purpose of Expenditure	Component	2009	2010	2011	2012	Total
Human Resources	Forestry	56,400	698,000	249,800	249,800	1,254,000
	Biodiversity	93,000	130,800	37,100	37,100	298,000
Transportation	Forestry	20,000	180,000	47,000	33,000	280,000
	Biodiversity	30,000	148,000	64,000	47,000	289,000
Inputs	Forestry	200,000	375,000	80,000	79,000	734,000
	Biodiversity	143,000	290,000	36,000	36,000	505,000
Per diem allowance	Forestry	15,000	70,000	45,000	40,000	170,000
	Biodiversity	15,000	70,000	45,000	40,000	170,000
Advisory services	Forest Inventory		700,000	300,000		1,000,000
Total		572,400	2,661,800	903,900	561,900	4,700,000

Forest Inventory

PURPOSE OF EXPENDITURE	EXTERNAL FUNDING	NATIONAL FUNDING	TOTAL
STAFF	673,000		673,000
ADMINISTRATIVE EXPENSES	247,000		247,000
INPUTS	50,000		50,000
DIVULGACION	15,000		15,000
MONITORING AND SUPERVISION		200,000	200,000
PUBLICATIONS	15,000		15,000
TOTAL	1,000,000	200,000	1,200,000

Annex 1. Land Use, Forest Policy and Governance Quick Assessment

The analysis of change in forest cover between 1992 and 2000 shows a decline of 330,369 hectares, equivalent to an annual average loss of 1.12%. It also points to three critical areas (See Annex 2 - Map of Changes in Forest Cover in the Republic of Panama, 1992-2000):

- The indigenous comarca of Ngöbe-Buglé, located in north-east Panama, with a deforestation area of 81,793 ha, or 2.7%;
- The province of Darién, in the east of the country, with an annual deforestation rate of 1.7% (137,612 ha); and
- The eastern part of Panama Province, which has an annual deforestation rate of 1.55% (60, 709 ha).

The study also shows changes in vegetation coverage by type of forest, notably the following:

Category	1992 (Ha)	2000 (Ha)
Mature forest	3,352,072	3,015,002
Mangrove	181,775	174,435
Mixed floodable forest	45,554	37,398

The most serious environmental problem we face is the loss of natural resources, as a result of unsustainable development, based on waste. It is deforestation (at a rate of approximately 48,000 ha per year) that illustrates this most clearly. The problem worsens in the dry season, when slashing, burning and forest fires destroy vegetation and biological diversity, be it in forests, stubble fields, grazing land, or anywhere else, even close to our homes, driven by the society’s own irresponsibility and its development style.

Studies carried out by ANAM point to six major causes of deforestation:

7. Traditional and mechanized agricultural practices;
8. Extensive cattle-breeding practices;
9. Unsustainable and disorderly exploitation of forests;
10. Poorly planned urban development;
11. Inappropriate practices in the exploitation of mining resources; and
12. A low level of education and an unsustainable environmental culture in the country.

Contributing factors in deforestation are said to be; an uncontrolled approach to development; extreme poverty, a paddock mentality, and incorrect valuation of forest resources irrespective of the Agrarian Code.

As for the legal provisions specifically addressing this issue, Law No. 1 of February 3, 1994²², Establishing forestry legislation in the Republic of Panama and enacting other provisions” establishes in title I, chapter II, the forest heritage of the State.

²² Article 129 of Law No.41 of 1998, General Environment Law. Declares that Law No. 1 of 1944 “establishing the forestry law of the Republic of Panama is “complementary” to Law 41, so that both are considered to pertain to the same legal order, one covering the environment in general and the other the specific case of forestry

Article 10 specifies that the forest heritage of the State consists of all the natural forests²³, the land on which such forests are growing and the State lands with mainly forest potential. Forest plantations established by the State on State-owned land are also part of this heritage.

Article 13 of the aforementioned law indicates that administration of the forests and land constituting the forest heritage of the State is the responsibility of ANAM, which by dint of that provision and its Executive Board Resolution 05-98 of January 22, 1998 (regulating enforcement of Law No. 1 of February 3, 1994) establishes management and development rules governing the forest heritage of the State.

Article 15 of Resolution JD-05-98, expanding on the Forest Law, specifically authorizes ANAM to adopt measures designed to capture carbon dioxide: “INRENARE may establish mechanisms to stimulate and promote the creation of plantations and the management of the natural forest, so as to capture and fix carbon and make a positive contribution to the national and global balance of greenhouse gas emissions. To that end, it shall establish a promotion, monitoring and control office.”

Even in natural forests on estates governed by private property law, ANAM has a role to play by virtue of the provisions of the Sustainable Use of Forests Regime, title II of this regulatory resolution.

Indigenous peoples

The General Environment Law establishes -- in title VII on the indigenous comarcas and peoples - the relations between the national authorities and the indigenous comarcas and peoples. Panama is currently divided into nine provinces and five (5) indigenous comarcas: Ngöbe-Buglé, Emberá-Wounann, Kuna Yala, Madugandí and Wargandí. The lands comprising their comarcas are owned collectively under a constitutional mandate.

That law develops the constitutional principle that the State will respect, preserve and maintain the knowledge, innovations and practices of the indigenous and local communities which involve traditional ways of life related to the conservation and sustainable use of biological diversity, promoting their widest application, with the participation of the communities, and will promote equitable sharing with them of the resulting benefits.

The same law also indicates: that any natural resource exploration, exploitation and development studies authorized on land occupied by comarcas or indigenous peoples should not cause harm to their cultural, social and economic integrity or spiritual values.

Thus, for activities, works or projects carried out within the territory of indigenous communities, consultations will focus on concluding agreements with community representatives relating to their rights and customs, as well as on the granting of benefits to compensate for the use of their resources, knowledge or land; that when granting any type of authorization relating to the development of natural resources, in the comarcas or on lands of indigenous communities, preference will be given to projects submitted by their members, provided that they comply with the requirements and procedures laid down by the competent authorities.

Article 103 of Law 41 of 1998 states that for activities, works or projects carried out within the territory of indigenous communities, consultations will focus on concluding agreements with community representatives relating to their rights and customs, as well as on the granting of benefits to compensate for the use of their resources, knowledge or land.

Article 105, for its part, establishes that, in the case of activities involving the development of natural resources on land of comarcas or indigenous peoples, they are entitled to a share in any resulting economic benefits, if such benefits are not covered by existing laws.

²³ Natural forest: any natural, native, woody plant formation with a predominance of tree species or that because of its function and composition must be regarded as such. Article 5 of Law 1 of February 3, 1994, Forest Law.

Ownership of carbon

As established above, in the Republic of Panama natural resources pertain in general to the public domain and so form part of State assets, which cannot be used without following the procedures it lays down.

The forest heritage of the State, be it all the natural forests, the land on which they are growing, and state lands with mainly forest potential, or forest plantations established by the State on land pertaining to it, are in the public domain, as stated in the General Environment Law and the Forestry law of the Republic. Applying the legal principle of *accessorium sequitur principale*, whereby the legal status of the principal is transferred to the accessory, this category extends to the composition of the state property: in this case, the carbon associated with the forest resource, be it a complex, such as a forest, or an individual tree.

In conclusion, Panamanian legislation recognizes carbon capture as an environmental service and clearly establishes the powers of the State with respect to the management and administration of said services, since they derive from assets pertaining to its heritage.

In addition, and to facilitate administrative tasks, the legislation places such administration and related matters within the spheres of competence, functions and responsibilities of the National Environment Authority (ANAM). Furthermore, it establishes that projects derived from carbon capture-related activities shall be shared with the indigenous peoples, be they inside or outside the comarcas governed by a special regime.

That provides the juridical platform for legal development of the REDD strategy in Panama by means of its execution by the State. In addition to regulating matters that form part of the strategy itself, the law directly establishes an entity responsible for ensuring compliance.

[end]