Annex II: Bolivia: Country Experiences

1. Climate Change and its Implications in Bolivia

The GHG emissions from Bolivia reach only 0.097% of the Global emissions[6], 80% of which come from the land use and land use change and forestry (LULUCF) sector. As for the scale of its energy sector, the emissions of the whole country are so small, that only one urban area from the United States, namely Manhattan, has 26.74 times the emissions of the energy sector of Bolivia.

The impacts of climate change have been growing in the last decades, with the presence of extreme events like droughts and floods, with the alarming retraction of glaciers (more than 60 % in some cases) and consequently higher levels of vulnerability in natural ecosystems, water resources, food security health and lost of infrastructure.,

Recent evaluations in Bolivia have shown that extreme climatic events produced an estimate of 250 millions losses in the agriculture sector, cattle ranging and road infrastructure for the hydrological year 2005-2006. Health risks due to the expansion of disease vectors due to temperature and rainfall and humidity patterns changes have increased especially in the case of malaria and dengue among others.

In parallel, poverty problems related to environment degradation and the increment of vulnerability to climate change enhance the problem. Unfortunately the major impacts are foreseen in the rural areas where more of the poor people live. The main issues to consider when analyzing rural livelihoods[7] are:

a) **Dependence on the ecosystem**, the rural population depends directly from the use of natural resources and environmental services from the ecosystems as a primary or secondary support of their life system. Forest ecosystems provide basic requirements, fuel, food, medicines and shelter. The lost of these ecosystems increases the vulnerability of rural populations.

b) **Access to water:** scarcity of water is already a major problem in arid and poor areas of the country, and excess of floods in plains. The lost of forests upstream in watersheds along without adequate management has increased frequency and intensity of floods. Additionally, the reduced development of hydraulic infrastructure determines a strong vulnerability to lack of water because the country is not prepared for this type of events.

c) **Access to land use,** the limited access to productive land is other aspect that might be worsened by climate change, due to the reduction of productive areas as a consequence of temperature rise.

d) **Forest resources degradation,** Bolivia has high deforestation rates, around 250,000 ha /year and there is a tendency to increase this number. The emissions for 2000 from the land use and land use change sector represent 80% of the total GHG emissions which come from a combination of energy and land habilitation uses. This clearly shows the high potential of the country to participate in the climate change battle through the reduction of deforestation.

The main goal of all strategic instruments both in adaptation and mitigation are created to generate development policies for poverty eradication through the sustainable use of natural resources.

[6] Based on IPCC estimations for 1990 and national inventories of GHGs for 1990 for Bolivia [7] Plan Quinquenal del Programa Nacional de Cambios Climáticos.

2. Present Deforestation in Bolivia

Bolivia is among the 10 countries with greatest biodiversity in the world – a megadiverse country. More than 52% of the Bolivian territory is covered by forests. It is the sixth country in the world in terms of the highest quantity of natural tropical forests and world leader in the voluntary forest certification of natural tropical forest with over 2 million hectares certified. Forest loss is a current and real threat to the conservation of Bolivia's natural resources, biodiversity, economic growth and development. Over the period 1993-2000 the Forest Superintendency estimates that the annual national average of deforestation was 270,333 ha. In 2004 large scale deforestation (> 25 ha) reached 276,000 ha. Principal drivers for this trend are land use change to cash crop production and cattle ranching, forest fires, illegal logging, and new settlements.

a. Legal Framework

Bolivia has made enormous efforts to improve and to support the sustainable use of natural resources. The legal and institutional framework related to the use of natural resources is very well developed.

Bolivia has two laws which directly regulate land use in the country, the first one is the law on environment (No 1333) approved in 1992 and the other is the Forest Law (no 1700) approved in 1996. Both laws have the aim to regulate human en relation to nature, and the environment. Besides, there's the Law on Land Reform (Ley 1715) which was established in 1996 to improve the unclear land tenure situations in the country and regulate access to land.

Bolivia's forest development policy takes the principles of sustainable development as guidelines for meeting socio-economic challenges, managing the natural heritage, organizing technological updating and building institutions.

b. Forest management: legal framework and actors

The approach mentioned above was incorporated when formulating Forest Law 1700, which represented the country's first application of sustainability principles per sector. This law established a Forest Code, which has the objective of regulating the sustainable use and protection of forests and forest lands for the benefit of present and future generations, while coordinating such activities with the country's social, economic and environmental interests.

The forestry régime of Law 1700 extended access to the forest and its benefits in Bolivia. This law norms the use of forestry lands, opening the way for new sectors, and improving the conditions for all those who want to work in the Bolivian forestry industry. In the case of forest use, the situation demanded orientation and laws that balance economic, social and environmental aspects. Since the application of this Law, access to forestry resources has been transformed, formally including rural settlers, private properties and the TCOs within the new régime. Nowadays Local Social Groups (ASLs), the Original Community Lands (TCOs) and the private farms on the land, are added to the already-existing concessions scheme.

The regulations, especially regarding the use of natural resources, are indispensable to safeguard these resources, and to be able to sustain productive activity over time.

Without doubt, implementation of the Law implies a process of technology transfer, adopting new practices and forms to undertake the work. However, the results seen today demonstrate that it is a régime that guarantees the forestry sector's sustained stability and growth.

Under Bolivia's new Forest Law, the institutional structure of the forestry sector when created was: the Ministry of Sustainable Development and the Environment is in charge of implementing the Forest Code as national policy-making institution, the Superintendence as regulatory institution and the National Forest Development Fund as financial institution, while prefectures and municipalities provide support. The Regulatory System for Renewable Natural Resources, also established by the Forest Law and working with the Forest Superintendence, has the objective of regulating, controlling and supervising the sustainable use of renewable natural resources.

Currently, 47 ASLs, and 35 TCOs have been formed in the country. There are 208 private properties and 78 concessions, with a total of approximately 8 million hectares. Of these forests, 2 million hectares have voluntary forestry certification, and Bolivia has become the world's leading country in this reagard. This demonstrates that the forestry régime regarding its environmental variable is working, and the forestry actors are applying a Law that is indispensable for the country.

The forestry areas granted in concession to companies total 5,091,086 hectares, all under General Plans of Forestry Management. This means that, of the forestry actors in Bolivia, they are the ones that work the greatest forest areas, protecting this natural resource based on Forestry Law 1700.

The following table shows who are the main actors by right in the forest sector and how they have been increasing over time.

Table 1. Forest access by right (hectares managed according to authorised plans)

Year	Industrial* Concessions	Local Community Associations	Long-term* Concessions	Indigenous Territories	Private Properties	Total
1997	5,498,017	0	361,721	0		**5,859,738**
1998	5,516,615	0	339,000	121,609	93,443	**6,070,667**
1999	5,330,853	0	294,022	141,150	199,791	**5,965,816**
2000	5,302,520	0	294,022	238,259	239,670	**6,074,471**

Access to forestry concessions is through the Forestry Superintendence, which calls a public bid to grant each concession, on the minimum base of annual forestry rentals and the list of referential prices established by the Ministry of Sustainable Development and Environment. That is to say, the best offer is awarded the concession. It must be noted that to date, and since the approval of Forestry Law 1700 in June 1996, no bids have been held. The current concessions existed prior to the Forestry Law.

Like other forestry actors, the concessionaires must follow the procedures in the Forestry Law, which regulates the use of this natural resource. As an indispensable requirement to initiate forestry operations, the concessionaire must have the respective management plan approved, and realize the technical instruments called for by the norm.

Forestry concessions are granted for 40 years, renewable every five years, after an audit of fulfillment of the Program of Sustainable Forestry Management.

Forest Management Regulations are of a very high standard reason why Bolivia companies and indigenous territories have been able to certify 2 million hectares of natural forest according the criteria of the Forest Stewardship Council (FSC) Certification is an instrument, a group of steps that protect the

environment and social surroundings. This provides an evaluation of the baseline for the forest, and the planning of productive capacity, taking into account the social factors surrounding the production.

Finally, it gives a long-term strategy of the future goals of that forest, and not only how to manage the forests but also how to develop the chain of custody.

However it is necessary to recognize the differences between the actors and their need to use the forestry resource, involving forestry management so that it is productive. This way, the national, foreign, large and small investor should have an investment modality with sustainable forest management. The design of forestry policies that consider these differences and promote use of the forest resource is important.

In this regard the Original Community Lands (TCOs) are rural areas granted to the country's communities of native people. For the native people, such as the Confederation of Native People of Bolivia (CIDOB), the TCO constitutes "the global space where the social and cultural experiences, the animals, the forests, the air, the waters and the human being develop; are interrelated and interact; all this comprises the territory." Under this view, the State gives preference to their requests for lands, and contemplates this in the Law, also guaranteeing exclusivity in forestry use in the TCO properly recognized by the State.

The involved area dedicated to forestry use is subject to the Forestry Rental and its consequent Forestry Management Plan. According to the land's suitability for use, the TCO can have available determined surfaces for forestry use, which are worked by the community's native people. The number of jobs depends on the decision of each community. The more wood volume they want to use, the more jobs are generated for their members.

Currently, the TCO national demands is 17.7 million hectares, in which the total titled surface is 3.8 million hectares. Of these, only 441,285 hectares are dedicated to forestry production, equivalent to 12% of the titled lands.[8]

The forestry regime has prove to be able to demonstrate that maintaining forests and use them properly, development and poverty reduction can be achieved, nevertheless the 8.5 million hectares under this law represent only 16.0 % of the total forest in the country. The deforestation is still a risk in the rest 84% and therefore there is the need to strengthen the implementation of the Law and to use new mechanisms to provide alternatives to land use change. **Environmental payments for reducing deforestation has the potential to complement all the effort already done in the country**.

3. Noel Kempf Mercado Project: Reducing deforestation experience in implementation

The project began in 1997, when 832,000 hectares of tropical forest adjacent to the Noel Kempff Mercado National Park in northeastern Bolivia, where large areas of the forest were threatened with timber harvesting and deforestation. The Government of Bolivia through the National Program of Climate Change, a Bolivian conservation organization: Fundación Amigos de la Naturaleza (FAN) and The Nature Conservancy created the Noel Kempff Climate Action Project. Together with three energy companies, the partners terminated the logging rights and the land was incorporated into the national park. Then the project partners launched a rigorous scientific program to measure the carbon stored in those 832,000 hectares and the carbon emissions avoided by the project.

[8] Bolivian Forestry Chamber

In November 2005 an internationally accredited certifier evaluated and certified the Noel Kempff Climate Action Project design and its emissions reductions. It is the first forest emissions reductions project to be fully certified using rigorous standards based on those used in the Clean Development Mechanism. The Noel Kempff project provides an excellent working example of how carbon sequestered in the living biomass of forests, and emissions reductions achieved through forest conservation, can be scientifically quantified, monitored and certified. This type of activity will need to be accomplished at a much a larger scale to make a significant difference to greenhouse gas concentrations.

The results of that monitoring and third party certification show that from 1997 to 2005, a total of 989,622 tons of carbon dioxide that is sequestered in the forests would have been released into the atmosphere if not for the project.

Table 2. Bolivia: land tenure and forest rights

Land distribution by type of owner	Area in thousand ha		With approved FMP (a)
	Highlands	Lowlands	
Forest areas in the country	8,900	44,500	8,500
Total forested lands (b)	4,018	24,682	
Permanent production forest areas (c)			
Private lands by actor	4,381	43,249	1,078
Medium- and large-scale farmers (d)	1,323	3,744	723
Small-scale farmers (d)	10,678	2,151	
Community lands (d)	12,111	19,516	
Indigenous areas (TCO) claimed and admitted (e)	749	4,249	
Indigenous territories (TCO) titled areas (e)	178	56	
Number of indigenous demands (e)			
Forestry rights in public lands	0	5,399	5,399
Forest concessions (f)	0	2,500	906
Forest concessions for non-timber products (g)	0	2,200	488
Municipal forest reserves (h)	0	488	
Long term contracts and research concessions (f)	4,237	14,096	
Protected areas (i)			

Notes: a) areas in lowland Bolivia with an approved Forest Management Plan (FMP) in 2003. Information based on annual reports of the Superintendencia Forestal (SF), taken from Terrazas (2005), b) areas with any type of forest cover taken from MDSMA (1995), c) areas declared for sustainable forest management according to DS. 26075 of February 2001, d) correspond to land distributed by INRA and INC from 1953-2002, based on Balderrama (2002), e) based on INRA, f) adapted from SF (2005), g) personal communication from Director of Land Sanitation, INRA, h) data obtained from Direcci—n Forestal, MDS i) quoted in Bojanic (2005) based on SERNAP.

a. Project Actors

Project Developers/ Managers: The Nature Conservancy and Fundación Amigos de la Naturaleza (FAN)

Project Investors: Government of Bolivia, American Electric Power Company (AEP), BP-Amoco, PacifiCorp Lead Carbon Measurement Partner: Winrock International Institute for Agricultural Development Certification: Emissions reductions, certified in November 2005 by Société Générale de Surveillance (SGS)

b. Main Project Benefits

- Emission reductions: Without the project, 989,622 tons CO2 would have been released into the atmosphere between 1997 and 2005
- Carbon benefits from the project guaranteed through 2026
- Preserves a rich and biologically diverse forest ecosystem among the Amazonian, Chaco and Cerrado ecoregions
- Residents of villages in the park achieved legal status as "Communities of Native Peoples," and application for their official land title is under way
- Provides alternative, environmentally sustainable economic opportunities for the local population by the establishment of a community forestry program among others.

c. Project Design

Carbon Credits: Carbon emission reductions were generated by this project through two specific activities:

i) Deforestation avoidance through cessation of logging in former concessions. Logging right of concessions previously operating in the project area were retired with funds generated for project activities.

ii) Enforcing the deforestation ban in protected areas within the park by reducing slash-and-burn agriculture and initiating alternative income programs for the surrounding communities.

Additionality: The project provided carbon financing to stop logging in the park and deforestation around communities. Without this funding, these activities would have continued, leading to the loss of forest cover and release of carbon dioxide.

Project leakage: A non-linear dynamic optimization model was used to quantify how the project might cause the loss of carbon benefits outside of the project boundary (e.g., shifting timber production elsewhere in the region and reducing the overall carbon benefits of the project). The project included programs and activities explicitly designed to minimize leakage as much as possible. Project partners detected the leakage was arising in three ways: a shift of logging to areas outside the project boundaries, logging by communities in former concessions and shift of domestic timber supply internationally. From 1997 to 2005, project partners calculated a loss of 171,618 tons of CO2 benefit from leakage. This loss was factored into the calculation of the final net carbon benefits from the project.

Permanence: The project area is now protected under the auspices of the National Service of Protected Areas and FAN Bolivia. The project finances 27 rangers and an infrastructure to protect the park. Monitoring: The project design includes a comprehensive plan to monitor biomass increments, socioeconomic impacts, development of timber markets and deforestation dynamics.

Certification: The certification process involved assessing the project's design document and methodologies. These included assessment of additionality, baseline, leakage, monitoring, and environmental and social impacts.

3.1 Community development

Local communities are responsible for and beneficiaries of forest conservation. To improve the livelihood of the seven communities living out and inside the park and to strengthen their organization structure two sequential programs have been initiated. APOCOM (1997-2001) improved access to basic services (health, education, communication), PRODECOM (2002 –2006) emphasises community development by securing land titling, self-organisation, and income generating activities (community forestry, micro enterprises). Amongst others, the following activities have been supported:

- **Organization empowerment:** Traditional organizations and grouping of indigenous councils into the Central Indígena Bajo Paraguá (CIBAPA) has been supported. Today, CIBAPA is registered as an organisation with legal standing representing the indigenous communities around the park.
- **Land tenure and community property rights:** Before the project started, none of the communities bordering the park had any property rights to the land they had historically live on. Today, the entitlement demand of 360,565 ha of Native Communal Land has advanced by nearly 80% of its due course.
- **Elementary and high school education:** Scholarships were given to 120 students to continue their studies in courses that are not available in the communities.
- **Capacity training:** 4 communities were trained in sustainable community forestry. Agricultural promoters were educated and special scholarships in strategic areas (business administration, tourism, agricultural and forest engineering) financed.
- **Income generation:** Amongst other income generating activities the project supported the elaboration of the community forest management plan and the establishment of the community forest concession. Today, IBAPA is running its own sawmill being the first indigenous community with a timber selling point in the capital of the Department of Santa Cruz.
- **Land use planning:** To enhance access to livelihood means and to mitigate leakage the project financed the elaboration of a land use plan covering the overall indigenous territory.
- **CERS benefits:** The Government of Bolivia owns a 49% of the emissions reductions achieved in the lifetime of the Project, after cashing the CERS the money generated will be use as follows: To cover the activities of park protection and fundamentally to support the communities development and wellbeing.

The project represents a success history, first for the institutional framework where the government of Bolivia along with national and international NGOs, and Energy Companies has been able to support the implementation of the NKMP, improving the park and overall supporting the sustainable development of the communities, while providing a service to the world reducing GHG emissions that are certified. This is an example proving that this can be done in a technically and scientifically manner but also supporting sustainable development in the host country.

4. Financial Instruments use to secure resources for National Parks system

The National Protected Areas System (SNAP) was established by the Government of Bolivia in 1992, and presently includes 22 protected areas of national interest covering 10.68 million of ha (representing 17 percent of the Bolivian territory) of which 19 areas (encompassing 15% of national territory) are currently under SERNAP management. SNAP is very ambitious, given the human and financial constraints Bolivia faces. The Government of Bolivia (GOB) has taken steps to establish a policy framework to support biodiversity conservation and to closely link this to social development and poverty alleviation.

The Foundation for the Development of the National System of Protected Areas (FUNDESNAP) was created in 2000 and is legally recognized as a private foundation by the La Paz department prefecture. Its mission is to raise, channel, and administer financial and non-financial resources that enable the National Service of Protected Areas (SERNAP) to advance the principles, policies and strategic goals of Bolivia's National Protected Areas System (SNAP).

FUNDESNAP currently manages $11.1 million in permanent endowment funds, a $2.1 million sinking fund from which both capital and earnings may be spent, and $4.8 million in project funds. As a private, non-profit foundation, FUNDESNAP is characterized by transparent procedures and is free from political interference. Given it role in supporting SERNAP, it is operationally linked but not subsidiary to the Bolivian government.

In five years, FUNDESNAP has demonstrated the financial management and administrative capacity needed to realize conservation and development goals in Bolivia's protected areas. The initial impetus for its formation was the failure of a public entity to adequately manage public resources intended to generate investment income and project funds to cover Bolivia's protected area costs. Endowment resources totaling $9.95 million were transferred to FUNDESNAP management in 2001 and have grown an average of 6.9 percent per annum over the last three years under its stewardship. Previous management had attained a return of only 1 to 2 percent on average over 4 years. FUNDESNAP's maximum decision-making and representational body is its founder's Assembly comprised of nine representatives of the Bolivian government, the private sector, civil society, international cooperation, and representatives of the protected area management committees.

FUNDESNAP financing ensures that the best technical tools are available and used to advance protected area management including the Protected Areas Planning System (SIPAP) and Monitoring Effective Management System (MEMS). The SIPAP provides an orderly framework for the generation of annual operating plans for each area and for the overall protected area system. At present, six of the eight areas have long-term management plans. The MEMS, based on The Nature Conservancy's Scorecard, monitors the fulfillment of planned activities. With Critical Ecosystems Partnership Fund (CEPF) support, SERNAP is currently working to strengthen this system. Ultimately, SERNAP aims to take its planning and monitoring efforts beyond protection and distraction to enable others to work effectively on environmental education and sustainable development.

FUNDESNAP and SERNAP together present the institutional capacity needed to finance and implement long-term management of Bolivia's protected areas.

This represent a good experience for a public and private framework that can manage financial resources, capacity that is require for the implementation of incentive mechanism on the ground for reducing emissions from deforestation.