Forests, Land Use, and Climate Change Assessment for USAID/Mexico

Final Report
Prepared by the CIFOR team
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Contents

List of Acronyms

AFOLU	Agriculture, Forestry and other Land Use	Agricultura, Bosques y Otros Usos de Suelo
BECC	Border Environment Cooperation Commission	Comisión para la Cooperación Ecológica Fronteriza
CCBA	Climate, Community, and Biodiversity Alliance	Alianza para el Clima, las Comunidades y la Biodiversidad
CDM	Clean Development Mechanism	Mecanismo de Desarrollo Limpio
CENAPRED	National Center for the Prevention of Disasters	Centro Nacional de Prevención de Desastres
CICC	Interministerial Commission on Climate Change	Comisión Intersecretarial de Cambio Climático
CIFOR	Center for International Forestry Research	Centro Internacional de Investigación Forestal
CO_2e	Carbon Dioxide Equivalent	Bióxido de carbono equivalente
COMEGEI	Mexican Committee for GHG Emission Reduction and Sequestration Projects	Comité Mexicano para Proyectos de Reducción de Emisiones y de Captura de GEI
CONABIO	National Commission for the Knowledge and Use of Biodiversity	Comisión Nacional para el Conocimiento y Uso de la Biodiversidad
CONACYT	National Science Council	Consejo Nacional de Ciencia y Tecnología
CONAFOR	National Forest Commission	Comisión Nacional Forestal
CONAGUA	National Water Commission	Comisión Nacional del Agua
CONANP	National Commission for Natural Protected Areas	Comisión Nacional de Áreas Naturales Protegidas
COP	Conference of the Parties (to the UNFCCC)	Conferencia de las Partes
FAO	Food and Agriculture Organization of the United Nations	Organización de las Naciones Unidas para la Agricultura y la Alimentación
FCPF	Forest Carbon Partnership Facility	Fondo Cooperativo para el Carbono de los Bosques
FIP	Forest Investment Program	Programa de Inversión en Bosques
FMCN	The Mexican Fund for Nature Conservation	Fondo Mexicano para la Conservación de la Naturaleza
FSC	Forest Stewardship Council	
GEF	Global Environmental Facility	Fondo Mundial para el Medio Ambiente

Gg	Gigagram	Gigagramo
GHG	Green House Gas	Gases de Efecto Invernadero
GT-PECC	Working Group on the Special Climate Change Program	Grupo de Trabajo para el Programa Especial de Cambio Climático
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit	Agencia de Cooperación Alemana
IDB	Inter-American Development Bank	Banco Interamericano de Desarrollo
INE	National Institute of Ecology	Instituto Nacional de Ecología
INEGEI	Mexican Greenhouse Gas Emissions Inventory	Inventario Nacional de Emisiones de Gases de Efecto Invernadero
INEGI	National Institute of Statistics and Geography	Instituto Nacional de Estadística y Geografía
INIFAP	National Institute for Agricultural, Livestock and Forestry Research	Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias
IPCC	Intergovernmental Panel on Climate Change	Panel Intergubernamental sobre el Cambio Climático
LULUCF	Land Use, Land Use Change, Forestry	Uso de Suelo, Cambio de Uso de Suelo y Silvicultura
MCP	Mexico Competitiveness Program	
MRV	Monitoring, Reporting, and Verification	Monitoreo, Presentación de informes y Verificación
Mt	Million tons	Millones de toneladas
NAMA	Nationally Appropriate Mitigation Action	Acción Nacional Apropiada de Mitigación
NGO	Non-governmental Organization	Organizacion No Gubernamental
PEACC	State Climate Change Program	Programa Estatal de Acción ante el Cambio Climático
PECC	Special Climate Change Program	Programa Especial de Cambio Climático
PEMEX	Mexican state oil company	Petróleos Mexicanos
PES	Payments for Ecosystem Services	Pagos por servicios ambientales
PROCAMPO	Direct Rural Support Program	Programa de Apoyos Directos al Campo
PROCYMAF	Sustainable Community Forestry Program	Programa de Desarrollo Forestal Comunitario
PRODEFOR	Forest Development Program	Programa de Desarrollo Forestal
PRODEPLAN	Commercial Plantations Program	Programa de plantaciones Forestales Comerciales
PROFEPA	Federal Attorney of Environmental Protection	Procuraduría Federal de Protección al Ambiente
PROGAN	Program for Sustainable Livestock	Programa de Estímulos a la

	Production and Management	Productividad Ganadera
PSA-CABSA	Payment for Environmental Services Program for carbon sequestration, biodiversity and the establishment and improvement of agroforestry systems	Pago por Servicios Ambientales por Captura de Carbono y los Derivados de la Biodiversidad y para Fomentar el Establecimiento y Mejoramiento de Sistema Agroforestales
REDD	Reducing Emissions from Deforestation and Degradation	Reducción de Emisiones derivadas de la Deforestación y Degradación
R-PIN	Readiness Plan Idea note	
R-PLAN	Readiness Plan	
R-PP	Readiness Preparation Proposal	
SAGARPA	Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food	Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación
SEMARNAT	Ministry of Environment and Natural Resources	Secretaría de Medio Ambiente y Recursos Naturales
SFM	Sustainable forest management	Manejo Forestal Sostenible
SPF	Strategic Programmes Fund of the United Kingdom	Fondo de Programas Estratégicos del Gobierno del Reino Unido
UNAM	National Autonomous University of Mexico	Universidad Nacional Autónoma de México
UNDP	United Nations Development Programme	Programa de las Naciones Unidas para el Desarrollo
UNEP	United Nations Environment Programme	Programa de las Naciones Unidas para el Medio Ambiente
UNFCCC	United Nations Framework Convention on Climate Change	Convención Marco de las Naciones Unidas sobre el Cambio Climático
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries	Programa Colaborativo de Naciones Unidas sobre Deforestación y Degradación Forestal en Países en Desarrollo
USAID	Unites States Agency for International Development	Agencia de Estados Unidos para el Desarrollo Internacional
VCS	Voluntary Carbon Standard	
WB	The World Bank	El Banco Mundial

Executive *Summary*

This assessment presents an analysis of climate change challenges with respect to sustainable landscapes, with an emphasis on the vulnerability of ecosystems and biodiversity to climate change in Mexico, summarizes the country's climate change policies, strategies and programs, and the outcomes and lessons learned from past and ongoing climate change programs, including work supported by bilateral and multilateral agencies and donors.

The purpose of this assessment was to analyze emerging issues related to forests, land-use, and climate change in Mexico within the context of current US and Mexican policies, strategies and programs. The ultimate objective was to clearly identify pragmatic, achievable cooperation options for future USAID programming that meet the following criteria:

- Have a short/medium term impact;
- Have the potential to be sustainable beyond the life of the activity;
- Are cost effective and/or innovative.

The assessment is based on the following components:

- The review of official national, sectoral and, where relevant, state programs and reports, as well as scientific literature when needed;
- The review of goals and results from previous activities of USAID Mexico in areas relevant to the assessment;
- The review of activities of other bilateral and multilateral donors in areas relevant to the assessment;
- Interviews with key stakeholders and USAID partners; and
- A gap analysis for defining the priority actions based on the information described above.

The work involved the following stages:

1. Data collection
2. Meetings and interviews with key actors
3. Analysis
4. Gap Analysis and Recommendations

The assessment was carried out by Center for International Forestry Research (CIFOR) according to the Scope of the Work agreed between the USAID and CIFOR. The assessment was conducted by a two-person team led by (CIFOR, team leader) and Mr. Manuel Estrada (under contract with Carbon Decisions International, local climate change expert) between January 25 and April 15, 2010. Mr. Salvador Sanchez, USAID/Mexico Natural Resources Advisor, and Ms. Susan Wofsy, USAID/Mexico Environment Officer, oversaw the assessment process and participated in stakeholder consultations.

A. Introduction

1. Background and objective

This assessment presents an analysis of the climate change challenges with respect to sustainable landscapes in Mexico, the country's climate change policies, strategies and programs, and the outcomes and lessons learned from past and ongoing climate change programs, including work supported by bilateral and multilateral agencies and donors.

This work seeks the following objectives:

1. Identify the key forestry, land use and climate change issues in Mexico, with an emphasis on the vulnerability of ecosystems and biodiversity to climate change.
2. To recommend options for future USAID programming (identifying opportunities for adjusting existing USAID/Mexico activities) aimed at addressing the key challenges identified during the assessment, describing how and to what extent those actions may contribute to tackling such challenges.

2. Methods used

The purpose of this assessment was to analyze emerging issues related to forests, land-use, and climate change in Mexico within the context of current US and Mexican policies, strategies and programs. The ultimate objective was to clearly identify pragmatic, achievable cooperation options for future USAID programming that meet the following criteria:

- Have a short/medium term impact;
- Have the potential to be sustainable beyond the life of the activity;
- Are cost effective and/or innovative.

This assessment aims at describing baseline information, identifying possible synergies with ongoing initiatives, and providing options for designing a program of work. The proposed program should aim to support Mexico's efforts to reduce greenhouse gas emissions through ecosystem-based mitigation and adaptation actions that might take advantage of emerging carbon markets and help the country approach a low carbon development path.

This assessment is based on the following components:

- The review of official national, sectoral and, where relevant, state programs and reports, as well as scientific literature when needed;
- The review of goals and previous activities of USAID Mexico in areas relevant to the assessment;
- The review of activities of other bilateral and multilateral donors in areas relevant to the assessment;
- Interviews with key stakeholders and USAID partners; and
- A gap analysis for defining the priority actions based on the information described above.

The work involved the following stages:

1. Data collection
   - Collecting existing documentation on climate change, forests, agriculture and land use in Mexico, such as that prepared by government agencies, bilateral and multilateral donors, and national and international NGOs;
   - Internal USAID reports, including summaries of previous relevant projects, evaluations of current projects, and sector-related assessments;
   - Sector-related reports and analyses conducted by the Government of Mexico (GOM); and
   - Sector-related research available from universities, development banks and other institutions.

2. Meetings and interviews with key actors
   - USAID/Mexico staff to review the Mission's current portfolio with respect to climate change and forestry activities; and
   - Relevant ministries and agencies, donor organizations, NGOs, and other organizations involved in forestry, land-use and climate change projects in Mexico.

3. Analysis
   - Analysis of the data compiled through the literature review and interviews in order to identify the major climate change challenges and opportunities related to the forestry and other land use sectors in Mexico.
   - The topics covered included:
     - Country profile and key issues - An analytical overview and synthesis of the status of forests and land use in Mexico and the major climate change challenges related to the forestry and other landscapes;
     - Policy Context - GOM laws and policies which impact how land is used as well as GOM's priorities to address climate change that are directly or indirectly related to forestry and land-use;
     - Greenhouse Gas Reductions and Low Carbon Development Strategies;
     - Carbon Market Readiness; and
     - Donor and Government Programs - Recent and ongoing initiatives/projects related to forestry, land use and climate change carried out by the GOM, USAID, and other bilateral and multilateral donors.

4. Gap Analysis and Recommendations
   - Synthesis of the information above; and
   - Recommendations for possible areas that USAID/Mexico might focus on for a new four to five year climate change program.

The assessment was carried out by Center for International Forestry Research (CIFOR) according to the Scope of the Work (Annex 1) agreed between the USAID and CIFOR. The assessment was conducted by a two-person team consisting of Dr. Markku Kanninen (CIFOR, team leader) and Mr. Manuel Estrada (under contract with Carbon Decisions International, local climate change expert) (See Annex 2 for biodata) between January 25 and April 15, 2010. Mr. Salvador Sanchez, USAID/Mexico Natural Resources Advisor, and Ms. Susan Wofsy,

USAID/Mexico Environment Officer, oversaw the assessment process and participated in stakeholder consultations.

B. Country profile and key issues

1. State of Mexico's Agriculture, Forestry and other Land Uses (AFOLU) sector[1]

According to the Forest Resources Assessment published by the United Nations Food and Agriculture Organization (FAO) in 2005, Mexico's forests covered 64,238,000 hectares (ha). This area is roughly evenly divided between coniferous and broadleaf forests, and large areas of shrubs and woodlands can also be found in the country. Most of the forests are owned by *ejidos* or communities (either agrarian or indigenous) (55%), and by private actors (35%), while very few are national forest lands.

Tenure rights are relatively secure in Mexico, although agrarian conflicts persist in some areas. About 85% of the land properties were geo-referenced by the government and official property titles were handed over to the *ejidos*, communities and private land owners. The owners of the remaining 15% were not interested in delimiting their property or their lands were located in areas with access problems due to presence of conflicting groups (political, drugs, organized crime). About 2 million hectares are disputed among indigenous groups or between indigenous and non-indigenous communities. Conflicts in land tenure increase the risk of deforestation and degradation due to forest fires, over exploitation and illegal logging. Some of the conflicting areas are located within indigenous communities.

It is estimated that 12 to 13 million people live in forest areas in Mexico and about 5 million of them are indigenous people, most of them living in extreme poverty conditions (medium to very high marginalization levels, according to the National Population Council marginalization index), with limited access to education, public services and decent labor; generally, poor people depend on firewood as energy source for cooking, which may cause forest degradation where firewood is scarce.

In the last decades, the country's forest cover has gradually receded from 68.86 million hectares in 1993 to approximately 66.46 million hectares in 2007, including all types of second-growth vegetation (INEGI, series 2, 3 and 4). Scrublands diminished only slightly in the same period of time from 20.76 million hectares in 1993 to 20.15 million hectares in 2007. The process of degradation was especially notable in the different types of forests, increasing from 30.89 million hectares in 1993 to 33.43 million hectares in 2007.

According to the National Forestry Commission (CONAFOR, in Spanish), the net annual deforestation rate (rate of total or raw deforestation minus the rate of forest recovery) was 203,103 hectares in average between 1993 and 2002 and 160,667 between 2002 and 2007, with an average between 1993 and 2007 of 185,729 hectares. A decrease was also observed in the

[1] The information presented in this section was summarized from Mexico´s Readiness Preparation Plan submitted to the World Bank´s Forest Carbon Partnership Facility, and presented during the PC 5 Meeting - Gabon: March 22-25, 2010. Available at: http://www.forestcarbonpartnership.org/fcp/MX.

rate of forest degradation from 341,639 hectares/year between 1993 and 2002, to 246,830 hectares/year between 2002 and 2007, indicating that the process of degradation is faster that the process of deforestation. Currently, a large part of the deforestation observed in the country happens through the process of degradation, while the direct deforestation of primary forests plays a relatively minor role. Public investment in forestry and conservation, low profitability of agriculture, rural out-migration, and poor suitability for agriculture of remaining forestland contributed to the decline in the annual area of forest loss in the past decade.

The main causes of deforestation in the country are complex and vary from region to region. High-input agriculture, such as the avocado plantations in Michoacán, conversion to grazing lands in the states bordering the Gulf of Mexico and in the northern States, development of tourist infrastructure, such as the Mayan Riviera in the State of Quintana Roo, and the small-scale conversion to slash-and-burn agriculture in the southern States, due to population pressure, are some of the major causes identified in the literature. In general in the country deforestation is mainly caused by the change in land use for agricultural and urban use; by forest fires, illegal logging, special permits for alternative land uses (like those granted to the Federal Commission of Electricity for the development of power infrastructure) and to a lesser extent by natural disasters (Figure 1). Forest degradation is basically driven by the extraction of timber and firewood, by slash-and-burn, and by illegal logging.

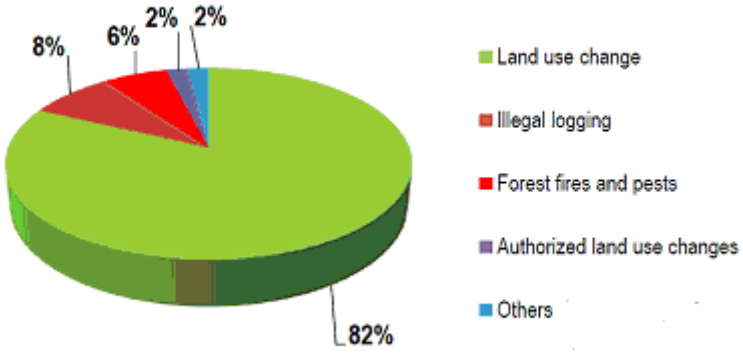


Figure 1. Main causes of deforestation in Mexico
Source: Mexico´s R-PP

2. *Mexico's AFOLU sector in the context of climate change mitigation and adaptation*

2.1 Mexico's Greenhouse gas emissions from the Agriculture, Forests and Other Land Uses (AFOLU) sector

The update of the Mexican Greenhouse Gas Emissions Inventory (INEGEI) finished in 2009[2] estimated GHG emissions of six gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride) for the period from 1990 to 2006. According to these estimates, in 2006 Mexico generated GHG emissions for a total of 709,005 Gigagrams (Gg) of carbon dioxide equivalent (CO_2e). Of this total, energy uses were responsible for the 60.7% (430,097 Gg); waste contributed with 14.1% (99,627.5 Gg); land use, land-use change and forestry emitted 9.9% (70,202.8 Gg); industrial processes: 9% (63,526 Gg); and agriculture: 6.4% (45,552.1 Gg). The increase in GHG emissions in the period 1990-2006 was approximately 40%, for an annual average growth of 2.1%.

The Agriculture, Forests and Other Land Uses (AFOLU) sector includes CO_2 emissions arising from vegetation management practices and those of other GHG resulting from forest fires. On average, the AFOLU sector emitted 80,162 Gg CO_2e/year in average over the period from 1990 to 2006. Most of these emissions resulted from land use changes from forest to agriculture and pasture, although the gradual degradation of forests was also a relevant source in the net balance.

It is important to point out that GHG emissions in this sector decreased significantly from 2003 to 2006 due to the reduction in the rate of land use change, particularly from forest to pasture and from intact forest to degraded forest. At the same time, a slight increase in the conversion of forests to agricultural lands was observed in that period with regard to the emissions estimated from 1990 to 2002.

On the other hand, GHG emissions from agricultural activities (mainly crop and soil management and livestock-related) decreased from 47,427.50 Gg CO_2e in 1990 to 45,552.10 Gg CO_2e in 2006 (a 0.3% decrease). Around 80% of these totals were caused by methane emissions arising from enteric fermentation in livestock (38,802.6 Gg in 1990 to 37,180.9 Gg in 2006, respectively), while emissions from agricultural soils were second in importance with volumes between 6,631.9 and 7,800.5 Gg CO_2e/year in the period 1990-2006. Manure management, rice cultivation and in situ burning of agricultural residues made minor contributions to total emissions from this sector along the period.

[2] This inventory was included in Mexico´s fourth National Communication to the UNFCCC. Available at: http://www2.ine.gob.mx/publicaciones/consultaPublicacion.html?id_pub=615.

2.2 Mexico´s GHG mitigation potential in the AFOLU sector

A number of studies have been developed in the last few of years to assess Mexico´s GHG mitigation potential and costs. In 2008 the Centro Mario Molina and McKinsey published the results of their joint project "Low carbon growth: a potential path for Mexico", according to which the GHG emissions of the country could go from 610 million tons of CO2e (MtCO2e) in 2005 to 1,095 $MtCO_2e$ in 2050. The mitigation options proposed in this study would limit Mexico´s GHG emissions to 268 MtCO2e in 2050, which is consistent with the objective of 2 tCO2e per capita per year associated to a stabilization in atmospheric concentrations between 450 and 500 parts per million. The document describes 144 mitigation opportunities and quantifies their cost per mitigated ton of CO2e. The largest volumes of potential emission reductions identified by this study would occur in the energy sector (26%), followed by waste management (16%) and the industrial (16%), transport (14%), agricultural (11%), forest (10%) and the commercial and residential (7%) sectors. Taken together, the individual contributions of the agriculture and forest sector to the total mitigation potential would therefore be almost as significant as that of the energy sector.

Agriculture and forestry is one of the key sectors in which greenhouse gas emissions can be reduced in Mexico. According to the "Low carbon growth: a potential path for Mexico" study, the interventions in forestry - including reforestation, commercial plantations, and measures to reduce emissions from deforestation and forest degradation (REDD) - account for 85 percent of the proposed mitigation in the agriculture and forestry sector. There are fewer cost-effective measures for reducing greenhouse gas emissions in the agricultural sector. Minimum-tillage crop production appears to be a promising technology for Mexico to reduce energy use and aid in soil carbon sequestration. The production of liquid biofuels faces financial and economic barriers, and research and development has not been conducted on other low-carbon measures in the agricultural and livestock sectors.

On the other hand, experience in Central America has shown that the introduction of silvopastoral (forest grazing) systems to rehabilitate degraded pastures can simultaneously protect soils, store carbon, and foster biodiversity (Watershed Markets), which might be an option also in Mexico with large areas of low-productivity pastures.

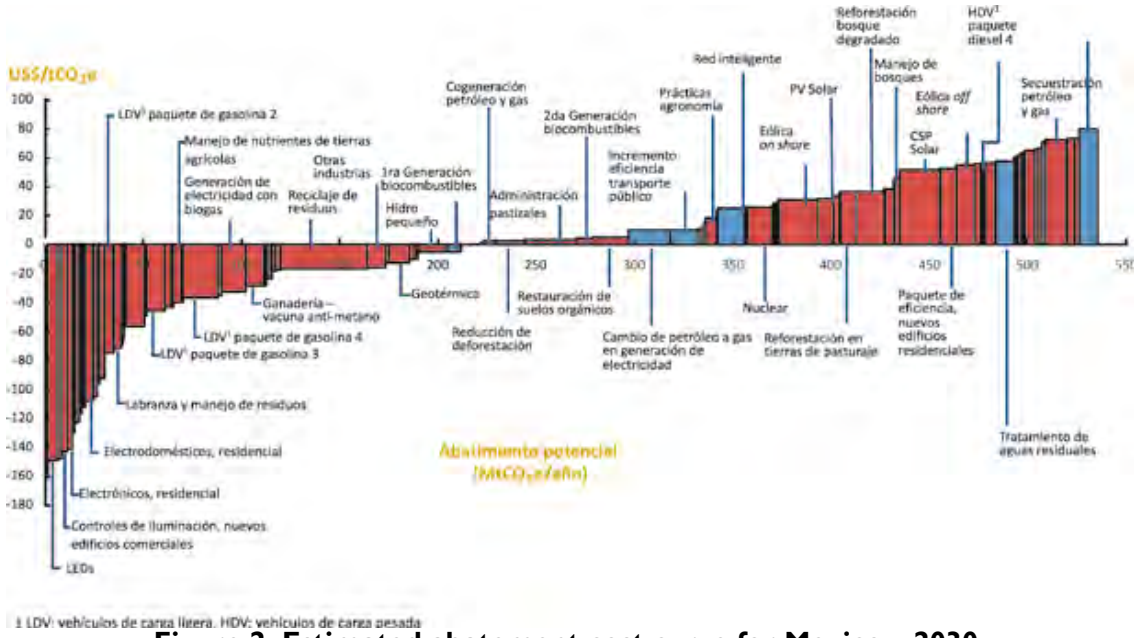
In terms of mitigation costs, the "Low carbon growth: a potential path for Mexico" study identifies 535 $MtCO_2e$ per year that might be abated by 2030, of which 215 $MtCO_2e$ could be reduced at a negative or zero cost and 320 $MtCO_2e$ at a cost below 90 US$/$tCO_2e$. The weighted average cost of all emission reduction opportunities included in this analysis is 2 US$/$tCO_2e$ (see Figure 2). As can also be observed in Figure 2, the expected cost of avoiding deforestation would be below 5 US$/$tCO_2e$, with a mitigation potential lower than that of reforestation activities, although the latter would entail costs nearing 40 US$/$tCO_2e$, while the potential of sustainable forest management practices would be more limited and expensive (over 40 US$/$tCO_2e$).

Similar research was finished in 2009 by the World Bank with the objective of assessing the GHG emission reduction potential in key sectors of the Mexican economy (power generation, oil and gas, final energy use, transport, agriculture and forests) and developing a low carbon

scenario to 2030. This assessment presents a Business as Usual scenario under which GHG emissions in Mexico would increase from 660 $MtCO_2e$ in 2008 to 1,137 $MtCO_2e$ in 2030. The study considered 40 mitigation alternatives with a total potential of 477 $MtCO_2e$ by 2030. Results showed that most reductions could be generated in the agriculture and forest sector (150 $MtCO_2e$, representing 32.9% of the total), transport (131 $MtCO_2e$, 29.6%), power generation (129 $MtCO_2e$, 27.5%), final energy use (38 $MtCO_2e$, 6.5%) and oil and gas (30 $MtCO_2e$, 3.4%), see Figure 3. As shown in Figure 4, about half of the identified mitigation volume (represented by 26 alternatives) implies net economic benefits[3]. Most of the potential in the forest sector according to this study could be reached through Environmental Management Units (UMAS, in Spanish) followed by reforestation, restoration, plantations and payment for environmental services, all at net economic costs; on the other hand, forest management could entail net economic benefits, but its mitigation potential would be relatively low (Figure 4).

A third study ("Climate change in Mexico and the GHG mitigation potential by sector" carried out by Gabriel Quadri in 2008) identified emission trends, estimated a baseline for a number of sectors by 2020 and evaluated mitigation measures and their cost by sector. The study concludes that the biggest mitigation opportunities are found in the transport sector through the elimination of subsidies to fuels, the reduction of fugitive methane emissions in PEMEX operations as well as the mitigation of methane through the treatment of wastewater, the establishment of landfills and biodigesters. The report also underlines that avoiding deforestation represents a high emission reduction potential to 2020 at extremely low costs and even negative costs if the benefits arising from the conservation of biodiversity, the protection of watersheds, the landscape values and other environmental services are quantified (Figure 5).

[3] It must be noted that the costs estimated by this study take into account the required investment for the implementation of mitigation options and deducts the cost of the cheaper alternative with the highest mitigation and the savings it generates (e.g. energy savings). This is why some of the alternatives show negative costs in the medium and long terms.



1 LDV: vehículos de carga ligera. HDV: vehículos de carga pesada

Figure 2. Estimated abatement cost curve for Mexico – 2030.

Source: "Low-Carbon Growth, A Potential Path For Mexico" CMM-McKinsey, 2008

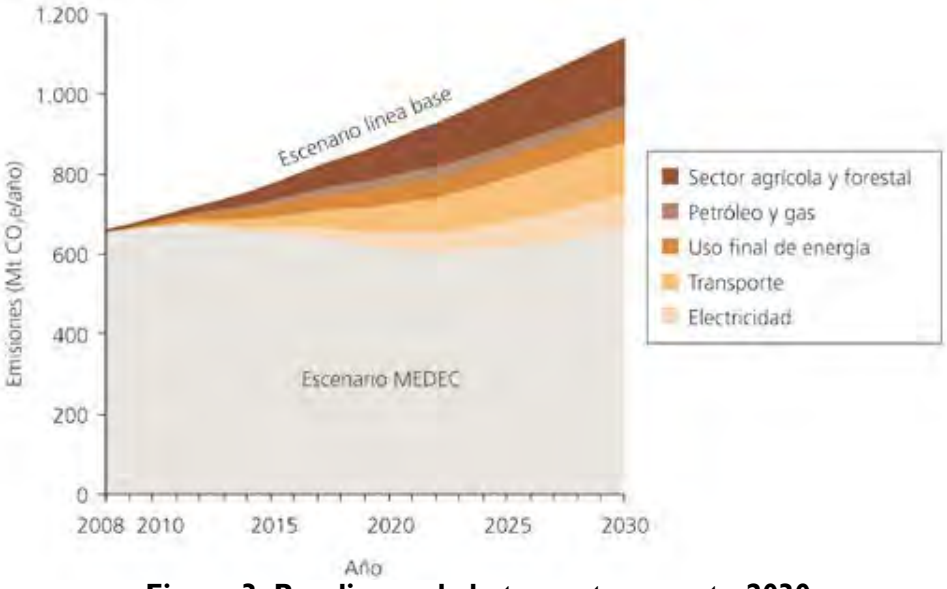


Figure 3. Baseline and abatement curves to 2030.

Source: "Low-Carbon Development for Mexico", World Bank 2009.

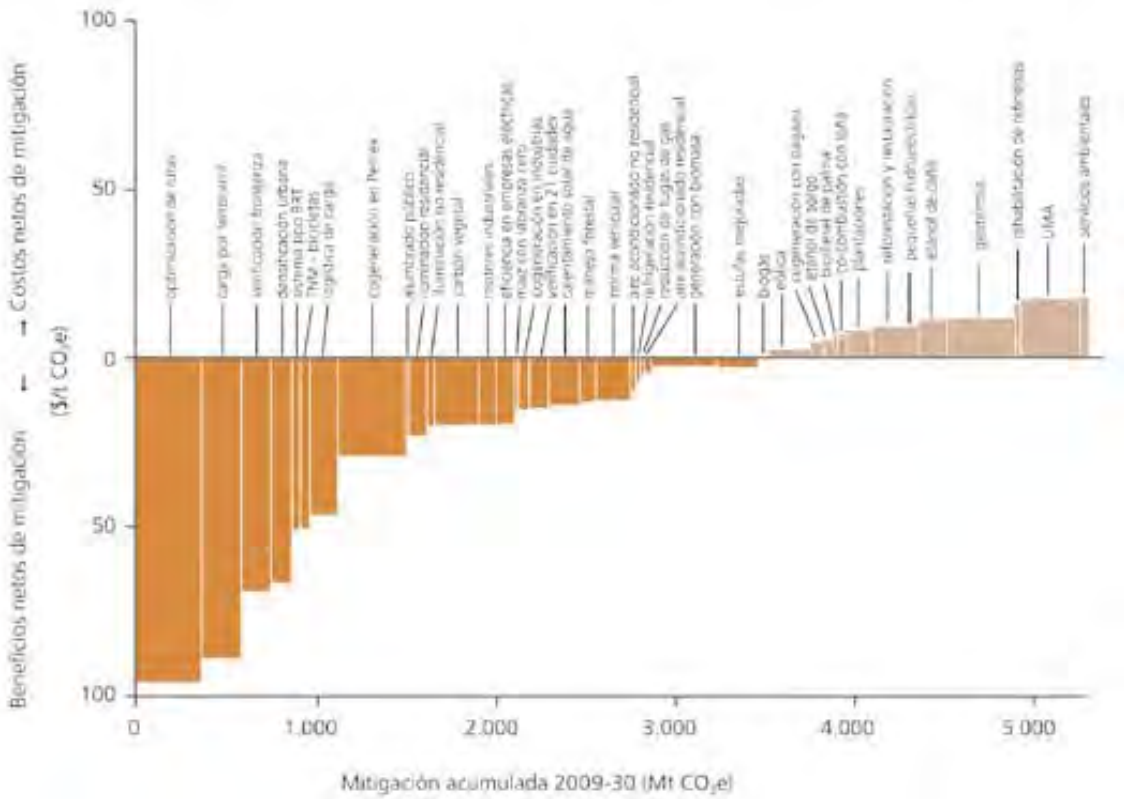


Figure 4. Marginal abatement costs

Source: "Low-Carbon Development for Mexico", World Bank 2009

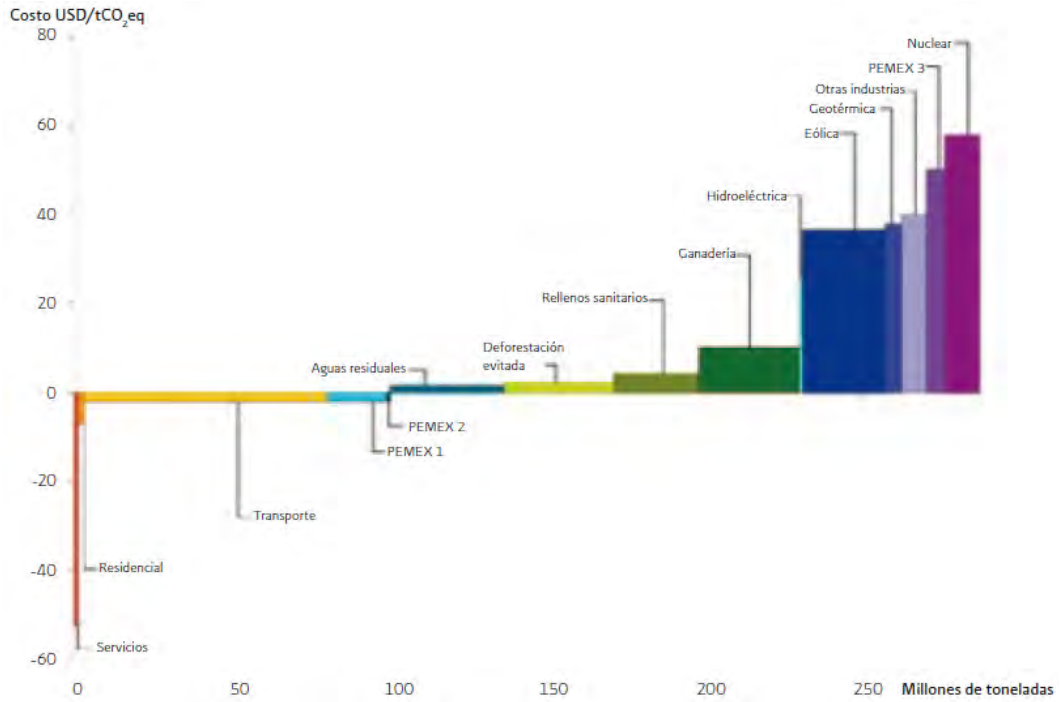


Figure 5. Marginal mitigation costs in Mexico to 2020.

Source: "Climate Change in Mexico and the potential to reduce emissions by sectors" Gabriel Quadri, 2008.

2.2 Vulnerability of Mexico's AFOLU sector to climate change impacts

2.2.1 Vulnerability of Mexico's forest ecosystems and biodiversity to climate change

Research commissioned by the National Institute of Ecology (INE) in 2008[4] selected 12 forest species distributed in three climate zones and assessed the potential distribution of each species under the baseline and climate change scenarios. The main results of the potential distribution of species under climate change conditions (considering the A2 emission scenario of the IPCC to 2050) as compared to the baseline scenario showed that the most severe impacts in temperate zones could be felt by *Pinus cembroides* and *Pinus pseudostrobus* as a consequence of an increase in the area with conditions not suitable for its growth. The north of the central part of the country would see an increase in the extension of the surface not suitable for temperate species; however, due to the particular conditions found in the center of the State of Chihuahua some non suitable areas for such species would become moderately and marginally suitable.

The northwest of the country and the Baja California peninsula would experience the most significant increases in areas not suitable for the potential distribution of semiarid species, while in the south of the Mexican plateau the suitability for such species would improve. As a consequence of these changes, the surface with natural suitability for the *Acacia farnesiana* would be reduced.

In the case of tropical zones, while the area potentially suitable for some native and exotic species such as the mahogany, *Brosimum alicastrum,* and teak could increase, the areas with unsuitable conditions for species such as the red cedar could expand. The latter situation would be observed in the States of Veracruz, Tabasco and in the southwest of Campeche. In contrast, the zones with high altitudes in Sonora could see the expansion of tropical species. The most notable changes are expected in the north of the country, with potential decreases in the areas covered by conifers and increases in the probability of conditions favorable for the occurrence of the seasonally-dry tropical forest.

The study also found that the pattern of the potential distribution of species generally remained constant even if a lower GHG emission scenario (the B2 scenario of the IPCC) was considered, although the majority of species showed less variation under such scenario. Another study commissioned by INE[5] found that recent increases in temperature and precipitation have favored longer lifetimes of forest plagues, particularly in temperate forests and rainforests and, under climate change scenarios, up to three additional life cycles a year could take place

[4] "Generation of regional climate change scenarios to 2030 and 2050, vulnerability assessment and adaptation options in human settlements, biodiversity, livestock, forests and fisheries to climate variability and change, and capacity building and technical assistance to State experts involved in the elaboration of State Climate Change Programs". Study coordinated by C. Gay and C. Conde of the Atmospheric Science Research Center – UNAM for the National Institute of Ecology. 2008.

[5] "Behavior and distribution of economically relevant plagues in the forest sector under climate change conditions in Mexico". Study developed by: Hernández, T., J. A. B. Ordóñez, J. M. Galeana, J. D. León and A. L. Reyes, of the National Institute of Forest, Agriculture and Livestock Research (INIFAP, in Spanish) and the Faculty of Sciences, UNAM, for INE. 69 pp. Available at: http://www.ine.gob.mx.

compared to current conditions. Out of the total 82 plagues registered in Mexico, 33 are relevant due to their wide distribution in the country. Research found that, assuming a temperature increase of 1°C, in elevations between 1,500 and 2,500 meters above sea level (masl) the incidence of economically relevant plagues could affect 10-30% of the total ecosystem area. In elevations between 2,501 and 3,300 masl a temperature increase of 2°C would result in an increase of 30%-40%. Likewise, in the case of rainforests in elevations ranging from 0 to 1,000 masl the potential incidence of plagues could represent around 20%-30% of the total surface covered by the ecosystem, while in elevations from 1,001 to 1,500 masl a 2°C the distribution of plagues could cover around 40% and 50% of the total rainforest area.

By considering temperatures, humidity, altitude, type of vegetation and plague, the study also found that forests would be affected in up to 7% and 11% of their total surface area by temperature increases of 1°C and 2°C, respectively. Likewise, the potential area affected by plagues in rainforests under these two scenarios would vary from 13% to 35%, which reflects the high vulnerability of this ecosystem to plagues.

2.2.2 Vulnerability of Mexico's agriculture sector to climate change

One way to project the vulnerability of the agriculture sector is by considering the suitability of regions for corn-growing under new climatic conditions. Mexico's Third National Communication presents the results of a study that developed suitability maps for rainfed corn in Mexico both under current conditions and considering climate change scenarios[6]. The assessment took into account agroclimatic factors such as temperature, precipitation, topography, soils and growth period. Climate scenarios for 2020 showed moderate reductions in the suitability for rain-fed corn crops and increases of up to 4.2% of non-suitable surface areas.

The comparison of scenarios using different climate models illustrates how the uncertainty generated by differences between models extends to the impact scenarios: According to suitability maps with scenarios created with the ECHAM and HADLEY models, the state of Sonora would be most affected as regards the reduction of surface area appropriate for corn-growing. Assuming the IPCC´s A2 scenarios to 2050, this trend is maintained but its intensity is increased; according to the GFDL model, there will be no changes in corn growing suitability throughout approximately 85% of the country, while the other two models suggest that there will be changes in just over 40%. According to this, the changes presented in the models differ with respect to the future suitability of corn: the GFDL model makes it possible to predict that 8% of the territory will improve and another 6% will diminish in suitability; the ECHAM model estimates that 29% of the territory will increase in suitability, and 12% will decrease. Finally, the HADLEY model foresees that suitable conditions will increase in 13%, while decreasing in 28.5%, of the national area.

[6] *"Analysis of climate change scenarios and vulnerability in key sectors in Mexico and adaptation proposals". Study developed by the CCA-UNAM in 2006. Synthesis report. 33p.*

C. Policy context

1. Mexico's participation in international climate change policy fora

1.1 Mexico in the context of the UNFCCC

Mexico ratified the United Nations Convention on Climate Change (UNFCCC) in 1993 as a non-Annex I country, adopting the following general commitments: i) to carry out research and to develop national capacities aimed at understanding the effects of climate change in the country; ii) to assess its share of greenhouse gas emissions to the atmosphere, and iii) to develop policies and measures in order to reduce its contribution to global emissions and to adapt to climate change.

In compliance with these commitments, the country has submitted to date four National Communications to the UNFCCC, which have comprised a number of studies including national greenhouse gas inventories by sources and sinks up to 2006, as well as the results of vulnerability and adaptation assessments, future emission scenarios and mitigation options. National Communications have also presented the impacts of policies and programs already in place –even if established for other purposes, such as energy efficiency or local pollution- on greenhouse gas emissions of the country. Mexico has continuously led developing countries within the UNFCCC in submitting such communications, and is currently the only one of them with a fourth communication published.

Mexico ratified the Kyoto Protocol in 2000, which reinforced the commitments stated in the UNFCCC for non-Annex I countries, and opened new ways of collaboration between these countries and developed countries through the Clean Development Mechanism (CDM).

On January 31st 2010, through a letter submitted to the UNFCCC Executive Secretary, Mexico associated itself with the Copenhagen Accord resulting from the 15th Conference of the Parties (COP15) and proposed as its Nationally Appropriate Mitigation Actions (NAMAs) and voluntary mitigation goals those described in the country's Special Climate Change Program 2009-2012[7].

In the context of the UNFCCC negotiations, Mexico participates as a member of the Environmental Integrity Group (EIG), which also includes the Republic of Korea, Switzerland, Monaco and Liechtenstein. The EIG emerged at the thirteenth session of the UNFCCC Subsidiary Bodies, held in Lyon, in September 2000. It aims to achieve environmental integrity in the outcomes of climate change negotiations. It is the only group that brings together non-Annex I (Mexico and the Republic of Korea) and Annex I Parties (Switzerland, Monaco and Liechtenstein). Like most other negotiation groups, the EIG develops common positions and feeds them into the climate change process.

[7] Available at: http://unfccc.int/files/meetings/application/pdf/mexicocphaccord_app2.pdf

1.1 Mexico's participation in other relevant climate change fora and initiatives

Mexico is an active participant in a number of climate change and climate-related international policy fora and initiatives. These are briefly described in Table 1 below.

Table 1. Summary of international fora and initiatives in which the GOM participates

Forum/Initiative	Description
Extended G8 Dialogue	In 2005, the Group of 8 (G8), comprised by Germany, Canada, the United States, France, Italy, Japan, the United Kingdom and Russia, started a dialogue on climate change that involved five developing countries: Brazil, China, India, Mexico and South Africa, known as the Group of 5 (G5). In July 2007, Mexico hosted one of the G8+5 meetings in Veracruz, Veracruz. The G5 continued participating in the G8 meetings held in 2008 and 2009. Mexico has been an active participant in these sessions, both at the ministerial and the Chief of State levels, and in the respective preparatory meetings.
Major Economies Forum	In 2007, following a US Government initiative, the Group of Major Economies on Energy Security and Climate Change was constituted. The Group reformulated its activities in 2008 with the aim of boosting the multilateral negotiations in the context of the UNFCCC and is currently known as the Major Economies Forum on Energy and Climate (MEF). In this forum, Mexico has put forward initiatives such as the Green Fund and has underlined the urgency of establishing a fast-track fund to finance actions in the period 2010-2012, as well as the usefulness of low carbon intensity development plans to identify mitigation opportunities to be implemented with the help of international resources.
International Group of Funding Agencies for Global Change Research (IGFA)	IGFA coordinates and guides the work of the most important climate change research agencies in the world, and thanks to its intervention the resources available for research on this issue are channeled more efficiently, not only within agencies but also in and between member countries. Mexico is currently a member of IGFA and was part of its Advisory Committee from 2006 to 2008. As part of its support to the work of IGFA, Mexico hosted the plenary meeting carried out in September 2008.
Organization for Economic Cooperation and Development (OECD)	Mexico is a member of the OECD since 1994 and, as such, has participated in its activities, including those on climate change. In particular, Mexico participates as observer in the meetings of the Annex I Expert Group.
Iberoamerican Network of Climate Change Offices (RIOCC, in Spanish)	Mexico participates regularly in the activities organized by the RIOCC. This network, which was established and operates thanks to the support of the Government of Spain, has provided funding and technical advice for the participation of Mexican experts in the Iberoamerican Program on Impacts, Vulnerability and Adaptation Assessments. The RIOCC also supported a technical training course on natural disasters and civil protection in 2008.
Global Network for Adaptation in Latin America and the Caribbean	UNEP, in cooperation with some key U.N. agencies and other International organizations is facilitating the development of the Global Network for Adaptation in Latin America and the Caribbean. This network will be comprised by local and regional centers as well as by a group of international support institutions. Its aim is to increase the adaptive capacity of developing countries through knowledge sharing.
U.N. International Disaster Reduction Strategy (UN/IDRS)	UN/IDRS is the node within the U.N. system to promote synergies and coordination between the various disaster reduction activities in the socioeconomic, humanitarian and development fields, and to provide support for the integration of policies with similar aims. It also works as the international disaster reduction information center. The Global Platform for Disaster Risk Reduction is part of the UN/IDRS and constitutes the main consultative forum globally. Its objective is expanding the political space devoted by governments to risk reduction in all sectors and contributing to the fulfillment of the Millennium Development Goals, particularly those on poverty reduction and environmental sustainability. Its work supporting the development of tools and disaster risk assessment and management systems for national policies is particularly relevant for Mexico.

Table 1. (Continued)

Forum/Initiative	Description
Mesoamerican Strategy on Environmental Sustainability (EMSA, in Spanish)	In June 2008, the Ministers of Environment of Mesoamerica (México, Guatemala, Belize, El Salvador, Nicaragua, Honduras, Costa Rica and Panamá) subscribed the Campeche Declaration, which is the basis of the EMSA. This Strategy was later adopted by the Chiefs of State and Government of the Tuxtla Dialogue and Coordination Mechanism and subscribed also as part of the Integration and Development Project of Mesoamerica. Climate change is one of the three priority areas of the EMSA. Through this mechanism, the Ministries of Environment of the region work jointly on the development of the Mesoamerican Sustainable Development Program, which Colombia and Dominican Republic have joined. The Central American Commission on Environment and Development (CCAD in Spanish), the Executive Direction of the Mesoamerica Project and other international organizations such as ECLAC are supporting this initiative.
Methane to Markets (M2M)	Mexico became a member of the Directive Committee of the Methane to Markets initiative in 2005 and participates actively in it. M2M is coordinated by the US Environmental Protection Agency and aims to foster the development and implementation of projects to mitigate methane emissions and promote the development of carbon markets.

Source: Mexico´s Fourth National Communication to the UNFCCC.

2. Mexico's climate change institutional framework

In 2005, the Mexican Government created the Interministerial Commission on Climate Change (CICC, in Spanish) as the federal entity responsible for formulating public policies and cross-cutting strategies for the prevention and mitigation of GHG emissions, the adaptation to the effects of climate change and, in general, for the development of programs and strategies on climate change, including those related to the fulfillment of Mexico's commitments under the UNFCCC. In addition, the CICC acts as the Mexican National Designated Authority for the purposes of the Clean Development Mechanism of the Kyoto Protocol.

The CICC is integrated by the heads of the Ministries of Environment and Natural Resources (SEMARNAT), Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA), Communications and Transport (SCT), Economy (SE), Social Development (SEDESOL), Energy (SENER), Ministry of the Interior (SEGOB), Foreign Affairs (SRE), Treasury (SHCP) and Health (SS), and has the Ministry of Tourism and the National Institute of Statistics and Geography (INEGI) as permanent guests. Various other Ministries and Federal entities participate in some of the CICC´s Working Groups.

The head of SEMARNAT is the permanent chair of the CICC, the alternate chair is the Underminister of Planning and Environmental Policy of SEMARNAT (SPPA, in Spanish), who is also responsible for the Technical Secretariat of the Commission through its Direction General for Climate Change Policy. The CICC is supported by the following Working Groups (see Figure 6):

1. Working Group on the Special Climate Change Program (GT-PECC), coordinated by the SPPA is in charge of gathering the information for the annual public reports of climate change actions submitted to the CICC. This Group coordinated the Strategy on Climate Change, which served as the basis for the PECC.
2. Mexican Committee for Emission Reduction and GHG Sequestration Projects (COMEGEI), coordinated by the Direction General for Climate Change Policy of the SPPA is in charge of promoting and evaluating CDM projects.

3. Working Group on International Affairs (GT-INT), coordinated by SRE, promotes the work between Ministries to define the position of Mexico in international climate change fora, particularly those in the context of the UNFCCC.
4. Working Group on Adaptation Policies and Strategies (GT-ADAPT), coordinated by the National Institute of Ecology of SEMARNAT (INE) and constituted by the nine Ministries that participate in the CICC, and the Ministry of Tourism, as well as the General Coordination of Civil Protection and the National Center for the Prevention of Disasters (CENAPRED), both belonging to the Ministry of the Interior.
5. Working Group on REDD (GT-REDD), coordinated by CONAFOR, was created in November 2009 with the objectives of developing a REDD Strategy for Mexico, developing a reference emissions scenario and a Monitoring, Reporting and Verification (MRV) system and facilitating cross-sectoral consultation on REDD issues. The linkages between the objectives of the CICC and the GT-REDD, as well as the goals of the latter and those of the PECC are illustrated in Figure 7.

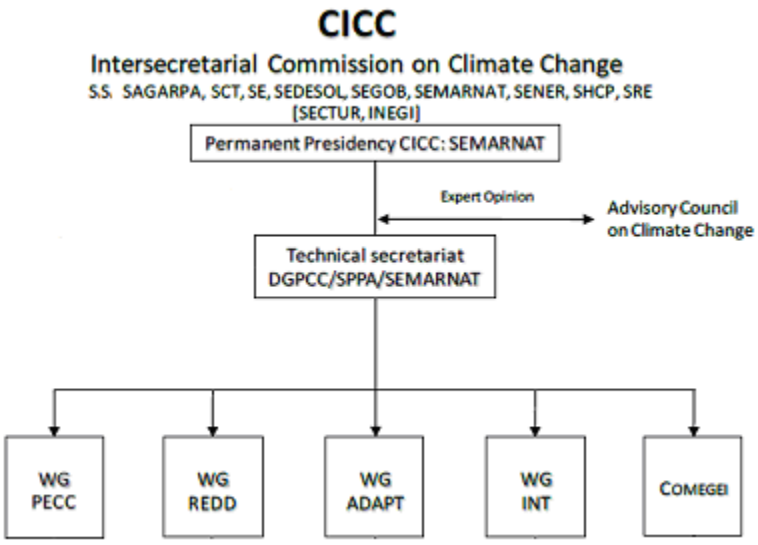


Figure 6. Structure of the Inter-secretarial Commission on Climate Change (CICC).
Source: Adapted from Mexico´s R-PP based on the information presented on the CICC´s website.

Together with the CICC, an Advisory Council on Climate Change (known as C4) was put in place as a permanent consultative body of the Commission. The C4 follows up the work of the CICC and submits recommendations to improve or strengthen its actions. It is constituted by 24 experts from the academia and the social and private sectors and is chaired by Dr. Mario Molina.

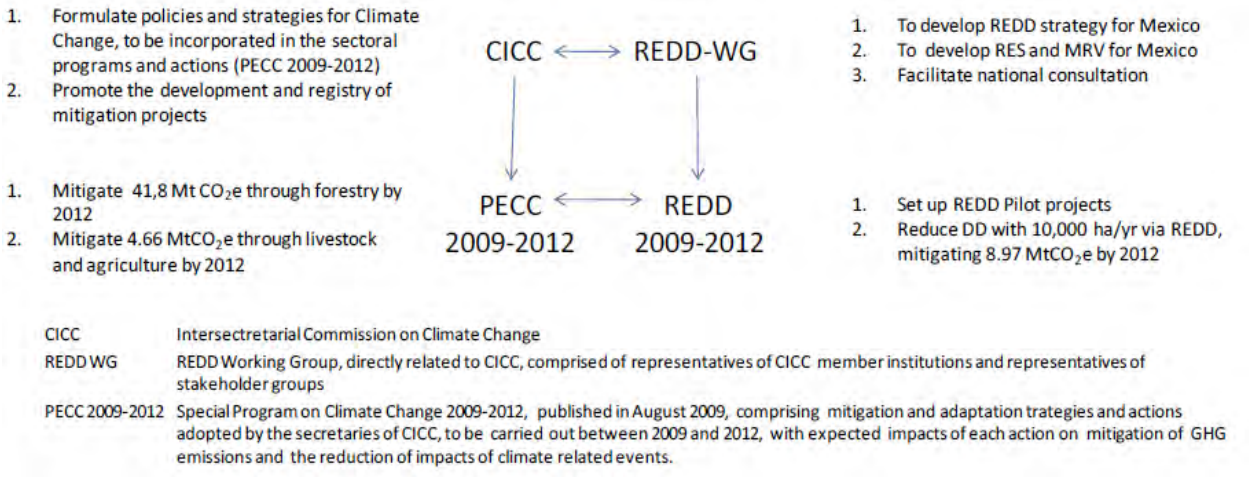


Figure 7. Relationship between the REDD-WG, the CICC and the PECC 2009-2012.
Source: Mexico´s R-PP to the FCPF.

3. Mexico's climate change priorities and programs

3.1 Priorities of the Mexican Government regarding climate change mitigation and adaptation

3.1.1 Mexico's Special Climate Change Program

In May 2007, the Mexican Government published its National Climate Change Strategy (ENACC), which contained a review of mitigation potentials in different sectors, vulnerability to climate change impacts and possible adaptation measures and some initial ideas on the position of the country in the climate change negotiations post-2012. Following the publication of the ENACC, the various entities participating in the CICC started working on a Special Climate Change Program.

The elaboration of the Federal Government's Special Climate Change Program (PECC) finished in 2009. Through this Program, the different entities of the Federal Administration commit to adopting, as part of their work plans, objectives, strategies, lines of action and goals to mitigate greenhouse gas emissions and carry out adaptation measures during the period 2009-2012. The PECC comprises 105 objectives and 294 goals that contribute to the fulfillment of the National Development Plan 2007-2012 (PND), which for the first time in Mexican history contains explicit courses of action for climate change mitigation and adaptation. The successful implementation of the PECC would result in a total emission reduction of around 51 million tons of CO2 equivalent in 2012 with respect to the "business as usual" scenario. This means a 6% deviation from the baseline estimate for 2012 (786 million tones (metric tonnes) of CO_2e), as consequence of the implementation of a series of unilateral actions in sectors such as energy generation and use, agriculture, forestry and other land uses, and waste. The contribution to this reduction by sector is illustrated by Figure 8.

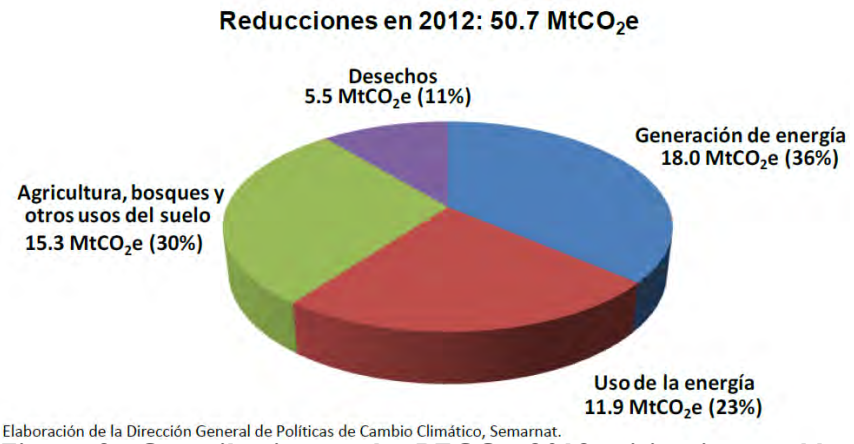


Figure 8. Contribution to the PECC´s 2012 mitigation goal by sector

Source: PECC

The mitigation and adaptation activities relevant for sustainable landscapes are mainly found in three sections of the PECC: forests, agriculture, livestock raising[8], and farming frontier. The objectives and goals associated to mitigation actions imply a reduction of about 15.3 million tons of CO_2e, which represents around 30% of the total mitigation goal of the PECC in 2012 (Figure 8) and are summarized in Table 2.

As can be observed, most of the emission reductions in the forest sector are expected to result from significant increases in the areas under sustainable forest management (around 40% of the total mitigation from the sector in the 2008-2012 period), Environmental Services Programs and under the System of Wildlife Conservation and Management Units (UMAS). The measures to stabilize the farming frontier (which include the reduction of forest fires) have also important mitigation benefits. The contribution of the proposed objectives and goals in agriculture and cattle ranching is relatively minor during the period 2008-2010, the highest volumes of emission reductions arising as a consequence of planned ranching in pasturelands, productive reconversion of agricultural lands and reduced tilling.

In addition to the 2012 mitigation objectives, the PECC establishes an aspirational long-term emission reduction goal for the country of a 50% emission reduction to 2050 with respect to its GHG emissions in 2000. With this, the Mexican Government seeks to contribute to a global effort to stabilize atmospheric GHG concentrations at a maximum level of 450 parts per million of CO_2e, presumably consistent with an increase in the average global superficial temperature of between 2 and 3 degrees Celsius and with a convergence path towards an average global per capita emission of 2.8 tons of CO_2e in 2050. This long-term goal is not legally binding and is conditioned to both the provision of technological and financial support by Annex I countries to developing countries and to the existence of a global climate change regime leading to the atmospheric GHG concentrations, per capita emissions and temperature parameters mentioned before and based on the principle of common but differentiated responsibilities.

[8] Note: The PECC´s objectives and goals leading to emission reductions from livestock waste management are not considered here.

It is important to note that, while the short-term mitigation goal is expected to be achieved primarily through budgeted public funds[9], the PECC acknowledges the need to actively involve the private sector in order to reach the aspirational long-term goal. To this end, the PECC incorporates a commitment by the Federal Government to establish a dialogue with the private sector.

[9] The PECC contains some specific exemptions where e.g. private investment or the carbon markets will be required. According to SAGARPA, although the costs of implementing the actions mentioned in the PECC are covered by the Federal Government´s budget, those related to the estimation of GHG emissions are not.

Table 2. Objectives, goals and expected mitigation of the PECC´s activities relevant for sustainable landscapes

Sector	Objectives	Goals	Expected mitigation results
Forests	**Objective 2.3.6.** Mitigating GHG emissions from the forest sector and those arising from land use change through programs for the protection, conservation and sustainable management of forest ecosystems and their soils.	M.64 Incorporating 2.95 million ha to Sustainable Forest Management	11.88 $MtCO_2e$ (2008–2012); 4.37 MtCO2e /year (in 2012).
		M.65 Incorporating 2.5 million ha of terrestrial ecosystems to the system of Wildlife Conservation and Management Units (UMAs, in Spanish).	4.19 $MtCO_2e$ (2008– 2012); 1.39 MtCO2e /year (in 2012).
		M.66 Incorporating 2.175 million ha to payment for environmental services programs.	6.27 $MtCO_2e$ (2008– 2012); 1.43 MtCO2e /year (in 2012).
		M.67 Incorporating 750 thousand ha of forests to NPAs.	3.36 $MtCO_2e$ (2008 – 2012); 1.12 MtCO2e /year (in 2012).
		M.68 Carrying out conservation and restoration activities in 200 thousand ha of forest soils.	1.07 $MtCO_2e$ (2008-2012); 0.36 MtCO2e /year (in 2012).
		M.69 Carrying out phytosanitary treatments in 200,000 ha of forest areas.	0.71 $MtCO_2e$ en (2008-2012); 0.18 MtCO2e /year (in 2012).
		M.70 Carrying out phytosanitary diagnosis in 3 million ha in forest areas.	Not applicable.
		M.71 Elaborating and publishing the National Strategy for Forest Phytosanitary Attention.	Not applicable.
		M.72 Formulating and implementing 8 programs to combat drought and desertification.	Not applicable.
	Objective 2.3.7. Increasing the potential of forest carbon sinks through forestation and reforestation activities.	M.73 Establishing 170,000 ha of commercial forest plantations	1.48 $MtCO_2e$ (2008 – 2012); 0.61 MtCO2e /year (in 2012).
		M.74 Reforesting 1.117 million ha.	1.01 $MtCO_2e$ (2008-2012); 0.41 MtCO2e /year (in 2012).
		M.75 Reforesting and restoring soils in 418,130 ha.	0.23 $MtCO_2e$ (2008-2012); 0.09 $MtCO_2e$ /year (in 2012).
		M.76 Restoring 170,000 ha of forest ecosystems through the Environmental Compensation Program.[10]	Not estimated (see footnote).
		M.77 Placing at least 0.50 $MtCO_2e$ carbon credits from the forest sector on International carbon markets.[11]	[Conditioned to the success of the multilateral negotiations on REDD]

[10] According to Article 118 of the General Law for Sustainable Forest Development, the resources for the realization of compensation activities will come from the payment of rights for the authorization of land use changes. It is not possible to determine ex ante neither the location of areas to be restored through this mechanism, nor their area, or the type of forest ecosystems that will be restored.

[11] Corresponds to the implementation of a carbon sequestration Project on 15,000 ha that will require funding.

Table 2. (Continued)

Sector	Objectives	Goals	Expected mitigation results
Agriculture	**Objective 2.3.1.** Reconverting agricultural lands degraded and with low production potential and recurrent disasters to sustainable systems.	M.54 Reconverting 298,200 ha of agricultural lands degraded and with low production potential and recurrent disasters to perennial and diversified crops.	0.65 $MtCO_2e$ (2008-2012); 0.26 $MtCO_2e$ (in 2012).
		M.55 Reconverting 125,000 ha devoted to self consumption corn to forest production in coordination with the ProÁrbol program.	0.23 $MtCO_2e$ (2008-2012); 0.11 $MtCO_2e$ (in 2012).
		M.56 Incorporating 125,000 ha of lands in zones within the Mesoamerican Biological Corridor to sustainable management .	0.23 $MtCO_2e$ (2008-2012); 0.11 $MtCO_2e$ (in 2012).
		M.57 Implementing ecological projects on 61,995 ha registered in Procampo .	0.09 $MtCO_2e$ (2008-2012); 0.02 $MtCO_2e$ (in 2012).
	Objective 2.3.2. Promoting the harvest of green sugar cane.	M.58 Harvesting 188,000 ha of green sugar cane.	0.43 $MtCO_2e$ (2008-2012); 0.14 $MtCO_2e$ (in 2012)
	Objective 2.3.3. Reducing N_2O emissions from fertilizer use.	M.59 Developing and publishing a Manual on Good Practices for the Use of Fertilizers.	Not applicable.
		M.60 Producing bio fertilizers for use on 2 million ha entailing fertilizer savings of 15%.	0.29 $MtCO_2e$ (2008-2012); 0.12 $MtCO_2e$ (in 2012).
	Objective 2.3.4. Promoting sustainable agricultural practices such as conservation tillage to maintain carbon stocks and increase carbon sequestration capacity.	M.61 Introducing conservation tillage on 250,000 ha of agricultural lands by supporting the acquisition of adequate machinery (5,000 machines in the 2008-2012 period) and sustainable practices on another 199,012 ha.	0.60 $MtCO_2e$ (2008-2012); 0.19 $MtCO_2e$ (in 2012)
Livestock raising	**Objective 2.3.5.** Recovering or improving plant coverage through the rehabilitation of cattle ranching areas.	M.62 Sowing cattle ranching areas with 30 plants (shade trees, bushes, herbs, etc.) per animal unit, with the support of Progan (approximately 353 million plants).	0.09 $MtCO_2e$ (2008-2012); 0.07 $MtCO_2e$/year (in 2012).
		M.63 Applying planned cattle ranching on 5 million ha of grazing areas.	2.05 $MtCO_2e$ (2008-2012); 0.84 $MtCO_2e$/ year (in 2012).
Farming frontier	**Objective 2.3.8.** Stabilizing the forest-agriculture frontier to reduce GHG emissions from forest conversion.	M.78 Designing and implementing an incentives scheme to REDD.12.	8.97 $MtCO_2e$ (2008-2012); 2.99 $MtCO_2e$ /year (in 2012).
	Objective 2.3.9. Reducing the incidence of forest fires caused by agricultural and forest burnings.	M.79 Reducing the surface affected by forest fires to keep it below 30 ha per fire event.	2.63 $MtCO_2e$ (2009-2012); 0.49 $MtCO_2e$ /year (in 2012).

Source: PECC.

[12] The objective of the Program is to avoid emissions through incentives thus allowing to reduce emissions from deforestation and degradation. A factor of 81.5 tC per ha was used in the calculations.

With respect to vulnerability and adaptation, the vision of the PECC considers 3 broad stages towards 2050:

- In the first stage, from 2008 to 2012, the country will assess its vulnerability and quantify the costs of priority measures;
- The second stage will go from 2013 to 2030 and focus on strengthening the strategic adaptation capabilities of the country; and
- The third stage, going from 2030 to 2050, will consolidate the capacities built in the previous years.

In the sectors related to sustainable landscapes, i.e. agriculture, livestock raising, forests and terrestrial ecosystems, the PECC establishes the objectives and goals described in Table 3 for the 2008-2012 period. The proposed activities will address the identified vulnerabilities in such sectors, e.g.:

- Agricultural production: the predicted future climate conditions are associated with variations in the rates of agricultural soil degradation, increases in the salinity of irrigated areas, increased losses due to fires, droughts and floods, changes in production patterns and regions due to changes in temperature and water availability. Significant changes in the distribution and dynamics of plagues, diseases and predator species, as well as pollinating species, vital for agriculture.
- Cattle raising: impacts expected from climate change include increased risk of losses due to extreme climatic events, as well as in the incidence of diseases and plagues, changes in very specialized cattle rising zones and variations in the availability and quality of water.
- Forest productivity: climate change is expected to generate both negative and positive impacts on forest productivity. The former could be caused mainly by the modification of precipitation regimes, the occurrence of more intense droughts, changes in the regional distribution of plant species and in the growth and productivity of commercial tree species. Some favorable conditions have also been foreseen that could be translated into benefits if they are identified with enough time and capacities are put in place to adapt to changes.
- Terrestrial ecosystems: if their integrity and balance is maintained, ecosystems constitute the pillars for a successful adaptation to climate change. Terrestrial ecosystems in Mexico have been significantly affected by anthropogenic activities such as infrastructure building and urban development, agriculture, cattle rising, deforestation and industrial pollution, thus severely limiting their capacity to adapt to climate change.

Table 3. Vulnerability and adaptation objectives and goals set by the PECC relevant for sustainable landscapes

Sector	Objectives	Goals
Agricultural production	**Objective 3.3.1** Reducing the vulnerability of the agricultural sector to climate change effects and securing the agrobiodiversity of the country	A.43 Securing 9 million ha of crops against the occurrence of extreme weather events.
		A.44 Saving 3 billion cubic meters of water in agricultural uses.
		A.45 Increasing the water storage capacity in 116.2 million cubic meters.
		A.46 Creating the National Center of Genetic Resources.
	Objective 3.3.2 Modernizing the hydroagricultural infrastructure and technifying the agricultural surfaces in coordination with local users and authorities.	A.47 Technifying 1,722,000 ha with hydroagricultural infrastructure (522 thousand in charge of SAGARPA and 1.2 million of technified irrigation in parcel by CONAGUA) .
		A.48 Increasing water productivity in irrigated districts by 2.8% per year to reach 1.66 Kg/m^3.
		A.49 Consolidating 2,000 organized irrigation units.
		A.50 Elaborating 21 direction plans in irrigated districts.
		A.51 Issuing 85 unique sowing and irrigation permits in the irrigation districts.
		A.52 Establishing in 58 irrigation districts with agricultural plans the unique sowing program in coordination with CONAGUA based on water availability, and promoting crops with the highest productivity per volume of water used through integral agricultural planning.
	Objective 3.3.3 Increasing the knowledge on impacts and vulnerability of the agricultural sector to climate change and variability.	A.53 Generating 3 maps of the productive potential of agricultural species (corn, beans and barley) in select regions of the country under different climate change scenarios.
		A.54 Elaborating and publishing 1 study on the effects on agriculture in low lying coastal areas of flooding and saline intrusion in aquifers and soils under different climate change scenarios.
Cattle rising	Objective 3.3.4 Reducing the vulnerability of livestock and strengthening adaptation capacities to climate change effects.	A.55 Restructuring the National Commission of Animal Genetic Resources.
		A.56 Achieving the goal of insuring 5 million animals against the occurrence of extreme weather events
		A.57 Achieving 91% of the livestock areas free or with low presence of diseases.
	Objective 3.3.5 Deepening the knowledge on impacts and vulnerability of livestock to national variability and climate change.	A.58 Establishing a framework to carry out research on the vulnerabilty of livestock to climate change.
		A.59 Carrying out 500 studies to determine grazing coefficients and for the recovery, conservation, improvement and rational use of cattle ranching areas.
		A.60 Developing a GIS for the livestock production units supported by the sustainable livestock production and livestock and apiarist zoning (Progan).
		A.61 Promoting scientific activities through the Mexican Carbon Program.

Table 3. (Continued)

Sector	Objectives	Goals
Forest productivity	**Objective 3.3.6** Increasing forest cover under conservation, zoning and sustainable forest Management taking into account climate change effects.	A.62 Establishing communal forest zoning in 2.3 million ha.
		A.63 Supporting the incorporation or reincorporation to technical forest management of 4.1 million ha of natural ecosystems, the additional incorporation of 2.175 million ha of forest ecosystems and agroforestry systems to payment for environmental services programs.
		A.64 Publishing the forest zoning, the National Agroforestry Strategy and the National Strategy for the Phytosanitary Attention of Forests.
	Objective 3.3.7 Deepening the knowledge on the impacts and vulnerability of the forest sector to climate variability and change.	A.65 Creating the National Center for the Conservation of Genetic Forest Resources.
		A.66 Generating 3 forest production potential maps of Mexico by studying the response of commercial species to different climate change scenarios.
		A.67 Generating 5 regional forests and climate change studies.
Terrestrial ecosystems	**Objective 3.4.1** Preserving, broadening and connecting priority natural ecosystems and their biodiversity considering the potential effects of climate change.	A.73 Increasing in 13,075,000 ha the extent of natural vegetation incorporated to environmental management programs (NPAs, UMAs, PES, SFM).
		A.74 Achieving that 50% of the terrestrial NPAs develop a fire control program; 42,000 ha of terrestrial ecosystems under restoration within NPAs and 35% of the federal NPAs with biological corridors and other connectivity actions at the landscape level between NPAs and other conserved areas.
		A.75 Achieving that 20% of the reforested surface connects remains of natural vegetation in the region of the Mesoamerican Biological Corridor-Mexico (MBC-M).
		A.76 Implementing a collaboration agreement between SEMARNAT and SAGARPA to carry out environmental sustainability actions in the municipalities integrating the Mesoamerican Biological Corridor-Mexico.
		A.77 Reducing the use of fire as agricultural practice in at least 30% of the surface covered by the MBC-M.
		A.78 Achieving that 25,000 ha within NPAs have grazing coefficients determined.
		A.79 Achieving that 50% of the NPAs include climate change adaptation subprograms as part of their Conservation and Management Programs.
		A.80 Defining a 10% of the NPAs as risk defense territories and 10 NPAs as change verification witnesses.
		A.81 Establishing in 40% of the NPAs REDD pilot programs and risk prevention programs in 50% of the NPAs.
		A.82 Achieving that 60% of the NPAs with urban population centers participate in urban zoning schemes with risk reduction criteria.
	Objective 3.4.2 Deepening the knowledge on the vulnerability to and impacts from climate variability and change of temperate and tropical forests, shrublands, grasslands and continental wetlands	A.83 Complete the inventory of potential wetlands in Mexico.
		A.84 Supporting the development of 5 research projects on the impacts and vulnerability of natural ecosystems and environmental services to climate change, and disseminating the results of the first 2 supported projects.
		A.85 Generating and publishing a set of computer models on the impacts on natural ecosystems and environmental services under various climate change scenarios.

Source: PECC.

Over and above the mitigation and adaptation objectives and goals mentioned before, the PECC includes specific ones on research and technological development. Many of the planned research topics are linked to the implementation of current and future activities in sustainable landscapes, vulnerability and adaptation. Relevant objectives and goals are presented in Table 4.

Table 4. Objectives and goals of the PECC regarding technological development relevant to sustainable landscapes, vulnerability and adaptation.

Sector	Objectives	Goals
Basic Research	**Objective 4.5.3** Strengthening scientific research and knowledge on the carbon cycle.	T.57 Developing and publishing estimates of carbon content coefficients and carbon sequestration capacity for the major eco-regions (marine, forested and agricultural) of the country.
	Objective 4.5.5 Strengthening the installed capacity for the analysis, monitoring and reporting on the status of vegetation cover through satellite images.	T.61 Put in operation one national monitoring and reporting system on the distribution, abundance and dynamics of vegetation cover.
	Objective 4.5.6 Strengthening the installed capacity for the analysis, monitoring and reporting on the situation of soils and land degradation**.**	T.62 Put in operation one national monitoring and reporting system on the situation of soils and land degradation.
Sectoral research	**Objective 4.5.8** Strengthening the research on the vulnerability of settlements, regions and priority sectors to climate change.	T.64 Developing and publishing 3 studies on the regional and sectoral vulnerability to climate change.
	Objective 4.5.9 Strengthening basic research on the integral use of biomass.	T.65 Carrying out and publishing one study on the integral use of biomass.

Source: PECC.

3.1.2 The Medium-Term Strategy of SEMARNAT

The Direction General for Climate Change Policy of the Underministry of Planning and Environmental Policy of SEMARNAT, which acts as the Secretariat of the CICC, is currently starting the development of a Medium-Term Strategy for Climate Change. This Strategy is envisioned as the continuation of the PECC. SEMARNAT has already asked for support from USAID through its Mexico Competitiveness Program (MCP) to design part of this Strategy.

3.1.3 The Mexican REDD Strategy

The discussion on the elements of a REDD strategy started within CONAFOR's ad-hoc REDD Task Force initiated in July 2008, mainly in the context of the elaboration of the Readiness Plan Idea Note (R-PIN) and the Readiness Preparation Proposal (R-PP) of the World Bank's Forest Carbon Partnership Facility (FCPF), although the preparation of the Strategy will be conducted as a separate process within the framework of the CICC. The elaboration of the REDD strategy will be coordinated by CONAFOR in close collaboration with the CICC's REDD Working Group and contracted consultants, such as those under the Mexican Carbon Program, while the Interministerial Commission on Climate Change will be in charge of decision making.

The objectives of the REDD Strategy, as expressed in Mexico's R-PP will be:

1. To create an institutional and political structure that can deliver and administer measurable emission reductions, according to IPCC standards;
2. To create a flexible and efficient financial revenue system to support the REDD related activities;

3. To develop a payment distribution system that optimizes emission reductions, biodiversity conservation and poverty alleviation; and
4. To develop a series of demonstration projects in different socio-ecological conditions.

The strategy will be developed following the UNFCCC negotiations on REDD, along two main activities including several studies:

1. Reference Emission Scenario and monitoring, with specific studies on historical analysis of land use and land-use change, impact of recent land-use policies on deforestation and forest degradation, development of a deforestation and forest degradation risk map, identify priority criteria, design and implementation of a permanent monitoring system based on the integration of various satellite imagery and permanent and temporary monitoring plots, generate a national database on emission factors; develop a Reference Emission Scenario.
2. Design and implementation of the REDD strategy, with studies on the impact of Sustainable Forest Management (SFM), Natural Protected Areas (NPAs) and PROCYMAF on deforestation and forest degradation, design of improved and new actions for REDD including the use of experience from Payment for Environmental Services (PES) program and Forest Mexican Fund in CONAFOR. All activities and studies will be carried out with national, regional and local consultations with stakeholder groups.

The REDD strategy will be implemented at three scales: National, State (priority areas) and property level (community, *ejido*, private land owner). At the national level, the lines of action to be developed include addressing the drivers of deforestation and degradation through federal programs, establishing REDD regulations and institutions, developing methodological aspects, carrying out capacity building and community outreach activities, designing economic incentives and ensuring the integration of government policies and programs. Activities at the State level are proposed to focus mainly on methodological (e.g. baseline setting), institutional (e.g. establishment of REDD working groups, consultations, pilot projects) and capacity building aspects. At the landowner level, the Strategy would develop land use planning instruments and forestry-related capacities, and seek to improve community or *ejido* – level organization.

According to the schedule presented in Mexico's R-PP, the works to support the assessment of REDD strategy options will finish in 2011. On the other hand, although no official date for the release of the REDD Strategy has been announced yet by the Mexican Government, in interviews with the General Direction of Climate Change Policy - SEMARNAT it was mentioned that the Strategy could be presented during the next meeting of the CICC on the 1st of June 2010.

3.2 Review of governmental programs and activities to mitigate climate change and adapt to its impacts in the context of sustainable landscapes

3.2.1 Existing CONAFOR programs and activities

In April 2001 the Government of Mexico created the National Forest Commission (CONAFOR) to support sustainable production and conservation of forest resources based on the Strategic Forestry Program for 2000-2025, which articulates specific priorities, goals, and strategies in areas such as community forestry, commercial forestry, soil conservation, forest land-use planning and management, and reforestation. This forest strategy is part of an overarching approach to national development that also includes formal sector strategies for water, rural development, and biodiversity. To help support and implement these strategies, the government recently passed on extensively modified laws on water resources management, forests, and sustainable rural development.

In February 2007 the Federal Government put in place the ProArbol Program, which integrates CONAFOR's previously separate programs into a single, comprehensive program that integrates the distribution of resources to landowners for the implementation of actions aimed at protecting, conserving, restoring and using in a sustainable way the resources of temperate and tropical forests and vegetation of arid zones. CONAFOR, through a number of programs under the framework of ProArbol, has established various lines of action with the purpose of contributing to the goals proposed by the PECC (see section 3.1 above). Existing CONAFOR's programs under ProArbol are summarized in Table 5.

In addition to these programs, CONAFOR has been carrying out many activities for the elaboration of the R-PIN and the R-PP for the FCPF (see section E below), as well as to establish the CICC's REDD Working Group (see subsection 2 above) and to coordinate the design of the Mexican REDD Strategy (see subsection 3.1.3 above). Some of the most critical aspects of the Strategy and the establishment of the REDD mechanism in Mexico for CONAFOR are:

- The establishment of a cost effective and reliable Monitoring, Reporting and Verification system: towards 2015, CONAFOR would like to have in place a consolidated system developed at different scales, particularly at the local level, building e.g. on the experience of Servicios Ambientales de Oaxaca (SAO)[13] and replicating it in 6 or 7 communities, in order to reduce monitoring costs. Mainstreaming MRV is also a priority;
- The generation of local capacities to allow the elaboration and enforcement of public policies at the State and Municipal level and of cross-sectoral policies and tools; and
- The implementation of REDD pilot projects: CONAFOR is planning pilot REDD projects with a number of local actors. The identified projects are: El Ocote (with CONANP and AMBIO), Lacandona and Los Tuxtlas. In addition, Michoacán is planning

[13] SAO recently developed a project in Oaxaca based on work with communities and was able to sell carbon credits to the Mexican companies Televisa, Chinoi and Gamesa.

a State-wide project. It is still required to define the areas, carry out the studies required for the project and the monitoring systems.

Table 5. Summary of CONAFOR´s programs included in ProÁrbol

Program	Description
National Reforestation Program (**PRONARE**)	Program oriented to restore forests cover in deforested and/or degraded areas, generally with no commercial purpose, usually in scattered areas with an extension of less than 5 hectares. This program has increased its target for the total number of trees planted every year and it has national coverage. 250 million trees were planted in 2007 (about 250,000 hectares) and a goal of 280 million trees is the target for 2008 (280,000 hectares); Survival rates for plantings have been increasing, but are it still around 50% per cent, on average.
Forest Fire Prevention and Fighting	The program is aimed to coordinate actions between the various levels of the government, land owners, NGOs and other sectors, to reduce the incidence and effects of forest fires.
Forest pest control and prevention	Subsidies are channeled through CONAFOR to forest owners to conduct activities to prevent forest pest infestation (diagnosis through field surveys) as well as direct pest control activities (both mechanic and chemical).
Soil conservation	The program finances restoration and conservation practices on forest lands, mainly to prevent water-derived soil erosion. Subsidies are used to pay for labor and/or acquisition of materials and/or tools required for such activities.
Commercial plantations (PRODEPLAN**)**	It was established to channel financial resources to develop plantations of timber and non-timber forest products for commercial purposes. The program promotes the establishment of forest plantations on deforested lands only.
Sustainable Community Forestry (**PROCYMAF**)	The program encourages sustainable forest management based on capacity building of forest communities and *ejidos*, through participatory approaches to planning management, forest production and conservation activities. The program has obtained World Bank's finance and technical assistance, although its implementation is currently limited to 6 states in Mexico. PROCYMAF has delivered important lessons for working with indigenous communities and *ejidos* for implementing sustainable forest management. CONAFOR has proposed PROCYMAF could focus on capacity building and operate as an introduction to the rest of its programs.
Payment for Environmental Services	The Payments for Hydrological Environmental Services Program (PSAH) began in October 2003, and it is designed to complement other initiatives by providing economic incentives to avoid deforestation in areas where water supply is a severe problem, but where in the short- or medium-term commercial forestry cannot cover the opportunity cost of switching to agriculture or cattle ranching. PSAH consists of direct payments to landowners with forests in a good state of conservation. Payments are made for watershed conservation, management, and restoration aimed at preserving highland and lowland tropical forests (particularly montane cloud forests associated with the supply of water to communities. It is partially funded through the water fees collected under the Federal Rights Law (LFD). In 2004, as a complement to the PSAH, Mexico created a program called CABSA (Program to Develop Environmental Services Markets for Carbon Capture and Biodiversity and to Establish and Improve Agroforestry Systems). CABSA supports reforestation activities and land-use changes (from annual crops to agroforestry) in Mexico and links them to national and international markets/financing for carbon capture and biodiversity conservation. Landholders can receive payments for environmental services if their lands are inside eligible areas determined by CONAFOR and based on certain criteria. Since 2004, PSAH and CABSA have delivered payments to support forest conservation in more than 1.2 million hectares.
Forest Development Program	This program is oriented to promote sustainable forest management granting financial support to forest owners to increase their capacities to undertake forestry and forest production activities by their own; activities financed through this program are aimed to increase productivity of forests, diversify production of forest goods and services and/or to increase added value to timber and non-timber forest products.
Forest productive chains	This program is aimed at increasing the productivity and competitiveness of the forest sector, by promoting association and collaboration of those involved in every link of the forest productive chain; i.e. from timber added value, increase use of technology and marketing, among other activities.
Mexican Forest Fund	This Fund was created as a financing mechanism to promote conservation and sustainable forest management, and to facilitate access to financial services and to develop mechanisms of payment for environmental services (LGDFS, article 142). It ensures that financial resources collected for environmental services are dedicated to pay directly to the providers of such services and for financing the operating costs related with such payment mechanisms (LGDFS, 143). It also encourages private contributions, as they are tax deductible (LGDFS, article 143).

Source: Mexico´s R-PP

3.2.2 CONANP's Climate Change Strategy and related programs and activities

The National Commission for Natural Protected Areas (CONANP) was created in 2000 as a decentralized entity of SEMARNAT in charge of managing the country's national protected areas. In 2009 a division on Climate Change and Natural Protected Areas was created as part of the Coordination of Advisors to the National Commissioner.

In March 2010 CONANP presented its Strategy on Climate Change and Protected Areas as a governing instrument for the integration of climate change considerations into the planning processes, management and operation processes of protected areas, as well as into the conservation of ecosystems and of their associated biodiversity. The elaboration of the Strategy was supported by USAID, through an agreement with the US Forest Service and received co-funding from the Spanish Agency of International Cooperation for Development (AECID). In parallel to this effort, CONANP has been developing the first climate change components that will be included in the Management and Conservation Programs of the Protected Areas of the country, including regional awareness and capacity building activities.

In the context of REDD, the Commission has recently started experimenting with pilot projects. According to Mexico's fourth National Communication and interviews with CONANP's staff, three such projects – aimed both at reducing emissions and promoting adaptation to climate change impacts - have been identified by CONANP (Figure 9):

1. Reserva de la Biosfera Sierra la Laguna in Baja California Sur;
2. Área de protección de Flora y Fauna Corredor Biológico Chichinautzin, in Estado de México, Morelos and Distrito Federal; and
3. Reserva de la Biosfera Selva El Ocote in Chiapas (partially supported by USAID).

Through these pilots, CONANP seeks to:

- Integrate technical and social data of the current situation of each NPA and of the carbon market;
- Generate and share knowledge on carbon projects and carbon credit marketing with local organizations within the NPAs;
- Analyze the carbon sequestration and GHG emissions mitigation associated with avoided deforestation and reforestation activities, as well as to natural regeneration; and
- Collect, assess and systematize the data produced on carbon sequestration and emissions avoidance.

Figure 9. Location of CONANP's potential REDD Pilot Projects

Source: Mexico's fourth National Communication to the UNFCCC

Some preliminary estimations show that the development of the proposed mitigation actions could lead to a total emission reduction, considering the three NPAs, of around 6,964 $ktCO_2e$ (Table 6).

Table 6. Estimated mitigation potential of CONANP's potential REDD pilot projects

Natural Protected Area	Activities to be developed	Mitigation potential (ktCO2e)
Reserva de la Biosfera Sierra la Laguna	i. Conservation and restoration program covering 8,000 ha of degraded lands in the buffer zone ii. Implementation of agroforestry systems	264
Área de protección de Flora y Fauna Corredor Biológico Chichinautzin	i. Strengthening of protection measures to avoid the loss of around 5,000 ha of intact forest ii. Restoration of 1,000 ha of degraded forests iii. Establishment of agroforestry systems and *cercos vivos* in 1,000 ha	700
Reserva de la Biosfera Selva el Ocote	i. Strengthening protection measures to avoid the loss of around 15,000 ha of remaining forest cover in the buffer zone ii. Restoration of 5,000 ha of degraded forests iii. Establishment of agroforestry systems and *cercos vivos* in 1,000 ha	6,000
Total		6,964

Source: Mexico's fourth National Communication to the UNFCCC.

In the case of the Reserva de la Biosfera el Ocote, CONANP is currently promoting the design of a REDD pilot Project following the Plan Vivo system (promoted by AMBIO), which was first developed for the Scolel Té project in Chiapas in 1996 and has since then been used by a handful of community-based carbon projects worldwide to produce carbon credits in the voluntary carbon market. The first phase of the project started in 2009 with the selection of two communities within the reserve for the design of two communal Planes Vivos, the establishment of soil carbon monitoring plots following the guidance of the Intergovernmental

Panel on Climate Change, strengthening capacities at the community level and among the reserve´s personnel and initiating linkages with actors and institutions to replicate the proposal at the national level. CONANP is working on this project with Reforestamos Mexico and Ecologic as partners, CONAFOR is involved through a consultancy carried out by ECOSUR; USAID provides funds through the Mexico Competitiveness Program to cover the work of AMBIO and the training on monitoring of plots. In addition, CONANP plans to develop the Chichinautzin project under the Voluntary Carbon Standard (VCS), but so far it has not identified partners to implement it.

Other potential REDD pilot projects have also been spotted by CONANP: Calakmul, La Primavera, Pico de Orizaba (which receives a payment from CONAFOR's PES) and Volcán de Tacaná. There is also the idea of developing Los Tuxtlas as a REDD pilot.

Moreover, many of the programs run by CONANP have carbon mitigation effects. Two examples of such programs are the Fire Management Program for Protected Areas, which contains the conceptual, legal and operative basis to address fires within such areas and thus produces GHG mitigation benefits, and the creation of new protected areas. In the latter case, it is worth mentioning that from 2007 to 2009 the area under Federal protection increased by 8.2%, representing, according to CONANP's figures, a carbon sequestration of around 142 million tCO_2e.

3.2.2 CONABIO's Climate Change-related activities

The Mexican National Commission for the Knowledge and Use of Biodiversity (CONABIO) is an inter-ministerial commission created in 1992 composed by the Ministries of Environment, Agriculture, Health, Social Development, Education, Tourism, Economy, Energy, Foreign Service and Treasury. Its main objective is to promote and coordinate actions oriented to the knowledge and sustainable use of Mexico's biological richness; especially those conducted to obtain, organize, analyze and disseminate information about this richness.

CONABIO devotes part of its research efforts to define the degree of threat to which the species and ecosystems found in the country are and will be exposed due to climate change. To this end, CONABIO monitors such species and ecosystems and gathers information and offers this knowledge to facilitate the design of adequate mitigation and adaptation policies. The tools that CONABIO uses in its work to address climate change and biodiversity are, amongst others, the National Biodiversity Information System (SNIB), the Biodiversity World Information Network (REMIB), CONABIO´s cartographical database and its geodata website.

In 1999, CONABIO started its Hotspot Early Detection Program, which provides daily information for the detection, through remote sensing, of wildfires and fires caused by agricultural activities occurring within the Mexican territory as well as in Central America. This program currently offers public satellite images from MODIS and the NOAA on CONABIO's website.

3.2.3 SAGARPA's Climate Change-related programs and activities

The Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA, in Spanish) has as one of the five objectives included in its Sectoral Program 2007-2012 reverting the deterioration of ecosystems through actions to preserve water, soils and biodiversity and, by applying a number of different programs, promoting sustainable practices that support the reduction of emissions, carbon sequestration and adaptation to climate change effects. In order to fulfill this objective, SAGARPA has incorporated sustainability concepts in the operation rules of its programs and has created a specific office to address climate change issues. The main activities and programs affecting climate change mitigation and adaptation currently carried out by SAGARPA are summarized in Table 7. All these activities are supported by the Program for Sustainable Livestock Production and Management (PROGAN).

Table 7. Summary of SAGARPA's activities related to climate change mitigation and adaptation

Activity	Description
Soil conservation	SAGARPA promotes integrated projects with conservation and sustainable use practices and actions on soils, water and vegetation. For instance, the introduction of conservation tilling on agricultural soils through support for the acquisition of machinery.
	Soil conservation actions include the implementation of joint actions between SEMARNAT and SAGARPA for the establishment of ecological projects related to the conservation, restoration or reforestation of land in high priority municipalities (soil degradation), in rural properties registered in the Direct Rural Supports Program (PROCAMPO, in Spanish).
Productive reconversion	SAGARPA supports re-planning of production and the replacement of monocrops for perennial species, woody species, grasses and multiple or alternated crops. This action also includes conversion from traditional crops to orchards or other alternatives or the improvement of patterns to face diseases potentially lethal for plantations. Adaptation measures are introduced by promoting the reconversion to crops with lower water requirements or to fodder.
Grazing lands	In Mexico, livestock raising is practiced in more than 100 million ha, and SAGARPA promotes, since 2008, the mitigation of GHG emissions by supporting planned livestock raising practices in 65 million ha, which, among other things, leads to the increase of biomass and carbon sequestration in soils. In order to support these activities, between 2007 and 2012 a total of 500 studies will be carried out for the determination of grazing coefficients, and for recovering, conserving, improving and giving a rational use to grazing lands, as well as to develop a GIS of the Livestock Production Units in order to monitor, measure and verify the evolution of the status of pastures in a surface of 5 million ha, as committed in the PECC. Among the means of supporting the establishment, rehabilitation and conservation of grazing lands SAGARPA promotes, since 2009, reforestation with live hedges and the management of native plants, and has set as the minimum, sowing or conserving 30 plants for each animal unit supported.
Harvest of green sugar cane	SAGARPA promotes the mechanization of harvesting green sugar cane by supporting the acquisition and use of machinery, as well as the elaboration and application of cane-based compost to improve soils. Harvest mechanization contributes to the elimination of burning practices, which reduces GHG emissions and other pollutants and favors the recovery of fauna and flora.
Conservation and recuperation of the vegetal cover in grazing areas.	This activity contributes to SAGARPA's objective of improving the income of producers by enhancing their presence in global markets, promoting value-adding processes and fuel production. The strategy followed to reach this objective is supporting the development of sustainable livestock raising projects that minimize the environmental impact of bovine livestock and support the recovery or improvement of grazing areas and of the livestock raising process, incentivizing at the same time investments from ranchers.

Source: Mexico's fourth National Communication to the UNFCCC.

SAGARPA is an active player in the ongoing national REDD debate. Its representatives have been participating in the REDD Task Force, and it has published a position paper with its views

on how REDD should be addressed in Mexico[14]. Moreover, SAGARPA has started collaboration with the Mexican Carbon Program to carry out research on the carbon implications of various agricultural practices.

3.2.4 State-level Climate Change Programs and activities

Many State Governments have started the preparation of their Climate Change Programs (PEACC, in Spanish), following the provisions of the National Development Plan 2007-2013, the National Climate Change Strategy and the Special Climate Change Program 2009-2012 of the Federal Government, which has as a specific goal publishing at least 8 PEACCs during the period 2008-2012. The rationale of the PEACCs lies in the fact that many adaptation and mitigation policies have better chances of success if they are designed and implemented at the State or local levels, since most of the authorities, communities and researchers in this context have the best understanding of the problems and capacities existing in their areas of influence. In addition, many of the most effective adaptation and mitigation measures reside in the local or State jurisdictions.

The PEACC is a support instrument for the development and planning of public policy at the State level with the objective of gathering and analyzing information in order to design lines of action that may be applied to address climate change at the local level.

According to the characteristics of each State, a committee is established to coordinate the elaboration of the PEACC, together with a Working Group with representatives from the academia, universities and research centers as well as from State entities in charge of the protection of the environment, planning processes, development, treasury, agriculture and tourism. The private sector, NGOs and federal delegates in the State also participate.

The main tasks involved in the development of a PEACC are the following:

1. Identifying the goals and priorities of the State development plans;
2. Convening local authorities, the private sector and the civil society in general to participate in the process;
3. Analyzing the local research and education (universities) capacities to develop and strengthen the technical-scientific basis available to work on climate change issues;
4. Synthesizing the main social, economic and environmental characteristics of the State;
5. Integrating gender and community considerations;
6. Elaborating a GHG emissions inventory for the State;
7. Identifying and assessing mitigation options in the State;
8. Elaborating GHG emissions scenarios;
9. Generating climate change scenarios at the regional level;
10. Assessing the vulnerability of the interest sectors identified by the State Government;
11. Designing local adaptation strategies;
12. Constructing the necessary agreements for the implementation of the program;

[14] The position paper is available at:
http://www.sagarpa.gob.mx/desarrolloRural/Documents/Vision%20SAGARPA%20REDD%20LG.pdf

13. Identifying potential sources of funding for the development and implementation of the PEACC;
14. Carrying out public consultations and awareness raising campaigns;
15. Follow-up and evaluate the PEACC.

SEMARNAT, through INE, has supported the elaboration of PEACCs in a number of States by strengthening local capacities and publishing guidance documents on how to elaborate State-level GHG emissions inventories, PEACCs and climate change scenarios.

According to INE's website on PEACCs (http://www2.ine.gob.mx/sistemas/peacc/), as of December 2009, 16 States had started working on the elaboration of their PEACCs at some level. The status of such efforts is shown in Figure 10 and Table 8. A few more States are currently working on proposals and arranging support for the elaboration of their programs, as showed in section G of this report. Likewise, some municipalities and cities have elaborated – or are in the process of elaborating – their own climate change programs: This is the case of Mexico City and the municipality of Chihuahua, which presented its climate change plan in September 2009.

There are also increasing efforts to put in place the institutions required to address climate change issues at the State and Region levels. For instance, Guerrero established a State Commission on Climate Change and Baja California Sur and Morelos are in the process of setting up theirs, while Durango and Coahuila put in place a Regional Committee on Climate Change in La Laguna. In this sense, it is worth noting that Mexico is part of the International Council for Local Environmental Initiatives (ICLEI) since 2002, and that the municipalities of Aguascalientes, Aguascalientes; San Nicolás de los Garza, Nuevo León; Centro, Tabasco; Ciudad Hidalgo, Michoacán; as well as the Government of the Distrito Federal, and the Delegación Miguel Hidalgo participate in ICLEI's World Mayors Council on Climate Change. Additionally, within the framework of the US-Mexico Border Environmental Program (Border 2012), in operation since April 2003, a newly incorporated objective agreed between the two countries seeks to develop technical capacities in the Border States to generate and manage information on GHG emissions using comparable methodologies and to expand voluntary programs for the cost-effective reduction of such emissions.

Table 8. Status of PEACC elaboration in Mexico by State

State	Stage of PEACC development
Baja California	Has a State-level GHG emissions inventory and regionalized 12 km x 12 km climate change scenarios to assess local vulnerability in the water, energy, agriculture and health sectors.
Sonora	Has a State-level GHG emissions inventory.
Coahuila	The Government of Coahuila is currently elaborating and integrating the State Strategy and a climate change office with resources from the federal government and the own State. The elements of the strategy are being integrated, including climate scenarios, vulnerability assessments, and adaptation and mitigation measures. Additionally, a climate change office is being created within the Ministry of Environment of the State government. SEMARNAT has provided advice through INE and SPP.
Nuevo León	The Instituto Tecnológico y de Estudios Superiores de Monterrey has been in charge, since March 2007, of developing Nuevo Leon's PEACC. This PEACC includes a State-level GHG emissions inventory, regionalized scenarios, vulnerability assessments in key sectors of the State - such as agriculture and health, among others -, GHG mitigation options and adaptation measures. The program is currently going through a final revision and is expected to be published soon. Moreover, work has started to establish the State Committee for Climate Change .
Zacatecas	The Government of Zacatecas is about to start working on its PEACC and has organized discussion fora on e.g. its climate change strategy.
Nayarit	The Government of Nayarit has made important progress in the elaboration of its PEACC and has convened a group of researchers from UAN, INIFAP and the State Government itself.
Guanajuato	In November 2008, Guanajuato published the document "Towards a State Climate Change Strategy in Guanajuato". In the first communication of the State Interministerial Commission on Climate Change (COCLIMA), the State Government presented the executive summary of the state GHG emissions inventory and the advances of the Working Groups on vulnerability, adaptation and GHG emissions mitigation.
Veracruz	The Veracruz Climate Change Program was completed in 2008 and submitted for public consultation in March 2009. The Program includes a GHG emissions inventory, the results of the regionalized climate change scenarios for Veracruz, vulnerability analysis in key sectors and proposals to develop mitigation and adaptation measures.
Michoacán	In a coordinated effort between the Government of Michoacán, INE, the State Council for Ecology and the World Bank, a first workshop on strategic environmental assessment was carried out in order to build local capacities for the use of this tool in the elaboration of the Strategy on Environmental Sustainability and Climate Change.
Estado de México	The State Government will publish the "Climate Change Initiative for the Estado de Mexico", which includes a GHG emissions inventory, vulnerability aspects and actions resulting in the reduction of GHG emissions related with energy efficiency measures, improved transportation, and carbon sequestration and conservation.
Distrito Federal	The Climate Change Program of Mexico City 2008-2012 establishes 26 actions focused on the mitigation of GHG emissions, with an estimated goal of avoiding 4.4 million tons of CO_2e per year, representing 12% of the annual emissions of the City. The Program also includes adaptation measures to the current and foreseeable effects of climate change. The Program is already being implemented..
Puebla	The elaboration of the Strategy on Climate Change Mitigation and Adaptation of the State of Puebla began in 2009 and is expected to include a GHG emissions inventory, an energy balance, a vulnerability assessment and the analysis of cross-sectoral public policies, all of which will serve to define priority mitigation and adaptation measures for the State.
Guerrero	Guerrero has so far put in place a State Climate Change Committee and has developed a GHG emissions inventory.
Tabasco	The development of Tabasco's PEACC began in 2008. Also in 2008, an Interinstitutional Climate Change Committee was established with the objective, among others, of promoting the elaboration of the Program.
Chiapas	The Climate Change Action Program of the State of Chiapas is currently at an initial stage where basic management and information are being developed. The relevance of this project must be underlined, since it will focus on the AFOLU sector. The Program will incorporate a GHG emissions inventory, future climate change scenarios for 2020, 2050 and 2080 and local mitigation and adaptation options.
Quintana Roo	Quintana Roo has started awareness-raising activities on climate change, which is one of the tasks contained in its Climate Change Plan.

Source: Mexico's fourth National Communication to the UNFCCC and INE's PEACC website (http://www2.ine.gob.mx/sistemas/peacc/)

It must also be noted that since 2002 the State Governments of Chihuahua, Jalisco, Colima, Guanajuato, Puebla, Veracruz, Chiapas, Yucatán, Campeche y Quintana Roo have elaborated biodiversity studies that, among other activities, compile information on the impacts of climate change on local biodiversity. Moreover, the Biodiversity Strategies of Michoacán (published in 2007) and Aguascalientes (currently being elaborated) have incorporated strategic lines that

cover GHG mitigation actions and adaptation activities supporting biodiversity conservation.

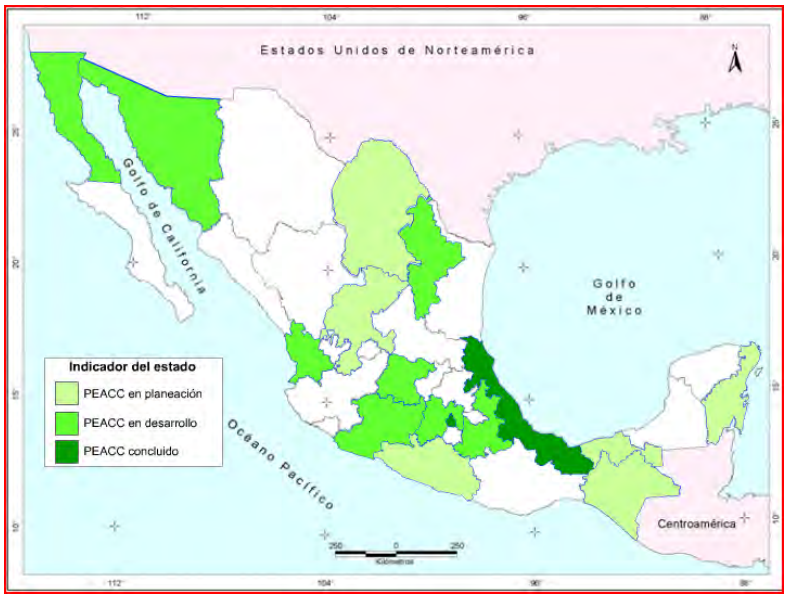


Figure 10. Status of PEACC elaboration in Mexico
Source: INE (http://www2.ine.gob.mx/sistemas/peacc/)

A number of national and international sources of funding have provided support for the elaboration of PEACCs. Table 9 provides a summary of the sources of funding used by State Governments in order to elaborate their programs.

Table 9. Main sources of funding used by State Governments to elaborate their PEACCs

Sources of funding	States
Strategic Programmes Fund (SPF) of the United Kingdom, previously known as Global Opportunities Fund (GOF)	Supported the elaboration of the PEACC of Veracruz (finished), Nuevo León and Chiapas (in process).
Interamerican Development Bank (IDB)	Will support the elaboration of the PEACCs of Tabasco and Yucatán, and possibly three other states.
The World Bank	The WB will support 6 PEACCs and 10 City Plans over the next two years. The WB chose Michoacán as a pilot by request of SHCP. The WB will start working in 2010 in 3 States and 5 cities.
Border Environmental Cooperation Commission (BECC)	Baja California, Chihuahua, Coahuila, Nuevo León, Sonora and Tamaulipas, submitted proposals under the Technical Assistance Program of the US-Mexico Border Program in 2009, for the development of GHG inventories and scenarios and the elaboration of Action Plans.
Joint Cooperation Fund between SEMARNAT and the Agency for International Cooperation for Development of Spain.	Support is being arranged for the States of Quintana Roo and Tlaxcala.
Sectoral Fund SEMARNAT-CONACYT	Aguascalientes, Baja California, Baja California Sur, Chihuahua, Michoacán, Morelos, Nayarit, Querétaro, Tabasco and San Luis Potosí, obtained support to develop the technical aspects of their PEACC and/or their GHG emissions inventory.
Mixed funds constituted with contributions from State Governments and the Federal Government trough CONACYT in 2009 .	Support the elaboration of PEACCs in Nayarit and Durango.

Source: Mexico´s Fourth National Communication to the UNFCCC and interviews carried out for this assessment.

4. Regulatory framework relevant for sustainable landscapes[15]

In Mexico, forest-related activity is regulated by the General Law on Sustainable Forest Development (2003) which makes reference to the competencies and attributes in forest matters under the three levels of government: Federal, State and Municipal. This Law refers to the institutional framework of activities to regulate, protect, promote and oversee the forest sector, and to the diverse government forestry programs. It states the necessary requirements to obtain authorization for forest use, as well as the commitments and obligations of the forest landowners and the Mexican Government to conserve, protect, sustainably use, and restore forested areas in the country.

The Forest Law is complemented by the General Law for Ecological Balance and Environmental Protection (LGEEPA, in Spanish), which focuses on activities to protect biodiversity and prevent and mitigate the environmental impacts of some activities on forest lands and tropical areas; the Law on Wildlife regulates the use of plant life and animal wildlife; the Law on Agriculture that provides the legal framework for landowners to carry out activities to use their forest resources; and the Law on Sustainable Rural Development that establishes the general framework for activities that protect and restore forest cover within the rural development programs.

In Mexico, Federal bodies are in charge of the regulation, advancement, protection and surveillance of forest resources. SEMARNAT is the institution in charge of regulating forest activities and authorizing the use of forest resources through its delegations in each of the 32 federal entities. CONAFOR is the agency in charge of promoting the activities related to proper forest use, forest protection, plantation development and restoration, through economic resources that are allocated as subsidies. While the Federal Attorney of Environmental Protection (PROFEPA in Spanish) is the body in charge of enforcing the law and carrying out inspections and forest surveillance, the State Governments and municipalities collaborate and participate in carrying out advancement, restoration and forest surveillance programs.

[15] This section draws from the document "Forest Certification in Mexico". Salvador Anta Fonseca. Consejo Civil Mexicano para la Silvicultura Sustentable A.C. Paper presented at the Symposium Forest Certification in Developing and Transitioning Societies: Social, Economic, and Ecological Effects. Yale School of Forestry and Environmental Studies. June 10 & 11, 2004.

5. Governance

Mexico has advanced significantly in strengthening transparency and accountability mechanisms, particularly at the Federal level. In the particular case of the forest sector, even though capacities for law enforcement have been increasingly growing since the late 90s, when PROFEPA was created, there are not enough human and financial resources to effectively enforce laws. Furthermore, there are areas within the country where government officials have limited access due to presence of organized groups of illegal loggers, drug traffickers and, in some specific areas, guerrilla groups challenging local and federal authorities[16].

Governance challenges faced currently by the forest sector in Mexico are also illustrated by the controversy surrounding the ProArbol program implemented by CONAFOR that started in the last quarter of 2008. According to Greenpeace, only 7.6% of trees planted as part of the reforestation efforts supported by ProArbol will survive due to poor planning and lack of continual care for saplings after planting, which raises questions about the program's efficiency.[17] *El Universal*, one of Mexico's prominent newspapers, has reported on widespread corruption in ProArbol's implementation.[18] Some politicians have suggested the need to cancel ProArbol, while opinion leaders and authorities defend the program and argue that it is part of the first relatively stable forestry policy in Mexico.[19] What is clear from this debate is that public information regarding the results of public programs is insufficient and that it is necessary to strengthen mechanisms that engage stakeholders and civil society in open discussions on Mexico's environmental and natural resources management policies (FAA 118-119 USAID).

At the local level, experience and research provide evidence that in communities and *ejidos* with internal power inequalities, agents with more power are able to impose higher costs on those with less power; on the other hand, powerful leaders in well organized communities provide positive externalities to the group. Such studies indicate that greater power inequality tends to lead to more illegal logging and more forest degradation[20].

Most *ejidos*, communities and private forest owners are not organized enough to implement sustainable forest management practices; nevertheless good examples of successful community forestry exist in some States. Communities in Mexico are a great force for both forest management and conservation, and there are many models for good resource management and forest enterprises. Expanding these models to other communities and *ejidos* requires extensive

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[16] Source: Report submitted to the United States Agency for International Development Assessment Of Tropical Forest And Biodiversity Conservation In Mexico (FAA Sections 118-119 Report). January 30, 2009.

[17] SEMARNAT, "Los resultados de ProÁrbol, estrictamente apegados a la verdad," *Comunicado de prensa número 193/08.* October 14, 2008. http://www.semarnat.gob.mx/saladeprensa/boletindeprensa/Pages/Bol%202008%20193.aspx . Cited by the FAA Sections 118-119 Report.

[18] *El Universal,* "Fracasa ProÁrbol; acusan corrupción," January 14, 2009. http://www.eluniversal.com.mx/primera/32325.html cited by the FAA Sections 118-119 Report.

[19] Julia Carabaias, "ProÁrbol cuestionado," January 22, 2009. http://www.reforma.com/editoriales/nacional/481/960776/ cited by the FAA Sections 118-119 Report

[20] V. Pérez-Cirera, J. Lovett. Power distribution, the external environment and common property forest governance: A local user groups model. Ecological Economics, Volume 59, Issue 3, Pages 341-352.

community organization and capacity building programs, which in turn are time consuming processes, determined largely by local conditions and decision-making processes.

Some recent studies on the potential of forest carbon markets in Mexico and lessons learned from the PES schemes emphasize the importance of proper institutional arrangements, participation of all the stakeholders, property rights, and adequate capacity for successful implementation of forest carbon markets based on PES schemes.

Corbera and Brown (2008) analyzed institutional design, organizational capacity, and interplay in markets for ecosystem services in Mexico focusing on challenges faced in the future development of a market-based mechanism to commercialize forest carbon. They concluded that several challenges have to be resolved before it is possible to guarantee effective management of the global atmospheric commons through market-based forest carbon trading. They indentified these main challenges for Mexico:

- This type of institutional arrangement does not yet have sufficient support from all civil society sectors, thus limiting widespread participation in these markets,
- There is a general lack of capacity across civil society actors to implement these projects in a consistent manner,
- The lack of integration between the different institutions trading forest carbon undermines any attempt to establish a uniform framework under a set of internationally agreed and legitimate rules and principles,
- Critical to the effective implementation of markets for forest carbon will also be the ability to design projects taking into account local property rights, socio-political dynamics, and cultural perceptions of market-based instruments.

In another study on institutional dimensions of payments for ecosystem services (PES) of Mexico's carbon forestry program, Corbera et al. (2009) concluded that:

- In the context of government-led PES schemes, it is important to strengthen processes of institutional coordination so as to avoid contradictory policies and actions in rural development and land-use planning,
- In user-led PES, it is important to examine to what extent government policies or changes in international markets induce land-use change dynamics in the region or area subject to PES and what is the response of PES actors to such changes: Would ES providers stick to their PES contractual obligations? Would ES users prosecute those who fail to deliver the service? Would ES users cancel contracts if their economic conditions change or the funding framework becomes inadequate?
- Capacity is extremely important to design consistent schemes and projects and to generate the required trust among all stakeholders, which can ultimately determine the provision of ES in the long run.

From a design perspective, defining the nature of the service for which communities are rewarded and establishing standard methodologies for the evaluation of ES provision is very important. Furthermore, all PES programs should ensure that intermediaries are accountable, contracts define actors' rights and responsibilities, and power relationships are even. The inclusion of a multi-stakeholder body bringing together PES actors to analyze PES drawbacks as the scheme develops is certainly a good idea. This, jointly with independent assessments,

strengthens processes of ongoing learning and institutional adaptation. More important is to develop a sustainable financing framework where ES users flexibly compensate ES providers over a long period of time, and where continuous support for sustainable resource management is provided. Above all, however, PES schemes need to secure a minimum level of capacity and understanding across the actors involved so that they understand what PES is actually about and what should be delivered. Capacity considerably influences PES procedural design and early implementation stages, in turn affecting PES efficiency and actors' long-term trust (Corbera et al 2009).

D. Civil Society activities on Sustainable Landscapes

Mexican Non-Governmental Organizations (NGOs) have dramatically increased their participation in climate change activities and initiatives in the last few years. This is due in part to external factors, such as the enhanced global awareness on climate change, the high expectations regarding a post-2012 international climate change regime and the attention and resources devoted to the carbon market and to REDD in particular, but also to the ongoing domestic processes such as the creation of the CICC, the elaboration of the PECC and the implementation of Environmental Services Programs and Clean Development and voluntary carbon market activities in the country.

Interviews carried out for this assessment with the most active NGOs on climate change issues in Mexico reveal that, in general, their agendas cover a wide range of activities, including, inter alia:

1. Participation in the international climate change negotiations;
2. Participation in domestic policy making processes and consultations (e.g., in the consultative committee of CONAFOR's environmental services programs, the REDD Task Force, in the design of the REDD Strategy and the discussions on the FCPF process and documents);
3. Awareness raising activities;
4. Capacity building activities;
5. Carbon markets (going from boosting the creation of a national carbon market to carbon neutrality programs and emission reductions registries); and
6. Carbon offset projects (going from identifying project opportunities to working with communities on specific project activities and designing community participation schemes and funding mechanisms).

Additionally, many NGOs are currently planning diverse activities to participate in the 16th Conference of the Parties (COP16) and its associated side events. A summary of the current and planned activities of the most relevant NGOs is provided in Table 10. It is worth noting that, although most of these NGOs are concerned about climate change vulnerability in the country, none of them is currently developing specific adaptation projects, adaptation is rather seen as a desirable co-benefit of mitigation (REDD, reforestation) activities. It must be also underlined that the great majority of the NGOs currently involved in the REDD discussions and activities have a forestry-oriented profile and seeking to develop expertise on carbon offset standards and procedures and related funding mechanisms.

Table 10. Summary of current activities by Mexican NGOs on sustainable landscapes

Organization	Main ongoing and planned activities
Reforestamos Mexico (RM)	Awareness raising: o Permanent awareness campaign (papalote, metro, etc.) o "climate witness program" o "carbon neutral program" o Mexican carbon calculator/CONOCE/calculator for children Environmental services o Environmental markets o Tool for the quantification of environmental services in urban green areas o Carbon sequestration and REDD projects In all of these activities, RM works with Ad-Hoc partners, both from the Government at different levels, other NGOs and the private sector (including development banks and international funders). RM works with an extensive network of local NGOs and communities and has close interaction with Mexican private sector companies.
Fondo Mexicano para la Conservación de la Naturaleza (FMCN)	FMCN sees REDD as an opportunity to promote the strategic objectives of its Strategic Plan 2007-20012, namely: • Strengthening the conservation, Management and sustainable use of priority ecosystems and their ecologic processes; • Developing an able civil society in terms of conservation, management and sustainable use of ecosystems and their ecological processes; • Promoting innovative mechanisms for the conservation and sustainable use of biodiversity.
WWF Mexico	1) Public Policy • In close collaboration with SEMARNAT and CONAFOR, build up the pathway to set up an effective public policy mechanism to implement REDD+ in Mexico for COP16 and beyond; • Definition of the objective, structure, terms of reference, rules of operation of the REDD Technical Committee (CoT-REDD) and its articulation within the REDD Working Group within CICC. • Facilitate meetings within the Government's REDD Working Group and the CoT-REDD. • Presentation and approval of Mexico's pathway towards REDD+ to the CICC • TNC and WWF in collaboration the Undersecretary of Regulation and Promotion, will lobby the creation of a new norm on deforestation and degradation rate calculations in the agenda, as well as an agreement to establish the standardized methodologies 2) Capacity building • Create and strengthen government's (Federal, State and local) capacities on climate change and forest related issues (REDD, adaptation, biodiversity…) • Exploring collaboration with universities: – TEC (State Climate Change Programs) – Regionalize REDD introductory course (www.conservationtraining.com) – Yale University/Duke University towards COP16 3) Communication • Socialize and exchange REDD+ related information to the key and general interested public. • Keep track and document Mexico's REDD+ building process • Dynamic and interactive REDD+ process presentation event at COP16 4) Demonstration projects • Support the "national REDD+ pilot (s)" by reinforcing activities and exploiting synergies with key stakeholders (Chiapas, Michoacán, Oaxaca…) • Showcase and replicate Chiapas work and State level Action Plan model to other states

Table 10. (Continued 1)

Organization	Main ongoing and planned activities
AMBIO	AMBIO currently works on two REDD+ pilots: one in El Ocote with support from USAID through MCP, and the second in Marqués de Comillas. In a first phase, AMBIO is working with the most organized communities in El Ocote, in the second phase it will seek to work with 2 additional communities developing local capacities. The role of AMBIO in these two pilots is still to be defined, but will most likely focus on facilitating processes and executing the proposals. AMBIO has been working in Marqués de Comillas since 2000 with the Plan Vivo program. This project was then labeled "forest maintenance" or "conservation" instead of REDD+. Since 2005, they have established 24 permanent monitoring plots. With the FMCN, AMBIO has been trying to identify the information needs for the communities to participate in REDD+. The experience gained in Marqués de Comillas is being adapted to El Ocote. AMBIO has two medium-term objectives: • Development of local strategies using the Plan Vivo system as planning tool • Creating a training center
Consejo Civil Mexicano para la Silvicultura Sostenible (CCMSS)	CCMSS wants to generate solid arguments and proposals for the REDD+ mechanism through learning by doing, so as to design actions that lead to improvements in local economies, capacities and governance and to avoid the generation of "no economy" options - that is, not touching the forest –which could happen, for instance, if the PSAH were expanded. Their experience points out that the forest is conserved only if it contains people with a clear interest. CCMSS wants to produce a replicable model, since they have a large network of local partners in the country that could apply it on the ground. To test this model, CCMSS is working on 5 pilot projects: • Amanalco, Estado de México • Costa de Oaxaca • Chiapas (with PRONATURA) • Campeche – Calakmul • José María Morelos, Quintana Roo • The CCMSS plans to develop its REDD+ work (including the development of these pilot projects) by o Characterization of regional deforestation and at the project level o Characterization of a project model, including economy, capacities required, governance, carbon, MRV o External evaluation. o Verification and carbon marketing schemes and peer review of the previous phases. In the area of policy, the CCMSS wants to continue participating in the national REDD+ process (Sergio Madrid, its head, is the Chair of CONAFOR´s Consultative Group on Environmental Services Programs where the Task Force on REDD+ started). CCMSS wants to establish an Advisor Group to interact with the REDD+ Working Group created within the CICC.
PRONATURA	PRONATURA´s current priorities on climate change are: 1. To continue promoting the development of the domestic and international voluntary carbon market, including its technical, legal and commercial aspects; 2. Vulnerability, adaptation and mitigation: their effects on biodiversity, local traditions and cultures. 3. Strengthening its participation in national and international REDD-related processes and pilot activities; 4. Promoting the elaboration of GHG emissions inventories at various levels; and 5. Communication of information on climate change and carbon sequestration, among others.
CEIBA	Is carrying out a project supported by USAID through MCP on the institutional and legal arrangements required to sell carbon. The analysis includes polls in Marqués de Comillas and seeks to explore relevant issues for REDD+ in the organization of communities and coordination of government entities.

Table 10. (Continued 2)

Organization	Main ongoing and planned activities
The Nature Conservancy (TNC)	• Participates in national climate change policy processes: e.g. SEMARNATs Special Program on Climate Change; CONANP's Strategy on Climate Change in Protected Areas; national REDD discussions • State-level climate change action plans: Nuevo León • Preparation of climate change impact studies and adaptation strategies in selected areas: Yucatán peninsula (Selva Maya and the Mexican Caribbean); Gulf of California; San Quintin Bay • Regional climate change projects: Adaptation to climate change in Chiapas and Northern Central America; carbon forestry in Selva Maya (Mexico, Belize, Guatemala); adaptation of coral reefs (Mexico, Belize, Guatemala, Honduras)
Rainforest Alliance/UNDP	• Global Environment Facility- funded project "Transforming management of biodiversity rich community production forests through building national capacities for market based instruments", which is implemented by UNDP and Rainforest Alliance. • The overall goal of the project is facilitating market-based sustainable forest management and conservation of biodiversity and associated environmental goods and services to support national, regional and local development priorities. The specific objective is integrating biodiversity management into forestry practices on community lands by competitive community enterprises through market-based instruments and a step-wise approach leading to full Forest Stewardship Council (FSC) certification. • The 5-year project is carried out in 50 *ejidos* in regions that have significant areas of production forests with high biodiversity values, including up to 41 municipalities in Chihuahua, Durango, Jalisco, Michoacán, Guerrero, Oaxaca, Chiapas, Campeche, and Quintana Roo.

Sources: Interviews carried out for this assessment and materials obtained from NGOs.

In contrast, the participation of the Mexican private sector in sustainable landscapes activities has almost been nonexistent. Only a handful of companies have shown interest in mitigation activities in the forest sector, with the acquisition of carbon credits by Televisa, Chinoin and Grupo Gamesa from the carbon sequestration project led by SAO representing the most significant private intervention in these activities so far. These transactions, although historical, are still mostly symbolic, as the total amount of credits bought in 2009 represented merely 16,412 tCO2e[21]. Nevertheless, efforts are being carried out by PRONATURA (which facilitated SAO's carbon transactions through technical support) and Reforestamos México to increase private awareness and engagement through the development of a national carbon market – something that is in line with the idea of establishing a cap-and-trade system currently being considered by the Mexican Government.

It must be noted that the Mexican private sector has been actively participating in mitigation initiatives and activities in other sectors for some years. The Programa GEI (the Mexican version of the World Business Council for Sustainable Development's GHG Protocol), led by the Private Sector Research Center for Sustainable Development (CESPEDES, in Spanish) in collaboration with SEMARNAT has been running since 2004. In 2008 70 companies participated in this scheme and 48 of them published their corporate GHG emissions reports, showing that in total their emissions represent around 118 million tons per year, which represents about 18% of the country's emissions and 26% of the national emissions from power generation and use[22].

[21] Source: "Por 2° año se realiza el Pago de Servicios Ambientales a 10 comunidades de Oaxaca" Online article available at: http://www.pronatura.org.mx/VerNoticiaDetalle.php?NoticiaID=19

[22] Source: Mexico´s fourth National Communication to the UNFCCC.

Likewise, the Mexican private sector has had a significant participation in the Clean Development Mechanism (CDM) of the Kyoto Protocol: as of April 22, 2009, Mexico has registered 120 projects in the CDM. Even though none of these projects is being carried out in the land use sector, 24 of them, consisting primarily on the mitigation of methane emissions through anaerobic biodigesters, are being implemented in the agriculture sector by cattle and swine producer's associations and small and medium-size farmers[23].

The private sector has also been active in domestic consultation processes such as those carried out for the National Climate Change Strategy and the Special Climate Change Program, and, even though the attendance of private sector representatives to international climate change negotiations is rare, some of the sector's leaders are very knowledgeable of the state of such discussions, as demonstrated by the position paper published by CESPEDES before the fifteenth Conference of the Parties to the UNFCCC (COP15) in December 2009[24], which represents the views of 14 organisms (e.g. national industry chambers and associations) and 14 companies (amongst them, HOLCIM, CEMEX and Ford, to name a few).

Interestingly enough, in its position paper the private sector underlines the risks to its operations arising from climate change and promotes the adoption of an integral national adaptation strategy to reduce the vulnerability of the country and increase its adaptive capacity and to serve as a framework for the design of local plans integrating all relevant actors. Furthermore, the paper expresses the concern of the private sector about the fact that the Mexican Government could devote more resources to mitigation than to adaptation, and acknowledges that until now adaptation has lacked attention from the GOM.

The position paper proposes a number of actions that should be implemented for the private sector to adapt to climate change impacts, namely:

1. Strengthening the institutional capacities of the sector to prepare and implement adaptation measures in the design and operation of productive activities;
2. Participating with the GOM in the design of risk reduction and vulnerability programs throughout the value chain;
3. Building risk management capacities, which implies assessing vulnerabilities and the economic costs of impacts and identifying measures to reduce them;
4. Developing risk analysis, vulnerability levels and identifying adaptation needs and opportunities in all sectors throughout their production chains following a bottom up approach;
5. Considering adaptation as a strategic and cultural issue in private companies; and
6. Integrating as part of adaptation plans the establishment of alliances between the community, the government, the industry and other relevant actors.

[23] Source: http://cdm.unfccc.int/Projects/projsearch.html

[24] "Climate Change: Opportunities for the Private Sector. Vision of the Mexican Private Sector on Climate Change". CCE/CESPEDES. October 2009. Available at: http://www.cce.org.mx/cespedes/Documents/cspdsOK161009baja.pdf

E. Carbon market readiness

Even though Mexico was a pioneer in the implementation of carbon offset projects in the forestry sector (with the Scolel-Té project in Chiapas, which dates back to 1996 and is still selling carbon credits to date), and despite the existence since 2003 of a specific governmental program to support carbon sequestration and conservation projects (the PSA-CABSA), recent success stories in the country regarding such projects are limited. Besides Scolel-Té, only the Project Sierra Gorda in Querétaro and more recently Servicios Ambientales de Oaxaca have been able to actually sell credits from activities in the Mexican forest sector in the voluntary market. To date, no Mexican afforestation or reforestation project has been registered under the CDM, although the COMEGEI (the Working Group of the CICC in charge of approving such projects) has received five requests for No Objection Letters, which are granted to Project Idea Notes (PIN) that comply with the basic requisites (in terms of promotion of sustainable development) established by the CICC for carbon mitigation projects.

Still, the PSA-CABSA has served to raise awareness among civil society in the forest sector (communities, landowners, NGOs) and local Governments about the existing carbon markets and its mechanisms, as well as to provide experience in the preparation of project proposals and to identify capacity needs and barriers to the development of carbon offset activities in the forest sector. Likewise, the entry in operation of the CDM generated initial capacities within the Federal Government, mainly through the establishment of the COMEGEI, to participate in carbon markets.

The establishment and operation of a national REDD mechanism will benefit from these experiences and established capacities, but will require to scale them up significantly and to put new ones in place. Aware of this situation, the Mexican Government signed up to participate in the Readiness Mechanism of the Forest Carbon Partnership Facility (FCPF) of the World Bank, which assists countries to arrive at a credible estimate of their national forest carbon stocks and sources of forest emissions, work out their national reference scenarios for emissions from deforestation and forest degradation based on past emission rates for future emissions estimates, calculate opportunity costs of possible REDD interventions, adopt and complement national strategies for reducing deforestation and forest degradation, and design national monitoring, reporting and verification systems for REDD. These activities are referred to as 'REDD Readiness' and supported by the Readiness Fund of the FCPF.

Mexico was one of the countries selected into the Readiness Mechanism based on the review of its Readiness Plan Idea Notes by the Participants Committee (PC) and independent reviews by a Technical Advisory Panel (TAP) and thus became a REDD Country Participant and received grant support to develop a Readiness Preparation Proposal (R-PP), which was prepared and submitted for review at the end of 2009. The FCPF published the report of the reviews of the R-PP elaborated by the TAP and the PC in March 2010[25].

[25] Mexico R-PP TAP Review (PC 5 Meeting - Gabon: March 22-25, 2010) available at: http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/Mar2010/Mexico_FCPF_FMT_R-PP_Assessment_Kaimowitz_3-5-10.pdf

The relevance of Mexico's R-PP for this assessment is that it describes in a systematic way the existing situation in the country and the process and activities that will be implemented in order to achieve REDD readiness, therefore allowing the identification of the main actors, their roles and current and future needs. Specifically, the R-PP proposes work to be undertaken and funded to prepare the following core components of REDD readiness:

Component 1: Organize and Consult

1a. National Readiness Management Arrangements - to manage and co-ordinate the REDD readiness activities while mainstreaming REDD into broader strategies such as the national low carbon strategies and national development plans.

1b Stakeholder Consultation and Participation - for continuing and expanding consultations over time on the various components of REDD Readiness once the R-PP has been funded and while the R-PP work is being performed, recognizing that consultation needs to be a continuous process informing decision makers on options to be considered.

Component 2: Prepare the REDD Strategy

2a. Assessment of Land Use, Forest Policy and Governance - to help the country identify key drivers of deforestation and/or forest degradation and review its past experiences with reducing deforestation and forest degradation, in order to identify promising approaches for the emerging REDD strategy.

2b. REDD Strategy Options - to develop a set of policies and programs for addressing the drivers of deforestation and/or forest degradation identified in Component 2a, and hence reducing emissions from deforestation and forest degradation, in the context and in support of the national priorities for sustainable development.

2c. REDD Implementation Framework - to set out credible and transparent institutional, economic, legal and governance arrangements that may be necessary to enable the country to implement its provisional REDD strategy options.

2d. Social and Environmental Impacts - to assess the likely impacts (positive and negative) of the REDD strategy options and implementation framework

Component 3: Develop a Reference Scenario - defined as a combination of recent historical data on emissions from deforestation and/or forest degradation and other relevant land uses, and estimated future emissions and removals, leading to a national scenario through time of greenhouse gas emissions, in the absence of additional incentives for REDD.

Component 4: Design a Monitoring System - to design a monitoring system for measurable, reportable and verifiable (MRV) emission reductions and removals of greenhouse gases, and other benefits over time, in relation to a country's reference scenario.

The R-PP was developed through consultation with the REDD Task Force established based on the Technical Consultation Group on Environmental Services Programs of CONAFOR. Nineteen civil society organizations provided their advice to CONAFOR during the compilation of data, reports and assembly of inputs submitted by ECOSUR, during the working sessions of

the REDD Task Force. Moreover, CONAFOR contracted El Colegio de la Frontera Sur (ECOSUR) as a member of the Mexican Carbon Program for guidance in the development of the R-PP, particularly the sections related to the consultation process, establishment of a reference scenario and the Monitoring, Reporting and Verification (MRV) requirements. The main activities proposed by Mexico for each of the components of the R-PP are briefly described in Table 11. It is important to mention that the REDD readiness process will be accompanied by a wider effort launched by the Special Climate Change Program through its objectives 4.3.4 "Strengthening the institutional capacities to promote and implement emission reduction projects aimed at international carbon markets, including the CDM, and starting a national market of GHG emissions" and 4.3.5 "Developing and starting a carbon market among the companies of the energy sector, with the gradual incorporation of private companies in key sectors".

Probably, the most important achievement to date in this preparation process is the establishment of the REDD Working Group within the CICC, given that it implies moving the issue of REDD up in the agenda of the Federal Government and facilitates the design of the cross-sectoral policies required to address deforestation and forest degradation effectively. Likewise, the creation of the Task Force represents an important step in the required dialogue on REDD between the Mexican authorities and the civil society, thus its formalization as a permanent entity independent of the Consultative Group will be paramount for its continuation and evolution. Furthermore, the existing monitoring capacities are one of the comparative advantages that the country has relative to other potential REDD host countries, and the implementation of the activities proposed in the R-PP could go a long way towards establishing a coherent national system for monitoring changes in forest cover. Another key element in the preparation for REDD readiness is the development of demonstration activities, which do not only provide learning-by-doing experience, but also serve as pilots of cooperation schemes between the Government, research institutes, NGOs, communities and, eventually, carbon buyers.

On the other hand, according to the review carried out by the TAP, the weakest element of the process proposed by Mexico to achieve REDD readiness is the REDD implementation framework, since it does not provide concrete activities for the design of the institutional, economic, legal and governance arrangements that may be necessary to implement the country's REDD strategy options and to meet potential obligations under any future REDD regime. Other important concerns raised by the TAP regard the reduced space for the participation of indigenous peoples organizations and State and local Governments in the consultation process so far and in those proposed in the R-PP; the expansion of the existing Pro-Arbol program rather than the development of a more comprehensive set of actions; and the lack of proposals on how address conflicts related to land and forest tenure, illegal logging, and other illegal activities. In a presentation given during the FCPC Participants Committee, held in Gabon, 22-25 March, 2010, CONAFOR provided some comments on how it plans to address the issues pointed out by the TAP. These are shown in Table 12. In general, the review by the Participants Committee[26] seconds the findings of the TAP regarding the need for

[26] Available at: http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/APR2010/4c_Mexico_R-PP_PC_working_group_review_for_gabon.pdf.

cross-sectoral coordination, assessing governance risks, clarifying how biodiversity co-benefits will be integrated into the overall REDD strategy and ensuring social participation and benefits (particularly in the case of indigenous communities). Additionally, the PC raises some questions related to the implementation framework of the national REDD scheme, particularly regarding the steps that the country will follow (and the capacities that it will require) in its transition from individual REDD projects to a nation-wide system.

Based on these reviews, the Participants Committee, through its Resolution PC/5/2010/2[27] resulting from its fifth meeting, decided to allocate grant funding to Mexico to enable it to move ahead with preparation for readiness; and for this purpose, requested it to consider the issues identified in the TAP's R-PP assessment as well as those raised by the PC at this meeting during readiness preparation. The following are the key issues that Mexico needs to address before entering into a Readiness Preparation grant agreement with the Trustee of the Readiness Fund:

1. The roles of the non-forest sector institutions in the REDD national management structure need to be clarified to ensure that those institutions are adequately involved.
2. Component 2c of the R-PP on the implementation framework needs to be further elaborated to meet the standards of this component.
3. Initial engagement on the R-PP with representatives of key stakeholder groups should include Indigenous Peoples.

[27] http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/APR2010/8a-resolutions_1-8.pdf

Table 11. Summary of the main activities proposed in Mexico's FCPF R-PP

Component	Main activities proposed in the R-PP
1: Organize and Consult	
1a. National Readiness Management Arrangements	Establishment of the REDD Task Force and of the REDD Working Group
1b. Stakeholder Consultation and Participation	The consultation process will be carried out at various scales: national, regional (state) and local. The national consultation will be feasible trough the already existing consultation bodies, such as CONAF and the technical consultative bodies. At the regional level, participatory workshops are being planned at either state or regional level and other consultative bodies, such as the Sustainable Development Commissions, will be used to discuss the REDD mechanisms. The consultation will be carried out in 4 phases: a. Preparation and dissemination of the consultation b. Pilot consultation exercises to adjust methodologies c. Application of the consultation at a national level d. Dissemination of the results to obtain improvements through feedback
2: Prepare the REDD Strategy	
2a. Assessment of Land Use, Forest Policy and Governance	A nested national, state and local monitoring system with coordinated national, state and locally-based carbon inventories is envisioned for Mexico. Satellite imagery to develop this system is already available at a regular basis. The monitoring system will initially detect changes within forested areas, but will eventually be able to generate annually national land-use land-cover maps and GHG emission reports. Community-based monitoring of carbon stocks is a common practice in the Chiapas Scolel Té project, while community-based sustainable management of the forest and dispersion of payments from a central financial mechanism to thousands of project owners are also a common practice in the programs of CONAFOR, and will be used as a basis for REDD-based projects
2b. REDD Strategy Options	Since 2001 CONAFOR has implemented a series of forestry related programs directed towards decreasing deforestation, increasing sustainable forest management and restoration of degraded areas. The lessons learned from these programs will be the basis to design the REDD related activities. Required studies: • Assess the cost and impact of the various LU related projects of the forestry and non-forestry sectors on DD. • Develop a spatially-explicit study on opportunity costs of the various non-forest LU options. • Assess the capacity building requirements of both governmental institutions as local land-owners. • Develop a deforestation and forest degradation risk-index, in close collaboration with component 7. • Assess impact of the various forestry and non-forestry projects on biodiversity and poverty. • Assess the possible risks and barriers of implementing REDD projects.
2c. REDD Implementation Framework	1- Establishment of an institutional, legal and political framework for REDD (including national reference emission scenario and MRV system) 2- Establishment of the rules of operation and governmental involvement, national registry of project activities, landowner involvement and financial mechanisms. 3- Definition of scale of activities, how to establish local RES and MRV within the national framework and how to implement in Mexico 4- Tracking and register of REDD activities and MRV system 5- Evaluate transaction costs of the various administrative options of REDD implementation 6- Emission reduction ownership and transfer rights. 7- Definition of the payment system (payment US/tC; US/ha, combinations?)

Table 11. (Continued)

Component	Main activities proposed in the R-PP
2d. Social and Environmental Impacts	Terms of Reference for the development of a Strategic Environmental and Social Assessment (SESA) of the REDD readiness activities including the strategy to evaluate the REDD related social and environmental benefits and impacts, particularly poverty alleviation and biodiversity conservation
3: Develop a Reference Scenario	Terms of Reference for the development of this component, including: 1. Estimate forest conversion from 4-5 points in time, depending on availability of good-quality satellite imagery (e.g. 1990-1993, 1993-1997, 1997-2000, 2000-2002, 2002-2007). Scale defines level of uncertainty. 2. A spatial correlation analysis of DD in relation to drivers will be carried out to determine the deforestation and forest degradation risk, such as access or pressure 3. Analyze the impact of land-use programs on deforestation and forest degradation to be used to estimate the impact on DD of the National Development Program 2007-2012, Special Program on Climate Change 2008-2012, and the National Forest Strategy. 4. Develop biomass density maps of forests, according to eco-region, state, forest type, level of degradation, based on national forest inventory, state forest inventories and auxiliary data sources. 5. Develop a spatially-specific reference emission scenario, based on the integration of the results of the activities 1-4. 6. A priority index will be developed that identifies the key areas for future actions, according to indicators selected through stakeholder consultation. .
4: Design a Monitoring System	Terms of Reference for the development of a project to achieve the following outcomes: 1. A multi-scaled monitoring system for REDD, based on satellite imagery and ground-based monitoring plots. 2. Activity data and emission factors to develop a reference scenario and monitoring system of REDD 3. National reporting system for REDD compatible with other national, state and project-based GHG-emissions reporting systems:

Source: Mexico R-PP.

Table 12. Substantive issues found by the TAP regarding Mexico's R-PP and proposals by CONAFOR on how to address them

Issues	Solutions proposed by CONAFOR
1. Some sections of the R-PP imply that REDD+ strategies would largely be limited to expanding the existing ProÁrbol program, with minor modifications, rather than taking a more comprehensive set of actions. That is unlikely to be effective or efficient.	Pilots will develop more fully the aspects related to other REDD+ strategies involving agriculture and infrastructure policies, tenure policies, regulatory policies, protected areas, government procurement policies, among others.
2. The R-PP does not distinguish enough between deforestation and degradation. Although the two partially overlap, the actors involved, direct and indirect causes, location, monitoring requirements, and appropriate policy interventions differ markedly.	Distinguish more clearly between deforestation and degradation and between coniferous and broadleaf forests and propose approaches that are relevant to each specific case. Within this context, the R-PP should focus more on efforts to enhance forest carbon stocks, particularly forest management practices that increase carbon stocks. The R-PP will also emphasize the need to further develop monitoring degradation methodologies, which also requires intensifying the permanent plots sampling and re-measuring processes.
3. The R-PP says little about what the government proposes to do about conflicts related to land and forest tenure, illegal logging, and other illegal activities.	Map out in greater detail who are the relevant groups and organizations that need to be consulted and why. We need to intensify workshops and other consultation instruments to create a governance proposal to be presented up in the Congress and to the Interministerial Commission for Climate Change. The R-PP will develop a consultation calendar with the proposal and its costs, regarding issues like tenure conflicts, illegal logging and other illegal activities.
4. ProÁrbol has been controversial, particularly its reforestation activities. Critics claim the program emphasizes quantitative targets, rather than the quality of results; has been inefficient; gives preferential treatment to organizations aligned with the government; provides limited technical assistance to accompany its investment funding; and lacks truly independent monitoring and evaluation. The R-PP does not discuss these issues, even though ProÁrbol is a central part of the proposed strategies.	Clarify the relative weight that Pro-Arbol is expected to have within the overall set of REDD+ strategies. ProÁrbol has at least 40 different categories of programs. The design of the REDD strategy will take only those categories that are currently a proven instrument to reduce DD, like PES, Community Forest Management, Wild Fire Management, Sustainable Forest Management and others. From ProÁrbol, we will also take the Mexican Forest Fund, the Operational Rules and the development of a multi-criteria instrument to the focalized distribution of payments, as a good proven financial and payment instrument at national level.
5. The proposed consultation plans do not adequately consider relevant stakeholders with whom CONAFOR traditionally has not interacted much, including indigenous groups that do not receive government forestry funding, agribusiness, and small farmers. 6. The R-PP largely fails to recognize the special needs, circumstances, and rights of Indigenous Peoples. It does not explain how CONAFOR will coordinate with the National Commission for Indigenous Development (CDI); does not take into account Mexico's linguistic and cultural diversity; does not have a clear strategy for consulting with Indigenous Peoples organizations; and does not discuss how the government will ensure that the proposed efforts comply with its international obligations, related to the rights of Indigenous Peoples.	Devote greater attention to the specific needs and rights of Indigenous Peoples. R-PP will present an Indigenous Peoples Participation Plan according to the World Bank Safeguards. It will explain in greater detail how Indigenous Peoples, private sector representatives, and small farmer organizations will be effectively consulted; and give greater emphasis to community and civil society participation in monitoring REDD+ activities and their effects.
7. Re-examine whether it makes sense to devote 75% of the total readiness budget to improving the National Forestry Inventory.	Since the annual degradation rate is even higher than deforestation rate in Mexico, and monitoring degradation methodologies require more ground-trusted verification processes, compared to deforestation methodologies, we need to intensify permanent plot sampling until remote sensors and carbon budget models can be calibrated as part of the readiness step. However, we are going to look for other budget (from State governments and CONAFOR to cover the needs for the NFI, so that we will adjust current budget allocated to national forest inventory and to allow grater finance to aspects related to the design and implementation of an Indigenous Participation Plan and to the Environmental Impact Plan.

Source: Mexico´s Readiness Preparation Proposal. Presentation at the FCPC Participants Committee, Gabon, 22-25 March, 2010.

F. Existing donor programs

1. A brief review of previous activities and programs of USAID Mexico relevant for this assessment

USAID/Mexico Environment Program 1999 – 2008

USAID began its environmental activities in Mexico in 1989, as the first bilateral donor to support environmental conservation efforts in Mexico. In 1993, the natural resources portfolio was expanded to also include the topics of renewable energy and energy efficiency. The increasing number of USAID/Mexico environmental activities led to an integrated program of work under the first Environment Strategy 1999-2003. That strategy pursued two Strategic Objectives: Critical ecosystems and biological resources conserved and Carbon dioxide emissions and pollution reduced.

Critical ecosystems and biological resources conserved: This objective targeted conservation of critical ecosystems, primarily through building capacity in Mexican organizations, government and academic institutions, and helped improve management of protected areas, particularly forests and coastal resources. USAID accomplished this by introducing sustainable alternatives, developing and strengthening institutional capacities and identifying key policy limitations to conservation. The activities under this objective were implemented mainly through local NGOs and communities, in partnership with international and Mexican NGOs, international and Mexican universities, and GOM agencies.

During the first strategy, the Fondo Mexicano para la Conservación de la Naturaleza (FMCN), which USAID helped create, became fully operational and recognized as one of the largest and most effective conservation funds in the world. Working through USAID's Biological Support Program, Parks-in-Peril and the Coastal Resource Program, USAID helped create protected areas, consolidate planning, and improve management capacity and facilitated participation of local communities and organizations near these areas in the conservation decisions that impact their lives. USAID also created a cadre of conservation professionals now filling top positions in conservation organizations and in government offices in Mexico. As a result of the El Niño driven fires of 1998, USAID created a program that has helped strengthen capacity to detect, respond to and recover from fires.

Carbon dioxide emissions and pollutions reduced: An initial goal to reduce carbon dioxide emissions through demonstrative small-scale projects was expanded in 1998 to include the promotion of national-scale activities on renewable energy and clean production programs. Working with a variety of GOM agencies and private companies, activities included demonstration photovoltaic projects in remote areas for use in productive applications, conservation of protected areas, educational programs and baseline studies for the potential use of these new energy sources. Opportunities for independent financing of renewable energy and clean production projects were identified and promoted. USAID's clean production program led to the dramatic reduction of CO_2 emissions through energy savings, particularly within PEMEX. It also opened doors for the private sector in the energy efficiency and

renewable energy markets. The program demonstrated that renewable energy is a reliable and cost effective alternative in targeted areas, particularly for rural medical and educational facilities that are not connected to the national electrical grid.

Activities carried out under both objectives strengthened Mexico's ability to reduce greenhouse gas emissions from both, the energy and the Land Use, Land-use change and Forestry sectors. USAID's activities have also helped Mexico address its vulnerability to climate change.

Environmental work continued under the USAID/Mexico Environment Program 2004 – 2008 which aimed for the improved management and conservation of critical watersheds. This program included two major activities: Natural resource management in targeted watersheds, with a related regional fire management program and coastal resource management activities, and Promoting clean production and renewable energy technologies.

Natural resource management in targeted watersheds: The aim of this program was to improve watershed management and promote sustainable economic activities in local communities in four high biodiversity-high marginalization watersheds: The Usumacinta River, the Pacific Coast of Chiapas, the Chimalapas region and the Sierra Tarahumara. Through the provision of technical assistance to improve the use of resources, add value to existing products, improve business skills and develop new markets, sustainable economic opportunities for rural communities were generated: promotion of eco-tourism; production and commercialization of cacao and specialty coffee for export markets, development of wood products and furniture, etc. USAID worked closely with CONAFOR supporting the development, operation and strengthening of national-level policies for environmental service payment in priority areas and the creation of Mexico's Initiative for Reducing Emissions from Deforestation and Forest Degradation.

Fire management: In partnership with CONAFOR, the Fondo Mexicano para la Conservación de la Naturaleza and the U. S. Forest Service, this capacity building program helped to strengthen Mexico's capacity to organize and improve fire responses through the country-wide implementation of the incident command system, better fire detection systems and the safer use of helicopters. It also assisted CONAFOR's efforts to develop more reliable fire-risk models in order to improve understanding of fire behavior, fuel loads and fire use, and to track fire emissions. Special attention has been given to local participation and high biodiversity and natural protected areas. In this regard, USAID supported CONANP to involve local communities and organizations in and around 11 key protected areas in fire prevention, fire management planning and restoration activities. USAID also supported the formulation of planning and public policy instruments such as the National Strategy for Wild Fire Prevention and Management (with CONAFOR), the Program for Fire Management in Protected Natural Areas (with CONANP) and the Official Mexican Norm 015 on the Use of Fire (with the Mexican Secretariat of Environment and Natural Resources, SEMARNAT). Other key results reached include the establishment of a hot-spot identification and response system that integrates the efforts of communities, NGOs and government; and professionalization of forest fire management training sessions through CONAFOR.

Clean production and renewable energy: This activity aimed to support the Mexican

Government's commitment to develop renewable energy sources and to expand the use of technologies to reduce, recover and use methane emissions, as major steps to reduce global warming. USAID funded key studies on wind energy potential in Mexico, which catalyzed investments from the U.S., Europe and Mexico totaling over US $3.7 billion, as well as the development of the first 13 wind farms in the country, which will capture 2,500 megawatts by 2012. By 2008, the Mexican state of Oaxaca was generating approximately 100 megawatts of power from wind farms. Over 400 renewable energy systems to meet off-grid agricultural and conservation needs were installed; PEMEX eliminated over 95% of the fugitive emissions from three gas processing complexes in Chiapas and Tabasco and methane recovery technology was implemented at pig farms in Guanajuato, Michoacán and Veracruz. The USAID energy program also supported the implementation of the Watergy Program aimed to implement best practices for efficient water and energy management in water utilities along the US-Mexico border region. Through the training and technical assistance thus provided, water utilities at the cities of Monclova, Hidalgo del Parral, Guaymas, Nogales and Durango saved over 55.3 GWh of energy (an estimated annual cost saving of over US$ 7.1 million), expanded water access from 8 hours daily to 24 hours daily for over 1.4 million people and provided access to water to over 76,650 additional people.

Since 1989 USAID has contributed over US$100 million in supporting Mexico's efforts to sustainably manage its natural resources, protect its rich biodiversity, reverse environmental degradation, and improve the well-being of its population. The assistance thus provided has led to significant results and has allowed for the development of strong relationships with the leading GOM environment and energy agencies and national/international conservation NGOs. This work has laid an excellent foundation on which to build the new Environment Program.

Recent developments in the U.S.-Mexico cooperation on climate change

In early 2009, Presidents Obama and Calderon announced plans to strengthen and deepen bilateral cooperation by establishing the US-Mexico Bilateral Framework on Clean Energy and Climate Change. The Bilateral Framework will focus on: renewable energy, energy efficiency, adaptation, market mechanisms, forestry and land use, green jobs, low carbon energy technology development and capacity building. The framework will also build upon cooperation in the border region promoting efforts to reduce greenhouse gas emissions, to adapt to the local impacts of climate change in the region, as well as to strengthen the reliability and flow of cross border electricity grids and by facilitating the ability of neighboring border states to work together to strengthen energy trade.

In August 2009, at the 2009 North American Leaders Summit, the governments of the USA, Canada and Mexico issued the North American Leaders' Declaration on Climate Change and Clean Energy. In their declaration, the urgency and necessity of taking aggressive action on climate change was reaffirmed and the commitment to achieve a low-carbon development path in North America was made. To achieve that goal, the agreement was made to, inter alia, cooperate in sustainably managing the North American landscapes for GHG benefits, including protecting and enhancing forests, wetlands, croplands and other carbon sinks, as well as developing appropriate methodologies to quantify, manage and implement programs for

emission reductions in this sector.

Prompted by the renewed focus on global climate change instilled by the Obama Administration and by legislative proposals still in process (such as The American Clean Energy and Security Act of 2009), USAID/Mexico began shifting its existing sustainable forestry activities to address climate change and, under the Mexico Competitiveness Program (which began implementation in FY 2009), to address climate change policy and support the bilateral framework described above.

Mexico Competitiveness Program

The USAID/Mexico Competitiveness Program (MCP) seeks to enhance competitiveness by promoting more effective policy design, implementation and evaluation across three governance areas: environmental management, small business promotion, and precursor and factor markets including capital, water and renewable energy. The Program builds on prior USAID efforts in Mexico to achieve sustainable reforms by improving transparency, strengthening civil society participation, and promoting accountability. It seeks to strengthen governance to improve economic competitiveness and environmental management, and to preserve biodiversity. The Program's three governance areas address:

Component 1 - Environmental management

1. Governance: Improve environmental governance and strengthen capacity of environmental agencies at the federal and state level, through the dissemination of lessons learned from the implementation of public policies.
2. Sustainable forest management: Identify obstacles to a competitive forestry sector and improve public forestry policies through independent monitoring and evaluation.
3. Alternative incomes for small producers in high biodiversity areas: Support sustainable and profitable projects in eco-tourism, the production and commercialization of environmentally sound goods, as well as payment for environmental services.

Component 2 - More efficient and effective government

1. Small and medium enterprises (SME) policy: Strengthen policies and programs that promote the competitiveness of small and medium enterprises through dissemination of best practices and technical assistance to public sector economic development agencies at the federal and state level.
2. Strengthen competition authority. Strengthen the capacity of the Federal Competition.
3. Commission to initiate and litigate competition cases through study tours, best practice seminars and independent organization of civil society networks dedicated to improved competition.

Component 3 - More efficient factor and precursor markets

1. Capital for micro and small enterprises: Increase access to capital for productive investment by strengthening the capacity of micro-finance institutions.
2. Water service: Improve the quality and sustainability of urban water service through technical assistance and dissemination of best practices.
3. Renewable energy: Promote investments in renewable energy by fostering the market for

"green mortgages," by identifying municipal bottlenecks in renewable energy projects, and by developing productive projects in rural areas that require renewable energy.

Several elements of the Competitiveness Program are directly linked with climate change, and are thus relevant for the development of new USAID interventions in climate change. These include:

Component 1:

- Citizen-based monitoring and evaluation of Mexico's forests and forestry policies
- Value chains for sustainably produced goods
- Payments for environmental services under REDD schemes
- Analysis of institutional and legal arrangements required by communities for selling REDD+ carbon credits.
- Monitoring of the Special Climate Change Program of the GOM.
- MRV and sectoral NAMAs in the context of the medium-term Climate Change Strategy of the GOM.

Component 3:

- Greater access to microfinance – when applied for low carbon pathway polices
- Water service – when applied as "lumped" payment schemes combined with carbon sequestration and other ecosystem services

USAID/Mexico is now in the process of developing a comprehensive strategy to support the Government of Mexico to achieve a low carbon development path. Current and envisioned activities center on support for reducing emissions and sequestering carbon in forested and agricultural lands and for adaptation to climate impacts for greater resilience.

USDA Participating Agency Service Agreement

USDA's Forest Service has a long record of collaboration with the Government of Mexico as well as Mexican non-governmental organizations in the areas of forest fire management, forest health, protected area management, and biodiversity conservation. While many of these activities were undertaken with the support of USAID, many are ongoing supported by resources from within USDA. The USAID-supported activities are an effective lever of the ongoing collaborative and capacity-building relationship the USDA Forest Service (USFS) has with both governmental and non-governmental actors in Mexico. In addition to the Forest Service, another USDA agency which provides expertise in land management, particularly watershed management, is the Natural Resources Conservation Service (NRCS). Both of these agencies are collaborating on assisting Mexican counterparts in strengthening their approaches to watershed management and control of landslides and floods in vulnerable watersheds.

The current portfolio of collaborative work focuses on the overarching objective of protecting Mexico's natural resource base from long-term degradation and from the negative effects of climate change. The 2010 program includes the following components:

- Improve Watershed Management in order to maintain critical ecosystem services and conserve biodiversity in the face of climate change;

- Moderate the impacts of desertification in the face of climate change;
- Strengthen Mexico's capacity to reduce GHG emissions from deforestation and degradation (REDD); and
- Support other USAID/Mexico programs and priorities through USDA technical expertise.

Many activities included in the USDA-USAID Participating Agency Service Agreement are directly linked with climate change, and are thus relevant for the development of new USAID interventions in climate change.

2. Review of relevant donor government's programs on climate change in Mexico

Various governments currently support Mexico's efforts on climate change. The areas of collaboration between Mexico and those donor countries may be summarized as follows:

- With the United Kingdom: design and implementation of PEACCs, the "Mexican Stern Report" on the economics of climate change;
- With Japan: Training and exchange of Mexican experts on future climate change scenarios and on the use of ALOS satellite images;
- With Spain: emphasis on vulnerability and adaptation; support to PEACCs;
- With Germany: Natural protected areas; and
- With Canada: GHG emissions inventories and inventory systems, forest carbon models.

Table 13 provides a more detailed description of these activities. It is worth noting that there are currently no specific activities on REDD. In fact, Mexico's R-PP states that so far, the country has not collaborated with any donor countries on REDD, and no bilateral support has been identified to fund the activities proposed in such document.

Table 13. Summary of activities supported by donor countries´ Governments in Mexico

Donor country	Relevant climate change activities supported
United States (USAID)	• Last year AMBIO, CONANP, ECOSUR and CONAFOR (informed only) started work on a REDD+ project. They are using the Plan Vivo system (promoted by AMBIO). In Fiscal Year 2009 two communities started using the Plan Vivo and measuring carbon in some plots. This year, they will continue with 2 more communities, providing training for communal monitoring and equipment (GPS). They plan to sell credits within the following two fiscal periods (2012), although there is no agreement yet between CONANP and CONAFOR on how the money will be distributed or channeled. USAID funds the work of AMBIO and the training on monitoring of plots. • MCP is supporting a project carried out by CEIBA on the institutional and legal arrangements required to sell carbon. The analysis includes polls in Marqués de Comillas and seeks to explore relevant issues for REDD+ in the organization of communities and coordination of government entities. • MCP is supporting SEMARNAT in the establishment of a system to monitor the Special CC Program, including a web-based interface to report advances in the fulfillment of goals. At this point, the information will not be verified, but SEMARNAT expects that by 2012 the reduction in emissions would be verifiable internationally. • Upcoming is the medium-term strategy of SEMARNAT with various donors and with the involvement of many areas of the ministry. MCP would support MRV and sectoral NAMAs. • SEMARNAT has requested support to strengthen its work on REDD+ (consultancies).

	• USFS, through USAID, is supporting CONANP in the development of Mexico's Strategy for Climate Change in Protected Areas. • USFS is also providing assistance to CONAFOR on the establishment of a baseline greenhouse gas inventory and improvements in modeling and analysis of forest carbon dynamics in order to strengthen carbon management, monitoring and policy.
United Kingdom	• Through the Strategic Programmes Fund, the UK has supported the development and subsequent instrumentation of some PEACCs, as well as the elaboration of the study "The Economics of Climate Change in Mexico". • Many activities have been carried out in the context of the Dialogue for Sustainable Development, amongst them a study on the viability of producing inputs for biofuels in arid zones; • Web-based tools aimed at strengthening the capacities of states for the development of PEACCs are currently being developed.
Japan	• In 2006, a group of Mexican Experts from the Center for Atmospheric Sciences of the UNAM visited the Earth System Simulator of the Meteorological Research Institute in Tsukuba, Japan, with the objective of analyzing future climate change scenario with very high resolution (22 km x 22 km). • In 2009, experts from the Remote Monitoring Technology Center trained Mexican government officials and scientists on the use of satellite images such as Advanced Land Observation Satellite Data (ALOS); • The Government of Japan supported a project for the Development of Capacities for the Formulation of Adaptation Programs on Water and Coastal Management in Yucatán, Campeche and Quintana Roo. Its support included several training courses in Japan on issues such as climate scenarios, assessment of climate change impacts on water resources, and coastal management, as well as case studies on the Japanese experience in the design and implementation of adaptation policies and programs.
Spain	• The GOM and the Agency of International Cooperation for Development of Spain (AECID) are identifying areas of mutual interest on climate change, particularly regarding vulnerability and adaptation. • As a result of this process, both Governments will support the development of PEACCs in Tlaxcala and Quintana Roo. • Strategy for Climate Change in Protected Areas funded, in collaboration with USAID.
Germany	• Mexico participates in the Climate Initiative promoted by the German Government in the framework of which two projects have started: one on NPAs with CONANP, and the other on solar roofs with INFONAVIT. • Additionally, climate change has been included as a cross-cutting issue in the technical cooperation between Mexico and Germany through the German Cooperation Agency (GTZ, in German) in projects on renewable energy, urban and industrial environmental management, and others.
Canada	• In the framework of the Mexico – Canada Alliance (AMC, in Spanish), a political dialogue on climate change has been promoted, and two joint projects on methane sequestration are being developed, among other activities. • In October 2009, a workshop was carried out in Mexico with the aim of discussing issues related to GHG emissions inventories, inventory systems and the Canadian forest carbon model.

Source: Mexico's fourth National Communication to the UNFCCC.

3. Review of other national, regional and international donors´ programs supporting climate change activities in Mexico

The main activities relevant to this assessment that are being supported by multilateral donors in Mexico are summarized in Table 14 below.

Table 14. Summary of activities supported by multilateral donors carried out in Mexico in the context of sustainable landscapes, vulnerability and adaptation

Donor	Activities supported in Mexico
The World Bank	• Forestry: starts in 1990. In 1995 WB supports the national program. The WB starts the PES with CONAFOR and participates in the establishment of the Consultative Committee of the PSAH. Mexico has already submitted its R-PP, which in principle has been approved. Has also been submitted to FIP for 60 million USD. • Technical assistance to monitor the social aspects of the Special CC Program and its implementation. • Work with State Governments. The WB will support 6 State Plans on CC and 10 City Plans. The IDB in Tabasco and TNC in Chiapas are working with the WB on this. Just a couple of months ago, they chose Michoacán as a pilot by request from SHCP. The idea is to produce a set of guidelines from this experience that could be applied elsewhere. INE already produced guidelines for States based on their work in Veracruz, but these covered mainly the scientific aspects of CC. The ones that will be developed in Michoacán will also cover investment, institutional arrangements and social participation and will put an emphasis on adaptation. The WB will start working this year in 3 States and 5 cities. The Association of State Authorities accompanies them in this process in Michoacán in order to ensure that the guidelines will also be applicable to other States.
Interamerican Development Bank (IDB)	• With the support of INE, IDB started activities to identify some of the most vulnerable States of the country in 2008 with the aim of supporting them in the preparation of their PEACCs. Through a number of technical cooperation mechanisms, at the end of 2009 cooperation agreements were signed with the States of Tabasco and Yucatan to start the preparation of their programs in 2010.
UNEP	• REDD+ and adaptation are not priorities for UNEP in Mexico, although the country will be covered by regional activities in these two areas.
ECLAC	• ECLAC is currently working on a second generation of the "Mexican Stern Report" which will include the development of baseline information on land use changes due to climate change also considering human responses to such changes (e.g. if drought becomes more frequent in the North of the country, then deforestation agents (farmers) could move to the South and deforest there). Additionally, the study will analyze norms, fiscal incentives and other policy options to face the effects of such changes and of their associated human responses. The UN budget covers the work of experts and provides funds for the operation of the project. There is co-funding with national counterparts with donors from Europe, Canada and some others.
GEF-UNDP	• GEF 4 finishes in June 2010. GEF 5 will cover the period July 2010 to 2014 and will have a specific line for REDD+ with input from the different UN Conventions. As long as there is no agreement in the UNFCCC, GEF will only take small steps on REDD+ - support will only be provided on demand. • Projects of the GEF-UNDP Office at SEMARNAT in Mexico: o PES CONAFOR. 15 million USD o Last year, FSC and Rainforest Alliance for forest certification. 10-11 million USD. o Project with CONANP approved last year in La Mixteca Oaxaqueña on "Productive Landscapes" – land use patterns compatible with biodiversity conservation, this has some REDD+ - related activities. They are working with WWF-Oaxaca, who receives the money from GEF, UNEP acts as the agency, WWF manages and CONANP selects projects. This project is just starting. 7 million USD. o A project in the Sierra and coast of Chiapas was recently approved. CONANP participates and Conservation International manages the project. The project focuses on the integral management of the watershed and has a REDD+ component. IUCN, CI, PRONATURA, CONANP participate. The project seeks to integrate the Guatemalan part. • The GEF Small Grants Program Window in Mexico is limited to Yucatán, Tabasco and Chiapas. It has specific lines of work on REDD+ and communities – it provides grants to communities and small NGOs up to 50,000 USD. • There are two GEF indices, one for climate change and the other for biodiversity, which determine the ceiling of donations. In the case of Mexico, GEF had around 38 million USD. GEF5 could have a component to account for the deforestation index of the country, with which the grants available for Mexico could increase.
Border Environment Cooperation Commission (BECC)	• Baja California, Chihuahua, Coahuila, Nuevo León, Sonora and Tamaulipas, submitted proposals to the Technical Assistance Program 2009 of the Mexico-US Border Program 2012 for the development of GHG emissions inventories and emissions scenarios and for their Climate Change Action Plans.

4. Analysis of the coverage and performance of donor programs

As can be observed in Table 15, about half of the interviewed donors are currently supporting the development of PEACCs, some of them putting an emphasis on adaptation. However, only a few of them support REDD (with the WB FCPF being the main donor so far), and only the WB and USAID through the MCP are providing support to strategic programs (i.e. monitoring the progress of the PECC and supporting specific aspects of the medium-term strategy). Adaptation-related issues are receiving some attention, but mostly as research or capacity building, and efforts are not being oriented towards on-the-ground actions (with the possible exception of PEACCs). Capacity building on REDD, support to pilot projects, to civil society (and in particular to communities) and governance are some of the areas where – apart from the WB, through the FCPF, and USAID, by supporting a couple of projects – donor support seems to be almost totally lacking at present. It is worth noting that this analysis shows only the areas where support is being provided, but not the amount of such support or whether it is sufficient to cover existing needs or not.

Table 15. Summary of areas supported by donors in Mexico relevant to this assessment

Donor	Supported areas						
	CC Scenarios	**Vulnerability and Adaptation**	**REDD**	**Forests (not REDD)**	**Biofuels**	**State programs**	**National strategic programs**
UK					Y	Y	
Japan	Y^	Y^				Y	
Spain		Y*				Y	
Germany				Y			
Canada				Y			
WB		Y*	Y			Y	Y
IDB		Y*				Y	
ECLAC	Y**	Y**		Y			
GEF-UNDP			Y	Y			
BECC						Y	
USAID		Y	Y	Y			Y

*PEACCs supported have an emphasis on vulnerability and adaptation.

** ECLAC´s project has components of climate change scenarios and vulnerability.

^ Training/exchange of experts.

Sources: Mexico's fourth National Communication to the UNFCCC, interviews carried out for this assessment.

G. Gap analysis

1. Description of the methodology

In order to identify the capacity gaps for the implementation of a national REDD+ mechanism in Mexico, this assessment:

1. Reviews and analyzes the needs identified by the Mexican Government, academia and civil society based on published materials and interviews;
2. Considers the recommendations of the review of Mexico's R-PP by the FCPF's TAP and CIFOR's experts opinion;
3. Identifies and summarizes the specific bilateral funding needs included in Mexico's R-PP that are currently not addressed by donors; and
4. Compares the areas with support needs identified in steps 1-2 above to those currently covered by donors.

Gaps in vulnerability and adaptation are analyzed based on needs acknowledged in published materials and by identifying the States of the Republic that have not yet carried out vulnerability and adaptation studies and actions.

Given the relevance of local actions and the strategic role of State Government involvement in climate change activities (particularly regarding adaptation), the assessment points out which States have still not elaborated Climate Change Programs and those that are in the process of doing so or already implementing them but requiring further support. To this end, current and foreseeable needs identified through the review of official information sources and interviews will be compared to existing donor support for the development of PEACCs and of their technical elements.

Furthermore, funding opportunities identified in each of these three areas are prioritized according to their compatibility with USAID/Mexico's goals, their relevance for Mexico's policies and programs towards a low carbon development path, and their potential social, biodiversity and overall sustainable development benefits.

2. Application of the methodology

2.1 Gap analysis for REDD implementation in Mexico

2.1.1 Needs identified in the Federal Government

Interviews were carried out with the major players working on issues related to sustainable landscapes (particularly REDD) within the Mexican Government (i.e. SPP-SEMARNAT, INE, CONAFOR, CONANP and SAGARPA) with the purpose of learning about their current and future activities in this area and the associated existing and foreseeable needs. The needs identified as a result of these interviews are summarized in Table 16. A list of all the people

interviewed is provided in Appendix 3.

Additionally, published government strategies, programs and other relevant official documentation were reviewed and potential capacity and information gaps arising from their implementation were included in this analysis, and are summarized below.

Needs identified based on the review of the R-PP

A critical review of the results from the assessment of Mexico's R-PP by the TAP and the PC and the preliminary responses presented by CONAFOR at the FCPF's Participants Committee held in Gabon, 22-25 March, 2010, provides the basis for the identification of current and foreseeable needs arising from the country's readiness process. Although the following analysis does not provide an in-depth assessment of these documents, it points out some of the potentially most relevant issues that may require special attention during the establishment of a national scheme for REDD in Mexico. These comments are structured following the substantive issues underlined by the TAP and described in Table 12:

1. Strategies involving agriculture and infrastructure policies, tenure and regulatory policies, protected areas, government procurement policies should not be limited to R-PP pilots to complement the ProÁrbol program, as proposed by CONAFOR, but rather be part of the foundations of a comprehensive REDD policy package.

2. Distinguishing forest degradation more clearly, as pointed out by the TAP, should go beyond monitoring and considering increases in carbon stocks, as proposed by CONAFOR. More research on degradation drivers in different geographical contexts and forest types should be a priority, as a starting point for the design of appropriate policies to address those effectively.

3. Regarding conflicts related to land and forest tenure, illegal logging, and other illegal activities, CONAFOR essentially proposes to address them by increasing and improving consultation processes, which deals with the issue of promoting participation but is very unlikely to be enough to enhance governance to the levels required to reduce illegal activities.

4. Instead of proposing options to improve the governance and effectiveness of the ProÁrbol program, CONAFOR proposes to use only its most successful elements and expand them without improving them. This could be counter-productive in terms of governance and for the overall efficiency of the program.

Table 16. Summary of needs identified in the Federal Government

Government entity	Identified needs
Underministry of Planning and Environmental Policy of SEMARNAT	• Support for the work of the CICC´s Working Group on REDD • Support for the development of the medium-term Strategy
CONAFOR	• Consolidation of the MRV system • Strengthening the Plan Vivo system based on AMBIO and SAO´s experiences • Building capacities in the academia, carbon specialists and technicians - exchanges of experts and identification of professional profiles could be useful • Widening the scope of existing tools to facilitate cross-sectoral planning • Exploring guarantees for investment – minimum requirements for attracting private investments and foreign public funds and investments • Defining the area for pilot projects, carry out the studies required for their implementation and developing their monitoring systems • Capacity building in municipal associations to develop a scheme for the development of environmental policy • Support for the implementation of pilots, and also to overcome barriers to the diversification of tools to REDD. • Strengthening of local management capacities - monitoring, financing, verification, etc.
CONANP	• Developing a portfolio of methods for the NPAs to be able to measure their environmental services • Developing generic baseline and monitoring methodologies for REDD+ projects in NPAs in order to reduce transaction costs • Developing a strategy to manage carbon resources.
National Institute of Ecology	• Exchanging experiences and information with other REDD-relevant countries such as Costa Rica and Brazil • Technical collaboration for certification schemes for biofuels to support the design of sustainability criteria and guidelines. The Government of Chiapas is also very interested in this issue, but has very limited capacities in place.
SAGARPA	• Measuring and reporting of the GHG impact of SAGARPA´s activities for the PECC • Developing baselines, methodologies and more precise databases to estimate with more accuracy the contribution of this sector to national GHG emissions • Carrying out studies on soil carbon measurement including robust systematic measurements • Support to facilitate the exchange of information on the above issues, as well as to generate in a systematic way the data required for GHG inventories • Workshops to raise awareness and distribute information on REDD

Source: Interviews carried out for this assessment.

5. In order to improve the participation of indigenous peoples and other stakeholders currently not well represented in REDD consultations, CONAFOR relies almost entirely on the elaboration and implementation of an Indigenous Peoples Participation Plan according to the World Bank Safeguards. However, consultations per se do not guarantee the effective participation of such stakeholders. Important awareness raising and capacity building efforts should be carried out first or in parallel to ensure that they clearly understand the issues being discussed and their potential consequences on their activities, livelihoods, traditions, culture and ways of life.

6. Finally, although the proposed redistribution of a part of the readiness budget from the MRV system towards the design and implementation of an Indigenous Participation Plan and to the Environmental Impact Plan is an improvement, the low profile of specific measures to improve governance is worrisome, even more so considering that in the R-PP governance issues are limited to social organization within communities along forestry related activities, local leadership capacity building, participatory approaches within communities, and local consensus-building mechanisms, while proposals on to how to improve governance of Government entities, policies and programs, or the enforcement of laws, are totally absent.

In summary, the assessment of CONAFOR´s response to the TAP shows that the following areas are likely to remain unattended (at least to some extent) and should therefore be strengthened:

1. Cross-sectoral policy making, particularly regarding SAGARPA and SCT´s contribution to the REDD process;
2. Assessment of drivers of degradation in different contexts and options to address them
3. Governance (particularly regarding illegal activities and government programs and institutions); and
4. Capacity building previous to consultations with indigenous communities, small farmers and NGOs.

It is important to mention that addressing the needs expressed in 1 and 4 above is particularly relevant to ensure the support of the FCPF for Mexico's readiness, since they represent two of the three conditions set by the PC.

Needs identified based on CIFOR experts' opinion

Some additional gaps have been identified by the CIFOR team based on expert opinion considering the full body of information reviewed and the interviews carried out for this assessment. Such gaps result from the following observations:

1. There is a general lack of information and understanding both, in the Government and in civil society, about the details of how REDD mechanisms proposed internationally would work and of the implications of their implementation at the local level, as well as on how domestic carbon accounting systems should be designed – e.g. how to match

subnational and national accounting, how to credit policies and programs, how to deal with the overlap between projects and policies generating credits, etc.

2. Possibly as a consequence of this lack of information, distribution mechanisms proposed by CONAFOR are limited to the ones being used in its current subsidy programs, but there are no provisions on how these should evolve to work appropriately in the context of an international carbon market.
3. It has been recognized in many studies that most of the funding required to reduce emissions from deforestation and forest degradation is expected to come from the private sector. Nonetheless, the R-PP does not describe how private investment will be attracted to REDD in Mexico, or how the interest of private investors will be reconciled with those of communities and other rural actors.
4. Even though the R-PP and many government entities assign a central role to pilot projects, there is a large gap of information on how these will be defined and developed. A number of REDD standards and methodologies, including standards to account and promote wider social and environmental benefits, have been developed in the context of the voluntary carbon market in the last few years, but these advances are generally unknown to both government and civil society actors. CONANP and CONAFOR have particular interest in approaches that promote community participation in order to increase civil society engagement and reduce monitoring costs and have therefore promoted the use of the Plan Vivo system, which is the standard used by Scolel-Te, the most renowned offset project in Mexico's history. However, the Plan Vivo is also one of the least accurate standards carbon-wise, so options to improve its methodological rigor without losing its social benefits and cost-effectiveness should be studied before promoting its widespread use.
5. Civil society suffers from a generalized lack of information and knowledge about the economic, environmental and social implications of the different possible REDD mechanisms discussed internationally and of models for their domestic implementation, which weakens its role as counterpart of the Government in the discussion process and reduces its potential to contribute to improve governance.

In summary, the following needs may be relevant to take into account in addition to those previously flagged:

1. Generating capacities to allow for the design of appropriate accounting systems;
2. Designing fair carbon benefit sharing mechanisms and assessing the adequacy of the existing ones for market-based approaches, and establishing safeguards for marginalized rural and indigenous communities;
3. Analyzing schemes to promote and facilitate private investment in REDD activities in Mexico;
4. Strengthening the methodological aspects of community-based carbon offset standards; and
5. Generating and disseminating information among the civil society on the economic, environmental and social implications of the different options of the REDD mechanisms and models for their domestic implementation.

By addressing these needs, the third one of the FCPF's conditions to fund Mexico's readiness plan (component 2c of the R-PP on the implementation framework needs) would be at least partially covered.

Funding needs identified in Mexico's Readiness Preparation Proposal (R-PP)

In the proposal submitted to the FCPF, the Mexican Government provides a budget of all the activities to be developed to achieve readiness and identifies the amount of funds expected to be provided by government agencies, the FCPF and the UN REDD program to cover it. Although the R-PP also quantifies, by activity, the resources required from bilateral sources to complement this funding (see Table 17 below), specific donors have not yet been identified. Consequently, these gaps represent specific and quantified options for bilateral collaboration on REDD.

It must be noted that the figures presented in the R-PP may need to be revised as a consequence of the changes required to address the comments from the FCPF's TAP review (see Table 12 in section E above) - for instance, CONAFOR has proposed to adjust the current budget allocated in the R-PP to national forest inventory to allow greater finance to aspects related to the design and implementation of an Indigenous Participation Plan and to the Environmental Impact Plan. It is also possible that some of the activities could take more time than anticipated by CONAFOR, which would mean additional funding requirements.

Table 17. Bilateral support required for the implementation of Mexico's R-PP (in thousands USD)

Activities	2010	2011	2012	2013	Total by Activity
National Readiness Management Arrangements	$20	$20			**$40**
Stakeholder Consultation and Participation	$20	$57			**$77**
Assessment of Land Use, Forest Policy and Governance	$20	$20	$20	$20	**$80**
REDD Strategy Options	$85	$55			**$140**
Implementation Framework	$35	$25			**$60**
Social and Environmental Impact	$20	$20			**$40**
Reference Scenario	$95	$90			**$185**
Monitoring System	$1,250	$1,250	$1,250	$1,250	**$5,000**
Total per year	**$1,545.00**	**$1,537.00**	**$1,250.00**	**$1,250.00**	**$5,622.00**

Source: Mexico's R-PP

Needs identified in Mexico's fourth National Communication

Gaps in capacities, information and research on climate change were identified in a seminar carried out in 2007 by INE and the Metropolitan Autonomous University-Azcapotzalco (UAM)

aimed at establishing research priorities on climate change for the PECC, as well as in a workshop for the elaboration of priority elements for Mexico´s fourth National Communication to the UNFCCC. The resulting sectoral research needs contained in the PECC, as well as those arising from these expert and stakeholder meetings relevant for the implementation of REDD in the country (and in general for sustainable landscapes) are presented in Table 18.

Table 18. Summary of needs identified in Mexico's fourth National Communication

Area	Identified needs
Greenhouse gas emissions inventories	• Carrying out research on emission factors in key sectors, including forests, agriculture and livestock.
Observation, scenarios and scientific information	• Studying the carbon content coefficients and the carbon sequestration capacity of the main eco-regions (marine, forest and agricultural) of the country.
Mitigation	• Developing schemes for the measurement, reporting and verification of emission reductions in strategic sectors, particularly those susceptible of being incorporated into Nationally Appropriate Mitigation Actions (NAMAs). • Developing methodologies for new programmatic and sectoral schemes under the CDM and other market-based schemes.
Agriculture, livestock and forests	• Developing processes for the production of second and third-generation biofuels. • Improving the knowledge of baseline methodologies for carbon offset projects in the AFOLU sector. • Improving the knowledge on baseline methodologies for REDD at the project, region and country level. • Identifying priority areas for REDD. • Evaluating carbon monitoring methods in agriculture, livestock and forest activities. • Increasing research on biofertilizers with the goal of substituting nitrogen based fertilizers.

2.1.2 Needs identified in the Civil Society

Interviews carried out with some of the most active NGOs on the issue of REDD revealed that, in general, they require enhancing their capacities (human and technical) in three areas (see Table 19:

1. Technical, methodological, investment and legal aspects of REDD projects;
2. Enhancing their work with communities on REDD and carbon-related issues; and
3. Participation in domestic REDD policy-making processes.

Additionally, a couple of NGOs have started working on adaptation and need to build capacities in that area.

Regarding the participation of NGOs in the domestic processes led by the Federal Government, it is important to mention that it has so far been limited to the REDD Task Force that was instituted temporarily within the Consultative Council of the PSAH, but that doesn't have any formal role or recognition. Likewise, civil society does not currently have its own forum to dialogue on REDD before meeting with CONAFOR and other Government entities in the Task Force sessions.

Table 19. Summary of needs identified in the Civil Society

Organization	
Reforestamos Mexico (RM)	Priority issues on REDD and adaptation for RM requiring support: • Identification and training of climate change witnesses in rural communities inside NPAs and rural training agents; • Capacity building on adaptation: monitoring for adaptation, funding for research and specific projects: • Advice on how to improve GHG emissions inventory methodologies and emissions estimations for the Carbon Neutral Program. • REDD: Developing methodologies under the VCS for unplanned degradation, technical training for monitoring, forest inventories, baseline studies in priority areas for the development of REDD projects, funding to carry out workshops in communities to explain how REDD works. Additionally, support is required for carrying out surveys to determine the causes of deforestation and degradation and to develop the legal aspects arising from REDD activities.
Fondo Mexicano para la Conservación de la Naturaleza (FMCN)	Support is needed for: • The establishment of a space for the participation of NGOs in the decision-making processes of the Interministerial Commission's REDD+ Working Group, • Design a participation scheme that would allow the sustained participation of NGOs with the assistance of experts, modalities of participation and designated people to work on the design of public policies within NGOs, even if they are shared between various organizations. • Identification of the legal aspects associated to REDD+, • Establishment of a registry; • Identify policy measures and financing needs, as well as financing arrangements – what are the consequences of having the government as an intermediary for REDD+ funds and incentives? What other schemes could work in practice and how? • Capacity building for developing REDD+ initiatives, including planning, monitoring, registries, methodologies… • The participation of Mexican NGOs in the international REDD+ processes. • INE has produced a model to predict the impacts of different agricultural policies on deforestation rates. It would be interesting to put this tool in the hands of people working at the local level and to downscale its results to each particular region. • Baseline methodologies - FMCN would like to develop or obtain methodologies and transfer them to local actors. • Assessment of local capacities by region. There is a lack of organizations doing work on REDD+ and climate change, and supporting their creation in the border and the Gulf areas (both of which are vulnerable) could be important. • Start working on, not only the carbon markets but also the commercialization of forest goods, custody chains, etc. Also, on the use of long-lasting wood products and on the substitution of wood for fossil fuels. • The dissemination and translation of the climate change strategy of the USFS.
WWF Mexico	• Public Policy: Implement pathway • Capacity building: Create and strengthen government capacities at state and local levels • Communication: Continue to socialize and share information • Demonstration projects: Scale-up initiatives
AMBIO	• Establishment of strategies to combine funds • Ex- ante funding of REDD+ activities • Funding the work of experts – they have equipments but do not know how to use them. • Funding brigades, technicians, maintenance of equipments. • Support the organization and development of communities • Support communal awareness with CONANP and others • AMBIO has two mid-term objectives: o Development of local strategies using the Plan Vivo system as planning tool o Creating a training center
Consejo Civil Mexicano para la Silvicultura Sostenible (CCMSS)	Needs support to: • Continue developing its REDD+ work, particularly the scheme that they plan to use in their pilot projects • Continue participating in the national REDD+ process • The establishment of an Advisor Group to interact with the REDD+ Working Group created within

Organization	
	the CICC. • Develop a communication strategy and publications on REDD+ issues to feed the national process.
PRONATURA	Priority areas requiring support: 1. Continuing the development of the domestic voluntary carbon market, including its technical, legal and commercial aspects; 2. Vulnerability, adaptation and mitigation: their effects on biodiversity, local traditions and cultures. 3. Strengthening PRONATURA´s participation in national and international REDD-related processes and pilot activities;
The Nature Conservancy	• Participates in national climate change policy processes: e.g. SEMARNATs Special Program on Climate Change; CONANP's Strategy on Climate Change in Protected Areas; national REDD discussions • State-level climate change action plans: Nuevo Leon • Preparation of climate change impact studies and adaptation strategies in selected areas: Yucatan peninsula (Selva Maya and the Mexican Caribbean); Gulf of California; San Quitin Bay • Regional climate change projects: Adaptation to climate change in Chiapas and Northern Central America; carbon forestry in Selva Maya (Mexico, Belize, Guatemala); adaptation of coral reefs (Mexico, Belize, Guatemala, Honduras)
Rainforest Alliance/UNDP	• Global Environment Facility- funded project "Transforming management of biodiversity rich community production forests through building national capacities for market based instruments", which is implemented by UNDP and Rainforest Alliance. • The overall goal of the project is facilitating market-based sustainable forest management and conservation of biodiversity and associated environmental goods and services to support national, regional and local development priorities. The specific objective is integrating biodiversity management into forestry practices on community lands by competitive community enterprises through market-based instruments and a step-wise approach leading to full FSC certification. • The 5-year project is carried out in 50 ejidos in regions that have significant areas of production forests with high biodiversity values, including up to 41 municipalities in Chihuahua, Durango, Jalisco, Michoacán, Guerrero, Oaxaca, Chiapas, Campeche, and Quintana Roo.

Source: Interviews carried out for this assessment.

2.2 Identified vulnerability and adaptation needs

2.2.1 General needs identified by the Federal Government

As part of the seminar carried out in 2007 by INE and the UAM mentioned in subsection 2.1.1 above, a number of research priorities on vulnerability and adaptation were identified, and are summarized in Table 20. These are general research needs that in most cases will contribute to increase the knowledge on the vulnerability of the country and of specific sectors and activities to climate change impacts, thus facilitating the identification of priority regions and lines of action and of further, more detailed studies for the design of specific, on-the-ground adaptation measures.

Table 20. Vulnerability and adaptation priorities identified by the Federal Government

Area	Identified needs
Observation, scenarios and scientific information	Observation • Analyzing, monitoring and reporting on soil degradation. • Consolidating and expanding environmental monitoring networks. • Developing and publishing the first Vulnerability Atlas for the country. • Elaborating and publishing cartography on fragile lands. • Publishing the National Biodiversity Atlas. Models and scenarios • Developing models and scenarios of species distribution. • Developing models and scenarios to evaluate the vulnerability of livestock. Databases • Systematizing information on vulnerability and adaptation options. • Generating and updating databases on crops of agricultural significance. • Generating and updating databases on the productive potential of forest species that may be affected by climate change. Basic research • Enhancing the knowledge base and identifying the effects of extreme hydrometeorological events on biodiversity. • Continuing the analysis of key and protected species to analyze potential climate change impacts. • Continuing the analysis of key and invasive species, and of those included in the NOM-059-SEMARNAT-2001 (biodiversity in risk), particularly regarding they dispersion and adaptation capacities. • Identifying the agricultural zones where frost-free periods could happen as a result of climate change • Identifying local changes in the phenology of plagues and their relationship with climate tolerance. • Characterizing and assessing the role of soils as facilitator and determining factor of plague resistance and dispersion under climate change conditions. • Elaborating a georeferenced inventory of forest plagues.
Natural resources	• Generating information on biological corridors connecting NPAs taking into account the vulnerability, changes in structure, phenology and composition of species • Identifying changes in the biological and phenological processes of flora and fauna of key, invasive and control species within ecosystems so as to generate adaptation measures • Identifying current and climate change distribution patterns in cases of aggregation, disappearance, adaptation or displacement of vegetal or animal species • Identifying areas vulnerable to desertification to propose adaptation measures • Analyzing the social nature of adaptation
Forests	• Assessing and analyzing the occurrence of forest fires due to climate variability and change • Estimating the area of forests affected by climate change impacts and identifying the species that could benefit from them • Quantifying the costs of adaptation and potential synergies between mitigation and adaptation measures in the forest sector

2.2.2 Needs identified at the State level

An analysis of adaptation-related needs at the State level was carried out as part of this assessment by reviewing existing and planned State Climate Change Programs and their associated technical studies. In order to determine the level of advance on this field in each State, the assessment checked the existence of the following elements within the context of PEACCs: climate change scenarios, vulnerability assessments and adaptation studies. As can be observed in Table 21, only ten out of the 32 Mexican States have developed or are currently developing at least one of these technical analyses.

Note that similar studies that may have been carried out before are not considered here as the work required to develop an exhaustive inventory of such studies is beyond the scope of this

assessment. However, research performed under the umbrella of PEACCs has better chances of becoming policy-relevant and of resulting in actual on-the-ground adaptation activities.

Table 21. Status of vulnerability and adaptation activities in States

State	Climate change scenarios	Vulnerability assessments	Adaptation studies
Aguascalientes			
Baja California	Y	Y	
Baja California Sur			
Campeche			
Chiapas	Y*		Y*
Chihuahua			
Colima			
Coahuila	Y	Y	Y
Distrito Federal	Y	Y	Y
Durango			
Edo de México		Y	
Guanajuato		Y*	Y*
Guerrero			
Hidalgo			
Jalisco			
Michoacán			
Morelos			
Nayarit	Y*	Y*	Y*
Nuevo León	Y	Y	Y
Oaxaca			
Puebla	Y*		Y*
Querétaro			
Quintana Roo			
San Luis Potosí			
Sinaloa			
Sonora			
Tabasco			
Tamaulipas			
Tlaxcala			
Veracruz	Y	Y	Y
Yucatán			
Zacatecas			

*** Under development/not yet published**

Sources:Mexico´s fourth National Communication to the UNFCCC.
INE´s PEACCs website: http://www2.ine.gob.mx/sistemas/peacc/
CONACYT:http://www.conacyt.mx/Fondos/Sectoriales/SEMARNAT/2008-01/Semanart_Resultados_2008-01.pdf

Moreover, it is important to note that, based on its experience working with State Governments, INE has identified some of the main challenges for the expansion and continuation of State-level efforts on climate change for which international support is required. These are, namely:

1. Incorporating climate change in the sectoral, State and municipal agendas;
2. Fostering the development of local capacities (expertise);
3. Managing local, national and international financial resources; and
4. Developing online tools to strengthen capacities in the States for the development of PEACCs.

2.3 Assessment of gaps in State-level programs

In order to identify the Mexican States requiring support for the elaboration of their PEACCs and their components or for the establishment of institutions to coordinate State-level policies and measures (i.e. cross-sectoral climate change Committees), the CIFOR team reviewed the information contained on the section of INE´s website on PEACCs, State Government climate change websites (when available), the fourth National Communication and the websites of identified donors (e.g. SEMARNAT-CONACYT, BECC, WB). The same methodology used to evaluate needs associated with adaptation actions presented in the previous section was applied here, but the elements checked included, in addition to adaptation, mitigation (GHG emissions inventories, emissions scenarios and mitigation options), the existence or preparation of a State program or strategy and the existence or preparation of institutional arrangements. Whenever data was available, information on sources of funding was also taken into account. States applying for funds to SEMARNAT-CONACYT that did not get approved are also included with the idea of taking note of their interest in the development of PEACCs or related activities. The result is shown in Table 22.

As can be observed, most State Governments are currently working on their PEACCs or in some of their adaptation and/or mitigation elements. In fact, only ten States (Campeche, Colima, Hidalgo, Jalisco, Morelos, Oaxaca, Quintana Roo, Sinaloa, Tlaxcala and Zacatecas) have remained inactive so far, and seven out of those ten (the three exceptions being Zacatecas, Hidalgo and Colima) are already seeking support to start working on their programs and related activities – as illustrated by the fact that they applied to the SEMARNAT-CONACYT fund in 2008 (even though they did not succeed).

This analysis should be seen as indicative, since many initiatives to support State and local level actions are taking place at present in Mexico – for instance, as noted in section F, the World Bank envisions supporting the elaboration of six PEACCs and ten city programs over the following years. Moreover, it must be noted that the PEACCs presented here, covering only the technical aspects of mitigation and adaptation, represent the "first generation" of such programs in the country and that a "second generation" should also include non-technical elements such as investment, institutional arrangements and social participation. In fact, the WB is about to start the first PEACC of this kind in Michoacán (see section F above). Supporting the transition from PEACCs of the first to the second generation should therefore be seen as an additional opportunity for collaborating with State Governments. Additional support will obviously be required by State Governments for the actual implementation of the activities described in their PEACCs.

Table 22. Summary of gaps identified in State-level programs

State	GHG inventory	Mitigation options	Emissions scenarios	Climate change scenarios	Vulnerability assessments	Adaptation studies	PEACC	Institutional arrangements	Known sources of support
Aguascalientes	Y*								SEMARNAT-CONACYT 2008
Baja California	Y		Y	Y	Y		Y*		BECC + SEMARNAT-CONACYT 2008
Baja California Sur							Y*		SEMARNAT-CONACYT 2008
Campeche									Did not get SEMARNAT CONACYT 2008
Chiapas	Y*	Y*		Y*		Y*	Y*		SPF UK
Chihuahua	Y*		Y*				Y*		BECC + SEMARNAT-CONACYT 2008
Colima									
Coahuila	Y*	Y	Y*	Y	Y	Y	Y*	Y*	State and Federal funds + BECC
Distrito Federal	Y	Y		Y	Y	Y	Y		WB
Durango							Y*		State + SEMARNAT-CONACYT 2009 Did not get SEMARNAT CONACYT 2008
Edo de México	Y	Y			Y		Y*		
Guanajuato	Y	Y*			Y*	Y*	Y	Y	Did not get SEMARNAT CONACYT 2008
Guerrero	Y							Y	Did not get SEMARNAT CONACYT 2008
Hidalgo									
Jalisco									Did not get SEMARNAT CONACYT 2008
Michoacán							Y*		WB + SEMARNAT-CONACYT 2008
Morelos									SEMARNAT-CONACYT 2008
Nayarit	Y*			Y*	Y*	Y*	Y*		State+SEMARNAT/CONACYT 2008 - 2009
Nuevo León	Y	Y		Y	Y	Y	Y	Y	SPF UK + BECC
Oaxaca									Did not get SEMARNAT CONACYT 2008
Puebla	Y*	Y*		Y*		Y*	Y*		Did not get SEMARNAT CONACYT 2008
Querétaro								Y*	SEMARNAT-CONACYT 2008
Quintana Roo									AECID/SEMARNAT^ + Did not get SEMARNAT CONACYT 2008
San Luis Potosí								Y*	SEMARNAT-CONACYT2008
Sinaloa									Did not get SEMARNAT CONACYT 2008
Sonora	Y						Y*		BECC + Did not get SEMARNAT CONACYT 2008
Tabasco								Y	IDB SEMARNAT-CONACYT 2008
Tamaulipas	Y*		Y*				Y*		BECC + Did not get SEMARNAT CONACYT 2008
Tlaxcala									AECID/SEMARNAT^ + Did not get SEMARNAT CONACYT 2008
Veracruz	Y	Y		Y	Y	Y	Y		SPF UK
Yucatán							Y*		IDB
Zacatecas									

*** Under development/not yet published**

^ Requested/not yet granted

Sources: Mexico´s fourth National Communication to the UNFCCC.

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BECC: http://www.cocef.org/english/Projects/Certified/ppipeline.cfm

CONACYT: http://www.conacyt.mx/Fondos/Sectoriales/SEMARNAT/2008-01/Semarnat_Resultados_2008-01.pdf

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