

**Asociación Mexicana de Instituciones de Seguros, A.C. (AMEDESEF)**  
**Mexican Chapter of AIDA**

**A. Your local context**

***In your country:***

- 1. What is the degree of awareness of climate change and its consequences:***
  - In the general public***

The degree of public awareness of climate change and its consequences in Mexico is varied. The Mexican National Strategy on Climate Change anticipates that the consequences of the climate change will result in the intensification of existing social stress-points, such as poverty, social inequality, public health, and rural development. Public schools, the media and the federal government are all involved in communicating climate change information to their respective constituencies. There are also numerous non-governmental organizations (NGOs) involved in climate change issues in Mexico.

- In the business sector***

The Mexican business sector is working in collaboration with the federal government in green house gas (GHG) emission inventory projects and energy efficiency programs. The level of awareness of the commercial consequences of climate change remains relatively low.

One of the more active associations is the Business Coordinating Council (Consejo Coordinador Empresarial "CCE"). Within the CCE, is the The Private Sector Sustainable Development Study Committee (Comisión de Estudios del Sector Privado para el Desarrollo Sustentable "CESPEDES") which purpose is to establish and implement strategies that promote sustainable development in the Mexican business sector to. CESPEDES belongs to the global network of the World Business Council for Sustainable Development.

The main objectives of CESPEDES are:

- Capacity building (corporate GHG inventories, calculation tools and quantification in GHG reduction projects).
- Promote corporate GHG emission awareness.
- Undertake cost-benefit analysis of GHG reductions.
- Encourage participation in voluntary markets

– *In the insurance industry*

The Mexican Association of Insurance Institutions (Asociación Mexicana de Instituciones de Seguros “AMIS”) anticipates that global warming will result in more hurricanes, more intense rains, floods, crop failures, deaths, tornadoes and more areas of risk in Mexico.

AMIS informs that the price of disaster-related insurance is increasing and coverage underwriting now includes geographic criteria.

– *In the public authorities*

The Mexican Government, in 2005, created the Interministerial Commission on Climate Change (Comisión Intersecretarial de Cambio Climático “CICC”) to coordinate the federal public policy on Climate Change and to comply with the commitments made by Mexico in the United Nations Framework Convention on Climate Change (UNFCCC) and other derivatives of the Kyoto Protocol.

The CICC is chaired by the Ministry of the Environment (SEMARNAT) and is composed of the following secretariats: Agriculture (SAGARPA), Communications and Transportation (SCT), Energy (SE), and Treasury (SHCP). The CICC developed the 2007 National Strategy for Climate Change and the Special Climate Change Plan for 2008 – 2012. The paper identified emissions from various sectors and modeled some longer-term projections of consequences.

In addition, the CICC has the following Working Groups:

- Working Group of International Affairs (GT-INT), coordinated by the Ministry of Foreign Affairs,
- Working Group on vulnerability and adaptation policies (ADAPT-GT), and
- The Mexican Committee for Emission Reduction Projects and the Capture of Greenhouse Gases (COMEGEI) that reviews the project proposals for the Clean Development Mechanism (CDM) and is coordinated by SEMARNAT.

In addition, in 2006, Mexico submitted its Third National Communication to the UNFCCC. This document contains information on the national inventory of emissions of GHG gases, measures to mitigate GHG emissions, climate change scenarios for Mexico, trends and impacts, vulnerability and adaptation to climate change.

The Mexican government has made efforts to develop and disseminate information on climate change through the National Ecology Institute (INE) and the Center for Atmospheric Sciences of Mexico's National University (UNAM). This effort includes the publication of the Strategy of Environmental Education for Sustainability in Mexico 2006-2014, the Strategic Forest Program 2025 (Programa Estratégico Forestal 2025 "PEF 2025"), ProÁrbol (the reforestation program of the National Forestry Commission (Comisión Nacional Forestal "CONAFOR"), the National System of Protected Natural Areas, the National Program for Productive Reconversion (Programa Nacional de Reconversión Productiva), the Integrated Program for Sustainable Agriculture and Productive Reconversion in Zones of Recurrent Disaster (Programa Integral de Agricultura Sustentable y Reconversión Productiva en Zonas de Siniestralidad Recurrente), the Plant Nutrition Program (Programa de Nutrición Vegetal), and the development of a GHG reduction and carbon credit sales program within the Mexican National Petroleum Company Petroleos Mexicanos (PEMEX).

2. *Which are locally the main expected consequences of climate change (please specify: "not applicable"/"medium risk"/"high risk"):*
- *Floods (including flash floods)*

High risk

During recent years an increase in mean annual precipitation in the northeast, an increase in the frequency and severity of those still in the center-north of the country, an increasing number of tropical depressions in the Caribbean region and Gulf of Mexico, as well as an escalation in the strength of hurricanes. The hurricane season of 2004 was the third most active since 1950 and the 2005 season the most active ever recorded.

- *Rise of sea level*

High risk

Coastal areas will be exposed to greater risks associated with the gradual rise in sea level, estimated between 20 and 60 cm by 2100<sup>1</sup>. In the case of Mexico will be very sensitive the expected increases in sea level, particularly in the states of Tamaulipas, Veracruz, Tabasco, Yucatan and Quintana Roo.

- *Melting of ice*

Medium risk

On January, 2008, Víctor Magaña, researcher of Centro de Ciencias de la Atmósfera, said that the lack of Popocatepetl glaciers on Iztaccihuatl and Pico de Orizaba suggest that climate change affects the country and one of its expressions is to reduce the thickness and ice extent in the volcano.

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<sup>1</sup> IPCC, 2007. Intergovernmental Panel on Climate Change

- *Earthquakes*

High Risk.

- *Storms, tornadoes*

High risk

- *Heat waves, draught, fires*

High risk

Forest fires are the third leading cause of deforestation in Mexico. According to the National Climate Change Strategy 2007, most of them are of anthropogenic origin and are related to traditional use of fire during the preparation of agricultural land and livestock.

- *Spread of diseases*

High risk

In Mexico will increase and redistribution of disease vectors such as mosquitoes (malaria, dengue, etc.). In addition, there will be greater incidence of infectious diseases related to water quality (cholera, typhoid, etc.). And increase morbidity and mortality from heat waves and dehydration.

- *Other adverse effects*

Mexico will increase in temperature from 2 to 4 degrees<sup>2</sup>. According to the National Strategy for Climate Change, 96.98% of the country's soil is susceptible to disruption for at

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<sup>2</sup> [http://www.atmosfera.unam.mx/cclimatico/boletin/aserca\\_Cambio\\_climatico\\_2007%5B1%5D-1-2.pdf](http://www.atmosfera.unam.mx/cclimatico/boletin/aserca_Cambio_climatico_2007%5B1%5D-1-2.pdf)

least some of the processes of degradation of arid soil and are highly vulnerable to desertification<sup>3</sup>.

- *Any favorable consequences?*

3. *Which economic sectors, critical for your country, could be particularly affected:*

- *Agriculture*

The models indicate that areas suitable for seasonal maize production by an observed climate change impacts. It was also expected loss of biodiversity in native maize spices and other partners.

- *Fisheries*<sup>4</sup>

- Changes in the distribution of commercial marine species, fishery resources, and ocean temperature and currents.
- Impact on coral reefs, mangroves, wetlands, beaches and low-lying areas by rising sea levels.
- Erosion of beaches by high tides, storms and hurricanes.
- There is a risk of damage to coastal infrastructure, reducing the value of real estate and urban infrastructure.
- There will be affectation in fish farming in coastal areas and wetlands.
- Decrease in revenue in the tourism sector in the affected coastal areas.

- *Forestry*<sup>5</sup>

- It is probable the extinction of coniferous forests and mountain meadows and major changes in at least 50% of other types of ecosystems.

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<sup>3</sup> Oropeza, 2004

<sup>4</sup> Gallegos, 2004

<sup>5</sup> Villers y Trejo 2004; Arriaga y Gómez 2004; Goldammer y Price 1998; Villers y Trejo 1998; Townsend Peterson *et. al*, 2002.

- Drastic reduction in other areas of distribution of coniferous forest and oak, as well as mountain cloud forests.
  - Increased forest fires.
  - Reduced the production of timber, pulp and paper from the forest of conifers.
- *Energy*<sup>6</sup>
- Reduction in hydroelectric generation capacity due to changes in rainfall and increased siltation of dams and reservoirs.
  - Increase in demand for electricity in peak hours due to increased use of air-conditioning systems.
  - Increased costs of oil production and power generation for economic valuation of GHG emissions to the atmosphere.
  - Increased risk of damage to oil infrastructure and petrochemical hydrometeorological extreme events, especially on the coasts of the Gulf of Mexico.
  - Deterioration of towers and cables for power transmission due to hydrometeorological extreme events
  - Increase in consumer prices.
- *Industry (which?)*
- Scarcity and uncertainty in the water supply.
  - Greater energy requirements for temperature control.
- *Tourism*
- Decrease in revenue from tourism, particularly in the coastal zones.
- *Others?*
- *Weather and water resources*

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<sup>6</sup> Sánchez, 2004

- Changes in precipitation cycles and intensity.
  - Increased siltation of dams and reservoirs.
  - Saltwater intrusion into coastal aquifers by rising sea levels.
  - Drastic reduction in water availability per capita in some regions (DF, State of Mexico, Guanajuato, Jalisco)
  - Changing ecological regions, migration of ecosystems to higher latitudes and altitudes.
  - Loss of wetland habitats for migratory species.
  - Decrease the abundance of species of flora and fauna.
  - Increase the rate of extinction, particularly species with restricted distribution.
  - Invasion of exotic species that altered structures.
  - Diminish the replacement capacity for environmental services of ecosystems.
- *Infrastructure*
    - Incremental costs of insurance policies.
- *Land degradation*
    - Increased damage, loss of soil and spread of desertification in about 48% of the territory.
    - Increased erosion and the occurrence of landslides in mountainous areas.
- *Livestock*
    - Reduction in cattle ranching in the center and north of the country due to increased aridity, severe droughts and land degradation.
    - Incremental risk of accidents caused by extreme hydrometeorological events in productive areas (drought, hurricanes, floods).
    - Expanded zones of pests and vectors due to changing environmental conditions.
- *Transport and communications*



- Damage to transportation and communication infrastructure (roads, bridges, ports, airports, railways, communications towers and cables, etc.) from floods and high winds associated with extreme events hydrometeorological.
- Disruption of transport (especially air and maritime) due to extreme weather events, increased incidence of fog and torrential rain.

4. *Have some concrete measures already been taken or envisaged (other than in insurance sector – see B below):*

– *Legislation, regulation*

Recent federal environmental, energy and tax legislation contain provisions to promote GHG reduction through, among others, renewable energy, energy efficiency and economic incentives.

*Initiatives of economic agents*

– *Others?*

5. *How much is your country involved in international efforts and initiatives related to climate change:*

– *Kyoto Protocol*

Mexico is extremely active in the ongoing international negotiations related to the Kyoto Protocol.. See Section A above for discussion of public sector awareness and actions.

– *International strategy for Disaster reduction, Hyogo Framework*

Since 1999, Mexico has been working closely with G-77 and China, the original developers of this initiative in submitting proposals to prevent and mitigate natural disasters. As a consequence of these efforts, the General Assembly approves every year three resolutions to adopt an integral view of these: (1) International Strategy to Reduce Disasters”; (2) International Cooperation on Humanitarian Assistance in the sphere of

natural disasters and development”; and (3) International Cooperation to reduce the effects of “El Niño”.

Pursuant to the Resolution on the International Strategy to Reduce Natural Disasters, a Global Conference on the Reduction of disasters was held from January 18 to 22 of 2005 in Kobe, Japan. In that Conference, Mexico gave an impulse to the International cooperation in natural disasters, on the improvement of the human assistance in all the phases of disasters and in the promotion of a culture of prevention.

Mexico actively participated in the preparation of the Conference and in the Drafting Committee, whose principal result was the adoption of the “Hyogo Action Framework for 2005-2015: Increase of the Nations and Communities Resilience in Disasters”.

In 2005, during the 60° General Assembly, Mexico endorsed the resolution on the “Strengthening of the Coordination of Humanitarian Emergency Assistance of United Nations” in which the Renewable Central Fund for Emergencies (CERF) was increased. The increase of the now Renewable Fund for Action in Case of Emergencies is one of the most important aspects of the reform of the humanitarian system of the United Nations and represents a great advance for countries that, as Mexico, have supported a more efficient, transparent and less political system of response to humanitarian emergencies. Mexico has contributed 50,000 Dollars to the fund.

Mexico also participated in the Third Conference of Early Alert that took place in Bonn from March 27 to 29, 2006 and actively participated sharing its positive experience on the three alert systems for tropical cyclones, monitoring and alert of the Popocatepetl Volcano and the seismic alert for Mexico City. The foregoing allowed giving specific recommendations on the Mexican experience on these matters.

Mexico declared that it would continue to apply its policies on humanitarian assistance, prior request of the States and subject to the circumstances of each case, benefiting bilateral decisions and recognizing the importance of strengthening the role of multilateral organizations supporting the efforts of States and with full respect to international law.

The reform of EIRD is currently under discussion, to increase its capacity to support the implementation of Hyogo Action Plan and create a worldwide movement to reduce the risks of disasters. The proposal includes the creation of three different organizations within EIRD: a global platform for the reduction of disasters, to give advise on the implementation of the Hyogo Action Plan and give support during that process; an Advisory Committee on Programs (CAP) whose objective is to guarantee coherence and provide programmatic support and the Supervisory Board of Proceedings to provide advice to Mr. Egeland on strategic, administrative and financial matters.

Mexico supports the strengthening of the International Strategy for the Reduction of Disasters to provide a solid base for the measures contemplated in the Hyogo Action Plan, through a proceeding of reforms that is transparent and inclusive with an ample participation of the various States involved.

- *National Platforms*

N/A

- *Emission trading systems*

Mexico is currently developing an emission trading system that would include the US and Canada. Mexico participates and uses the U.N. emission trading system.

- *Others?*

6. *Please provide references to literature on climate change concerning your country.*

Julieta Martínez y Adrián Fernández Bremauntz (comp.). *Cambio climático: una visión desde México*. SEMARNAT e INE, 2004, México.

*Mexico's Third National Communication to the United Nations Framework Convention on Climate Change*. SEMARNAT and INE, 2007, México.

*Programa Forestal Estratégico para 2025*. CONAFOR y SEMARNAT, 2001, México.

[http://www.ine.gob.mx/cclimatico/edo\\_sector/estados/estados.html](http://www.ine.gob.mx/cclimatico/edo_sector/estados/estados.html)

## **B. Climate change and insurance** (please stress legal aspects)

The issue of global warming was considered by insurers following Hurricane Wilma, which struck in October 2005 off the coast of Quintana Roo, and severely affected the tourist destination of Cancun. The resulting damages are estimated at 1.752 billion dollars. Thereafter, the recent storms that caused significant flooding in over 80% of the state of Tabasco caused an estimated \$ 700 million in damages.

The AMIS now expects that the costs and criteria for catastrophic risk insurance will be significantly changed.

### *1. Which are the lines of insurance that could be affected?*

- *Property*
- *Liability*
- *Transport, marine*
- *Life, health*

In Mexico the value of insurance for disasters is delimited by geographic area. Insurance in the Yucatan peninsula is expensive because of the incidence in meteors, extreme rains, including hurricanes and flooding. It is followed by the Pacific region, which extends from Baja California to Chiapas, and thirdly, the Gulf of Mexico. These places are exposed to risks hydrometeorological hazards which have become more expensive than earthquakes, which has implied a challenge for the industry. The lines of insurance affected are mainly property, liability, marine and transport and agricultural and livestock, followed by life and health.

2. *How are the risks linked to climate change to be defined?*

- *Problems of interference of human and natural causes (e.g. building in an area prone to being flooded)*

These problems are either carved-out as exclusions under policies or dealt with at the underwriting of the respective policy.

- *Problems of causal links (e.g. increase of losses often due to combination of factors natural, but also demographic and economics)*

These problems are being dealt in the underwriting of the policy and upon its renewal.

3. *Insurers' measures of protection against excessive exposures*

- *Improvement of statistics*
- *Cartography of risks*

Twenty Atlas of risk were elaborated, in addition to the "Atlas of Natural Hazards", allowing approximately 350 locations. More than 15,000 persons have access and consult these tools.

- *Raising risk awareness (communication campaigns, lobbying...)*
- *Prevention*
- *Limits of indemnity*
- *Deductibles*
- *Exclusions*
- *Premium increases*
- *Cancellations*
- *Withdrawals from markets*
- *Adaptation of reinsurance agreements (or develop under point 4 below)*

- *Cover or climate risks on the financial market (or develop under point below)*

#### *4. Insurers' initiatives to develop "new products"*

*N.B. Climate change is seen as opening new opportunities by a growing number of insurers. Some examples are listed below, but they are far from exhaustive and new products keep appearing. Please, investigate the situation in your country and provide as much information as possible (obtaining of clauses and policies would be extremely valuable)*

- *New policies to cover the consequences of climate change (e.g. wind-mills)  
Coverage for producers of new energies (e.g. wind-mills)  
Liability of architects  
D & O environmental liability  
Micro-insurance products for developing countries*
- *Climate risk management services, expertise*
- *New policies as incentives to reduce greenhouse gas emissions  
"Pay as you drive" motor insurance  
"Energy saving", "green-building" insurance*
- *Initiatives in the carbon market  
Carbon credit insurance (covering failure to deliver emission right)  
Options to buy carbon credits to offset emissions (vehicles)*
- *Others*

Support Fund for Rural Producers Affected by Climate Contingencies (Fondo de Apoyo a Productores Rurales Afectados por Contingencias Climatológicas "FAPRACC") works as an insurance policy to provide monetary compensation per hectare, head of livestock, crop type, or fishing boat that has been affected by these contingencies. These supports are designed for primary producers without economic possibilities for insurance. FAPRACC currently has 300 million pesos a year, a figure that will be insufficient in the coming years as the contingency situations by increasing effects of climate change.

#### *5. Reinsurance*

*In your country, what is the role of reinsurance companies with respect to the above problems?*

## **6. ART (Alternative Risk Transfer)**

*Have any of the following techniques developed in your country with climate change:*

- *Derivates*
- *Swaps*
- *Cat bonds*
- *Others?*

*The Mexican Government has developed cat bonds main technique*

Yes, the Mexican Government has used cat bonds to cover certain catastrophic risks, mainly those relating to hurricanes.

*What is the legal nature of these different products? Can they qualify as “insurance”?*

Although there are no precedents on this matter; they have not been treated as insurance by the Mexican Government. Notwithstanding the foregoing, there are elements to consider that these qualify as insurance.

## **7. Cooperation or competition with public sector**

*What is the state of cooperation (or competition) between public authorities and the insurance sector in your country in issues related to climate change?*

The development of mechanisms to prevent these issues has been mostly developed by public authorities and the private sector is still working to offer alternatives dealing with these matters. The main cooperation stems from partnerships between private and public universities on research and development on these areas.

*Are there specific public schemes concerning some of the risks involved?*

*C. Any additional information or comments*