

# **Government of Belize Policy on Adaptation to Global Climate Change**

## **Introduction**

The Government of Belize acknowledges the conclusion of the Intergovernmental Panel on Climate Change (IPCC) that mankind is having a discernible influence on the earth's climate. The mean temperature of the earth is projected to rise by 1.5 to 6 degrees Celsius during the next 100 years. This will produce a rise in mean sea level of 15 to 95 centimetres. It will also affect the hydrological cycle, leading to changes in evaporation and precipitation.

The effects at the regional and national levels are unknown at this stage. However, the best scientific evidence indicates that there could be significant repercussions on the productive sectors of Belize, i.e. agriculture, coastal zone, energy, fisheries, forestry, human settlements, and water resources.

The international response to global climate change articulated in the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol offers Belize new opportunities to meet its development goals and priorities.

## **Policy Statement**

The *Belize Climate Change Adaptation Policy* encourages all agencies in Belize to explore and access the opportunities being developed by the climate change negotiation process such as capacity building, new sources of funding, and technology transfer. It also mandates the relevant government agencies to prepare adaptation policy options for their sectors.

## **Definitions**

Adaptation refers to measures, which countries should undertake to respond to the adverse impacts of global climate change and sea level rise.

Annex I countries are those so-called "developed" countries which have ratified the UNFCCC and have undertaken certain obligations under the Convention to reduce their emissions of greenhouse gases and to assist developing country Parties in adapting to the adverse impacts of global climate change and sea level rise.

The Clean Development Mechanism (CDM) is one of the flexibility mechanisms established by the Kyoto Protocol to enable non-Annex I Parties to participate in climate change projects with Annex I Parties to reduce the net global emission of greenhouse gases. A portion of the proceeds of CDM projects should fund adaptation projects in non-Annex I countries.

CPACC is the Caribbean: Planning for Adaptation for Adaptation to Global Climate Change project. It is a Stage I climate change adaptation project funded by GEF implemented in CARICOM States from 1997 to 2001.

Three flexibility mechanisms have been established in the Kyoto Protocol to assist Annex I Parties to meet their assigned emission reduction targets.

1. Joint implementation allows two or more Annex I Parties to enter into joint ventures, which reduce their net emissions of greenhouse gases. The credits for emission reductions will be based upon mutual agreement.
2. Annex I Parties are permitted to trade in emission reduction units, which can be used to meet their emission reduction targets.
3. The CDM permits non-Annex I Parties to participate in projects with Annex I Parties to meet their emission reduction targets.

The rules under which these flexibility mechanisms will operate are still being negotiated.

Global climate change refers to changes in the global climate produced by the emission of greenhouse gases into the atmosphere through energy production and use, land use patterns, agriculture, industry, and waste management. Climate change also occurs naturally and it is difficult to make a clear distinction between the two.

Greenhouse gases are those gases in the atmosphere, which limit the earth/atmosphere system from emitting long-wave radiation, and results in global warming.

The Intergovernmental Panel on Climate Change (IPCC) is the international mechanism established by the United Nations Environmental Programme (UNEP) and the World Meteorological Organization (WMO) to assess available information on the science, impacts and the economics of climate change and of the mitigation options to address it.

The Kyoto Protocol to the UNFCCC assigns emission reduction targets which Annex I Parties are required to meet within the period 2008 to 2012. It also specifies the means by which those targets are to be met.

Mitigation refers to actions to reduce the net emission of greenhouse gases into the atmosphere.

Non-Annex I countries are the developing country parties to the UNFCCC which are under no obligation to reduce their emission of greenhouse gases, but are vulnerable to the adverse impacts of global climate change.

Sea level rise is the rise in relative sea level produced by the expansion of water as a result of rising temperatures and the additional water produced as the permanent ice fields melt.

The United Nations Framework Convention on Climate Change (UNFCCC) is the international response to climate change. Its objectives are to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

## **Policy Objectives**

The objectives of the *Belize Climate Change Adaptation Policy* are to:

1. Explore and access the opportunities being developed through the climate change negotiation process to meet the development objectives of the nation.
2. Prepare all sectors of Belize to meet the challenges of global climate change.
3. Promote the development of economic incentives, which encourage investment in public and private sector adaptation measures.
4. Develop Belize's negotiating position on climate change at the regional and international levels to promote its economic and environmental interests.
5. Foster the development of appropriate institutional systems for planning and responding to global climate change.

## **Application**

The *Belize Climate Change Adaptation Policy* is directed at all government agencies, which execute policies or provide services in sectors, which may be impacted by global climate change. These include but are not limited to agriculture, coastal zone, energy, environment, fisheries, forestry, health, housing, local government, tourism, transportation, and water resources.

It is also addressed to those agencies, which elaborate, enunciate and guide government's policies such as the Ministries of Budget Management, Economic Development, Finance, Foreign Affairs, Industry, Investment and Trade.

The Government recognizes that if the *Belize Climate Change Adaptation Policy* is to be effective, there must be an aggressive, innovative and on-going public awareness programme that targets all sectors in Belize. Consequently the *Policy* is also directed toward the Ministries of Education and Information.

All sectors in Belize both public and private, academia, civil society and the media have important roles to play in advocacy and in the public awareness campaigns. They have a much greater role to play in developing and participating in programmes and projects that are becoming available through the climate change negotiation process. These include capacity building opportunities, new sources of funding, and access to new technology. Funding and technology in Annex I countries are in the hands of the private sector and they are seeking partners in non-Annex I countries such as Belize to help them meet their countries' greenhouse gas emission reduction targets.

## **Policy Directives**

The Chief Meteorologist, National Meteorological Service is Belize's Focal Point on all matters related to climate change. The Government recognizes that there are many initiatives on climate change, which involve different sectors. The Chief Meteorologist is directed to remain

abreast of these initiatives. Agencies involved in these initiatives are requested to provide reports to the Chief Meteorologist on these activities and on others of which they may be aware.

The Chief Meteorologist should:

1. Convene regular meetings of the National Climate Change Committee. It should include representatives from the Ministries of Agriculture, Fisheries, Forestry, Natural Resources, Environment, Tourism, and Energy, the Coastal Zone Management Authority, academia and non-governmental organizations. The purpose of the committee is to provide advice to government on all aspects of climate change and supervise climate change projects in Belize.
2. Prepare an Annual Report on Climate Change in Belize. It should include a report on the climate of the country, climate change projects being implemented and the status of the climate change negotiation process.
3. Assist all sectors in Belize in preparing climate change vulnerability studies and adaptation options.
4. Undertake a public awareness campaign to advise all sectors of the population on the threat posed by climate change and of the opportunities being developed for projects addressing climate change.

### Agriculture

Vulnerability studies undertaken by officials of the Ministry of Agriculture and the National Meteorological Service indicate that increases in air temperature of 1 to 2 degrees Celsius and changes in rainfall of  $\pm 10\%$  will lower productivity by 10% in beans, corn and rice. This could have serious implications for the nation's food security. The nation's economic agricultural mainstays such as bananas, citrus and sugar and the emerging vegetable crops could face similar climatic threats.

Consequently, the Agriculture Department is mandated to:

1. Undertake climate change vulnerability studies on all the major crops in Belize.
2. Prepare adaptation options for those crops, which are threatened. These may include the introduction of varieties, which are more tolerant to the new climatic regime, diversification, and the introduction of new agronomic practices.
3. Promote the use of new cultivars and practices in the agricultural community.
4. Include a report on climate change related activities in the Ministry's Annual Report
5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### Coastal Zone

The coastal zone will face many threats as a result of global warming and sea level rise. Coral reefs will be threatened by more severe and prolonged episodes of bleaching, disease and mechanical damage from wave action. Beaches will be inundated and erosion more severe and widespread. Mangroves will be threatened which will affect fish habitats, reduce the coastal zone's ability to absorb the impacts of hurricanes and flooding, and affect the marine's filtering system.

The overwhelming tourist attraction in Belize is the coastal zone. Any threat to this area could have major repercussions on this thriving industry.

The Coastal Zone Management Authority should:

1. Undertake climate change vulnerability studies of the coastal zone.
2. Prepare adaptation plans for the coastal zone to address the impacts of climate change.
3. Maintain the inventory of coastal zone resources developed through the CPACC project.
4. Include climate change in its Annual Report on the State of the Coastal Zone.
5. Provide a report to the National Climate Change Committee and the Chief Meteorologist on its climate change activities.

### Education

If the *Belize Climate Change Adaptation Policy* is to be effective its message must be widely disseminated. One of the most important vehicles is through the education system.

The Ministry of Education should:

1. Promote the inclusion of climate change in the school curricula at all levels.
2. Prepare educational material on climate change for use at all levels.
3. Provide a report to the National Climate Change Committee and the Chief Meteorologist on its climate change activities.

### Energy

A significant portion of Belize's energy requirements is being met through renewable sources namely hydropower.. The country has the natural resources to expand this capacity and to exploit other non-traditional sources of energy. These renewable sources of energy could be threatened by climate change.

Annex I countries are seeking investment opportunities in energy production, efficiency and distribution projects which they can use to meet their commitments under the Kyoto Protocol. Belize should pursue these new sources of funding to meet its growing demand for energy.

The Ministry of Energy should:

1. Convene an Interdisciplinary Energy Committee comprised of energy producers, distributors and the major users to formulate a national energy plan and provide the Government with advice on energy.
2. Seek opportunities for Belize to participate to the fullest extent possible in energy projects which meet the needs of the country and which can be accommodated within the opportunities being developed through the climate change negotiation process.
3. Undertake climate change vulnerability studies of the energy sector.
4. Include a report on climate change related activities in the Ministry's Annual Report.
5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### Environment

Climate change can have significant impacts on many areas of Belize's environment. It is essential that the environment be monitored to note these changes as they are occurring so that remedial action can be undertaken as early as possible.

The Department of the Environment is requested to:

1. Undertake climate change vulnerability studies of the environment.
2. Prepare adaptation options to meet the threats of climate change.
3. Invite project proponents to address climate change in their Environmental Impact Assessments.
4. Include a report on climate change in their Annual Reports.
5. Provide the National Climate Change Committee and the Chief Meteorologist with reports on their climate change activities.

### Fisheries

Fisheries in Belize face many threats from climate change. Warmer sea temperatures and sea level rise may cause traditional catches to migrate from Belizean waters or could affect their reproductive cycles. New species may move in and offer new opportunities or threaten traditional catches. More frequent and prolonged episodes of coral bleaching may threaten the

health of our reefs. This would affect the habitat of some species. Mangroves, which are the fisheries nurseries could also be threatened.

The Fisheries Department is requested to:

1. Undertake climate change vulnerability studies of the fish species resident in Belizean waters.
2. Sensitize the fishing community to opportunities that may arise as new species become more abundant in Belizean waters.
3. Monitor and protect the nation's reefs and mangroves to preserve these important fisheries habitats.
4. Include a report on climate change related activities in the Ministry's Annual Report
5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### Forestry

Belize is endowed with healthy forests that are occasionally threatened and damaged. One such episode was the pine bark beetle infestation, which devastated our pine forest. Global warming and reduced rainfall may have contributed to the proliferation and propagation of the beetle. Forest fires continue to pose an annual threat. These episodes pose a clear threat to a sustainable timber industry. Our forests are also the habitats to a unique combination of flora and fauna that supports a growing tourist trade.

Our forests provide Belize with an opportunity to participate in the incipient international carbon market through carbon sequestration projects. Annex I countries will attempt to meet their carbon emission reduction targets by seeking partners in non-Annex I countries like Belize to help them meet these targets through the various flexibility mechanisms being developed in the climate change negotiation process. The country already has a history of forest preservation and we should attempt to gain a foothold on this market in which Belize may hold a competitive advantage.

The Forest Department should:

1. Undertake climate change vulnerability studies on Belize's forests.
2. Explore and promote the opportunities being developed for forestry projects, which will enable the country to participate fully in the emerging carbon markets.
3. Monitor and protect the nations forests and watersheds, including our mangroves.
4. Include a report on climate change related activities in the Ministry's Annual Report.

5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### Health

Changes in air temperature and the water cycle could have serious effects on the nation's health. Disease vectors could become more prevalent and resilient to control measures leading to more outbreaks of diseases such as malaria, cholera and yellow fever. There could be more incidences of respiratory illnesses.

The Ministry of Health should:

1. Undertake climate change vulnerability studies in the health sector.
2. Prepare options to address the potential threats.
3. Include a report on climate change related activities in the Ministry's Annual Report.
4. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### Housing

The majority of the country's population resides within the coastal zone that is very flat and very near the existing sea level. Structures within this area, which includes the cayes and the mainland, will be threatened by sea level rise.

Municipal authorities, the Department of Lands and Surveys and the Housing and Planning Department should:

1. Undertake climate change vulnerability studies of residential areas along the coast of Belize.
2. Prepare adaptation options to meet the threat of sea level rise.
3. Enforce existing regulations and develop new regulations, which promote good building practices to meet the threat of sea level rise and dangerous storms and hurricanes.
4. Include a report on climate change related activities in the Ministry's Annual Report.
5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### Information

It is essential that information on all matters related to climate and in particular the impacts on Belize and the potential opportunities arising from the climate change negotiation

process reach as wide an audience as possible. An on-going public awareness campaign should be developed and updated regularly.

The Ministry of Information should:

1. Develop a public awareness campaign on climate change.
2. Encourage the media to publicize the issues associated with climate change.
3. Provide a report to the National Climate Change Committee and the Chief Meteorologist on its climate change activities.

### Tourism

Belize is actively promoting the country as a ecotourist destination because of its coastal and marine resources, its fishing and diving attractions, its forests which are host to thriving animal and plant populations and its rich Mayan heritage. All these attractions are threatened by climate change.

The threat to the tourism industry is also from the exterior. As temperatures continue to rise, travelers may find the more northern latitudes more attractive as tourist destinations. As the world seeks to reduce its emissions of greenhouse gases in the energy sector, environmental levies may be imposed on international aviation fuel, which is presently untaxed, or fuel prices may be artificially inflated. This could increase the price of Belize as a tourist destination.

The Ministry of Tourism should:

1. Undertake climate change vulnerability studies of the tourism industry.
2. Prepare adaptation options for those sectors threatened by climate change
3. Promote projects within the tourism industry, which could benefit from the opportunities being developed by the flexibility mechanisms of the climate change negotiation process. These include renewable energy production, energy efficiency and waste disposal projects.
4. Include a report on climate change related activities in the Ministry's Annual Report.
5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### Transportation

Several of Belize's roads and bridges are vulnerable to seasonal floods. Belize's waterways also become un-navigable during certain periods. Sea level rise and changes in rainfall patterns could increase the episodes of flooding which will impact the nation's transportation.

The Ministry of Works and the Port Authority should:

1. Undertake climate change vulnerability studies of the nations roads, bridges and waterways.
2. Prepare adaptation options to meet these threats.
3. Include a report on climate change related activities in the Ministry's Annual Report.
4. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### Water Resources

Belize's water resources are threatened by global climate change and sea level rise. Sea level rise will threaten water resources within the coastal zone through salt-water intrusion. Changes in the rates of evaporation and rainfall will affect surface and ground water resources in the interior of the country. Changes in land use and watersheds will also impact on the nation's water resources.

The threats on our water resources will be felt by all sectors in Belize. Hydroelectric power generation will be affected. The use of water for agriculture and aquaculture, sources of potable water, and receptacles for the disposal of waste will all be threatened. Our inland waters as waterways for navigation and tourist attractions will also be threatened.

The Ministry of Natural Resources is requested to:

1. Convene an interdisciplinary Water Commission to coordinate, monitor and regulate the use of the nation's water resources.
2. Undertake climate change vulnerability studies of the nation's water resources.
3. Advise the relevant sectors of threats on their supplies of water as a result of climate change and recommend that they prepare adaptation options.
4. Include a report on climate change related activities in the Ministry's Annual Report.
5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

### **Planning and Management Mechanisms**

1. The National Meteorological Service should establish a climate change unit within the department. It should be charged with maintaining a database on the nation's climate, sea level, and water resources. It should also maintain a database on all climate change activities undertaken in Belize.

2. The Coastal Zone Management Institute should maintain the inventory of coastal zone resources established by the CPACC project. The Coastal Zone Management Authority should incorporate climate change in its integrated coastal zone management activities.
3. The Land Information Centre should maintain an inventory of the nation's terrestrial resources including sufficiently detailed topographic and bathymetric maps to monitor land use change and sea level rise.
4. The Land Use Authority should include available climate change vulnerability studies as a guide in making land use decisions.
5. The Environmental Impact Assessment (EIA) process should incorporate the results of climate change vulnerability studies.
6. The National Emergency Management Organization (NEMO) should incorporate climate change and sea level rise into the natural disaster preparedness and response process.
7. The National and District Sustainable Development Councils should include climate change in their decision making process.
8. An Interdisciplinary Water Commission should be established to coordinate, monitor and regulate the use of the nation's water resources. The Commission should include climate change and sea level rise in its deliberations.
9. An Interdisciplinary Energy Committee should be established to provide the Government with advise on all aspects of energy and to develop short, medium and long-term national energy plans.

### **Accountability**

The National Climate Change Committee should be responsible for all climate change activities within the country. Ministries, departments and agencies are responsible for implementing activities in their sectors and report on these to the National Climate Committee. The Climate Change Unit within the National Meteorological Service will serve as the Secretariat of the Committee. The Chief Meteorologist will provide the Ministry of Public Utilities, Energy, Communications and Immigration with regular reports from the Committee and produce an Annual Climate Change Report for submission to Cabinet.

### **Monitoring and Review**

The implementation of the *Belize Climate Change Adaptation Policy* will be monitored by the National Climate Change Committee. The *Policy* should be reviewed regularly by the Committee. The Committee should undertake a formal review with public consultations following the publication of the IPCC Assessment Reports which are produced every five years. The next Report is scheduled for 2005.

## **References**

The implementation of the *Belize Climate Change Adaptation Policy* should be guided by the following documents and legal instruments.

Belize Biodiversity Strategy and Action Plan

Belize Climate Change Issues Paper

Belize Climate Change Vulnerability Studies on Agriculture, Coastal Zone and Water Resources

Belize's First National Communication to the Conference of the Parties of the United Nations

Framework Convention on Climate Change

Belize's 1994 Inventory of Sources and Sinks of Greenhouse Gases

Coastal Zone Management Authority Act

Environmental Impact Assessment Act

Fisheries Regulations

Forestry Act

Physical Planning Act

Public Utilities Commission Act

Water Industry Regulations