

Access and Benefit Sharing (ABS) policies in a changing climate in Central America and Dominican Republic

1. Introduction

Climate change is expected to greatly affect biodiversity in Central America and the Caribbean region. Global climate models predict a decrease in precipitation and an increase in the variability of precipitation patterns, making the region drier overall (UNEP, 2010)¹. Central America is a climate change “hotspot” at global scale, according to a study calculating a climate change index for 26 regions of the earth, based on climate change projections of 20 global climate circulation models, 3 Intergovernmental Panel on Climate Change (IPCC) emission scenarios, mean superficial temperature and its annual variability². Local communities, whose livelihoods are connected to fisheries, agriculture, tourism and other economic activities dependent on ecosystem services, will be directly impacted.

Acknowledging the region vulnerability the designated representatives for the Nagoya Protocol and Access and Benefit Sharing (ABS) of the eight countries, that are part of the Central American Integration System (SICA), agreed on the 28th February 2017 to work on a factsheet establishing the synergies and challenges presented by climate change and ABS. It is important to identify the most important impacts climate change could have on biodiversity in the region, and to promote the integration of adaption measures, onto regional, national and strategic public policies, to ensure biodiversity conservation.

2. Biodiversity crisis

Biodiversity generally refers to entire diversity of genes, species and ecosystems; the number of organisms and species and the interactions between them and the environment around them. Similarly, it also refers to the variability of organisms of any kind, such as those found

in terrestrial and marine ecosystems, as well as other aquatic ecosystems and ecological complexes that they are part of. Biodiversity includes the diversity within species as well as the variability between species and ecosystems³. Changes to biodiversity and ecosystems arise from multiple factors and their combinations, which persist through time (Table 1) (MEA, 2005)⁴.

Several studies show that biodiversity loss has occurred in a drastic manner, especially in the last few decades. One such study uses the methodology of Globio 3 (2011) (CCAD, 2011), which is based on the Mean Species Abundance Index (MSA) i.e. an indicator describing biodiversity change with reference to the original state of ecosystems. The study estimates that for Central America the rate of biodiversity loss was approximately 52%, and was associated with land use changes, infrastructure interventions such as roads, habitat fragmentation and climate change. However, the biggest driver affecting biodiversity is international trade. International trade is responsible for about one third of all threats to biodiversity worldwide (Moran and Kanemoto, 2017).

Table 1: Drivers of biodiversity change

Direct drivers

Also known as anthropic drivers, they include land use change, climate change, invasive species, overexploitation of resources and contamination.

Indirect drivers

Connected to changes in human lifestyle patterns, such as income level, lifestyle pattern, economic activity changes, demographic pattern changes, socio-political, cultural and religious patterns, and scientific and technological knowledge.

1 United Nations Environment Programme (2010). State of Biodiversity in Latin America and the Caribbean. Available from http://www.unep.org/delc/Portals/119/Latinamerica_Stateof-Biodiv.pdf.

2 Giorgi, F. (2006), Climate change hot-spots, Geophys. Res. Lett., 33, L08707.

3 According to the definition of the Convention on Biological Diversity (CBD)

4 Millennium Ecosystem Assessment (2005), Ecosystems and human well-being: Biodiversity synthesis. World Resources Institute, Washington, D.C.

3. Effects of climate change on bioiversity

Climate change is expected to have direct effects on individual organisms, populations and ecosystems. At the individual level, impacts could affect their development, physiology and early development, reproduction and migration behaviour.

It is most likely that changes in precipitation patterns and the expected temperature rise (Böhning-Gaese, Jetz, & Schaefer, 2008)⁵ will have an impact on the distribution, size, structure and abundance of certain species populations. Moreover changes to the hydrological cycle, interactions between species, nutrient cycles and its distribution to the different ecosystems, will consequently impact the flow and quality of ecosystem services (IPCC, 2013)⁶. Within the impacts climate change is expected to have on biodiversity in Central America and the Caribbean region, the following are some examples: impacts to the ecology of cloud forests, tropical forests, and lowland habitats such as mangroves, swamps and reefs (IPCC, 2013).

- Impacts to the ecology of cloud forests, tropical forests, and lowland habitats such as mangroves, swamps and reefs (IPCC, 2013).
- Sea level rise is expected to result in the loss of about 1% to 2% per year of mangrove habitats, which will consequently affect the population dynamics of certain fishes, molluscs and aquatic mammals (IPCC, 2013).
- Changes in the geographical distribution of certain species because of changes in rainfall patterns (Barrantes et al. 2011; Barrantes, 2009; Fuchs et al. 2010).
- Impacts to the rural economy and traditions associated with indigenous traditional crops, as a consequence of climate driven changes to their cultivation systems (IPCC, 2013).

Climate change is generally associated in the literature with increased loss of biological resources, with the impacts of such losses being more acute in the ecosystems, which are already significantly changed as a result of human activities. Climate change is expected to lead to further changes to ecosystems, accelerating the rate of species loss in the region, which would consequently decrease the ecosystem goods and services provided to society.

⁵ Böhning-Gaese, K., Jetz, W., & Schaefer, H.-C. (2008), Impact of climate change on migratory birds: community reassembly versus. *Global Ecology and Biogeography*, 38-49.

⁶ IPCC (2013), Cambio Climático 2013-Bases Físicas. Resumen para Responsables de Política. Estados Unidos de América.

4. Impacts of climate change on people's life in Central America

Geographically positioned between two oceans, the region, and consequently its social and economic contexts, are highly vulnerable to the impacts of climate change. From the range of identified impacts that climate change is already having and/or will have in the 8 member countries of SICA (CCAD, 2010), the following are of greater impact:

- Increased vulnerability to and frequency of extreme weather events;
- Food Security;
- Deforestation and ecosystem loss;
- Water availability;
- Negative impacts to human health;
- Loss of coastal-marine resources;
- Decreased touristic activity;
- Impacts to the livelihood and cultural traditions of indigenous and afro-descendants communities;

Name of programme	Equitable and sustainable promotion of the economic potential of biodiversity to implement the Nagoya Protocol in Central America – Access and Benefit Sharing (ABS/CCAD-GIZ)
Commissioning parties	German Federal Ministry for Economic Cooperation and Development (BMZ) – Energy and Climate Fund (EKF) of the German Government
Programme region	Central America and Dominican Republic (member states of the Central American Integration System SICA)
Implementing organisation	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Overall term	December 2014 to March 2019

5. Main Policies and Strategies for biodiversity, climate change adaptation and mitigation in Central America

All countries of SICA are members to the United Nations Framework Convention on Climate Change (UNFCCC) and of the Convention on Biological Diversity (CBD), adopted in 1992 in the Earth Summit. Government representatives of the 8 member countries of SICA

approved the elaboration of the “Regional Strategy on Climate Change” (ERCC - for its acronym in Spanish) and recognized, that in view of the effects of climate change and climate variability, it is urgent to take coordinated and articulated measures to push the political will and interest of the governments in the region to act upon this challenge.

With regards to biodiversity, the Central American Commission on Environment and Development (CCAD – for its acronym in Spanish), through the Technical Committee on Biodiversity, coordinated the process of elaboration of the “Regional Strategy for Conservation and Sustainable Use of Biodiversity in Mesoamerica” (ERB - for its acronym in Spanish). The ERB was built on four fundamental pillars: the CCAD’s Environmental Plan for Central America (PARCA – for its acronym in Spanish), the Central American Convention for the Conservation of Biodiversity and Protection of Priority Wildlife Areas (CCABAP – for its acronym in Spanish), the Convention on Biological Diversity (CBD) and the eight National Biodiversity Strategies (NBS). The ERB’s mission is to promote and facilitate cooperation and coordination of actions among the countries of the region to achieve knowledge, valuation, conservation and sustainable use of Mesoamerican biodiversity, in harmony with national policies, strategies and action plans and with the international biodiversity agenda. The eight countries of the region also agreed to promote the Mesoamerican Biological Corridor (CBM - for its acronym in Spanish) as an integration initiative that constitutes a regional strategy for sustainable development.

The ERCC’s and ERB’s guiding guidelines integrate the “Regional Environmental Framework Strategy” (ERAM - for its acronym in Spanish) 2015-2020 as strategic themes. The ERAM aims, among others, to contribute to preventing and reducing the negative impacts of climate change and biodiversity loss in the region.

6. How can ABS be an instrument of resilience to climate change?

The species with high genetic diversity are the species with higher probability to withstand unpredictable environmental changes. Hence, future policies and initiatives must promote and assure genetic diversity and a mechanism to facilitate benefit sharing.

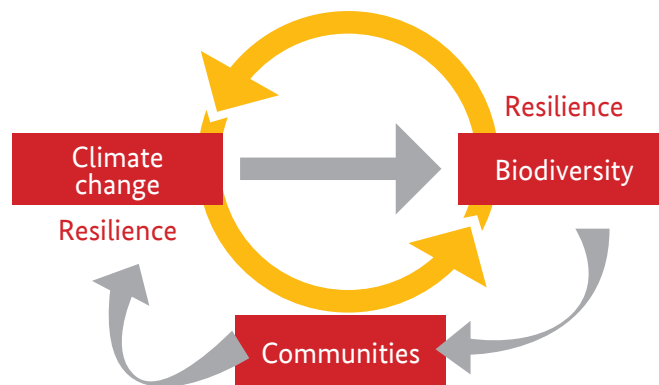


Figure 1. Illustrative representation how ABS can be an instrument of resilience to climate change.

Biodiversity loss is usually associated as one of the many consequences of climate change. Yet the loss of biodiversity aggravates the impacts of climate change. Therefore the relationship between climate change and biodiversity loss is two-way.

7. Recommendations

- A. Establishing a Regional Program on the use of genetic resources (*Ex situ* and *In situ*); to promote an efficient and informed management and use of these resources.
- B. Raising awareness within public and private contexts, at a regional scale, about species dynamics and ecosystems structure and function upon a climate change scenario. Building capacity to identify the location of climate change impacts and estimate the magnitude of economic and social impacts, in order to mitigate their effects is Central America challenge in the near future.
- C. Promoting regional inter-institutional collaboration against climate change, such as ecosystems strategic planning (beyond borders) to allow an integrated management of ecosystems and assure genetic variability.
- D. Changing policies and legal frameworks to highlight the value of genetic resources and promote the economic value of biodiversity beyond its use as raw materials. Adopting a Regional ABS Policy, which addresses the management of cross-border shared genetic resources and vulnerability to climate change.
- E. Promoting research and collaboration amongst universities and research centres to determine and identify, which native species are resilient to climate change.
- F. Building synergies between regional policies on conservation, sustainable use of genetic resources and biodiversity, and climate change policies.
- G. Establishing clear and transparent processes to access genetic resources and monitor their use.
- H. Setting up mechanisms to access financial support.

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Published by Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices in Bonn and Eschborn, Germany

Programme Equitable and sustainable promotion of the
economic potential of biodiversity to implement the
Nagoya Protocol in Central America – Access and (Benefit
Sharing ABS)

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Date November 2017

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Commissioned by Federal Ministry for Economic Cooperation and
Development (BMZ)

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