

# Project Biodiversity and Climate Change in the Atlantic Forest

## Challenge

The Atlantic Forest (Port.: Mata Atlântica) is the most densely populated area in Brazil, home to more than 120 million people. It is the **heart of the Brazilian economy**, with a share of more than 70% of the nation's economic output. This has caused **intense environmental degradation**, mainly due to the exploitation of natural resources and disorderly urbanization. Nevertheless, the biome shelters a great wealth of endemic biodiversity and is known as a biodiversity hotspot. It acts as a globally important **carbon sink and provides essential ecosystem services** to Brazilian society.

Over the last years, rates of deforestation in the Atlantic Forest have decreased significantly. However, the native vegetation remaining covers only 12.4% and a **high degree of fragmentation** persists across the remaining forest areas. This poses a huge threat to biodiversity conservation and the supply of ecosystem services.

Furthermore, **extreme weather events** have led to considerable socioeconomic consequences in recent years – also due to advanced degradation in the Atlantic Forest. However, the degree of vulnerability of highly-fragmented ecosystems in the region to the impacts of climate change remains unclear. Thus, under these circumstances of high fragmentation and isolation of the remaining forests, **climate change** constitutes an additional threat. Therefore, an integrated approach to **managing conservation and restoration of the Atlantic Forest, with a particular focus on ecosystem and climate-related factors**, represents a major challenge for the region.

## Goal

The project Biodiversity and Climate Change in the Atlantic Forest seeks to promote **biodiversity conservation and restoration of original forest cover** in selected networks of protected areas (mosaics) in the Atlantic Forest, in order to contribute to climate change mitigation and adaptation.

The project supports Brazil in achieving its objectives regarding **biodiversity conservation** and **climate change mitigation and adaptation**. It contributes to fulfilling Brazil's commitments under international conventions on climate (**United Nations Framework Convention on Climate Change, UNFCCC**) and biological diversity (**Convention on Biological Diversity, CBD**), especially to the achievement of the National Biodiversity Targets for 2020, the National Biodiversity Strategy and Action Plan (NBSAP), the National Policy for the Recovery of Native Vegetation (Proveg), the Nationally Determined Contribution (NDC) within the framework of the Paris Agreement as well as the National Climate Change Adaption Plan (NAP).

Project name	Biodiversity and Climate Change in the Atlantic Forest
Commissioned by	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)
Implementing partners	Chico Mendes Institute for Conservation of Biodiversity (ICMBio) Pact for the Atlantic Forest Restoration (Pacto) Brazilian Institute of Environment and Renewable Natural Resources (IBAMA)
Country	Brazil
Implementing Agency	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Political partners	Brazilian Ministry of the Environment
Budget	7,535,000 Euros
Duration	April of 2013 up to December 2020



Photos: The Atlantic Forest is of great importance for the region's population and economy, for example, regarding water supply. Therefore, the participation of municipalities is essential to the conservation, restoration and sustainable use of the biome, 2013.



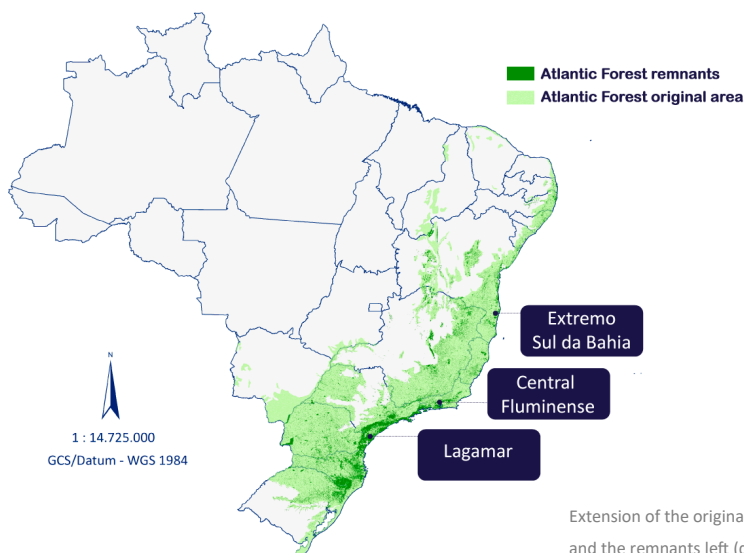
Photo: Workshop for the elaboration of the Municipal Plan for Conservation and Restoration of the Atlantic Forest in Ilhéus, Bahia, 2013.

## Realization

The project Biodiversity and Climate Change in the Atlantic Forest is an initiative of the Brazilian government, coordinated by its **Ministry of the Environment (MMA)**. It is implemented in the context of the Brazilian-German **Cooperation for Sustainable Development**, within the framework of the **International Climate Initiative (IKI)** of the **German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)**. For technical and financial cooperation, the project relies on the support of, respectively, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and KfW Development Bank, through Brazilian Biodiversity Fund (Funbio).

## Approach

The project implements actions in three selected networks mosaics of protected areas in the Atlantic Forest (*Mosaico do Litoral de São Paulo e Paraná - Lagamar*, *Mosaico de Áreas Protegidas do Extremo Sul da Bahia - Mapes*, *Mosaico da Mata Atlântica Central Fluminense – MCF*). The concept of **Ecosystem-based Adaptation (EbA) and Mitigation (EbM)** to climate change forms the core of the Project's approach, emphasizing the use of **biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change (EbA)** and, at the same time, to promote natural carbon sequestration and the mitigation of greenhouse gases (MbA). Project activities focus on **capacity development, implementation of economic incentive mechanisms, articulation of spatial planning instruments, and identification, prioritization and implementation of adaptation measures** to impacts of climate change.



Extension of the original Atlantic Forest (light green) and the remnants left (dark green).

Technical cooperation focuses on the following thematic pillars:

- **Development of scenarios and vulnerability analyses considering climate change**

Modelling and scenarios of land use, connectivity, climate change vulnerability and adaptation potentials in the project's intervention areas are jointly being developed. Subsequently, lessons learned are incorporated into strategic planning instruments and land management processes at local, state, and national level.

- **Economic instruments and incentive structures**

Analysis and improvement of economic instruments and incentive systems (e.g. conversion of environmental fines, payment for environmental services, and compensation mechanisms), and support for capacity building for their implementation.

- **Ecosystem-based adaptation and mitigation strategies**

Based on prior experiences and scenarios, strategic adaptation and mitigation measures for specific climate change impacts in the different intervention areas of the project are identified and capacities for the implementation of these measures are strengthened. Special attention is to be given to the interface between biodiversity and climate change, for example by promoting and valuing intact forest areas as a means to climate change adaptation or by supporting reforestation activities as a way to increase the area's global importance as a carbon sink.

- **Public policies for biodiversity conservation, forest restoration, and climate protection**

Lessons learned at the local and regional levels are incorporated and contribute to public policies and programmes at national level. Moreover, communication strategies and capacity development activities help disseminating mitigation and adaptation strategies in the Atlantic Forest to key stakeholders in civil society organizations, besides other multipliers.

## Results related to conceptual and capacity development in EbA:

- **EbA capacity development strategy implemented**, including four training of trainers, with **69 people trained**, 25 of whom have already replicated their knowledge;
- **Twelve methodological courses on EbA** carried out in **seven cities** (six of them with the majority participation of women), covering all the regions where the project operates. A total of **279 people were trained** (132 women and 147 men);
- **Distance education course in EbA** implemented, with **1,192 people enrolled** and **244 completing it**;
- **Online course for development and implementation of Municipal Plans of the Atlantic Forest (PMMA)** carried out, considering climate change and EbA, with the **participation of more than 4,500 people**. More than 1,000 of them completed the course;
- Study of the **impacts of climate change on the Atlantic Forest**, with **748 maps**, 260 of climate variables, 104 of climate extremes, and 384 of biophysical impacts of climate change on the Atlantic Forest;
- **Awareness raising at EbA** in technical, academic, and scientific events, such as the Seminar on Protected Areas and Social Inclusion, the Brazilian Congress on Disaster Risk Reduction, and the Atlantic Forest Week;
- Material available in Portuguese for dissemination about EbA and capacity building:
  - ⇒ Video "[Ecosystems: the key to climate change adaption](#)";
  - ⇒ Video "[From theory to practice: Elements and criteria to implement Ecosystem-based Adaptation measures](#)";
  - ⇒ Publication "[Ecosystem-based Adaptation \(EbA\) in the face of Climate Change: A handbook for trainers](#)";
  - ⇒ Posters "[Ecosystem-based Adaptation to Climate Change in Planning](#)";
  - ⇒ Course workbook "[Ecosystem-based Adaptation \(EbA\) to Climate Change](#)";
  - ⇒ Translation into Portuguese of the publication "[Making Ecosystem-based Adaptation Effective: A Framework for Defining Qualification Criteria and Quality Standards](#)";
  - ⇒ Podcast series "[AbE: using ecosystems to adapt to climate change](#)".



Photo: Training of trainers in Paranaguá, Paraná, Brazil, 2015.

## Results related to the integration of climate change and EbA in land use planning instruments and public policies:

- **25 PMMAs** were prepared integrating climate change and EbA, 9 in Mapes region, 7 in Lagamar Paraná region, and 9 in MCF region;
- **10 PMMAs in the South of Bahia state integrated regionally**, with measures for EbA planned jointly and a monitoring committee established;
- Guide for preparation and implementation of PMMAs improved based on existing experiences considering climate change and EbA;
- Technical recommendations for the insertion **of climate change and AbE in Conservation Units Management Plans**. APA CIP Management Plan considers climate change and plans EbA measures. APA Guaraqueçaba Management Plan considers risks and their relation with climate change;
- Climate risks for the whole Atlantic Forest were identified and, with the support of a participative processes, **EbA measures were designed for 715,572.24 ha** in the project regions;
- **EbA measure recommended by Porto Seguro's PMMA was implemented** in the ecological corridor between Pau Brasil National Park and the RPPN Estação Veracel, recovering the vegetation in 3 ha of demonstration areas, and prospects for expansion by the partner entity Anamma;
- Graduate Program in Geography at Federal University of Paraná integrated adaptive management of vulnerability and risk at conservation sites (Marisco) into classes and extension initiatives;
- Elaborated studies on vulnerability and ecosystem services analysis provide the basis for considering climate change and EbA in Land Use and Occupation Law and in Duque de Caxias Master Plan;
- **Knowledge and experience in EbA integrated in the National Adaptation to Climate Change Plan**, in the chapters of biodiversity and ecosystems, cities and urban development, and risk management.



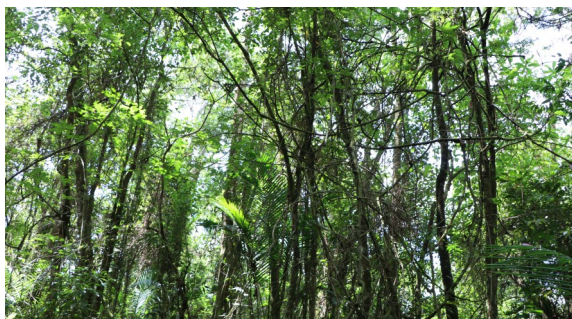
Photo: Technical exchange visit of municipal managers from the Lagamar Paraná Mosaic municipalities to MCF region to share experience on the inclusion of AbE in Municipal Plans of the Atlantic Forest, 2019.



## Results related to the recovery of native vegetation:

- **National agenda for the recovery of native vegetation strengthened** through advisory services for the preparation of the National Plan for the Recovery of Native Vegetation (Planaveg), and in the estimation of the potential for natural regeneration of native vegetation in the Atlantic Forest and other biomes, which will assist in the choice of priority areas for restoration in each region, seeking to reduce costs;
- Analysis of costs of native vegetation restoration in Brazilian biomes;
- Publication of [Technical Guide for the Recovery of Vegetation on Rural Properties in Bahia State](#);
- **Pact for the Atlantic Forest Restoration (Pacto)** strengthened by holding **six training courses** for its members on theoretical framework and restoration methods, monitoring protocol, restoration project database, landscape-scale governance, and gender and restoration, **training 112 people**;
- Support for the **insertion of new restoration projects in Pacto's database**;
- Elaboration of the [Forest Restoration Priority Index for Water Security in metropolitan regions of the Atlantic Forest](#);
- **43,131.53 ha of areas in forest restoration monitored by Pacto's protocol** in the states covered by the project;
- **Strengthening of native vegetation restoration chains at a landscape scale** in the project regions, with the publication of studies on the **economic analysis of the productive vegetation restoration chain** and on the **financing strategy** for restoration at a landscape scale. **56 people were trained** to continue the cycle of landscape-scale restoration in the three regions;
- Support for the development of **Strategic Communication and Capacity Building Plans for the Environmental Fines Conversion Program**;

- Elaboration of **two manuals for the Environmental Fines Conversion Program**, one with guidelines for the elaboration of environmental recovery projects and the other for project executors, with guidelines for monitoring the actions and accountability of the project's execution;
- Support to **two project selection administrative processes for environmental fines conversion** to integrate Ibama's portfolio of projects, both published;
- **More than 500 proponents mobilized and trained** about the call for proposals for forest restoration projects in Santa Catarina state in the scope of Ibama's Fines Conversion Program;
- **Two videos** were produced with **guidelines for project proposals**, under the Environmental Fines Conversion Program.



Photos: Native vegetation recovery area of the Atlantic Forest in the Lagamar Paraná Mosaic region, Guaricica Natural Reserve, Antonina, Brazil, 2020.

All publications, videos, and podcasts produced as part of the project are available [here](#).

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