

Case study

Dominican Republic

The *model forest concept* for forest restoration, timber and cocoa production

With a donation from a goldmine, the local non-governmental-organization Enda Dominicana is implementing the concept “Model Forest” on the Caribbean Island. The aim is to convert the former sugar cane plantations and degraded agricultural land back into fertile ground that provides benefits to the local population.

Initial situation and landscape

Overall, a total of 68% of the degraded land of the Dominican Republic would have potential for reforestation and restoration measures. At the national level, the Dominican Republic has been participating in the Bonn Challenge since 2017 and intends to restore 0.12 million hectares of degraded forests and landscapes by 2030. To this end, the government is pushing ahead with payments for environmental services and legal framework conditions for the forest sector, among other things.

The model forest Colinas Bajas covers around 9.000 km² in the North of the Dominican Republic. More than 1.5 million people live in this area. The river basin Ozama - Isabela supplies a large part of the population of the city Santo Domingo with drinking water. The population in Colinas Bajas is characterized by smallholder structures, often subsistence farming with low income. Overall, the area was severely affected by deforestation for sugar cane, particularly in the 1980s. Currently, land use is characterized by irrigated agriculture and livestock farming (42%). The forest cover is 32 %. The cultivation of crops like cocoa, rice (under irrigation), fruit trees (especially citrus fruits) as well as pineapple and bananas is widespread in Colinas Bajas. Besides sugar cane cultivation in the 1980s, gold, nickel and silver mining is one of the main drivers of deforestation in the area.

Project details

Country: Dominican Republic

Implementing organization: Enda Dominicana

Target group: 6.500 smallholder farmers

Partner institution: Model Forest Colinas Bajas, farmers association, private forestry businesses

Duration: 2007- 2018

Budget: 5 Mio. USD

Financing scheme: Donation from the Goldmine:

Barrick Pueblo Viejo, Enda Dominicana,
Farmers association Zambrana-Chacuey

Main stakeholders and their role in the landscape

In the region Colinas Bajas, stakeholders have come together to form a common vision of a sustainable landscape development. The highest body in the region is the **general assembly**, made up of 130 actors, among them representatives from forestry, smallholder farmers' cooperatives, city councils and government agencies.

The local non-governmental-organization (NGO) Enda Dominicana has already initiated different phases of the forest restoration concept Model Forest, since 1984. Today, the NGO serves as an important bridge between investors and the target group, as it offers a platform for communication and creates investment structures for smallholder farmers. Since 2007, the NGO has also been training farmers and communities on organizational development and decision-making competences. The mining company Barrick Pueblo Viejo finances these trainings and many other activities related to reforestation and agroforestry systems.

In 2007, the **goldmine Barrick** donated a sum of US \$5 mio. to the project. Barrick owns a large mine in the area and is interested in avoiding conflicts in the landscape and with employees. Before the donation by Barrick, Welthungerhilfe was the first initiator and financier of the project „Model Forest Colinas Bajas“. This case study relates to the project duration financed by the goldmine from 2007 to 2018. According to the employees of Enda Dominicana, in the past there have been several conflicts regarding municipal interests within

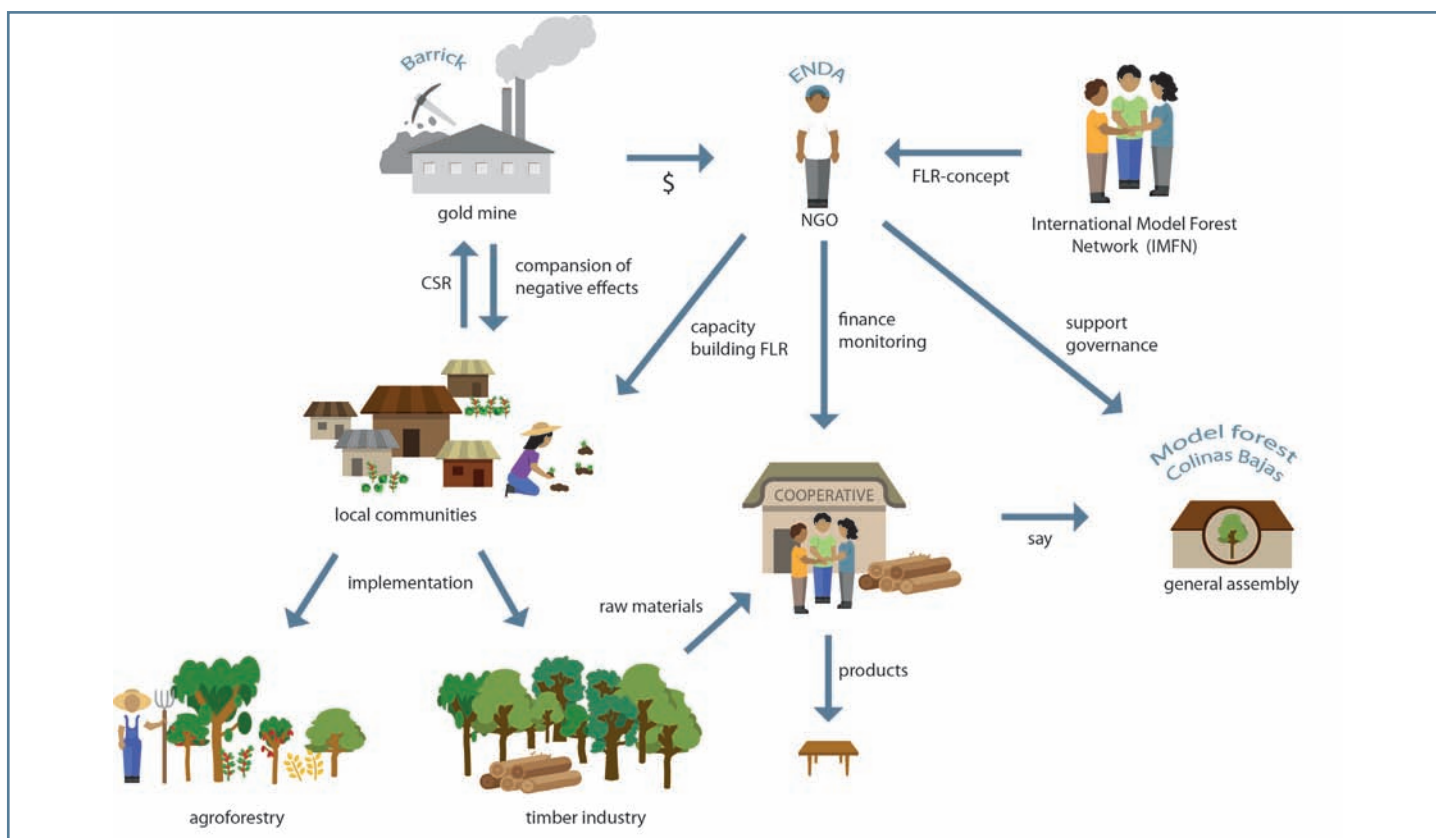
the community as well as conflicts with the goldmine. These conflicts were successfully countered with a participatory and territorial management approach involving all local actors. To this end, a regional land-use plan was developed together with the local authority, farmers and members of the local government.

The target group of this project are the smallholder farmers in rural areas with 0.5-1.5 ha of land. Through the donation of the goldmine, around **65,000 families** in the region of Colinas Bajas have been supported for 11 years by the local NGO to establish forests and cocoa agroforestry systems. The aim was to restore the region to its original forested state in the long term. To generate a sustainable source of income for the people, the NGO Enda set up small wood-processing companies within the framework of the project, which sell the wood from the forest and agroforestry areas of the smallholder farmers.



Figure 1 goldmine, picture Torsten Klimpel

Figure 2: Key stakeholder of this study.



Implementation and measures at the landscape scale

Overview project components

- Governance: Set-up of a multisectoral round table & land-use plan
- Model forest: Reforestation in 4 phases
- Establishment of local value chains
- Establishment of a forestry cooperative

The Model-Forest-concept

In order to improve the living conditions of the communities and reduce the pressure on the forest, forests were restored in four phases according to the Model Forest principal and a diversified agroforestry was introduced. This is a major project component alongside other activities such as the establishment of a forestry cooperative and the establishment of a multisectoral round table.

The concept „Model Forest“ comprises a process that establishes a diverse partnership of individuals and groups in order to realize the common vision of a sustainable landscape development. Geographically speaking a model forest is a functioning landscape that combines different forms of use, such as forests, agriculture, protected areas and cities. The model forest concept is already being applied in various countries. In Colinas Bajas, the NGO Enda developed a concept, which reforested the landscape in four reforestation phases. These phases are explained on the next page.



Figure 3 cocoa grafting workshop with a local cocoa producers' association. Bosque Modelo Colinas Bajas, picture Enda Dominicana

The Model forest network

The *International Model Forest Network (IMFN)* is a voluntary global community whose members work for the sustainable management of forest landscapes and natural resources through the model forest approach. The global initiative actively promotes forest development through participatory processes in 37 countries, including the Dominican Republic.



<https://imfn.net/>



Figure 4 forest, picture Torsten Klimpel

Forest Landscape Restoration

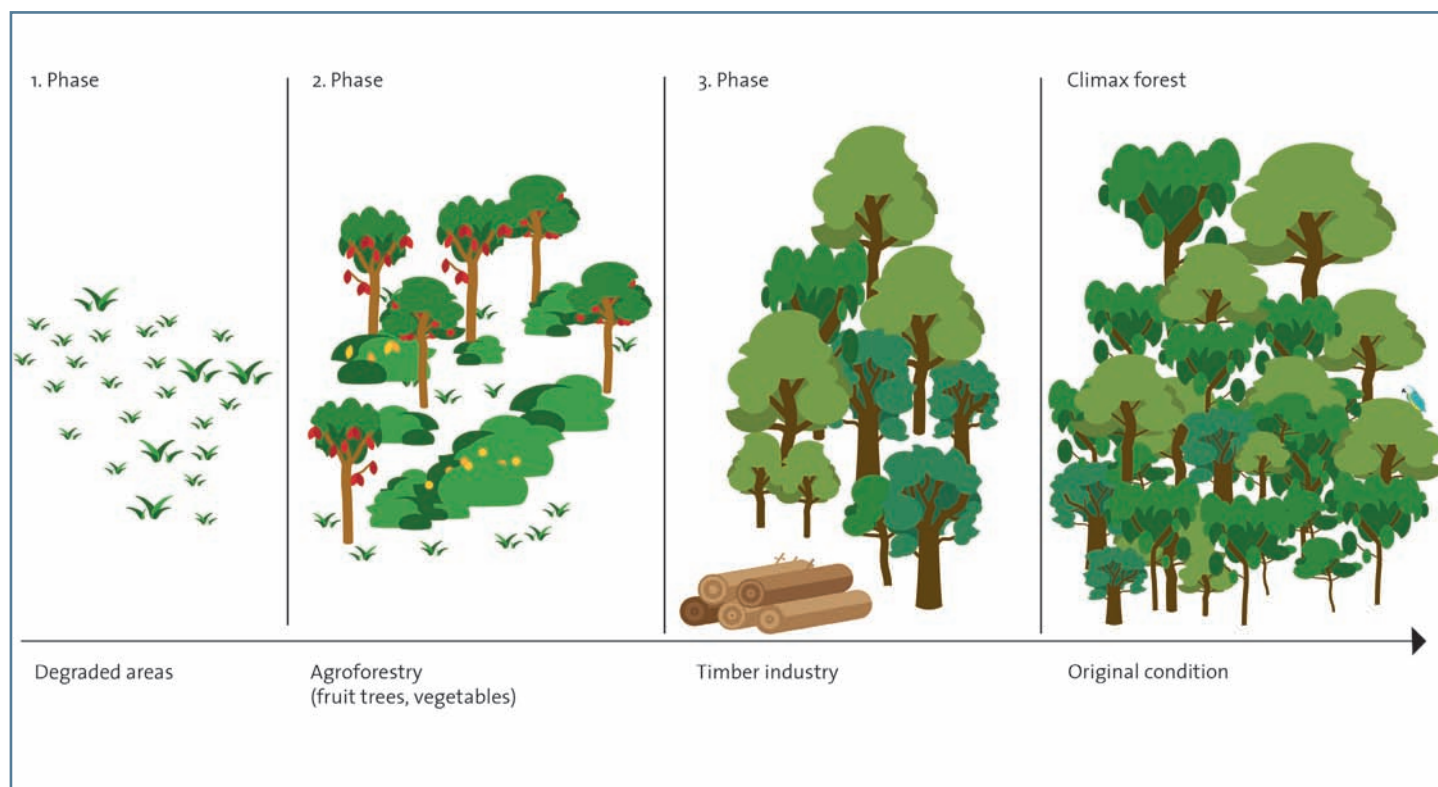
So far there is no generally accepted definition for Forest Landscape Restoration, although there are various global initiatives, such as the Bonn Challenge, which aims to restore 150 million hectares of degraded land by 2020. In our work, however, the following characteristics of FLR projects have proven to be relevant:

- ✓ Contribution to the conservation and regeneration of natural ecosystems.
- ✓ Restoration of ecological, social and economic functions for humans and nature.
- ✓ Stakeholder involvement, participatory planning and decision-making processes.
- ✓ Adaptation of measures to the local context.
- ✓ Focus on a whole landscape with different forms of land use.

Ecological benefits

By creating large areas of agroforestry and forest on originally degraded areas, the project makes a contribution to increasing biodiversity and thus pursues the approach of Forest Landscape Restoration (FLR) (see box). The reforested project areas in turn serve as connecting zones or biocorridors for migratory fauna and flora between the national parks Los Haitises, Aniana Vargas, La Humeadora and the Loma Quita Espuela Scientific Reserve.

Figure 5: The 4-phase model forest concept



Step 1: The initial situation is degraded land areas.

The soil is being worked and fodder plants and legumes are sown to bind nitrogen in the soil and produce fodder for livestock. At the same time fast growing tree species are planted for firewood and green manure, which provide shade for vegetables and legumes.

Step 3: Forest plantations and permaculture.

At this stage the soil regains fertility, the trees are larger and provide more shade. As over time, less space is available for agricultural products, many of the agroforestry systems are being enriched with various valuable woods and grow into mixed tree forest plantations. Other areas with less canopy density are continued as permacultures with vegetables and trees.

Step 2: Management of the agroforestry system.

In the second phase, when the soil is somewhat rehabilitated, forest trees or fruit trees are planted as agroforest systems or as family orchards in between to provide farmers and animals with food sources.

Step 4: From forest plantations to secondary forests and climax forests.

At this stage trees are already large and there are to land-use forms. 1. For further reforestation fast-growing species were selected so that the wood could be used for processing as fast as possible. 2. A few forest areas with a low commercial use reach a similar structural and functional level as the original tropical forest ecosystem in Colinas Bajas.

Multisectoral Round Table

What makes this project special is the participation of many stakeholders. As a measure for participatory implementation, a “Round Table” was established, which was founded in 2010 by local actors, the FAO and Enda Dominicana. Different working groups work separately on specific topics and problems. For the Model Forest General Assembly, however, they all meet regularly.



Figure 6 Board of Directors of the Colinas Bajas Model Forest regional platform, at an ordinary territorial management meeting, 2016. Picture Enda Dominicana

Main actors of the Round Table

- Small producers in the agroforestry sector
- Medium-sized forestry and agroforestry operations
- Locally based universities
- Local and regional delegations of the Ministries of Environment, Agriculture and Dominican Agricultural Institute
- Municipal environmental management units from 22 municipalities

Local value creation with forest cooperatives and micro-enterprises

Around 200 medium-sized producers and one dozen forest enterprises that operate reforestation, forest and agroforestry on their land, use the wood products from the four-phase model forest areas.

Another project component focused on the processing of wood from the newly created forest and agroforestry areas. For this purpose, small pilot-sawmills were set up in the communities. They are managed by the wood producers in small cooperatives or as private micro-enterprises. This has resulted in a new source of income for many entrepreneurs. However, not all of these forest enterprises survived, as some of them were not financially viable. According to the stakeholders, there was mismanagement within the companies and there was a lack of business know-how and sales markets. The micro-enterprises process the wood to boards and blocks, dry it with solar energy or air-drying. In addition, some joineries were founded as micro-enterprises where all local unprocessed sawn timber is sold, both regionally and nationally. Some members of the micro-enterprises had their wood FSC® certified.



Figure 7 picture sawmill Torsten Klimpel

Local and international market for agroforestry products

Besides wood, smallholders sell other forest products, such as exotic fruit (bananas), tannia (*Xanthosoma sagittifolium*), bush peas and yam root on the local market with increasing demand. The local NGO sees cocoa as the main product for nutrition and income generation. However, large export businesses or international importers currently dominate the market. The challenge of market access could not be overcome within the project and requires further support.

Challenges and solutions for forest and landscape restoration

At the landscape level

A success factor for the Enda model forest project are the **participatory processes** of the local community and the resulting **regional governance**. The implementation of local land-use plans and the ongoing discussion between landowners, the local association of producers and the Ministry at the round table are keys to the project. Thus, a common vision for sustainable and participatory land-use could be created.

In addition to the donation of the Barrick goldmine, an attempt was made to generate **financial sustainability** for the coming years by founding forest cooperatives and micro-enterprises. Some of them were also successful after completion of the project and are to be integrated into larger structures, in a national forest cooperative. Other micro-enterprises failed due to low turnover or bad management. The revenues from the sale of wood and cacao are not yet sufficient for the model forest to support itself. Nevertheless, smallholders today can earn a livelihood through various activities such as the sale of agricultural products like bananas and yams. Despite the considerably positive ecological impacts on the region and the impressive reforestation, the project is not self-sustaining without external financial support and this is not yet foreseeable.

Crucial for the implementation of a Forest Landscape Restoration project was the **locally represented NGO**. It has the local knowledge, access to the smallholders and is familiar with the region Colinas Bajas. At the same time, the NGO as an organization was able to generate larger financial resources and pass them on to the individual farmers. Without this organization, the goldmine would probably not have been able to invest such a large amount of money in the region. This demonstrates that there has to be an actor between the investor and the target group who implements the investment and functions as a bridge between both actors.



Sawmills process the wood for further processing in joineries or for sale.

National and international level

Knowledge transfer and sharing of experiences with new farmers are a key element for local dissemination. The project continues to expand in Colinas Bajas and new families want to participate. The approach could also be **scaled** to other areas with similar ecosystems. It should be mentioned, that although the model-forest-concept provides an important ecological benefit it is currently not financially independent which makes scaling more difficult.

In this project, the drivers of land degradation and deforestation are not reduced. Barrick continues the mining of gold. Although the project has achieved a lot of change together with local actors and reforested a region, international investors continue to mine natural resources in Colinas Bajas. Therefore, it remains questionable whether the investment of the goldmine compensates for the negative costs of environmental damages.

Thus, it is highly relevant to further curb degradation and deforestation at national and international level and to calculate the monetary values of environmental damages.

The project has replanted a large landscape, increased biodiversity and created biocorridors between national parks. Many local, private and state organizations have adopted the **reforestation practices “model forest in four phases”** and the training concepts of the project, both in the area of Colinas Bajas and in other parts of the country. In 2015, this project was awarded as „exemplary case of sustainable forestry“ by the Food and Agriculture Organization of the United Nations (FAO). Thus, the ecological and social component of the project can be applied to other regions that have similar geographical and political conditions.

List of sources:

http://www.bonnchallenge.org/sites/default/files/bonn_challenge_lat_2017_en_o.pdf

<http://www.bonnchallenge.org/content/dominican-republic>

<http://www.bosquesmodelo.net/colinas-bajas/>

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