



# RESTORATION OF KARAGO LAKE LANDSCAPE, NORTH-WEST RWANDA

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## Summary

*The Rwandan forestry situation is complex, and for good reason, notably: 1) a high population density and widespread poverty exert enormous pressures on forest resources, and; 2) limited institutional support for local communities and sustainable natural resource management. As a result, increased soil erosion, deforestation, land degradation, reduced water quality and quantity, and other factors contribute to the loss of biodiversity.*

*To help address some of these issues, in 2012–13 national and international partners joined efforts in Rwanda to implement a Model Forest in the Karago Lake and watershed (Gishwati area, north-west) focused on conservation and sustainable natural resource management through agroforestry and forest landscape restoration (FLR).*

*The main driver behind creation of the Model Forest was an interest in promoting a participatory governance structure to develop a common vision and approach to managing natural resources in a highly fragmented and densely populated area. A need for improved land use practices to reduce soil erosion and improve water quality and livelihoods also figured prominently.*

*The results to date from the Karago Lake project directly support a number of Rwandan national and international policies and commitments related to the sustainable use and conservation of biodiversity through ecosystem restoration.*

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## Description of the area

Rwanda is one of the poorest countries in the world with an annual per capita income of \$540 per inhabitant<sup>1</sup>. It is also characterized by a very high population density—approximately 400 inhabitants per km<sup>2</sup> with some regions exceeding 1,000 inhabitants per km<sup>2</sup>. The terrain around the developing Model Forest is mountainous and rugged, the highest peaks of which are the Karisimbi Volcano and Mount Muhe. The main water body, Lake Karago, extends over an area of 27 hectares (ha).

The climate is generally temperate. The zone has a mean temperature of 15°C and abundant precipitation, approaching 1,400 mm per year. In general, the dominant crops are potatoes, corn, wheat, beans, coffee, tea, flowers and peanuts. Dominant tree species include Eucalyptus, Cypress, Pine.

Wildlife has all but disappeared in the area, but in the remaining forests reptiles, a wide variety of bird species, and some small ruminants such as hares and jackal, can be found. Gishwati Natural Forest and Volcanoes National Park are also home to numerous animal and plant species.

The considerable pressures exerted on the natural resources of the six districts comprising the developing Northwest Rwanda Model Forest (Bulera, Musanze, Rubawu, Ngerorero, Rutsiro, and Nyabihu) is evidenced by high levels of soil and wetland degradation, deforestation and loss of overall biodiversity. In addition, economic development and industrialization / urbanization trigger demand for more transport thereby increasing energy demand (firewood, charcoal production, and gas) and associated carbon emissions contributing to climate change.

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## Objectives

Beginning in 2011, the African Model Forest Network (AMFN), IUCN, the World Agroforestry Centre (ICRAF) and the Rwandan Ministry of Natural Resources worked jointly to implement a project entitled “Forest Landscape Restoration and Model Forest Development in Rwanda”, funded by Natural Resources Canada through the International Model Forest Network (IMFN). Of Rwanda’s 26,338 km<sup>2</sup> of land, the developing Northwest Rwanda Model Forest (FMN-ORC in French) covers 3,931.06 km<sup>2</sup>.

The main watershed management activities focused on the restoration of riparian zones around Karago Lake as central to improved community well-being and were to include creation of a -multi-stakeholder governance structure (a fundamental principle of a Model Forest), establishing nurseries for locally grown seedlings considering genetic resources (high quality seeds), and a train the trainers approach to improved silvicultural techniques. Tree species diversity was a key consideration for both locally preferred species, as well as those that would adapt well to the area, contributing to overall enhancement of biodiversity and climate change resilience. Organic fertilizers were used to avoid contamination of the lake.



These objectives were developed and analyzed during workshops to raise awareness of the Forest Model concept and develop the common vision. The workshops were held in each of the six districts involved in the project and used to identify FLR as a key concern and common activity.

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<sup>1</sup> according to the 2012 census

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## Progress and outcomes to date

Participatory governance is a process built on trust. Engaging in the process takes time and signals a willingness to do things differently. For this reason, managers of the Ministry of Natural Resources were sensitized to landscape level and participatory governance concepts as related to the Lake Karago restoration project. As a result, both the Environment and Forest Directorate, as well as the Forest Program of the Rwanda Natural Resource Agency, were appointed as national focal points for FMN-ORc signaling strong government support.

The Lake Karago restoration project was launched officially within the context of the 37th anniversary of the Rwanda reforestation campaign. More than 122,650 alder seedlings, 600,000 bamboo seedlings, 320 avocado and 500 Japanese plum trees were grown in five locally established nurseries. The seedlings were planted on a 36 ha buffer zone at critical sites bordering the lake where the degree of degradation required the planting of erosion and wind-resistant species. The selected species responded to the agricultural

needs of the population as well as the government's forestry needs. In addition, a clear connection was established with the issue of food security and the recuperation of biological diversity.

In all, 72 training workshops were held where government officials, farmers, NGO representatives and rural communities learned about the Model Forest process, best practices in high quality seed production, erosion control and soil fertility management. Training was also provided on agroforestry techniques, as well as how to combat the erosion of green spaces and soils to prevent sedimentation in the lake.

Gender considerations formed part of the planning process. For example, a study on women's involvement in the FMN-ORc with respect to producing the bamboo die Gataraga as a way to increase incomes was undertaken. The experience of Rwandan women on the use and valuation of bamboo has since been shared with women elsewhere in the Congo Basin.

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## Benefits and policy relevance

Forests are a national priority in Rwanda. Restoration of the landscape around Lake Karago is a complement to actions already underway under the National Forest Policy, deemed the world's most inspiring and innovative forest policy in 2011 by the World Future Council<sup>2</sup>. While the overall project was small, it has helped limit erosion and promote the rehabilitation of ecosystem services vital for regaining ecosystem functionality, in turn helping to support local communities.

Participating stakeholders perceive the ongoing Model Forest process as a tool to strengthen local capacity to achieve sustainable development, and an approach to connecting and networking with other Model Forests. The Model Forest process and Karago Lake project focus on objectives and priorities in which the Government of Rwanda has an interest with respect to the following commitments:

### *At the national level:*

- Vision 2020 of the Government of Rwanda, which includes a 30% increase in forest cover by 2020.
- The Poverty Reduction Strategy, which is part of Vision 2020, focuses on addressing the immediate challenges facing rural development through agricultural transformation and human development based improving the living conditions of rural populations, as well as governance.
- The national policy environment as well as Organic Law No. 4 / .2005 DU8 / 4/2005 on the modes of protection and promotion of Rwanda's environment.
- Law No. 62/2008 of 10/09/2008 which establishes rules for the conservation, protection and use of water resource.
- The national decentralization policy which encourages local stakeholders to play a fundamental role in implementing government policy.
- In addition, the restoration of Gishwati is cited as an example of success in the Rwandan 2014 National Report to the CBD <https://www.cbd.int/doc/world/rw/rw-nr-05-en.pdf>.

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<sup>2</sup> <http://www.newtimes.co.rw/section/article/2011-09-22/35196/>

### *At the international level:*

- The Convention on Biological Diversity (CBD): particularly Aichi Target 5 (slow the rate of loss of natural habitats and degradation and fragmentation is significantly reduced), Target 7 (areas under agriculture, aquaculture and forestry are sustainably managed, ensuring conservation of biodiversity), Target 14 (ecosystems that provide essential services...are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable) and Target

15 (...at least 15 per cent of degraded ecosystems are restored, thereby contributing to climate change mitigation and adaptation and to combating desertification).

- The Sustainable Development Goals: mainly the followings targets 8, 13, 15, 16 and 17.
- The Bonn Challenge: a global goal to restore 20 million ha of degraded and deforested land by 2020 (Rwanda pledged 2 million ha).

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## Next steps

The methodology to monitor and review progress was conceived to be shared among the Provisional Steering Committee of the FMN-ORc, the communities directly involved and the technicians assigned to the project, as well as the larger AMFN and IMFN. A participatory assessment of the project remains to be done but will be based on a systematization approach, including:

- a. photographs of the reforested site
- b. evaluation of species growth
- c. collection of data in terms of silt reduction and return of ecosystem goods and services in the lake
- d. stakeholder reflection/discussion workshops
- e. course correction (if possible)
- f. documentation of the process and reporting

Once the above actions are complete or underway, the goal is to increase in the area under restoration, strengthen the stakeholder 'buy in' for the initiative, and conduct studies related to the socioeconomic contribution of the project to local communities and the viability of a payments for environmental services scheme as a source of sustainable funding. Finally, formalization of the Model Forest and entry into the IMFN as a full member is the next step in the organizational process.

Other initiatives have been carried out in different Model Forests in Africa that may be of interest to readers of this case study. For example, in Cameroon, the use of healthy seeds, biofertilizers (mycorrhizae) and biopesticides has provided an opportunity for local communities to use modern agroforestry methods with low environmental and health impacts. Also in Cameroon, the introduction of unconventional livestock farming has reduced pressures on biodiversity in national parks (Campo-ma'an Model Forest).

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## Conclusion

The creation of a Model Forest in north-west Rwanda supports the broader national strategy for restoring land, soil, forests and water resources (and does so in an integrated manner) for the preservation and maintenance of biodiversity, and for the production of beneficial environmental services to the Rwandan population.

This case study demonstrates how changing local behaviours and practices, and engaging stakeholders in a meaningful way, can positively impact communities and the environments on which they depend, indirectly mainstreaming conservation values into forest management decision-making at the local level while setting the stage for broader impacts in the future.