

Wildlife Conservation Society- Rwanda Program

Program description

Title: Development of Sustainable Financing Mechanisms for the Conservation and Management of Nyungwe National Park.

Funded by: GEF / PAB, USAID, and US Forest Service

Partner institutions: RDB and REMA

Overall term: 2007 to date

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Context:

In addition to protecting biodiversity Nyungwe National Park provides many services such as water provision and purification, climate regulation, erosion control and flood protection which are crucial for the survival of a large proportion of rural poor and to the sustainability of all primary industries (tea production, coffee washing stations, etc.) and the country's economy. While environmental protection is vital, the fundamental problem facing conservation is finance.

Over the past several years, Rwanda has taken important strides to improve the management of its protected areas, and to utilize tourism as a way to generate the revenue to finance them. The Government of Rwanda hopes to increase tourism numbers dramatically in this decade with a goal of earning \$100 million from 70,000 tourists by 2014. In the drive for increased tourism revenue the protected areas will serve as magnets and play the primary role in attracting tourists and creating revenue for the country as well as for the national park authority (RDB). Today tourism represents the primary source of revenue for financing park operations. .

Gorilla tourism attracts most of the international tourists currently visiting Rwanda. RDB hopes to diversify attractions at Volcanoes National Park (PNV) and create new attractions at Nyungwe National Park (PNN) to tempt tourists to extend their visit time in Rwanda and naturally increase their spending on nature-based activities. Success in this area will require infrastructure investment, greater private sector participation, peace and security in the region, and a solid marketing program.

At the same time that RDB is growing its tourism capacity, it recognizes the risk of focusing solely on one source of revenue, tourism, and essentially one product, gorilla tourism. RDB recognizes to develop new and diverse revenue sources by developing markets for ecosystem services (e.g. water services and carbon sequestration) supplied by its protected mountain forests.

Objective of the program:

To explore the possibility of creating markets for ecosystem services (especially water provision and carbon sequestration) provided by Nyungwe National Park diversify sources of income for its conservation and management.

Approach:

The market potential and value of ecosystem services in Rwanda, and especially in Nyungwe, is not well understood. Equally uncertain is the potential for developing viable investments. We are using a three-step approach in developing markets for ecosystem services in Nyungwe National Park:

1. Raise awareness about the value of ecosystem services provided by Nyungwe National Park through feasibility analyses and valuation studies.
2. Explore partnerships with local businesses (e.g. tea producers and Cement Company) by demonstrating both their dependency and impacts on healthy ecosystems such as Nyungwe.
3. Initiate a national dialogue on the importance of mainstreaming ecosystem services/payment for ecosystem services into protected areas management and economic development.

Achieved Results:**National Task Force on Payments for Ecosystem Services:**

Mainstreaming ecosystem services/payments for ecosystem (PES) services into conservation requires a high level of coordination of policies and efforts of all the authorities directly involved as ecosystem services cut across all economic sectors. Because PES programs often involve multiple levels of government, e.g. national and local, as well as multiple authorities within each level, e.g. ministries and departments of environment, finances and planning, ensuring this coordination is a challenging task. The second coordination challenge is ensuring that objectives are coordinated and supported by national policies and regulations. This coordination is needed to ensure that PES objectives are not compromised by contradictory policies or efforts. It is for these reasons that WCS, in partnership with REMA, has established a national task force on PES. The role of this task force is to advise, guide and provide technical leadership throughout the development of a national framework for establishing and implementing PES.

Project Design Document for Nyungwe Forest Carbon Project:

Wildfires in the park are a major threat to the forest and its biodiversity. In 1997 the park lost more than 12,800 hectares (approximately 12%) of forest due to anthropogenic wildfires, related to wild honey collecting and fires left smouldering by tourists during the dry season (June

through September). Newly burned areas are rapidly colonized by bracken ferns (*Pteridium aquilinum* (L.) Kuhn.) and become dominant as their rhizomes (root system) are fire resistant and their spores air-borne. Once established, a large frond and rhizome biomass inhibits tree seedlings to establish.

Multiple-year research within Nyungwe NP conducted by WCS found that repeated fern cutting, at a rate of four times per year of the fern layer over a period of three years, significantly accelerated the regeneration of trees in areas of wildfire disturbance. Repeated cutting of the fern layer allows tree seedlings to grow taller than the fern layer, eventually shading out ferns due to light competition. Cutting treatments resulted in a significantly greater number of trees than in untreated areas. After five years, treated areas contained an average of 5,500 trees/ha as compared to 1,100 trees/ha in untreated (control) plots. Furthermore, cutting treatments resulted in more biomass, as quantified by the height of the small trees. The average height of the five tallest trees in treated plots was 3.6 m, compared to 1.6 m in control plots. Due to financial constraints, the GoR in collaboration with WCS has not been able to promote a large scale Assisted Natural Regeneration (ANR) by removing the ferns and consequently the burned sites remain without forest.

A feasibility study on the opportunities for carbon asset development from Nyungwe forest conservation has just been completed. The carbon sequestration rate from forest regeneration is estimated at about 8.2 Mg C ha⁻¹ yr⁻¹ (30 tCO₂e ha⁻¹ yr⁻¹) during the first ten years of the project, based on field observations from field visits and potential growth rates from standardized tables. The total carbon density of treated plots is estimated to increase up to an estimated 442.4 tCO₂e after 17 years, and level out beyond this period. It is estimated that 2.8M tCO₂e will be sequestered over 20 years.

Next steps for this project include securing funding for the validation of the project document by a third party validator, and initiating the commercialization of the carbon credits under the Verified Carbon Standards (VCS).

Preliminary Assessment of Land Use Change Impacts on Nyungwe Hydrological Services:

In partnership with the US Forest Service (USFS), and with the funding support from USAID, WCS is carrying out a watershed modeling study to understand the impacts of different scenarios of land use change on Nyungwe hydrology. The watershed assessment was conducted using the Water Supply Stress Index - Carbon and Biodiversity model and the Integrated Valuation of Ecosystem Services and Tradeoffs model, and focused on evaluating the impacts of land use practices and climate change on water quality and quantity. Conclusions from the modeled scenarios suggest:

1. Global climate warming (specifically owing to temperature increases and reduced precipitation) would decrease stream flows,
2. Conversion of forest to cropland would have minimal impact on stream flows,

3. Deforestation would greatly increase erosion and sedimentation,
4. Nyungwe has relatively high water yield (30%-40% of its annual precipitation), and
5. Due to steep slopes and high rainfall, deforestation within Nyungwe would cause serious sedimentation problems.

Although conclusions were informative and insightful, validation with field data is required. Therefore, the second phase of this project consists of collecting local data with the aim of validating these models and disseminating the information to decision-makers, development partners and protected areas managers in Rwanda.

The Future of the Program:

The Government and people of Rwanda are committed to becoming a middle income economy in the next decade, but are concerned about following a “business as usual” approach that devalues and undermines the role ecosystem services play in rural livelihoods and sustained economic growth. The Government is keen to adopt comprehensive Green Economy options for more durable and equitable development. Thus, Rwanda is well positioned to help WCS understand how a Green Economy might be achieved practically and how ecosystem services may contribute to sustainable economic development.

WCS is seeking a partnership with potential development partners such as GiZ to help the Government of Rwanda (GoR) assess the desired options and scenarios for green economic growth and understand the role of ecosystem services in Rwanda’s transition to a green economy.