© UNEP/Lisa Schmidt

FORESTRY IN THE GAMBIA
A climate adaptation case study

The UN Environment Programme is helping the government of Gambia to adapt to climate change with a major project, titled *Large-scale Ecosystem-based Adaptation in The Gambia: developing a climate-resilient, natural resource-based economy.* Funded by the Green Climate Fund, the project aims to restore 12,788 hectares of degraded forests, savanna, and mangroves, and 3,000 hectares of farmland to increase the resilience of rural villages to storm surges and floods – a practice known as 'ecosystem-based adaptation.'

The consequences of climate change in the Gambia are stark. One-third of its total land area is below 10 meters above sea level, and 10-20% of its land is seasonally or diurnally flooded, which makes the Gambian population of 2.3 million extremely vulnerable to climate change and rising seas.

The project is helping the establishment of 176 natural resource-based businesses with a cumulative gross cash return of USD $4.5 million (in November 2021). Up to 500 people are expected be directly employed by the enterprises and they will provide almost USD $700,000 in annual contributions to the National Forest Fund (NFF). These businesses will stimulate economic activities for poor communities while creating investments in ecosystem services and easing the transition of the country towards a green economy.

The project is being implemented across four regions of Gambia: Lower River Region; Upper River Region; Central River Region North; and Central River Region South.

Ecosystem-based Adaptation

Ecosystem-based adaptation (EbA) is central to the project's activities. It involves the use of nature and healthy ecosystems to reduce the negative impacts of climate change on communities.

The project uses large-scale EbA, a cost-effective and low-risk approach, to promote climate-resilient sustainable development. This is achieved firstly by restoring degraded forests and agricultural landscapes with climate-resilient plant species that provide valauble goods for consumption or sale.

Project title:
Large-scale Ecosystem-based Adaptation in The Gambia: developing a climate-resilient, natural resource-based economy.

Executing entity:
Ministry of Environment, Climate Change & Natural Resources

Project timeframe:
2017-2023

Key targets

46,200
Households benefitting from project interventions

176
Natural resource-based enterprises established

13,400
Hectares rehabilitated in degraded forests, wildlife areas and farmland

Funding

Supported by the Green Climate Fund

Co-finance $4.97m

GCF Grant $20.5m

GREEN CLIMATE FUND
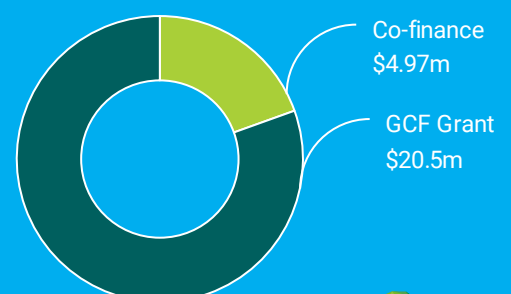
Secondly, the project is facilitating the establishment of natural resource-based businesses through a participatory process and management committees to manage the Gambian natural resource base sustainably. The project is also revitalizing community structures such as the forest management committee[1]. A total of USD $13.5 million will be raised over 20 years for the National Forest Fund from taxes and licensing fees.

Finally, the project is providing strategic recommendations and technical support to strengthen the implementation of existing policies for the participatory management and benefit-sharing of a climate-resilient natural resource base, as well as integrating EbA into these policies. Local communities are engaged in the planning and design of activities that will lead to the sustainable management of natural resources, and the project is well aligned with national and subnational needs and priorities. There is evidence of a high level of coordination between stakeholders.

The extensive restoration activities are using multipurpose plant species (timbre, fuel, fruits, honey, medicine and fibre), chosen for their climate resilience. The large-scale restoration is strengthening adaptation by reducing soil erosion and increasing groundwater supplies through greater ground infiltration capacity. Furthermore, millions of coastal mangrove trees are being planted, which act as buffer zones protecting villages from storm surges and floods.

The use of Assisted Natural Regeneration (ANR) practices was not considered in the initial project design, but was added to the project after the baseline assessment recommendations. The initial restoration targets for 2019 (1,050 hectares of community forests and 650 hectares of degraded agricultural landscape) could not be achieved owing to the lack of planting materials. As a result, the project decided to pioneer ANR practices over an area of 1,400 hectares in Kiang West National Park. In addition to the 29km-long and 10m-wide fire belt established around 3 of the main 'mega-plots', ANR practices at this site involved around 375,300 individual trees, along with clearing the 'fire load' and removing competitors within a 4m diameter.

To learn more about ecosystem restoration, visit the UN Decade on Ecosystem Restoration.

PART 1
Forestry Challenges & Recommendations

Since the start date in 2017, the project has identified many key challenges, solutions, and lessons learned on the topic of forestry.

Low availability of adequate and viable seedlings

The first challenge the team faced was the low availability of adequate and viable seedlings to match the objectives set by the project. There were no existing seed banks to store viable seeds and the needs of the project in terms of tree nurseries were largely underestimated in the project design. Tree nurseries were also lacking crucial nursery attendants.

To overcome this challenge, UNEP proposed the following activities and recommendations:

- *Constructing trees nurseries* - rather than 1 nursery per region, as initially planned, the project was encouraged to construct 9 nurseries all together as part of a strategy to meet the 10,000-hectare restoration target.
- *Establishing small gene banks* - UNEP is working with the Department of Forestry to explore low-cost options to establish small gene banks for use by the project and beyond its lifetime. With the construction of these nurseries, adequate seedlings are and will be available throughout the year.

Low survival rate of seedlings

During the first year of implementation, the seedling survival rate was 10% in community forests and around 48% in degraded agricultural lands. Various causes were identified. Firstly, large-scale restoration projects require tremendous preparation to grow robust and viable seedlings able to withstand the harsh field conditions, and the optimum planting methods must be identified beforehand. Conversely, the restoration teams used seedlings of unknown genetic bases and had difficulties ascertaining their viability.

Secondly, human activities can pose a direct threat to the survival of seedlings. Although mentioned in the original project design, bushfire and illegal logging proved to be much stronger drivers of ecosystem degradation than initially thought. In reality, more than 79% of forest areas are burnt at least once a year and fire incidences have risen by almost 50% in recent years. Additionally, the issue of wood-related biomass for cooking in the Gambia was inadequately catered for in the project design. Charcoal usage in the Gambia is 35.1% in urban areas and 1% in

---

[1] These committees have co-led forest plans and protocols development in Sandi Kunda, Song Kunda, Banni-manka Kunda, Njieyel And Tamba Sansang. In Yorobawol.

rural areas. Firewood usage figures are equally high at 94.5% and 48.1% in rural and urban areas respectively.

Thirdly, seedling survival rates were impacted by surrounding wildlife. Given the absence of extensive land-use plans in the project area, the limited knowledge on the movement and ranging patterns of large herbivores, such as the hippo and baboon, constitutes an additional threat to the survival of the young seedlings planted in community forests and community protected areas. Andropogon grass is another major threat to tree growth, in particular in Kiang West National Park, as it outcompetes trees for soil moisture and increases both fire risk and intensity.

Finally, the project also faced extreme climatic conditions, including high temperatures, low rainfall, and other seasonal climate risks such as bushfires and flooding. These extreme weather conditions necessitate a high level of water usage to irrigate the seedlings, but the project did not have access to sufficient water resources.

Recommendations

The project increased the seedling survival rate from 10%-48% to almost 95% after three months of planting through a range of solutions proposed by UNEP, including:

- Focusing on the need for water harvesting, storage, and distribution schemes in community forests, community protected areas, and agricultural lands to support the restoration efforts. Through a hydrological modeling study, the project identified the potential of rainwater harvesting – now under development - at 6 sites.

- Adding vegetation around the runoff water collection reservoir to enhance groundwater recharge through infiltration and reduce wind flow over the reservoir, thereby lowering evaporation.

- Baseline studies to determine the climatic risks in the project implementation areas and the necessary measures to adapt, such as the establishment of 150km of fire belts across the 4 regions [2] to limit the impact of bushfires around all preferred 'mother trees' - large trees within a forest that act as centralized hubs, supporting communication and nutrient exchange between other trees. No incidences of fires were subsequently reported

across the protected areas since the fire belts were established.

- Using market analysis to support the establishment of enterprises for the utilization of the aforementioned Andropogon grass for animal feed in communities surrounding Kiang West National Park.

- Adopting a new restoration method, drawing on a farmer-managed tree growing approach, named Zai Pits[3].

- Organizing a national policy discourse around the recommended minimum tree cover in farms and other public spaces, resulting in the Banjul Resolution on Tree Cover, which outlines a number of actionable resolutions in all managed landscapes. The project is now working with the Ministry of Environment Climate Change and Natural Resources to encourage the adoption of the resolution at national level.

- Integrating livestock management and seasonal transhumance movement into farming practices, for example, by integrating fodder trees into farmers' planting schemes to reduce wildlife roaming distances and the associated damage to planted seedlings.

- Limiting the impacts of charcoal and firewood usage by establishing woodlots (about 100 hectares of mixed species) as a medium- to a long-term solution and alternative to biomass clearing for cooking fuel.

---

[2] This technique involves clearing the fire load, removing competitors within a 4m diameter, and removing low canopy branches.
[3] Zai and half-moon planting pits, which farmers create in the hardpan soil using hand tools or plows and animals, act as micro-water catchments, holding about four times the amount of water that normally runs off the land. http://www.fao.org/3/br093e/br093e.pdf

Establishing Natural Resoure-based Enterprises

The baseline study found that some of the community forests and community protected areas (of which there were initially 114 and 9 respectively) chosen during the appraisal stage were too small to sustain financially viable natural resource-based businesses over time. As a result, it was determined the focus of the project should instead be on 53 community forests and 8 community-protected areas, as well as parts of the Kiang West National Park (around 1,000 hectares).

Recommendations

- Providing capital alone is not enough to develop successful natural resource-based enterprises. A more holistic, capacity-building approach is required, which is the path currently taken by the project.
- The importance of implementing natural resource-based businesses through suitable models requires the development of a business culture along the value chains of forest products, or other natural products, to facilitate value addition and link producers and vendors to input and output markets. This requires:

  1. The development of appropriate institutional arrangements to extend credit to actors in Small and Medium Forest Enterprises (SMFEs); raising awareness among value chain actors of appropriate financial sources; and establishing credit guarantee schemes for producers and cooperative organisations.
  2. The development and improvement of knowledge of market information systems and quality control measures and standards.
  3. Strengthening community-based organisations of SMFEs to access services and facilitate their partnership with private sector entities in the case of eco-tourism.

- To achieve sustainability and long-term impact, it is crucial to adopt participatory approaches to incentivize community members to take part in the proposed activities.

Project partners

- Ministry of Environment, Climate Change, Water, Forest and Wildlife (MoECCWFW)
- Ministry of Finance and Economic Affairs (MoFEA)
- Department of Forestry (DoF)
- Department of Parks and Wildlife Management (DoPWM)
- Ministry of Agricultrue (MoA)
- Social Development Fund (SDF)
- Gambia Chamber of Commerce and Industry (GCCI)
- Department of Community Development (DoCD)
- National Environment Agency (NEA)

Project location

The project is being implemented across four regions of Gambia: Lower River Region; Upper River Region; Central River Region North; and Central River Region South.

Sustainable Development Goals

Contacts

UNEP Task Manager
Daniel Pouakouyou
daniel.pouakouyou@un.org

Country Team Contact
Dr. Malanding S Jaiteh
msjaiteh@ebagambia.com

Further resources

Project Factsheet:
Ecosystem-based Adaptation in the Gambia 2017-2023

Video:
Climate Action in The Gambia

Human Impact Stories:
The Gambia, building resilience to a changing climate

Helping Gambian youth find greener pastures at home

Other:
UN Decade on Ecosystem Restoration

To learn more about ecosystem-based adaptation, visit us here