



TERMS OF REFERENCE

CONSULTANCY FOR CHARACTERIZATION OF WATER RESOURCES IN CHIMANIMANI NATIONAL PARK AND PRE-FEASIBILITY STUDY FOR A PAYMENT FOR ENVIRONMENTAL SERVICES SYSTEM FOR WATER

1. INTRODUCTION

The Foundation for Biodiversity Conservation - BIOFUND is a private, non-profit, Mozambican institution, with public utility status, whose mission is the sustainable financing of biodiversity conservation, with special focus on the national system of Conservation Areas, as a contribution to the balanced development of the country.

Created in accordance with international standards and best practices for Conservation Trust Funds, BIOFUND applies and manages financial resources for the exclusive benefit of biodiversity conservation in Mozambique, and to this end has a memorandum of understanding with the National Administration of Conservation Areas (ANAC), the entity that oversees conservation areas in Mozambique. As part of its specific action as a Conservation Trust Fund, BIOFUND's main activity is to support conservation projects, for which funding contracts are established with specific activities and concrete results to be achieved.

With the objective of mobilizing funds for the sustainable management of Conservation Areas (CAs) and improving the livelihoods of the communities living around them, BIOFUND has been creating innovative mechanisms to finance biodiversity conservation in the country. Under the MozBio2 project financed by the World Bank in partnership with the Biodiversity Conservation and Sustainable Development project financed by AFD (French Development Agency), BIOFUND intends to explore the feasibility of an innovative financing mechanism - *Payment for Environmental Services (PES) System*, based on the valuation of water services, in the Chimanimani National Park and its buffer zone to ensure sustainable management of water resources in the Chimanimani region.

In this context, BIOFUND intends to hire an individual consultant to conduct a *characterization study of water resources in the Chimanimani National Park and its buffer zone and a pre-feasibility study for a Payment for Environmental Services (PES) system based on water valuation* with a view to an integrated management of natural resources.

2. CONTEXT

Chimanimani National Park is in the district of Sussundenga, Manica province, in central Mozambique. It was initially proclaimed as Chimanimani National Reserve (RNC) through Decree no 34/2003, of 17th September, within the scope of the Forestry and Wildlife Law (Law no 10/99, of 7th July). It was later recategorized as a National Park through Decree no. 43/2020, due to the need to strengthen measures to protect the Chimanimani ecosystem given its high value in terms of biodiversity. The same Decree also establishes the buffer zone, aiming at the multiple use of natural resources in this area.

The Chimanimani region (PNC and its Buffer Zone) is an area rich in biodiversity and with a high rate of flora endemism. It is characterized by the Chimanimani massif, where Mount Binga, the highest point in the country, is located. This region forms part of the Búzi River basin and is where the sources of the various rivers flowing into this basin are located. The southern and central regions of the Chimanimani range are drained by the Lucite and Mussapa Grande rivers and their tributaries, and in the North, the main rivers are Munhinga, Nhaminguene, Bonda and Mupandeia, which flow into the Chicamba dam (third largest dam in Mozambique) located to the northwest, and into the Revue River which in turn drains into the Búzi river.

The services provided by the water resources in this region are of great ecological importance and for diverse uses not only for the Chimanimani region, but also vital for communities in the districts of Sussundenga and other districts in Manica and Sofala province (see Sussundenga PDUT). These services include, among others, industrial use, energy production, agricultural and domestic consumption.

The recently approved Development Plan for the District of Sussundenga (PDUT of Sussundenga), states that with the district's expected demographic growth, the number of users will surely increase with time, such as the companies already being established, as well as other types of companies foreseen in the PDUT, and perhaps even potential users of micro-hydro systems, among others.

Meanwhile, the same region has a great wealth in terms of biodiversity, in a recent analysis carried out by the Government of Mozambique and biodiversity specialists, this area was identified as a Key Biodiversity Area (KBA)¹, according to the criteria of the International Union for Conservation of Nature (IUCN) Global Standard. On the other hand, the region is rich in mineral resources, especially gold. The exploitation of these resources compromises the conservation of rivers, leading to high levels of pollution, which reduces the quantity and quality of water for domestic, agricultural, and industrial use.

In this context, the concept of *Payment for Environmental Services*² (PES) arises through the valuation of water resources, whose main objective is to develop specific contractual schemes between the various actors involved (private or public users, suppliers, polluters) and the NHP and local communities for the preservation of water resources and their environmental services.

¹ See KBAs Datasheet

https://drive.google.com/file/d/1L6qBED6nm7kOiBjUe_MigHR0vJPZTqqA/view?usp=sharing

² Payments for Environmental Services (PES) is the name given to a variety of arrangements through which the beneficiaries of environmental services (payers), reward those whose land provides services (such as watershed protection, forest conservation, carbon sequestration, among others) with subsidies or market payments.

However, this mechanism is still little known in Mozambique and its viability needs to be evaluated for proper promotion in the context of the Chimanimani region.

3. OBJECTIVE

Conduct a study on the feasibility of a *Payment for Environmental Services* (PES) mechanism based on water valuation that can contribute to an integrated management of water resources in Chimanimani National Park and its buffer zone.

4. TASKS AND RESPONSIBILITIES

Tasks and responsibilities of the consultant include:

4.1. Characterize the environmental services of water resources in Chimanimani National Park and its buffer zone, including:

- i. Bibliographic review of existing information on the rivers that make up the Búzi catchment including data such as:
 - Total number of rivers that make up the basin and their origin.
 - Total amount of water from the rivers originating in the Chimanimani region.
- ii. Produce a preliminary list of the potential ecosystem services of the watershed under study, with focus on the Chimanimani region.
- iii. Socio-economic characterization of all water related services in the Búzi watershed, with more detail for the Chimanimani region considering the following aspects:
 - Mapping and identification of all current economic users of water and potential new users according to district projections.
 - History of water resources use in the study region.
 - Detailed description of the different users, of the water required for each type of use, which includes:
 - Type of industry and the time of existence.
 - Characteristics of the quantity and quality of water required for each use (including the amount currently paid for water) and the degree of satisfaction regarding the current state of water.
 - Assess users' perception of water trends in quantitative and qualitative terms.
- iv. Detailed description of the main factors influencing the volume and quality of these ecosystem services, including a preliminary analysis of the influence of climate change on the issue under study.

4.2. Carry out a pre-feasibility analysis for a Payment for Environmental Water Services system for Chimanimani National Park and its buffer zone, includes:

- i. Produce a list of likely ecosystem services for a PES system and their cost;

- ii. Initial estimate of the economic value of these services per beneficiary or per service (including a description of methodology used to determine this value),
- iii. Initial assessment of the technical and financial viability of a PES system based on the data collected and making a comparative analysis with other countries in the region.
- iv. Quantitative and qualitative analysis of the possible impacts that different land uses, climate change, as well as socio-economic development projections, may have on water characteristics and how this may influence the PES system.

5. EXPECTED RESULTS

Expected results are as follows:

- i. Preliminary report with the mapping of the watersheds of the region (Chimanimani National Park and Buffer Zone), and preliminary list of water ecosystem services in the study site.
- ii. Final report, including:
 - a. Analysis of the local context, water, and connectivity with other ecosystems, mainly forest, mainly those referred to in the PDUT.
 - b. Socio-economic report with data on users disaggregated by gender, age group, groups, among others.
 - c. Pre-economic feasibility analysis of PES system(s);
 - d. Mandatory annexes:
 - i. List of documents consulted throughout the consultancy.
 - ii. List of interviewees and their respective contacts and report of meetings.
 - iii. Availability of all the raw data collected throughout the consultancy (in Excel and shapefiles).
- iii. PowerPoint presentation of the results made to the BIOFUND technical team, and the different stakeholders interested in the consultancy results.

6. PROFILE OF THE CONSULTANT

The consultant must possess:

- Having a higher-level degree in Hydrology, Water and Sanitation Engineering; Engineering; Environmental and Natural Resources; Oceanography; Marine Chemistry or related fields.
- At least 10 years of proven professional experience in hydrological resources assessment.
- Experience in the biodiversity conservation sector in Mozambique or in the Southern Africa region.
- Experience in the design and implementation of Water-based Payments for Environmental Services projects.

- Experience in the use of remote sensing tools (GIS), watershed mapping and map production.
- Experience in quantification and analysis of water resources.
- Fluency in Portuguese and English , written and spoken.

7. CHRONOGRAM OF THE ACTIVITY

The present work shall be carried out within a maximum period of 3 months from the date of signature of the contract according to the following schedule:

- i. Elaboration of the preliminary mapping report of the hydrographic basins of the region and presentation of the preliminary list of water ecosystem services in the study area (1 month).
- ii. Field visits and analysis of the local context, water, and connectivity with other ecosystems, as well as the elaboration of the socio-economic report (40 days).
- iii. Pre-economic feasibility study of the PES system (20 days).

8. SUBMISSION OF THE PROPOSAL

Interested applicants must submit electronically the technical and financial proposals (including history of similar work and relevant information) by 5pm on 05 October 2021 to the email: concursos@biofund.org.mz with the title "Payments for Environmental Services".