



CUANDO RIVER BASIN

Strategic Environmental Assessment (SEA)





A RIVER BASIN SHARED BY FOUR COUNTRIES

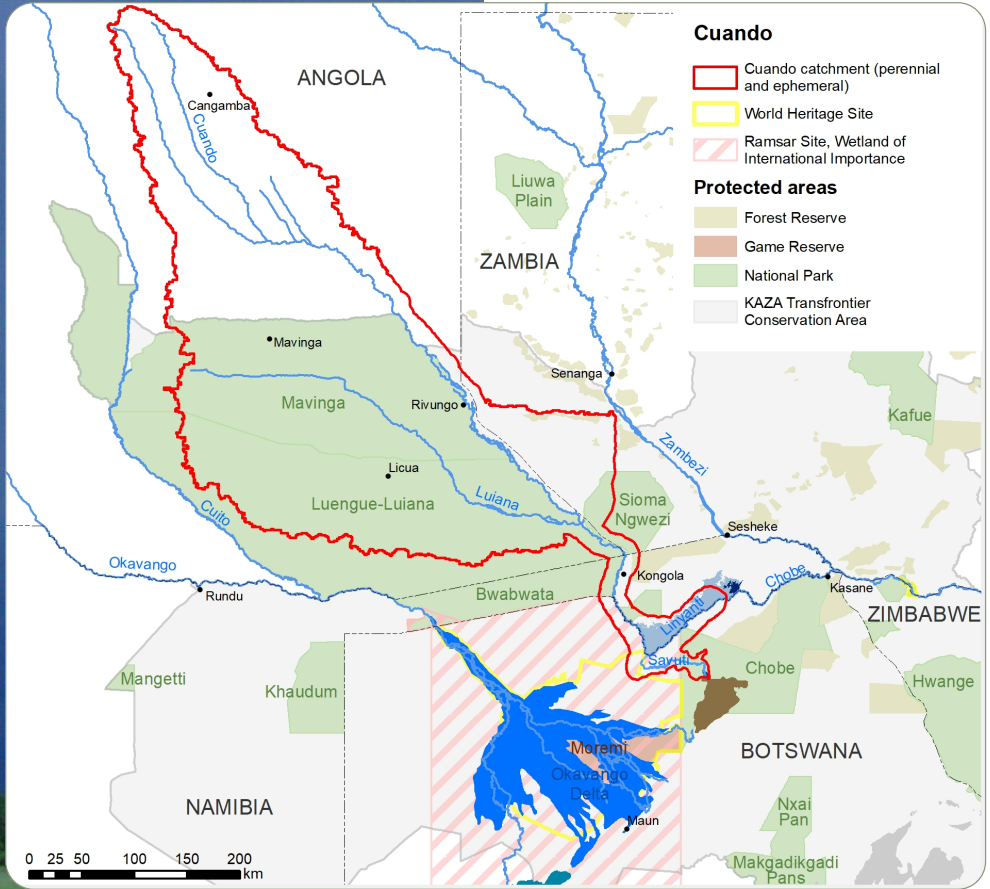
The Cuando River Basin Strategic Environmental Assessment (CURB-SEA) aims to serve as a proactive tool for guiding the sustainable development of the shared area. Although the Cuando River is the smallest of KAZA's three rivers, its position in the heart of the landscape and its pivotal importance as a transnational wildlife highway make it essential to achieving KAZA's vision.

A holistic approach was chosen in undertaking this SEA. System-wide risk factors—such as climate change, socioeconomic and population dynamics, and the degradation of ecosystem services—were taken into account.

Despite its importance, very little is known about the Cuando River. It serves as a major water source for the surrounding areas, including small settlements, and it is heavily relied on by both people and biodiversity. This reliance is anticipated to increase over time as populations grow and pressures on natural resources intensify.

A staged approach was taken—read more about it on the next page.







PHASE 1
Preparation
and scoping



- 1** Inception
- 2** Baseline Report (socioeconomic, biophysical, policies & laws, institutions) from existing data, literature etc.
- 3** Stakeholder consultation plan and initial consultation
- 4** List existing projects in the CURB
- 5** Compile Scoping Report

PHASE 2
SEA process
and report



- 6** Revisit SEA methodology
- 7** Further stakeholder consultation
- 8** Develop Scenarios
- 9** Demand forecasting for land, water, other natural resources (per scenario)
- 10** Understanding linkages and cumulative impacts
- 11** Estimation of socioeconomic and ecological thresholds
- 12** Alternatives and mitigation options
- 13** Compile draft SEA Report and refine after review and stakeholder input

PHASE 3
Management and
implementation
strategies



- 14** CURB Vision - taking into account development and climate change scenarios
- 15** Systematic Conservation Plan
- 16** Transboundary EIA Guidelines
- 17** Socio-economic & Environmental Management & Monitoring Framework (SEMF)
- 18** Decision Support Tool
- 19** Capacity Building Plan
- 20** Compile powerpoint presentation
- 21** Revise all deliverables after feedback





STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

This SEA was undertaken in recognition of the Cuando River Basin's status as a critical yet understudied transboundary asset, associated with a range of socio-ecological goods and services. Despite the development of the recent freshwater-specific Integrated Water Resource Management Plan (IWRM) for the Cuando River, there are no overarching multi-sector development guidelines for the basin. As a result, a growing number of diverse projects are contributing to cumulative impacts. The growing population and associated pressures further heighten the need for coordinated planning. The SEA therefore serves as a strategic measure to provide a transboundary framework for identifying key risks and advancing sustainability in the basin through informed recommendations.

Because SEAs assess multi-sector cumulative impacts across a large landscape, they differ from better-known Environmental Impact Assessment (EIA) studies. EIAs typically focus narrowly on the impacts of a single project (e.g. a mine) in a much smaller area. When undertaken early and well-integrated with development planning, a SEA has proven effective as a 'plan shaper' and 'fine tuner'.

METHODOLOGY

The methodology conformed to best practice globally, and was similar to that for "hub SEAs" elsewhere.

It included:

- a literature review;
- stakeholder engagement and analysis of stakeholder input;
- baseline overviews and identifying the key environmental, social and economic issues and concerns on which the SEA focused;
- reviewing the legal and regulatory framework of CURB states;
- understanding likely development trajectories over approximately the next ten years;
- identifying High Value Conservation Areas (HVCAs) and assessing their potential vulnerability to impacts;
- assessing cumulative impacts.



CUMULATIVE IMPACTS

Cumulative Impact Assessment (CIA) is the cornerstone of SEA. It seeks to understand the impacts from multiple projects, actions, or activities—or even from the same actions over an extended period of time—located in the same geographic area or affecting the same resource (e.g., watershed).

In some cases, the most ecologically devastating environmental effects—and their subsequent social consequences—may not result from a single project or activity. Instead, they may stem from the combination of existing stresses and the individually minor effects of multiple actions over time.

CIA's are evolving, and there is no single, globally accepted standard of practice. What is important, is that during the process of identifying environmental and social impacts and risks, planners and developers are committed to avoiding and/or minimizing negative impacts to the greatest extent possible, whilst maximising benefits.

Managing cumulative impacts transcends the responsibility of a single basin state or project proponent. It is a multi-stakeholder, iterative, expert-driven process that requires the involvement of a multidisciplinary team and a transparent, effective, and efficient approach.





PLANNERS AND DEVELOPERS
SHOULD BE COMMITTED TO
AVOIDING AND/OR MINIMIZING
NEGATIVE IMPACTS TO THE
GREATEST EXTENT POSSIBLE.





THE CUANDO: A VERY SPECIAL RIVER BASIN

The basin is shared by Angola, Zambia, Namibia, and Botswana. The Cuando is a free-flowing river that periodically connects to the Zambezi River and is considered one of the most pristine rivers in the world—primarily because the area is sparsely populated, relatively undeveloped, and its flow remains unimpeded along its entire length. It is also central to important wildlife corridors, linking the wildlife-abundant areas in Botswana to the wildlife-scarce regions in southeast Angola and western Zambia within the Kavango-Zambezi Transfrontier Conservation Area (KAZA).

The basin has six areas that are considered to be of greatest environmental importance. These areas were selected based on their significant biological, ecological, social, or cultural values, as well as their importance for ecosystem services and wildlife conservation at national, regional, and global levels. The six High Value Conservation Areas (HVCAs) are:



HVCA
1

The Angolan Highlands Water Tower and perennial supply of water along the length of the Cuando River. For the river to maintain its ecological function it requires about 87% of its current flow. This supply is fundamental to the structure, functioning and value of the entire river basin. Stop or change the supply of water, and the Cuando Basin will cease being what it is.

HVCA
2

The immense area of swamp or reedbeds. Covering up to 400,000 hectares, this is amongst the biggest expanse of reeds, papyrus and sedges in Africa. Such a large area likely contains important biodiversity. The aquatic plants play a crucial role in shaping the Cuando River system by transpiring significant volumes of water and slowing the river's flow. By acting as a natural dam, they regulate water release, ensuring a steady and consistent flow throughout the year.





HVCA
3

Linyanti Swamps and Savuti area. The Cuando feeds water, dissolved minerals and suspended solids into the Linyanti Swamps, the Savuti Channel and Savuti Marsh where the water disappears, and the minerals and sediment deposits feed concentrations of plants and wildlife. This rich resource, in turn, supports the livelihoods of local residents and a tourism industry that contributes much to the economy of northern Botswana and Namibia's Zambezi region.

HVCA
5

Wildlife corridors and ecological connectivity, notably for elephant, buffalo and predators such as lions and wild dogs. Without these corridors, various species of wildlife would be trapped or isolated and their numbers would decrease. Also, the wildlife corridors must be kept open to reduce Human-Wildlife Conflicts. The integrity of wildlife corridors is an important aspect of KAZA as a whole, as described in the KAZA Policy on Elephant Movements and Connectivity.

HVCA
4

Western flanks of the Cuando. Areas immediately west of the Cuando River and its swamps once supported an abundance of wildlife as a result of surface water in the Cuando and its ephemeral tributaries, the area's diverse habitats and relatively fertile soils. Wildlife numbers are likely to recover if the area is managed for conservation.

HVCA
6

Quando aquifers, and known groundwater resources in the basin are generally rather poor, but are still an important resource for rural people who live some distance from surface water. Groundwater is therefore a valued resource. The suspected presence of deep (still unknown) aquifers could provide an alternative to Cuando River water for development projects. This would be a game-changer for the Basin, and should be investigated as a matter of priority.





Since these HVCAs provide essential ecosystem services, they are important for the livelihoods of the people dependent on them, and the broader economy. They all contribute to maintaining the functioning and integrity of the Cuando Basin, and supporting the small but very important tourism industry. Thus, they are all part of the functioning of the Basin's social-ecological system, and the central value they add to the entire KAZA.

SYSTEMATIC CONSERVATION PLAN (SCP)

The SCP was a critical part of the SEA. It identified areas of highest value for sustainable management and conservation actions. The landscape was categorised into Critical, High, Medium and Lower Value Areas (see map to the right).

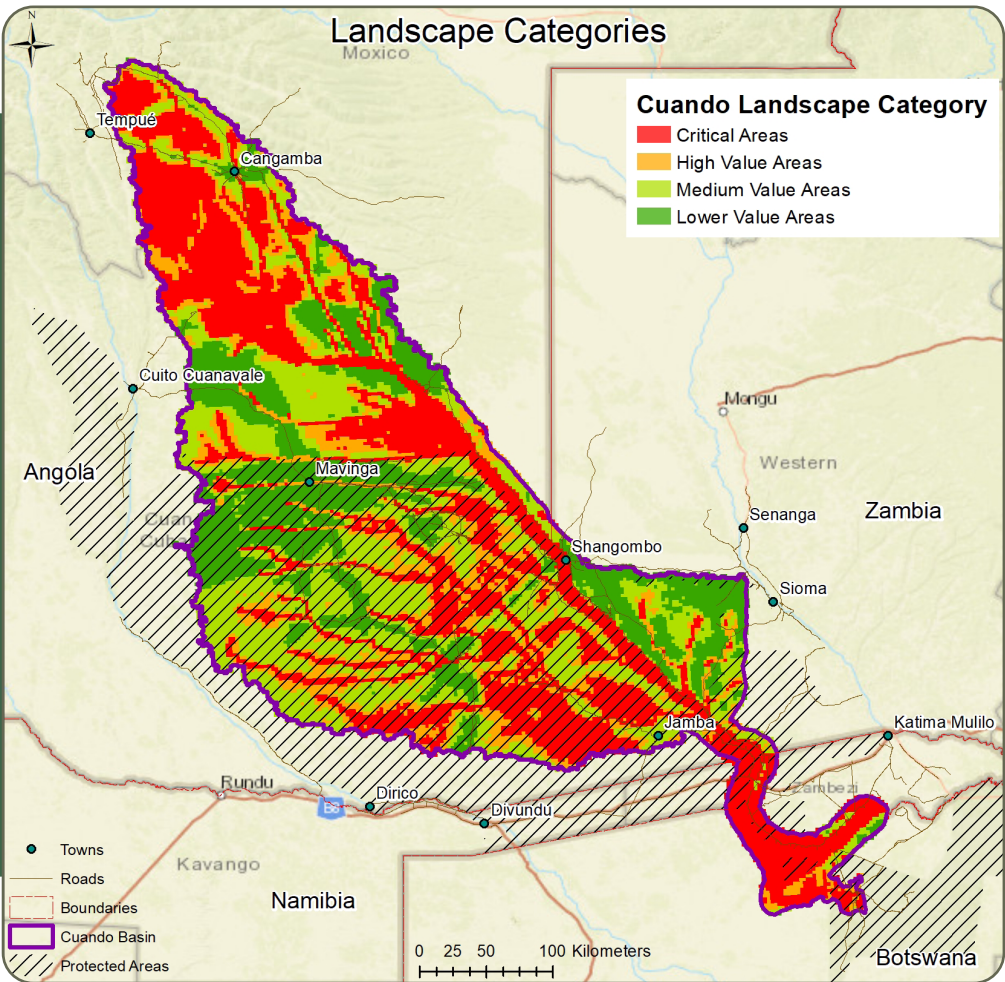
Most of the basin lies within the KAZA Transfrontier Conservation Area (TFCA) and is vital due to its protected areas and the relatively strong conservation status in its downstream sections.

The KAZA is the largest terrestrial TFCA in the world. It aims to join fragmented wildlife habitats into an interconnected multi-land use mosaic of protected areas, forest reserves, community conservation and subsistence use areas. KAZA offers an extraordinary opportunity to secure, connect, and harness the value of globally significant wildlife populations and habitats—but it must be developed wisely.





KAZA OFFERS AN EXTRAORDINARY OPPORTUNITY TO SECURE, CONNECT AND HARNESS THE VALUE OF GLOBALLY SIGNIFICANT WILDLIFE POPULATIONS AND HABITATS – BUT IT MUST BE DEVELOPED WISELY.





VISION FOR THE FUTURE

Human well-being and livelihoods in the Cuando depend largely on ecosystems, but development and human activity can reduce the capacity of natural ecosystems to meet future needs. The conservation and sustainable use of ecosystem services is thus vitally important for sustaining the basin's people.

**VISION:
A SUSTAINABLE
AND RESILIENT
CUANDO BASIN
BY 2040**





GUIDANCE FOR DECISION MAKERS

The SEA has proposed the following targets for implementation:

1 HYDROLOGICAL FUNCTIONING, WATER QUALITY, AND BIODIVERSITY

- No significant human-induced change to the natural flood pulse peak, nor loss of permanent swamp areas beyond the lowest flood level recorded during the 1995 dry period.
- No upriver dams or other impoundments.
- Water quality to be within 5% of current fluctuations as measured over the past 15 years.
- Remove existing wildlife veterinary fencing wherever possible, especially along the southern boundary of Bwabwata National Park between Namibia and Botswana.
- Reverse declines of terrestrial and freshwater indicator species.
- Reverse large mammal species population declines to 1994 levels; e.g. lechwe, buffalo, tsessebe, and zebra.
- Maintain the integrity of the riparian fringe; halt further clearing of riparian habitat for agriculture or other land uses, and implement rehabilitation of already impacted areas.
- No introduction of alien invasive species (especially fish, plants and invertebrates) and eradication of aliens where they exist already.



- Reduce human-wildlife conflicts: farming must avoid prime wildlife areas to mitigate further conflict.
- Implement the KAZA Elephant Management Plan.
- Maintain viable populations of endemic, rare and endangered species.
- Promote and improve support to CBNRM projects so communities can earn tangible benefits from sustainable natural resource management and, thereby, actively participate in conservation.
- Poaching reduced to zero (CBNRM and law-enforcement are key tools).
- Reduce fire frequency to a rate of one in 3-5 years and promote cool burns.

**THE SEMF IS A
TOOL TO ASSESS
SOCIOECONOMIC
DEVELOPMENT
PROGRESSES IN THE
BASIN, SUPPORTING
THE IDENTIFICATION
OF TRENDS, THREATS,
OPPORTUNITIES, AND
NECESSARY ACTIONS.**



2

MINING

- Given the sensitivity of the basin, mining should be discouraged in favour of more nature based solutions. Existing licenses to be withdrawn by the Member State as soon as they are relinquished by the license-holders.

3

ARABLE AGRICULTURE

- Water offtake (all sectors combined) should be limited so as not to compromise ecological integrity of the free-flowing Cuando River and associated wetlands.
- Future molapo/dambo and horticulture farms should not be placed within free-flowing river and its wetlands, nor extract wood from, the sensitive riparian fringe for any purpose whatsoever. Reduce human-wildlife conflicts by locating fields away from prime wildlife areas and migration/corridors.
- Practice climate-smart agriculture to reduce habitat alteration and soil exposure while improving farming efficiency and crop yields.
- Limit and reduce use of artificial fertiliser and pesticides to minimise pollution.





4

LIVESTOCK FARMING

- Limit livestock to rangelands further away from key biodiversity areas (e.g. riparian fringe) and stock appropriately (16ha/LSU in sandveld).
- No fenced commercial ranches or disease-control fences – unless EIAs show they will not impact biodiversity significantly.

5

TOURISM

- A suggested possible maximum 700 beds in the Namibian and Botswana area - no determination yet for other areas, but expansion probably possible in Angola.
- Improve equity and inclusiveness through local ownership and improved benefit sharing.
- Reduce conflicts with subsistence fishers/villagers.
- Improve the management of tourism establishments and practices (e.g waste management), no artificial waterpoints, reduce boating impacts on wildlife and habitats (especially riverbanks), careful management of vehicle traffic and road network, reducing noise (aircraft, generators, boats), avoiding artificial alterations of water flow (through erecting barriers & establishing/ maintaining channels), ensuring appropriate architecture, limiting footprint of lodges, avoiding proliferation of vehicle tracks and reduce traffic congestion (especially in self-drive areas).

The SEA has developed a Strategic Environmental Management and Monitoring Framework (SEMF). The SEMF is a tool for assessing socioeconomic development progress in the basin, supporting the identification of trends, threats, opportunities, and necessary actions. It is designed to facilitate the implementation of holistic policies and strategies that promote the sustainable development of the CURB and ensure the achievement of ZAMCOM's shared vision for the basin.



FROM VISION TO ACTION

VISION: A SUSTAINABLE AND RESILIENT CUANDO BASIN BY 2040



OBJECTIVES

- Develop the basin for sustainable tourism, limited natural resource use, small-scale human settlement, so that the natural beauty and wilderness value is strengthened and retained.
- Maintain ecosystem services and biodiversity linkages.
- Maintain upstream river inflows for wetlands and water quality.



ACTIONS

KEY ACTION: IMPLEMENT THE SEMF

- Maintain protected areas and wildlife corridors.
- Support Community - Based Natural Resource Management (CBNRM) to provide the glue between protected areas and increase benefits to communities.
- Continually improve management, especially regarding Valued Environmental Components.
- Strengthen KAZA and ZAMCOM, to facilitate improved basin management.
- Promote low density, high value eco-tourism whilst maintaining wilderness quality.
- Basin Partner States to limit cumulative impacts of development.

