

DECEMBER 2019



© Anton Ivanov/Shutterstock

CUBANGO-OKAVANGO RIVER BASIN FUND: BUSINESS CASE OUTLINE

Contents

1	Introduction	2
	Cubango-Okavango River Basin	2
	Competing demands and threats	3
	Permanent Okavango River Basin Water Commission (OKACOM).....	4
2	Our Fund	4
	The role of the Fund.....	4
	The Fund’s structure	6
	The Fund’s capitalisation plan	6
3	Understanding the changing resources	6
	Water resources use and benefits in the river basin	6
4	Interventions for resilience	7
	Interventions.....	7
5	Establishing the business case	8
	CORB Fund business case.....	8
	Development scenarios	8
6	The Fund’s potential impact	9
	Assessment approach	9
	Socio-economic modelling.....	9
	Biophysical modelling: SWAT analysis	10
	Overall economic analysis.....	10
	Preliminary results	10
7	Conclusion.....	12
8	The Fund’s active partners.....	13

The Cubango-Okavango River Basin (CORB) Fund is a fully independent hybrid fund that aims to enhance livelihoods, improve ecosystem resilience and provide equitable benefits to the riparian states of Angola, Botswana and Namibia, in their shared river basin.

1 Introduction

The Cubango-Okavango River Basin (CORB) is a critical ecosystem, rich in wildlife and, as a near-pristine river basin, virtually unique in the 21st century. It provides livelihoods for millions of people in the basin and is vital to Botswana's ecotourism industry. However, the rivers and delta are facing a multitude of pressures, from population growth to infrastructure development to climate change. High levels of poverty in the riparian region create a pressing need for infrastructure and market opportunities to underpin social and economic development. Yet, any gains brought by major infrastructure developments in the upper basin could be undermined in the longer term, if the essential health of the ecosystem is destroyed in the process.

How do we respond? The Cubango-Okavango River Basin Fund (referred to herein as 'the CORB Fund' or 'the Fund') has been designed to enhance livelihoods, improve ecosystem resilience and provide equitable benefits to the riparian states of Angola, Botswana and Namibia, in the CORB. It aims to achieve this by financing the sustainable development of the region's natural resources for the equitable benefit of its inhabitants.

This business case focuses on how long-term benefits can be derived by the river basin's Member States following the funding of socially focused and environmentally focused interventions by the CORB Fund. This document describes the context in which the CORB Fund will operate by contrasting a business-as-usual development scenario with a scenario that matches the aspirations of the Fund to support sustainable development, conservation and climate resilience. Identified and quantified potential benefits from the CORB Fund include economic benefits directly produced by interventions, as well as benefits produced through changes in ecosystem service flows as a result of interventions. This business case document serves as an initial description of the benefits that can be accrued over time, with a projected benefit-cost ratio range of US\$3.50–US\$7.00 in benefits for every US\$1 spent. The Fund also aims to catalyse significant long-term investments across sectors that promote a Resilient Development trajectory.

Cubango-Okavango River Basin

The CORB ecosystem (Figure 1) is a near-pristine basin – a global rarity among large river basins. It has a predictable and ecologically vital flood-pulse that, each year, moves over 1,600 km from its headwaters to the delta over the course of four to six months. Originating in the semi-humid highlands of Angola, the Okavango River system is fed by two main tributaries – the Cubango to the west and Cuito to the east. These are in turn fed by numerous smaller rivers before entering the Okavango Delta. The delta's unique and distinctive hydrology creates a globally renowned but fragile ecosystem, sensitive to hydrological, climatic and biological changes.

The Okavango Delta is globally recognised as a biologically rich and valuable ecosystem. It has been designated a Wetland of International Importance (Ramsar site), UNESCO's 1000th World Heritage Site and is the centrepiece of Botswana's vibrant tourism economy (the country's second largest economic sector). The basin above the delta covers an area of approximately 171,000 km², the majority of which lies in Angola and generates 95% of all runoff to the delta. The two main tributaries also exhibit different flow regimes with the Cubango's more incised valley landscapes resulting in more surface runoff and rapid subsurface flows. In contrast, the Cuito is characterised by more expansive, densely vegetated floodplains that moderate flows through the system, resulting in a baseflow-driven runoff regime. The river system sustains aquatic and terrestrial biodiversity and is essential to the livelihoods of millions of people. It supports enterprises ranging from artisanal fisheries to small-scale agriculture, as well as major tourism in the Okavango Delta, and planned infrastructure in Angola for commercial irrigation and municipal demands. The intactness of the Okavango Basin ecosystem, with its low human population density and minimal consumptive water use, supports an astounding variety and abundance of terrestrial and freshwater animal and plant life.

Less recognised is the fact that approximately 95% of the flows that sustain the delta's health are derived from Angola's Cuito and Cubango systems, which join to form the Okavango River along Angola's border with Namibia. Changes are coming to the basin, however, and almost all existing and planned economic development is based on the freshwater resources in the CORB. Currently, the only existing protection of the critical Angolan headwaters area is within the relatively

remote lower Cuito River catchment. The Cubango River catchment, also in this area, is less remote and more populated. It lacks any protected areas at all.



Figure 1. The Fund’s proposed interventions and impact area

Competing demands and threats

In 2011, a Transboundary Diagnostic Analysis was carried out for the river basin, which concluded that its natural systems are under substantial threat. Freshwater sources are the natural resource component most at risk, since there is no substitute for the basin’s rivers, watercourses, swamps and aquifers. Major upper-basin water and infrastructure investment in the form of irrigation schemes, hydroelectric dams and water supply diversions could all contribute to essential food security, energy and economic development goals in southern Angola and Namibia. However, the resulting ecosystem degradation and development will impact the river basin ecosystem in coming decades, potentially undermining any long-term social or economic gains. The trends are worrying for local livelihoods, and the health of the basin’s rivers and delta. They include:

- widespread poverty;
- rapid growth of a population that relies on subsistence resource-based livelihoods;
- a significant increase in planned water abstraction for commercial agriculture;
- deforestation driven by, for example, commercial logging and charcoal production;
- large-scale hydropower infrastructure;
- over-fishing and use of unsustainable fishing methods and gear;
- uncontrolled fires;
- climate changes, such as migrating hydrology patterns.

If the current configuration of threats and impacts continues, the CORB system is likely to experience increasing degradation of its critical freshwater resources and natural terrestrial resource base. As the health of the basin deteriorates, so does its ability to deliver the crucial ecosystem goods and services on which the basin residents and CORB Member States rely. Agricultural and natural resource-based livelihoods will become increasingly compromised, the economically important tourism industry will be highly threatened, and the ability of national and local authorities to deliver basic services (such as urban water supplies) will also be undermined (Figure 2).

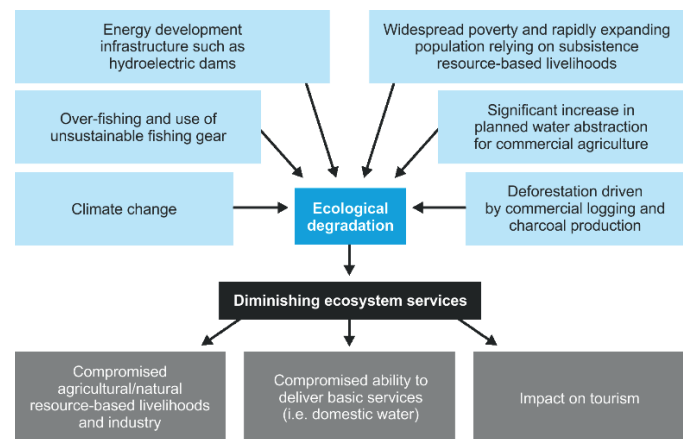


Figure 2. Causes and impacts of ecological degradation in the CORB

The population in the basin was 921,890 in 2011 and is forecast to be 1.28 million by 2025.¹ Currently, 62% of basin inhabitants live in Angola, with 16% in Botswana and 22% in Namibia. Despite the relatively low population densities in the CORB, changes in land use and vegetation cover are evident. Over 200,000 ha of forest have been lost in the Angola Highlands since

¹ The Permanent Okavango River Basin Water Commission. 2011. *Cubango-Okavango River Basin Transboundary Diagnostic Analysis*. Maun, Botswana: OKACOM, 2011

2000. If this continues, the flow of the Cubango and Cuito Rivers will alter, with negative consequences for fisheries and the delta.

Permanent Okavango River Basin Water Commission (OKACOM)

Unlike many of the world's large transboundary basins, the Okavango Basin has a functioning governing body, the Permanent Okavango River Basin Water Commission (OKACOM), established in 1994 by the countries that share the river basin: Angola, Botswana and Namibia. The Commission's mandate emerges from a shared vision of anticipating and reducing unintended, unacceptable and often unnecessary impacts to the resources of the basin. This is supported by operational principles of: (1) equitable allocation, (2) sustainable utilisation, (3) sound environmental management, and (4) sharing of beneficial uses. OKACOM aims to support the 'economically prosperous, socially just and environmentally healthy development of the Cubango-Okavango River Basin', by spearheading future development of the CORB.

OKACOM is guided by a framework of mutually agreed and integrated policies and guidelines. This framework is rooted in the Transboundary Diagnostic Assessment (TDA) which is a scientific and technical assessment of existing and emerging shared management issues in the basin. The Strategic Action Plan then responds to those issues by balancing the shared commitments of the basin's Member States. The main challenge to addressing these issues is usually funding and finance. The CORB Fund is a +US\$250 million impact endowment designed to provide long-term financing for both socio-economic and environmentally sustainable development throughout the river basin.

2 Our Fund

The role of the Fund

The vision for the CORB Fund is to operate as an independent hybrid fund that will contribute to the economically prosperous, socially just and environmentally healthy development of the CORB, recognising the need for the equitable distribution of benefits across the river basin's Member States (see Figure 3).

The Fund will align to OKACOM's integrated framework to ensure a harmonised response to the competing demands and threats in the basin. The design of the Fund's Resilient Development interventions addresses poverty alleviation, water resource management, land management, and environmental and biodiversity conservation. In turn, these activities align to the outcomes by which the Member States aim to impact livelihoods and socio-economic development, such as:

- water and energy security, and sanitation supply to basin communities improved;
- transboundary community-based natural resource management implemented;
- basin-wide tourism strategy developed, and tourism development increased;
- conservation agriculture established in the basin and livelihoods from agriculture improved;
- livestock management and productivity in the basin improved;
- sustainability of river fisheries ensured, and sustainable aquaculture production expanded;
- sustainable economic and investment opportunities (including those from the global climate change mitigation framework) identified and utilised.

The Fund aims to achieve positive change throughout the basin by responding to competing demands and threats in a way that protects the natural capital and environmental resources upon which the inhabitants depend.

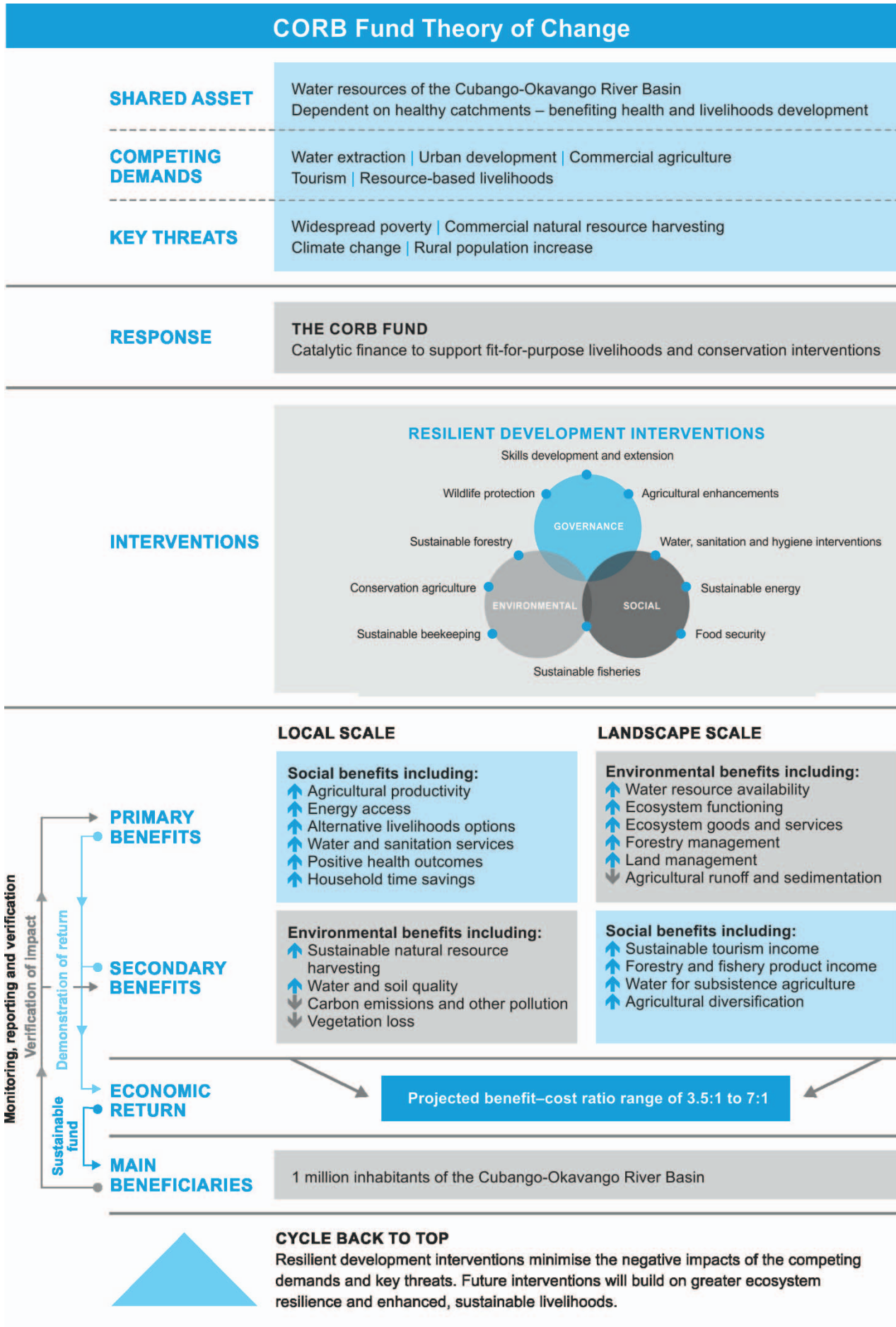


Figure 3. Cubango-Okavango River Basin Fund theory of change

The Fund's structure

The Fund will be a fully independent Company Limited by Guarantee in Botswana, with three distinct levels of governance:

1. Five members – one from each riparian state, one non-government livelihoods anchor and one non-government ecosystems anchor – will comprise the highest decision-making body and will meet annually.
2. Seven board directors – one from each riparian state and four independent, non-government experts – will meet quarterly to oversee the business and affairs of the company, and ensure it delivers on its purpose.
3. One executive officer – employed by the board of directors – will be responsible for the day-to-day activities of the Fund and its operational efficiency.

The Fund's capitalisation plan

The hybrid fund structure has two distinct investment vehicles, namely: a sinking vehicle of +US\$20 million, which is domiciled in Botswana, and an endowment vehicle of +US\$250 million, which will be domiciled offshore. Three phases are envisaged to capitalise the CORB Fund:

- Phase 1: The Demonstration Phase, beginning directly after fund registration for a two-year period, with the purpose of seeding and fully capitalising the sinking vehicle, with up to +US\$20 million from bilateral and multilateral development organisations.
- Phase 2: The Fundraising Phase, beginning once the Fund has established a track record, and running for two to three years, with the purpose of capitalising the endowment vehicle, with a target of +US\$250 million.
- Phase 3: The Investment Phase, beginning after the endowment target has been reached and the Fund's organisation is operating efficiently, running in perpetuity to leverage higher operational efficiencies.

² The Permanent Okavango River Basin Water Commission. 2011. *Cubango-Okavango River Basin Transboundary Diagnostic Analysis*. Maun, Botswana: OKACOM, 2011

3 Understanding the changing resources

Water resources use and benefits in the river basin

Water-mediated ecosystem services provided by the Upper Okavango River system are critical to livelihoods throughout the basin. Despite this and broader economic development through the direct use of its resources, the benefit, in terms of the economic value of resource-based livelihoods, derived by the Member States is neither equitable, nor proportional to their share of the basin's resource endowment (Figure 4).²

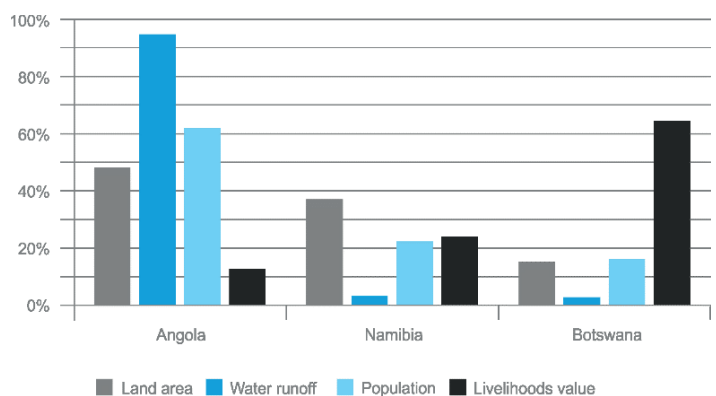


Figure 4. Proportional share of the Cubango-Okavango River Basin resource endowment by country (adapted from the TDA, 2011)³

As such, the status quo in the river basin is characterised by inequitable benefits between the Member States, requiring a response to rectify this imbalance, while navigating the various threats and challenges to the sustainability and the prosperity of the water resource. In addition to local livelihoods throughout the basin, there are several current and expanding uses of the CORB's water resources (Figure 5). While small-scale agriculture in the basin is primarily rain fed, agricultural yields could be improved by irrigation. There are plans to expand large-scale irrigated agriculture, energy generation and livestock operations. Numerous growing cities in Angola and Namibia also rely on water from the upper basin. At the same time, there is a need to maintain environmental flows to support fisheries throughout the basin. Existing water security challenges will be exacerbated by planned water diversions, which will also satisfy future water demands outside the basin, e.g. transfers to the

³ The Permanent Okavango River Basin Water Commission. 2011. *Cubango-Okavango River Basin Transboundary Diagnostic Analysis*. Maun, Botswana: OKACOM, 2011

Cuvelai Basin in Angola and to the central areas of Namibia.



Figure 5. Existing and planned major beneficiaries of water resources in the Cubango-Okavango River Basin

4 Interventions for resilience

Interventions

CORB Fund interventions were planned with stakeholder involvement and ground-truthing site visits at numerous stages of the Fund's development, over a three-year period. The aim was to create impacts that directly address Sustainable Development Goals (SDGs) (Figure 6). Specifically, they address SDGs that pertain to food security and hunger (SDG 2), that improve infrastructure backlogs (SDG 9) that improve water and sanitation service delivery (SDG 6), that enhance ecosystem health and functioning (SDG 15) and that improve human settlements (SDG 11). The impacts of the Fund's interventions also support progress towards the broader SDGs on poverty eradication (SDG 1), health and well-being (SDG 3), inclusive economic opportunity (SDG 8), inequality reduction (SDG 10) and addressing climate change (SDG 13), as well as life on land (SDG 15).



Figure 6. Sustainable Development Goals targeted by CORB Fund interventions

The Fund is designed to fund the implementation of interventions in all three member countries, in villages and landscapes across the full extent of the river basin. The Fund addresses the myriad of threats to the river basin, by intervening in three distinct ways to create ownership, enhance lives and protect nature (Figure 7). These three areas of interventions respond to growing awareness of environmental, social and governance considerations in the investment community.

- 1 **Create ownership:** Resilient Community Hubs are physical centres that provide training and skills development, as well as technical support, spare parts or extension services within a mobile proximity of the communities, villages and/or towns that benefits from the Fund's intervention suites. These hubs will be staffed by local residents and will facilitate the sustainable management and ownership of interventions by beneficiaries in the long term.
- 2 **Enhance lives:** Socially focused intervention bundles enhance and support livelihoods within villages. The bundles' composition depends on the number of households in a village, as well as road access and groundwater availability. Examples include composting toilets, rural road links, small-scale solar irrigation systems and solar photovoltaic (PV) packages.
- 3 **Protect nature and the services it provides:** Environmentally focused interventions will deliver both conservation and livelihood improvements. They are overarching and less dependent on the number of households in a

village or accessibility to roads. Examples include agricultural conservation and expansion planning, improved forest and fisheries management, and increased and well-managed protected areas.

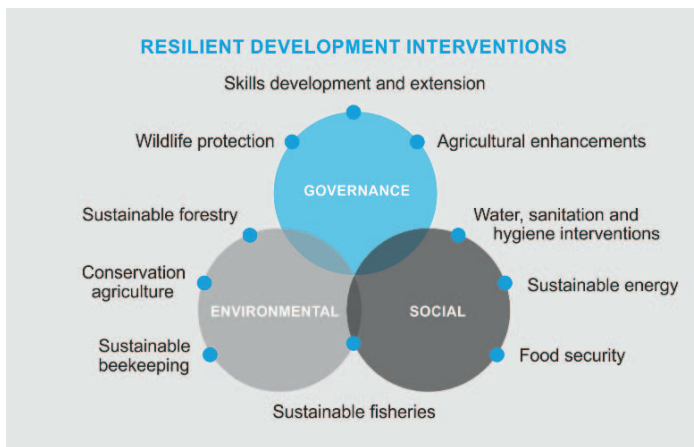


Figure 7. Cubango-Okavango River Basin Fund interventions

The CORB Fund will invest in Resilient Development interventions which will produce social and environmental impacts that generate a range of benefits throughout the basin. There are two distinct types of interventions:

- 1 **Socially focused interventions**, which primarily focus on enhancing the livelihoods of the river basin's inhabitants at a household level through critical services provision.⁴
- 2 **Environmentally focused interventions**, which enhance ecosystem resilience.⁵

Some key interventions include:

- community-level water and sanitation improvements;
- small-scale water supply, food and energy security;
- conservation-compatible agricultural productivity enhancements and expansion;
- improved fishing and beekeeping management;
- improved community-based natural resource management;
- ecosystem protection and promotion of an ecotourism economy;
- education and awareness via local committees.

Social and environmental infrastructure interventions were conceptualised to assess the impact of the Fund

⁴ While motivated by their potential to enhance livelihoods and well-being, in some cases these interventions will also generate a range of other benefits, including climate stabilisation and enhanced ecosystem resilience

on livelihoods and conservation efforts in the basin, with the following caveats:

- 1 Interventions were conceptualised *ex ante*, because they are based on forecasts rather than actual, directly observed results from the field.
- 2 There has not yet been ethnographic or sociological research to underpin the conceptualisation of the individual interventions, i.e. the business case has had to assume that interventions will add value for the people and communities in which they are implemented.

5 Establishing the business case

CORB Fund business case

A business case analysis of the CORB Fund compares the Fund's benefits and costs in a quantitative, rigorous manner. In addition to quantifying total benefits and costs, the analysis also identifies the distribution of benefits and costs across stakeholders. This allows the return on investment (ROI) of the Fund overall to be evaluated as well as the ROI of discrete intervention bundles implemented by the Fund. The business case can thus serve as an important tool for mobilising financing for the CORB Fund, both from sources external to the basin, as well as from individuals and organisations within the basin who stand to benefit financially from improved basin management.

Development scenarios

When developing scenarios to model the CORB business case, a 'no-development option' is unrealistic given the high population growth and poverty, which must be addressed as underlying drivers of landscape degradation in the basin and given already-planned agricultural expansion projects. To achieve water, food and energy security, and to address poverty and other social, economic and ecological challenges, targeted interventions are needed to develop the basin across multiple systems and scales. The business case, therefore, considers two development trajectories: Business as Usual (BaU) and Resilient Development.

⁵ These will also deliver benefits at multiple scales from household to basin-wide.

Under the BaU scenario, the basin continues to develop as it is with no additional interventions. This is likely to lead to accelerated negative impacts from deforestation and shifting agriculture in the Angolan source water area. Under a Resilient Development scenario, the BaU scenario is modified to include conservation agriculture and sustainable agricultural intensification, improved fisheries management, improved forest management, sustainable beekeeping management, increased protected areas and improvement of their management, improved rural water supply, improved sanitation, increased mobility and access to markets, and renewable energy. Resilient Development optimises the delivery of desired development outcomes while safeguarding vital ecological and socio-economic attributes and functions.

6 The Fund's potential impact

Assessment approach

A differential analysis approach was used to assess the impact of the Fund's interventions on the biophysical systems and human well-being in the basin under BaU and Resilient Development scenarios. This differential approach treats the BaU scenario as the counterfactual (i.e. the trajectory of the basin in the absence of Resilient Development interventions) and calculates the ROI of Resilient Development as the ratio of expected incremental benefits and incremental costs of the Resilient Development scenario. The analysis uses the Soil and Water Assessment Tool (SWAT) to assess the Fund's biophysical impacts and a range of economic valuation tools to estimate the socio-economic and livelihoods impacts. An analysed time horizon from 2020 to 2050 was used and an estimation of population growth and associated land-use change was projected spatially through 2030, based on the Shared Socio-economic Pathway 2 (SSP2).⁶

The analysis assessed the effect of Resilient Development interventions using various modelling techniques, as outlined below. The effect of

⁶ The SSPs are based on five narratives describing broad socio-economic trends that could shape future society. These are intended to span the range of plausible futures, where SSP2 is the 'middle of the road' scenario. These scenarios are globally recognised and will be included in the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report.

⁷ There is also a range of other benefits that the Fund will deliver that were not valued. In some cases, these benefits were *indirect*

interventions on landscape structure and functioning, as well as the resulting changes in key ecosystem services flows were assessed using biophysical modelling based on local information and expert input. The welfare effects of the interventions were estimated in a socio-economic modelling exercise by identifying the direct improvements in basic service delivery and economic productivity. The changes in ecosystem services, and improvements in basic service delivery and economic productivity resulting from the interventions were translated into quantitative welfare changes using appropriate metrics and parameters that determine the size of benefits associated with changes in ecosystem services flows (benefit-relevant indicators). Finally, economic valuation was used to express the welfare changes in monetary terms in an overall benefit–cost analysis. The analysis calculated the ROI and the economic net benefit of select intervention suites and of the CORB Fund overall.

Socio-economic modelling

Welfare impacts of the Fund's interventions were analysed by identifying and valuing direct and measurable benefits to the residents of the river basin. Due to their varied focus on environmental, social and governance needs, the Fund's interventions will generate a range of different benefits. The socio-economic modelling exercise quantified both market and non-market benefits:⁷

- Market benefits are increases in the quantity or quality of commonly traded goods and services. For instance, an increase in agriculture yields following the application of irrigation is a market benefit. By definition, these benefits are monetisable because their prices can be readily observed.
- Non-market benefits are goods or services that are not commonly traded in markets. However, the economic value of non-market goods and services can often be estimated using substitutes, averting behaviour or non-market economic valuation methods. For example, households may value the improved health

(i.e. not a result of intervention itself but rather the result of a specific direct benefit). In other cases, benefits may have been quantifiable, but they were *not easily or appropriately monetisable* (i.e. improved gender equality). Lastly, benefits that could *not be quantified or monetised* (i.e. improved community cohesion) were excluded from the quantitative impact assessment in the business case analysis.

associated with the provision of treated water for domestic consumption. This value can be monetised using the cost of bottled water (a substitute), water boiling (an averting behaviours), or avoided water-related illness (medication, work loss), or by eliciting individuals' stated willingness-to-pay to avoid risk of waterborne illness.

In order to quantify and model the welfare impacts of the interventions, both social and environmental interventions were analysed to define **benefit-relevant outcomes** with associated **benefit-relevant indicators**. These indicators are metrics that measure outcomes associated with a particular intervention that are demonstrably and directly relevant to human welfare. Locations where human activities are affected by interventions were identified based on information about the current location of people in the basin, and about their likely future location.

In an example of a socially focused intervention, improvements in domestic water supply (a benefit-relevant outcome) in the Resilient Development scenario are assessed by identifying direct impacts (including time savings associated with a lower water collection burden, or health benefits associated with treated water from a formal system) and combining these with information on the number of households for whom water supplies are improved and the amount of time spent on water collection, and the share of additional available time that is redirected to productive use.

In an example of an environmentally focused intervention, changes in fisheries production (a benefit-relevant outcome) as a result of improved water quality for fisheries (an ecosystem service) under the Resilient Development scenario are assessed by combining the relevant hydrologic parameters (e.g. sediment concentration in key fishery habitats) with dose–response relationships that link sediment concentrations to fish health and population size for fish species that support harvest, and with information on human resource use, such as the number of households engaged in the fishery, annual landings volume, and allocation shares of landings to own

consumption and sale fisheries (benefit-relevant indicators).

Biophysical modelling: SWAT analysis

The benefit-relevant indicators generated through biophysical modelling complemented the indicators identified and quantified through expert input and literature review. To this end, SWAT was used to predict the impact of land management practices on water quantity and quality (i.e. sediment and agricultural chemical yields) in the CORB. In this analysis, SWAT was set up to yield outputs of hydrologic parameters that are directly and quantitatively linked to specific ecosystem services supporting discrete human uses in the basin. These outputs are generated at locations in the basin where they support specific uses. For example, the SWAT model generates information on modelled sediment concentrations at locations where sediment in the water column affects fish habitat quality, which in turn could affect fish populations and associated fisheries.

Overall economic analysis

Using the benefit-relevant indicators identified in the modelling exercises, literature review and through expert input, the economic analysis applied appropriate valuation methodologies to estimate the monetary value of the Fund's many impacts. The economic analysis then compared the value of these benefits with the costs⁸ associated with implementing all Resilient Development interventions over the time horizon for the analysis (2020–2050) to establish an overall benefit–cost ratio that demonstrates the potential ROI for the Fund.

Preliminary results

The analysis demonstrated that the Fund would significantly improve livelihoods, ecosystem health and the resilience of the basin under the Resilient Development scenario. The Fund will support the realisation of the Resilient Development outcomes summarised in Figure 8. The tangible impacts to households throughout the basin as a result of the Resilient Development scenario are summarised in Table 1. The preliminary results demonstrate that key threats to livelihoods and ecosystems are minimised, while supporting development goals.

⁸ The analysis of the CORB Fund business case employs a comprehensive cost-accounting approach that strives to include the

implementation costs, opportunity costs and transaction costs associated with the Resilient Development interventions.

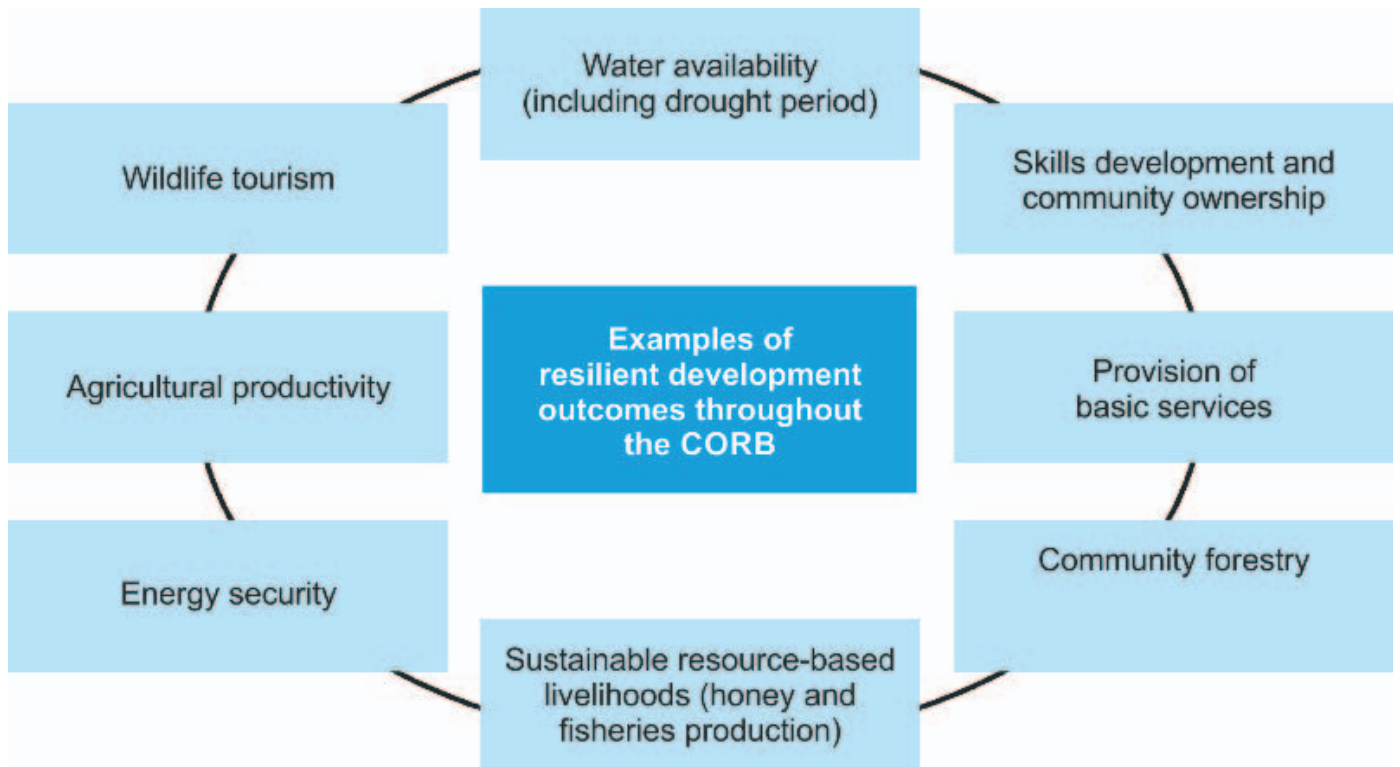


Figure 8. Examples of expected Resilient Development (RD) outcomes throughout the Cubango-Okavango River Basin relative to Business as Usual (BaU)

BUSINESS AS USUAL		RESILIENT DEVELOPMENT USING CORB FUND																																																																					
<ul style="list-style-type: none"> 2030 predicted population Increased deforestation <ul style="list-style-type: none"> Loss to shifting agriculture and charcoal Small-scale agricultural practices continue with low productivity Planned commercial agriculture is built out No source water protection or community-based conservation 	<ul style="list-style-type: none"> 2030 predicted population Communal water and sanitation provision <ul style="list-style-type: none"> Water, sanitation and hygiene systems Household energy access <ul style="list-style-type: none"> Small- and utility-scale solar PV Energy efficient cookstoves Small-scale agricultural productivity improvement <ul style="list-style-type: none"> Conservation agriculture on existing and newly cleared areas Examples include improved tillage, small animal manure, second crop with irrigation Community-based conservation <ul style="list-style-type: none"> Riparian zone protection under existing law Commercial agriculture <ul style="list-style-type: none"> Build out includes improved irrigation efficiency Sustainable forestry <ul style="list-style-type: none"> Reduced levels of deforestation (e.g. through forestry cooperatives) Protection <ul style="list-style-type: none"> No forest loss in proposed Ramsar site area 	<table border="1"> <thead> <tr> <th>METRIC OF INTEREST</th> <th>BaU</th> <th>RD</th> </tr> </thead> <tbody> <tr><td>River low flows</td><td>▼</td><td>●</td></tr> <tr><td>River high flows</td><td>▲</td><td>●</td></tr> <tr><td>Groundwater recharge</td><td>▼</td><td>●</td></tr> <tr><td>Sediment yield</td><td>▲</td><td>●</td></tr> <tr><td>Agricultural yield (combined)</td><td>▲</td><td>▲</td></tr> <tr><td>Protected/conserved forest</td><td>▼</td><td>▲</td></tr> <tr><td>Municipal water treatment costs</td><td>▲</td><td>▲</td></tr> <tr><td>Ecotourism income in Angola</td><td>●</td><td>▲</td></tr> <tr><td>Ecotourism income in Namibia</td><td>▼/●</td><td>●</td></tr> <tr><td>Ecotourism income in Botswana</td><td>▼/●</td><td>●</td></tr> <tr><td>Water and sanitation access</td><td>▼/●</td><td>▲</td></tr> <tr><td>Energy access</td><td>●</td><td>▲</td></tr> <tr><td>Rural food security</td><td>●</td><td>▲</td></tr> <tr><td>Artisanal fisheries production</td><td>▼</td><td>●</td></tr> <tr><td>Sustainable honey production</td><td>●</td><td>▲</td></tr> <tr><td>Forest cooperative income</td><td>●</td><td>▲</td></tr> <tr><td>CO₂ emissions</td><td>▲</td><td>▼</td></tr> <tr><td>Water-related disease burden</td><td>▲</td><td>▼</td></tr> <tr><td>Time spent collecting water/wood</td><td>▲</td><td>▼</td></tr> <tr><td>Accessibility to markets</td><td>●</td><td>▲</td></tr> <tr><td>Household indoor air quality</td><td>▼</td><td>▲</td></tr> <tr><td>Skills development and training</td><td>●</td><td>▲</td></tr> </tbody> </table> <p> ▲ Favorable increase ▼ Unfavorable increase ▼ Favorable decrease ▲ Unfavorable decrease ● No change </p> <p><i>Size of arrow indicates relative amount of change</i></p>	METRIC OF INTEREST	BaU	RD	River low flows	▼	●	River high flows	▲	●	Groundwater recharge	▼	●	Sediment yield	▲	●	Agricultural yield (combined)	▲	▲	Protected/conserved forest	▼	▲	Municipal water treatment costs	▲	▲	Ecotourism income in Angola	●	▲	Ecotourism income in Namibia	▼/●	●	Ecotourism income in Botswana	▼/●	●	Water and sanitation access	▼/●	▲	Energy access	●	▲	Rural food security	●	▲	Artisanal fisheries production	▼	●	Sustainable honey production	●	▲	Forest cooperative income	●	▲	CO ₂ emissions	▲	▼	Water-related disease burden	▲	▼	Time spent collecting water/wood	▲	▼	Accessibility to markets	●	▲	Household indoor air quality	▼	▲	Skills development and training	●	▲
METRIC OF INTEREST	BaU	RD																																																																					
River low flows	▼	●																																																																					
River high flows	▲	●																																																																					
Groundwater recharge	▼	●																																																																					
Sediment yield	▲	●																																																																					
Agricultural yield (combined)	▲	▲																																																																					
Protected/conserved forest	▼	▲																																																																					
Municipal water treatment costs	▲	▲																																																																					
Ecotourism income in Angola	●	▲																																																																					
Ecotourism income in Namibia	▼/●	●																																																																					
Ecotourism income in Botswana	▼/●	●																																																																					
Water and sanitation access	▼/●	▲																																																																					
Energy access	●	▲																																																																					
Rural food security	●	▲																																																																					
Artisanal fisheries production	▼	●																																																																					
Sustainable honey production	●	▲																																																																					
Forest cooperative income	●	▲																																																																					
CO ₂ emissions	▲	▼																																																																					
Water-related disease burden	▲	▼																																																																					
Time spent collecting water/wood	▲	▼																																																																					
Accessibility to markets	●	▲																																																																					
Household indoor air quality	▼	▲																																																																					
Skills development and training	●	▲																																																																					

Table 1. Resilient Development likely outperforms Business as Usual (BaU) in both metrics for development goals and ecosystem health



© Andre Silva Pinto / Shutterstock

The economic value of increased resilience and decreased threats (i.e. the Fund's net benefit) will be at least US\$187 million.[1] This translates into a projected benefit–cost ratio range of between 3.5–7, meaning that for every dollar spent on Resilient Development interventions, between US\$3.50 and US\$7 worth of benefits are generated for basin beneficiaries. The Fund could also deliver a high ROI for investors, with an internal rate of return range of between 24%–65%.

7 Conclusion

The Cubango-Okavango River Basin is a unique, global treasure. It is one of the largest remaining, near-pristine river basins on earth. The jewel of the river basin, the Okavango Delta, is completely dependent on upstream river flows and good quality water from Angola. Changes to the basin are imminent, and the way in which infrastructure is developed will have a lasting impact on the health of the rivers, the delta and more than a million people who depend on the basin's natural resources.

The results of this business case demonstrate that Resilient Development, funded and implemented through the CORB Fund, will generate significant impacts and economic benefits both in terms of SDGs and biodiversity conservation. Interventions will achieve between US\$3.50–US\$7 in benefits for every US\$1 spent. The Fund will support a common vision for the river basin and its people and ensure equitable distribution of benefits across Angola, Namibia and Botswana.

8 The Fund's active partners

OKACOM

OKACOM – The Permanent Okavango River Basin Water Commission is a tripartite technical commission that advises the three riparian states about the best possible use of the river's natural resources, while promoting coordinated and environmentally sustainable regional water resources development. Contact OKACOM's Executive Secretary, Phera Ramoeli: phera@okacom.org



CRIDF

CRIDF – The Climate Resilient Infrastructure Development Facility is a UK Aid-funded programme. CRIDF works with public and private organisations in Southern Africa to build climate resilience by promoting cooperation in the sustainable development and management of transboundary waters. Contact CRIDF's Mobilising Finance team member, Michael Vice: michael.vice@cridf.com



TNC

TNC – The Nature Conservancy is a global environmental non-profit organisation working to create a world where people and nature can thrive. TNC has been a leading partner in the creation of 35 water funds, in 12 countries around the world. Contact TNC's Okavango Basin Program Director, Sekgowa Motsumi: sekgowa.motsumi@tnc.org



Resilient Waters Program

Resilient Waters Program – A USAID funded five-year project, which aims to build more resilient and water-secure Southern African communities and ecosystems through improved management of transboundary natural resources and increased access to safe drinking water and sanitation services. Contact Resilient Waters Program, Project Manager, Lauren Redfield: lredfield@chemonics.com



