CUANDO RIVER BASIN 2021 REPORT CARD

ANGOLA, BOTSWANA, NAMIBIA, ZAMBIA

WWF

USAID FROM THE AMERICAN PEOPLE

ZAMCOM

kaza

University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE
INTEGRATION AND APPLICATION NETWORK

Foreword

This document presents the Cuando River Basin Report Card. It is the first-ever report card developed for the Cuando River Basin, one of the thirteen sub-basins of the Zambezi Watercourse. The Cuando River Basin provides various goods and services supporting biodiversity, the people, and economies of the riparian countries—Angola, Botswana, Namibia, and Zambia. While still relatively pristine, there are increasing pressures due to various factors including climate change and unsustainable use of natural resources. As part of transboundary efforts to manage the Cuando River Basin, the inaugural Cuando River Basin Report Card was developed with a view to supporting science-based decision making and planning processes. The development and application of assessment tools such as the Cuando River Basin Report Card is key to improving the resilience of communities, local economies, and ecosystems to growing climate change impacts and contributes to the conservation of critical biodiversity that sustains the Cuando Basin ecosystem services.

This Cuando River Basin Report Card is part of a larger project entitled "Water Partnerships for a Resilient Cuando Basin," funded by the United States Agency for International Development (USAID) and supported by the World Wildlife Fund for Nature (WWF) Zambia, the Zambezi Watercourse Commission (ZAMCOM), and the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA). The Cuando River Basin Report Card began with a stakeholder workshop that took place from 9–11 March 2020 in Kasane, Botswana. More than 35 multi-sectoral stakeholders from 19 institutions came together at this workshop to conceptualize the river basin shared vision, and discussed minimum indicators for a healthy Cuando River, which the Basin Report Card would track.

The key output from this Basin Report Card (BRC) is the common understanding among the Riparian States on the status of water and other natural resources management in the Cuando Basin. For example, it was agreed that the combined social, economic, and ecological status of the Cuando Basin is accurately represented by the grade "C-" meaning that the Cuando River Basin is moderately healthy and still in a good and pristine condition.

Strengthening transboundary water governance and inclusive decision-making mechanisms across the four Riparian Countries is important to the sustainability of this important shared basin and its future role in supporting biodiversity and people.

Sincere gratitude goes to USAID who funded the project and the supporting organizations, such as Namibia Nature Foundation, Global Water Partnerships Southern Africa (GWPSA), the World Bank (Zambia Office) and Civil Society Organizations (CSOs) that participated in the various project activities. It is worth mentioning that without communication with the countries and securing support from Member States through the respective National Multi Sectoral Stakeholder Committees (NAMSCs), the BHRC would have been a huge challenge. Accordingly, special thanks to the Ministries that form the NAMSCs in the Republics of Angola, Botswana, Namibia and Zambia for participating by providing government officials to collect field data and effectively participating in the technical review of the Cuando Basin Report Card development processes. It is our hope that this report card will be a valuable tool and source of information for planning, decision making, and other efforts towards improved management of this shared resource.

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Cuando River Basin: a transboundary river basin

The Cuando River Basin (96,778 km^2) stretches across four countries in south-central Africa. The Cuando River (731 km in length) starts in central Angola and flows between Angola and Zambia, and Namibia and Botswana, before entering the Linyanti Marshes and joining the Zambezi River. The Cuando River is a major tributary of the Zambezi River, and provides critical water resources to the heart of the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA), the largest transboundary conservation area on the planet.

Due to several decades of political and civil unrest, the Cuando River Basin has remained largely undeveloped, with a population of less than 200,000 people. However, the Cuando River Basin has recently experienced increased pressure due to political leadership shifts, climate change, and increased planned development in upstream Angola.

The Cuando River Basin includes parts of four countries in south-central Africa (Angola, Namibia, Botswana and Zambia).

Cuando River Basin: supporting a diverse natural system

The Kavango Zambezi (KAZA) Region is a vast transboundary conservation area where Angola, Namibia, Botswana, Zambia, and Zimbabwe converge. The region is home to 2.5 million people, shelters half of Africa's remaining savannah elephant population, and is critical for many other wildlife species. Most of the land in the Cuando River Basin is protected as game reserves or wildlife management areas. Much of this landscape is defined by seasonal variation in river flow, with wetlands and lakes that fill and dry depending on the season. The rich avian diversity of the region is on display during wet seasons. The Linyanti Marsh region is home to lions, leopards, African wild dogs, roan and sable antelope, and hippopotamus.

The Cuando River Basin contains savanna and open woodland habitats that serve as vital migration corridors for a variety of large mammal species. Elephants, zebras, buffalo, and wildebeests all rely on protected land in the Cuando River Basin to complete their annual migrations. Endangered species such as South African cheetah and Cape wild dog make their homes along the banks of the Cuando River. Because of the vitality and diversity of these ecosystems, Angola, Botswana, Namibia, Zambia, and Zimbabwe are committed to maintaining transboundary conservation throughout the KAZA region, including the Cuando River Basin.

This report card aims to assist in decision making to expand protected lands, increase biodiversity, maintain migration routes, and draw more tourists to the area. Inclusive conservation, which centers conservation actions on the needs of local communities, is at the heart of this approach.

Cuando River Basin **Report Card**

The Cuando River Basin Report Card is part of a larger project, "Water Partnership for a Resilient Cuando Basin", funded by the United States Agency for International Development (USAID) and supported by the World Wildlife Fund for Nature (WWF), the Zambezi Watercourse Commission (ZAMCOM), and the Kavango-Zambezi Transfrontier Conservation Area (KAZA).

The Cuando River Basin Report Card began with a stakeholder workshop that took place from 9–11 March 2020 in Kasane, Botswana. More than 35 diverse stakeholders from 19 institutions came together at this workshop to conceptualize the river basin, create a shared vision, and discuss indicators for the Cuando River Basin Report Card.

The report card aims to strengthen transboundary water governance and inclusive decision-making mechanisms across the four countries (implementing states) that the basin traverses: Angola, Botswana, Namibia, and Zambia.

Without a shared transboundary vision that balances the needs of people and the environment, these pressures could result in negative impacts to the basin and the people who live within it.

This work will ultimately help ensure inclusive and sustainable water resource management and increased water security, which will benefit the people and ecosystems in the Cuando River Basin and downstream in the Zambezi Basin.

River Basin Health **Report Cards**

River basin report cards have been shown to be a powerful instrument to describe ecosystem status, increase public awareness, and inform and influence decision-makers to take action to improve or maintain the health of a river basin's environmental, social, and economic health.

Report cards are central to the "Healthy Rivers for All" initiative, a partnership between World Wildlife Fund (WWF) and the University of Maryland Center for Environmental Science (UMCES). This partnership aims to expand report card use worldwide, as a mechanism to improve river basin awareness and management.

The process of developing **report cards** is highly participatory and includes the following five steps:

1. **Identification** of values and threats,
2. **Selection** of indicators,
3. **Definition** of thresholds,
4. **Calculation** of scores, and
5. **Communication** of results.

Cuando River Basin **Values and Indicators**

Stakeholders identified numerous values of the Cuando River Basin that have been grouped into seven categories (as shown in the figure below): water resources, landscape, biodiversity, health and sanitation, social inclusion, management and governance, and economic status. Approximately 40 indicators were originally identified as potential measures of the health of these values; however, limited data availability has resulted in a sub-set of indicators being used to assess the health of these seven values. Chosen indicators were dictated primarily by data availability, and in some instances, no data were available to confidently assess the health of certain values. These challenges are outlined in more detail later in this report.

A companion methodology report is also available that provides further details on the below indicators and the methods used to derive report card grades.

Water Resources refers to the quality and quantity of water available in the basin for environmental and human needs. There was insufficient data available for water quality and water quantity to confidently assess the health of water resources in the Cuando River Basin.

Landscape refers to basin condition in terms of connectivity of habitats, drought severity, and vegetation health.

Biodiversity refers to the abundance and diversity of flora and fauna in the basin. Although the Cuando River Basin is famous for it's biodiversity, there was insufficient information available to formally assess biodiversity at this point in time, particularly for freshwater biodiversity.

Health and Sanitation refers to the proportion of the population within the Cuando River Basin that have access to clean water, sanitation and health care facilities. Additional measures included the prevalence of malaria, anemia and diarrhea in children under 5 years old.

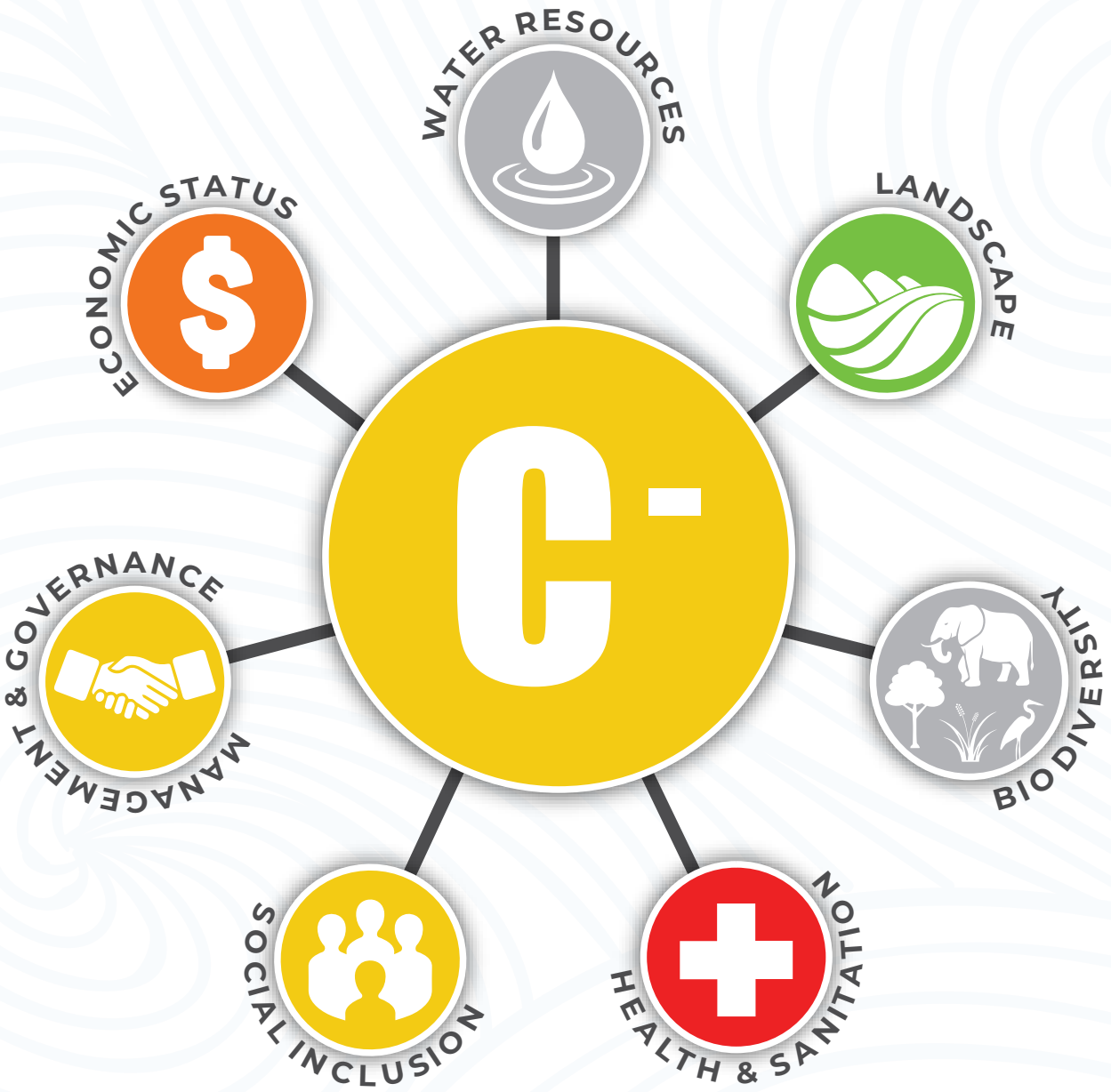
Social inclusion is a term developed for this report card to encompass gender equity, adult literacy, access to education for children and uniform access to the media in the Cuando River Basin.

Management and Governance refers to the existence and functioning of political, administrative, and social structures for water resource management in the Cuando River Basin. Information was sourced through surveys that asked questions on awareness and satisfaction of management and governance of the Cuando River Basin.

Economic Status refers to the level of employment of men and women living within the Cuando River Basin and the contribution of industries including agriculture, forestry and fishing to the gross domestic product (GDP) of the region.

Cuando River Basin

Moderate health, but more information and work needed



2021 Report Card

What do the grades **mean?**

A Excellent

All indicators meet objectives. Indicators in these locations tend to be very good, most often leading to preferred conditions.

B Good

Most indicators meet objectives. Indicators in these locations tend to be good, often leading to acceptable conditions.

C Moderate

Some indicators meet objectives. Indicators in these locations tend to be fair, leading to sufficient conditions.

D Poor

Some or few indicators meet objectives. Indicators in these locations tend to be poor, often leading to degraded conditions.

F Very poor

No indicators meet objectives. Indicators in these locations tend to be very poor, most often leading to unacceptable conditions.

Insufficient data

There is no data available or insufficient data to include this indicator at the current time.

Cuando River Basin **Findings**

WATER RESOURCES

There was insufficient data available for water quality and water quantity to confidently assess the health of water resources (surface and ground water) in the Cuando River Basin. There is currently only one gauging station in the river near Kongola in Namibia. An improved understanding of the quality and quantity of water in the basin is critically important to ensure that the unique and diverse water dependent habitats and species are maintained.

LANDSCAPE

The landscape condition of the Cuando River Basin is currently "good". The basin remains largely undeveloped except for small areas in the south of the basin that display habitat fragmentation. The drought severity index increased from north to south of the basin, which was reflected in the vegetation health indicator (NDVI) detecting much "greener" vegetation in the upper basin compared to the lower basin.

All information on "landscape" was sourced through remotely sensed satellite information.

BIODIVERSITY

Although known for its diversity of flora and fauna, there is currently insufficient data available to formally assess the status of biodiversity in the Cuando River Basin. The basin is an important wildlife corridor and preliminary evidence recorded in 2015 surveys suggest that in certain areas of the basin, elephant populations can be above desired carrying capacities. Threats to biodiversity in the basin can be attributed to human-wildlife conflicts and competition for productive areas of the basin. The relatively intact basin provides a good opportunity now to select and work towards protecting key biodiversity areas.

Other suggested indicators for biodiversity were wetland birds, fish and aquatic invertebrates; however, insufficient data were available to formally assess these indicators across the basin.

HEALTH & SANITATION

Human health and sanitation within the Cuando River Basin is currently "very poor". Conditions vary widely between the rural and urban parts of the basin, with up to 98% of the population not having access to clean water and sanitation in certain areas in the upper basin, whereas that percentage drops to 12% in other areas in the lower basin. The prevalence of malaria and anemia in children under 5-years of age follows a similar pattern, with 40% of children in certain areas displaying these illnesses and as low as 1% of children in other areas displaying these illnesses. The prevalence of diarrhea in children under 5-years of age ranged from 8-23% and was more evenly displayed throughout the basin.

All the information on "health and sanitation" was obtained through open source demographic survey reports from each of the member states.

Cuando River Basin **Findings**

Social inclusion in the Cuando River Basin is currently "moderate". Literacy among women (aged 15–49) ranged from 27% to 94% in different parts of the basin, compared to 73–92% of men of similar age. The percentage of married women of the same age group that were not involved in decision making ranged from 13–97%. Women were much more equally involved in agricultural production. The percentage of children above 6 years of age attending school varied widely within the basin from 10–77%. The percentage of people with access to media was much more uniform across the basin at 44–74%.

All the information on "social inclusion" was obtained through open source demographic survey reports from each of the member states.

Management and governance in the Cuando River Basin is currently "moderate". Over 70% of survey respondents knew which organisations in their country were responsible for managing water resources in the Cuando River Basin and agreed there were ways to report water-related concerns to these organisations. A slightly lower percentage (64%) were aware of who was responsible for managing the Cuando River Basin in its entirety. An even lower percentage of respondents agreed that local people have capacity to manage and govern water resources within the basin (48%) and 43% had heard of integrated water resource management.

All the information on "management and governance" was obtained through a 14 question survey developed specifically for this report card and distributed to both water users and policy makers.

Economic status of the Cuando River Basin is currently "poor". Information available to assess economic status were employment of men and women aged 15–49; and GDP contribution of agriculture, forestry and fishing. The average unemployment of men was 44% and 31% for women—well above the combined average 2019–20 unemployment rates for Angola, Namibia, Botswana and Zambia of 14.3%. The local communities within the Cuando River Basin are largely dependent on the natural ecosystem services which drives a large part of the region's economy, contributing 71% to GDP. Another major economic activity within the basin is tourism, but there was insufficient data to formally assess tourism as an indicator.

All the information on "economic status" was obtained through open source demographic survey reports from each of the member states.

Cuando River Basin **Recommendations**

1. The Cuando River Basin is a data-scarce region, making it challenging to make informed decisions on sustainable management and development of the natural resources. There is an urgent need to enhance monitoring and evaluation of climate and environmental variables through improved data collection.

    a. Increase the number of gaging stations in the Cuando River Basin to meet international best practice standards and equip stations to collect both water quantity and quality data.

    b. Create a Cuando River Basin Biodiversity Information Repository to collate existing information and generate new species data for long-term monitoring.

2. There is urgent need to strengthen climate adaptation and mitigation efforts such as tree planting, water efficient agriculture, implementation of rain-water harvesting techniques, and conservation agriculture to increase water infiltration. Ensure that water management plans account for more severe weather and climate conditions.

3. While connectivity across the landscape remains quite high, poorly planned development could fragment key corridors and flows of water. Land and water use plans should integrate information on key freshwater and biodiversity areas and implement a Strategic Environmental and Social Assessment for the basin to insure that these areas are well considered in future plans.

4. There is an urgent need for improved health and sanitation facilities across the basin. Integrated approaches that provide access to water, sanitation, and health and conservation benefits can support long-term sustainability.

5. Create a platform for data sharing, learning exchange, and dialogue among member states.

6. Undertake basin wide hydrological research to understand the hydrological processes and location of source water areas for the Cuando River Basin. This will contribute to effective water management and allocation.

7. Promote livelihood activities and tourism opportunities to improve job opportunities within the Cuando River Basin.

8. To encourage the maintenance of natural ecosystems, implement ecosystem environmental services, for water resources protection, forest conservation, carbon sequestration and landscape beauty.

Cuando River **State of the Basin**

This Cuando River Basin Report Card has been developed in unison with the Cuando River State of the Basin Report, supported by the United States Department of State. The aim of these two products is to increase cooperation and knowledge sharing amongst member states; increase awareness of the need for integration; increase capacity for water and natural resource management.

While the Cuando River Basin Report Card communicates the state of the basin from a stakeholder perspective, the State of Basin Report provides a much broader understanding of the physical environment as well as the socio-economic state. Both products can be used to complement each other in decision making and both recommend the need to address data and information gaps for biodiversity and hydrology of the basin.

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Photos
Cover: Elephants (Rabor74 | Dreamstime.com)
Pages 2–3: banner: River Cuando vista (WWF); Pied kingfisher (WWF); Water lilies (WWF); Hippopotamus (WWF); Workshop group photos (WWF).
Page 5: White fronted bee-eaters (Patrick Bentley / WWF-US); Hippopotamus (Dirk Fritsche, Dreamstime.com); African elephant (Timon Schneider, Dreamstime.com); Crocodile (Benjaminboeckle, Dreamstime.com); Cuando River vista (USAID); Workshop participants (WWF Zambia).
Page 6–7: Workshop participants and Cuando River vista (WWF Zambia).
Pages 8–9, 10–11: Cuando River vistas (WWF Zambia).
Pages 12–13: White blooming water lilies (Timon Schneider, Dreamstime.com).
Pages 14–15: Chacma baboon (Patrick Bentley, WWF-US); African jacana (WWF Zambia); Gazelle (WWF Zambia); Hippotamus (WWF Zambia); Elephants drinking (WWF Zambia).

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