Cahora Bassa North Bank Hydropower Project

Hidroeléctrica de Cahora Bassa

Zambezi River Basin

Hydropower Sustainability Assessment Protocol

Contents

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O orgulho de Moçambique

Introduction

The hydropower resources of the Zambezi River Basin are central to sustaining economic development and prosperity across southern Africa.

The combined GDP among the riparian states is estimated at over US$100 billion. With recognition of the importance of shared prosperity and increasing commitments toward regional integration, there is significant potential for collective development of the region's rich natural endowments. Despite this increasing prosperity, however, poverty is persistent across the basin and coefficients of inequality for some of the riparian states are among the highest in the world.

Reflecting the dual nature of the regional economy, new investments in large infrastructure co-exist alongside a parallel, subsistence economy that is reliant upon environmental services provided by the river. Appropriate measures are therefore needed to balance these mutual dependencies among different users within a sustainable guiding framework.

The Basin has close to 5,000 MW of installed hydropower generation capacity, with the potential approaching 15,000 MW. Development of the hydropower sector according to the generation plan of the Southern Africa Power Pool (SAPP) would include some 53 projects, over more than 15 years. If the full hydropower potential in the Zambezi River Basin was developed this would have the potential to double the production of firm energy from 22,776 to around 43,000 GWh/year. Average energy production would also double from 30,000 to around 60,000 GWh/year due to the extension of existing facilities and the addition of new infrastructure. This is sufficient to meet all or most of the estimated 48,000 GWh/year demand of the riparian states.

SOUTHERN AFRICA
ZAMBEZI RIVER BASIN

- ZAMBEZI SUB-BASIN BOUNDARIES

EXISTING DAMS:

CAHORA BASSA	2,075 MW
KARIBA	1,470 MW
KAFUE GORGE UPPER	990 MW
NKULA FALLS	124 MW
VICTORIA FALLS	108 MW
TEDZANI	90 MW
ITEZHI-TEZHI	80 MW
KAPICHIRA	64 MW

PROJECTED DAMS/ RUN OF THE RIVER FACILITIES:

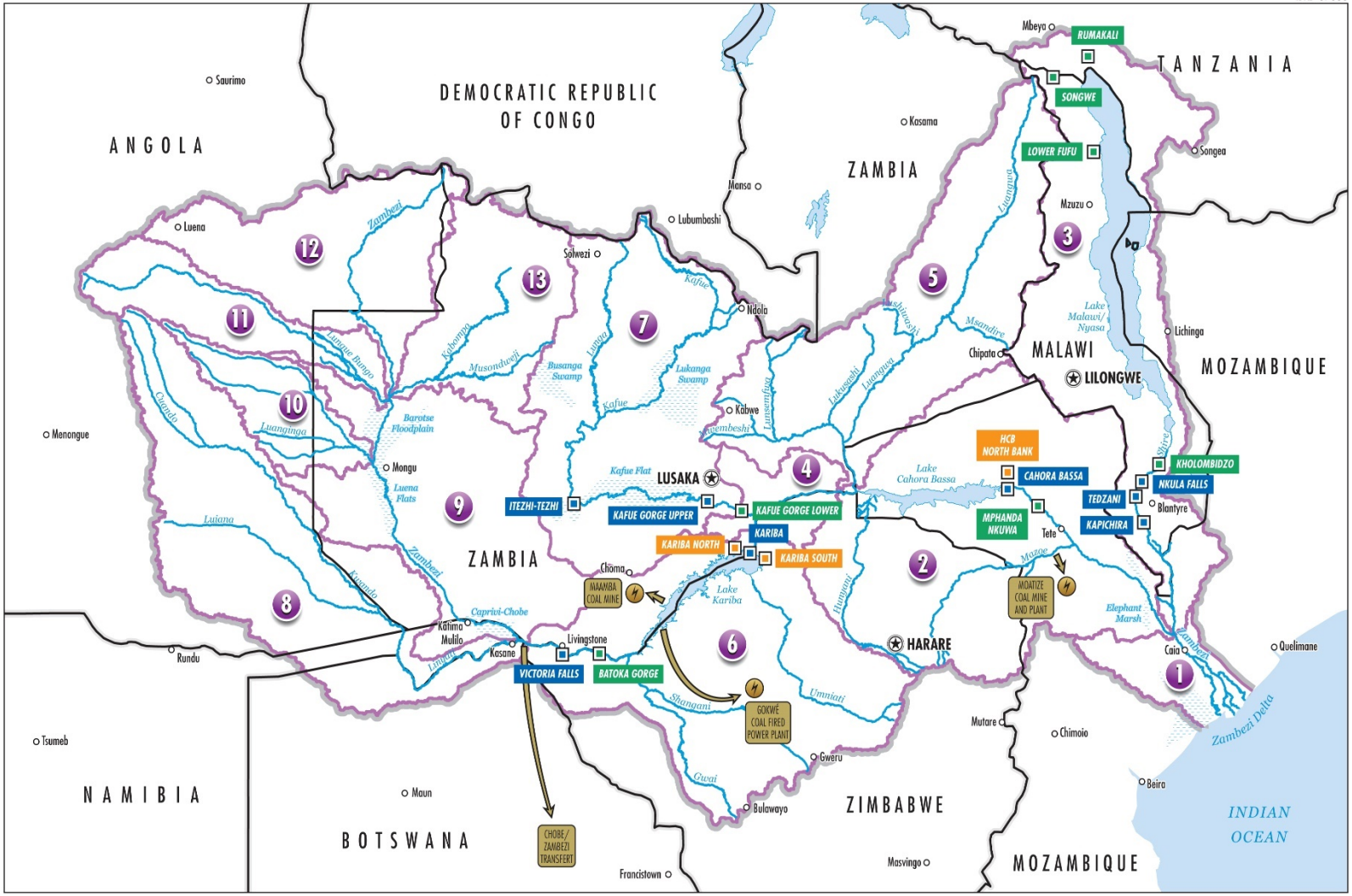
MPHANDA NKUWA	2,000 MW
BATOKA GORGE	1,600 MW
KAFURE GORGE LOWER	600 MW
KHOLOMBIZO	479 MW

EXTENSION:

HCB NORTH BANK	850 MW
KARIBA NORTH	300 MW
KARIBA SOUTH	300 MW

- MAIN PLANNED WITHDRAWALS
- NATIONAL CAPITALS
- MAJOR CITIES
- INTERNATIONAL BOUNDARIES

0 25 50 100 200 Kilometers
0 50 100 150 Miles

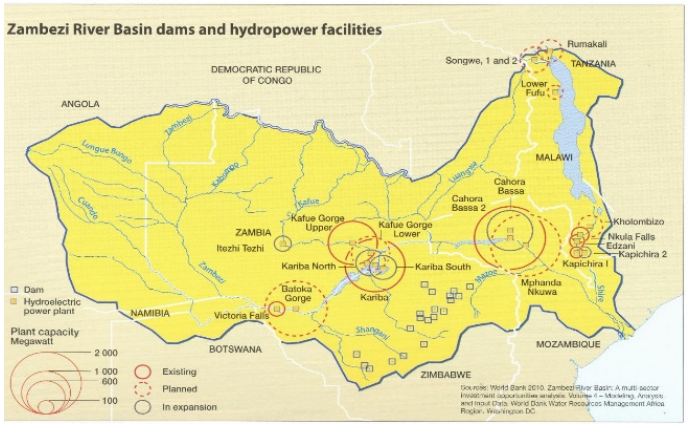


	1 ZAMBEZI DELTA		2 TETE		3 SHIRE RIVER/LAKE MALAWI-NYASA		4 MUPATA		5 LUANGWA		6 KARIBA		7 KAFUE	
	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)
CURRENT SITUATION (CS)	7,664	6,998	52,572	35,159	60,960	42,416	21,790	14,200	17,794	10,100	44,531	28,186	46,528	40,158
IDENTIFIED PROJECTS (IP)	106,774	84,053	123,193	72,995	162,126	101,927	30,356	20,060	28,857	16,230	228,919	147,778	67,048	53,768
UPPER LIMIT POTENTIAL (HU)	231,774	184,053	523,193	272,995	766,755	451,927	30,356	20,060	73,814	41,230	948,825	591,578	104,448	78,768

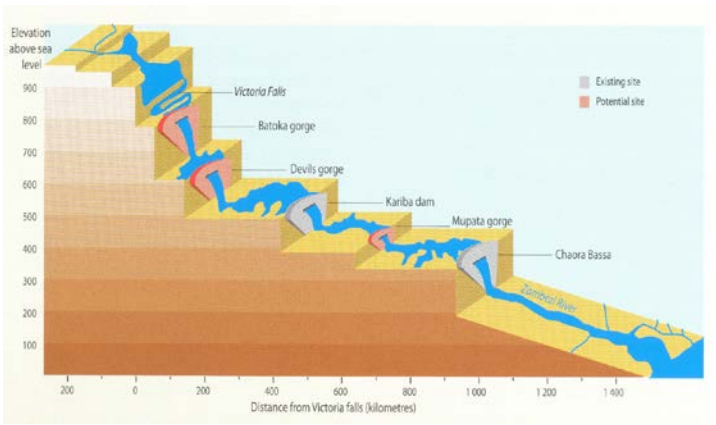
	8 CUANDO/CHOBE		9 BAROTSE		10 LUANGINGA		11 LUNGUE BUNGO		12 UPPER ZAMBEZI		13 KABOMPO	
	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)
CURRENT SITUATION (CS)	765	620	340	200	1,000	750	1,250	1,000	3,250	2,500	595	350
IDENTIFIED PROJECTS (IP)	1,215	920	12,753	7,208	6,000	5,750	1,875	1,500	8,250	7,500	11,314	6,650
UPPER LIMIT POTENTIAL (HU)	19,215	15,920	30,466	17,208	18,500	15,750	14,375	11,500	20,750	17,500	28,328	16,650

MARCH 2010

Hydropower Facilities in the Zambezi River Basin



Source: SADC/SARDC and others, 2012. Zambezi River Basin Atlas of the Changing Environment.



Source: SADC and ZRA, 2007. Rapid Assessment Report: Integrated Water Resources Management Strategy for the Zambezi River Basin. SADC Water Division, Gaborone.

More than US$16 billion worth of investments have been identified at the pre-feasibility or feasibility stage of preparation within the Zambezi River Basin[1]. Many of these proposed investments were identified long ago and have been in the pipeline for several decades. In addition to the challenges of financial mobilization within numerous competing demands, the geo-political history and contemporary transboundary nature of many of the resources creates a complex environment within which to advance the sustainable development of common pool resources.

Cooperation around the development and operation of hydropower resources within the Zambezi River Basin has the potential to provide substantial benefits.

The framework for this cooperation is provided by the eight riparian states through the "Agreement on the Establishment of the Zambezi Watercourse Commission (ZAMCOM)". The ZAMCOM Agreement promotes the equitable utilization, efficient management, and sustainable development of the Zambezi River Basin. Realizing the vision within this agreement requires a combination of strong institutions to drive the process, data collection and information sharing to inform decision-making, and infrastructure investments to provide for people's basic needs and boost economic growth within a sustainable framework.

In addition to the opportunities for cooperative development, it has been estimated that improved coordination in operation of the hydropower facilities envisaged under the Southern African Power Pool (SAPP) could provide an additional 23 percent of generation over uncoordinated (unilateral) operation.

Even in the absence of the full development scenarios outlined in the SAPP, coordinated basin-wide operation of existing hydropower facilities could increase firm energy production by seven percent over the current situation. The economic value of this basin-wide cooperation in terms of additional generation, with minimal investment, is estimated at over US$585 million over a 30-year period.

There are several additional benefits from improved cooperation beyond the energy sector. The gains from a coordinated basin-wide program could increase agricultural production and job creation, reduce vulnerabilities to hydro-climatic shocks and promote deeper co-operation and regional integration.

The results of a multi-sectoral investment analysis[1] show that improved cooperation around the development of planned investments in the basin have the potential to double the area under irrigation and provide more than 500,000 new jobs, while enhancing economic resilience by reducing the risks associated with floods that generate estimated losses of over US$1 billion per year on average.

The World Bank has been supporting a comprehensive program to strengthen cooperative management and development within the Zambezi River Basin. This program provides regional financing and analytical work that brings together the various commitments within a World Bank-financed portfolio of more than US$2 billion to facilitate dialogue among the riparian states and further drive the development of climate-resilient water resources for sustainable growth.

The application of the Hydropower Sustainability Assessment Protocol in the Zambezi River Basin represents part of this broader program of support to the riparian states toward enhancing development outcomes through improved cooperation and sustainable development.

[1] The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Vol.1, Summary Report, The World Bank Africa Region, Water Resources Management, June 2010.

The Hydropower Sustainability Assessment Protocol

The Hydropower Sustainability Assessment Protocol ('the Protocol') is a framework to compare the performance of hydropower projects using a defined set of globally-applicable sustainability criteria[2]. These criteria encompass a range of environmental, social, technical, and financial issues and provide a shared language for improved dialogue on sustainable hydropower.

The Protocol is the product of an intensive and transparent dialogue by the multi-stakeholder Hydropower Sustainability Assessment Forum (HSAF). Constituted in 2007, the HSAF included representatives from industry, civil society, donors, developing country governments, and commercial and development banks. Stakeholder views were solicited from over 20 countries involving 1,300 participants and pilot assessments carried out in 20 countries on six continents to reach consensus on the inclusion of aspects of sustainability and the definition of good and best practice. After completion of the Protocol, the Hydropower Sustainability Assessment Council was established along with a "Management Entity" for day-to-day implementation of the Protocol.

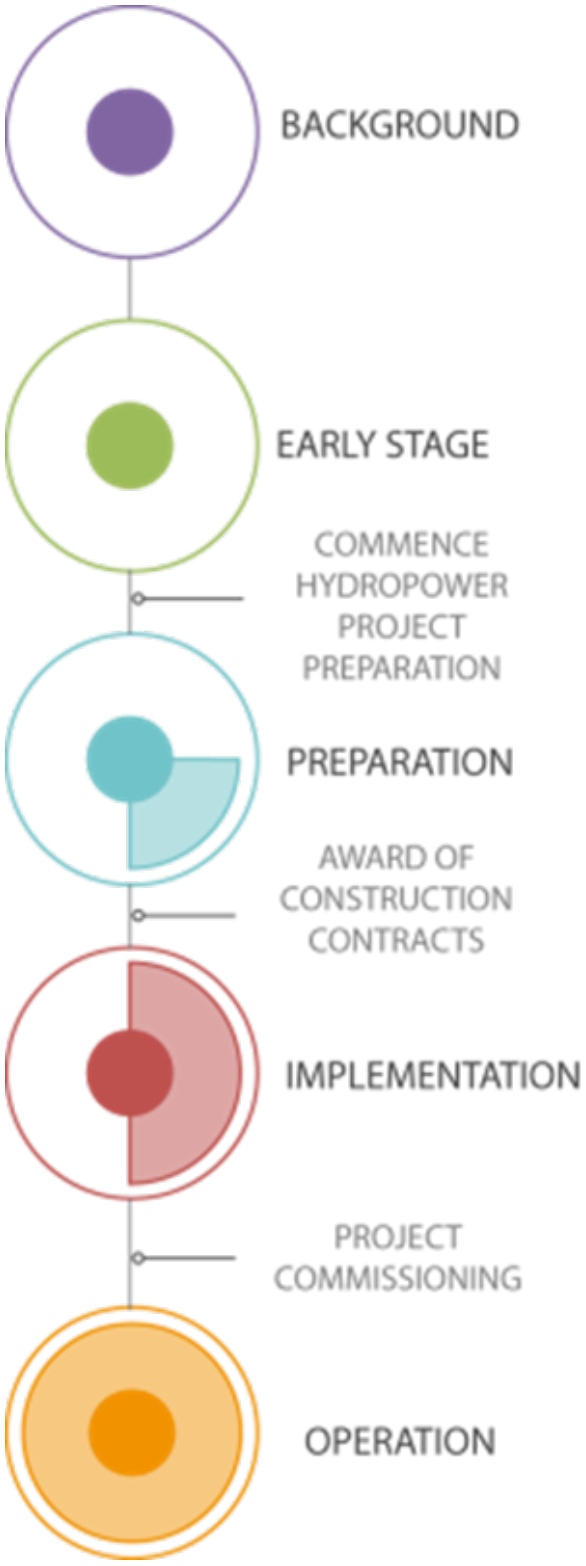
The Hydropower Sustainability Assessment Council consists of seven sectoral chambers. Each chamber represents a segment of stakeholders and ensure continuity in the multi-stakeholder approach that was used to develop the Protocol. The Chambers all elect two representatives to a Protocol Governance Committee (PGC) that provides oversight to the Protocol and its management, while the International Hydropower Association (IHA) serves as the Management Entity (Figure 3).

To reflect the different stages of hydropower development, the Protocol includes four assessment tools. These can be used separately with each corresponding to stages of project development, including: 1) the Early Stage; 2) the Preparation Stage; 3) Implementation; and, 4) Operation.

Each tool is made up of a set of sustainability topics of most relevance to that stage of the project, containing definitions of basic good practice and proven best practice for over 20 sustainability topics that combine environmental, social, technical, and economic/financial perspectives (Table 1).

A Protocol assessment identifies gaps that can be addressed, promoting the continuous improvement of sustainability performance. An assessment provides a platform for dialogue with a range of stakeholders, either through the sharing of results or involvement in the assessment. These may be official assessments carried out by independent IHA-accredited assessors or through informal or self-assessments (Box 1).

To date, over 25 official assessments have been conducted on projects with capacities from 3 to 14000 MW, in all regions of the world.



[2] Further information on the Protocol and its governance can be found on www.hydrosustainability.org

List of Protocol Topics:

	Sustainability Topics	Preparation	Implementation	Operation
Technical	Siting and Design	●		
	Hydrological Resource	●		●
	Demonstrated Need and Strategic Fit	●		
	Infrastructure Safety	●	●	●
	Asset reliability and efficiency			●
Environmental	Environmental and Social Impact Assessment and Management	●	●	●
	Erosion and Sedimentation	●	●	●
	Water Quality	●	●	●
	Waste, noise and air quality		●	
	Reservoir Planning / Preparation and Filling / Management	●	●	●
	Downstream Flow Regimes	●	●	●
	Biodiversity and Invasive Species	●	●	●
Social	Communications and Consultation	●	●	●
	Project Benefits	●	●	●
	Project Affected Communities and Livelihoods	●	●	●
	Cultural Heritage	●	●	●
	Indigenous Peoples	●	●	●
	Resettlement	●	●	●
	Public Health	●	●	●
	Labor and Working Conditions	●	●	●
Business and Economic	Financial Viability	●	●	●
	Economic Viability	●		
	Procurement	●	●	-
	Governance	●	●	●

Box 1. Ways of Using the Protocol

Official assessment. *This is an assessment conducted by a team of independent IHA-accredited assessors. Assessments rely on objective evidence to support findings that are factual, reproducible, and verifiable. At the end of an assessment, the assessors deliver a report using an approved format, including a set of scores indicating performance in relation to basic good practice and proven best practice. Reports are delivered in English, but can be translated.*

Informal self-assessment. *This is an assessment conducted internally within an organization. If the Protocol is used informally in this way, the report can be in any language, a shorter version of the report could be used, or only specific topics assessed. If made public, the report is required to carry a disclaimer stating that it is not an official assessment, in keeping with the Protocol's Terms and Conditions.*

Assisted self-assessment. *This is an informal self-assessment, but accredited assessors work with the developer or operator to advise them on how to interpret and use the Protocol. Using the findings of an assisted self-assessment, assessors can work with the developers, to identify an action plan, setting out the actions they will take to improve sustainability. This approach is very useful for capacity-building, or in situations where the project may have many gaps compared to the Protocol's basic good practice.*

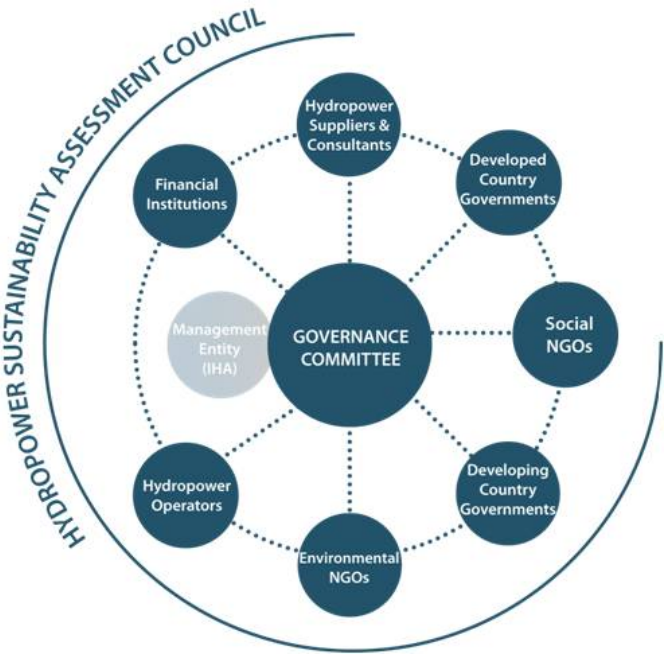
Verification. *An alternative to the assisted self-assessment is for Accredited Assessors to provide a verification of an internal self-assessment. This would require translation of the report into English and stakeholder interviews carried out by the accredited assessor. This process would deliver a critical review of the assessment report and verification of its findings.*

Templates for basic good practice only. *IHA is currently developing approved templates for conducting assessments that focus only on the environmental, social and governance topics at the basic good practice level. The intention is that assessments can be conducted at lower cost due to this lower scope.*

Checklists. *A further option is to develop and use shorter checklists based on the protocol that can be applied quickly and with minimal effort.*

Guidance. *At the most basic level, the Protocol can be used as a guidance document. For example, government agencies can use it to understand the range of hydropower sustainability issues, or the operator's personnel can refer to it in their day-to-day work, for example in developing terms of reference for an EIA.*

Structure of the Hydropower Assessment Council



Source: Hydropower Sustainability Assessment Protocol, 2017
http://hydrosustainability.org

The Project

The Cahora Bassa Hydro-Electric Scheme was built between 1969 and 1974 on the main stem of the Zambezi River in Mozambique. The dam is a 171-meter-high roller compacted concrete dam with a crest length of 303 meters, which forms a 55.8 billion cubic meter reservoir with a surface area of 2,739 square kilometres at full supply level. The original construction included provision for two power stations, one on the south bank and a second on the north bank.

The Cahora Bassa South Bank Power Station was built at the time of dam construction and is situated in a 220m long, 29m wide and 57-meter-high cavern on the south bank of the Zambezi River. The power station includes five 415 MW Francis turbines providing a total installed capacity of 2,075 MW.

The Cahora Bassa North Bank Power Station would be an extension to the existing Cahora Bassa Hydro-Electric Scheme and developed in an underground cavern on the north bank of the Zambezi River. Preparation of the CBN project resumed between 2011 and 2013 with studies on the hydrological, geotechnical and geological conditions along with social and environmental impact assessments. Financial and economic analyses are yet to be carried out.

The Cahora Bassa North Bank Power Station would use the dam, reservoir and other facilities of the existing installation, with three additional Francis turbines of 415 MW each, extending the total installed capacity by 1,245 MW from 2,075 MW to a total of 3,320 MW. A 140-meter-long bridge would be built downstream of the dam to provide access to the north bank during construction. Access during operation would be through a tunnel from the crest of the dam while transmission lines would pass over the dam wall and connect to the existing Songo substation.

The CBS and CBN plants would be operated jointly, with coordination of power generation, water storage, downstream discharges, and flood control. While CBS will continue to provide base load generation, CBN would be operated as a peaking plant during the high demand periods from 08h00 to 16h00 daily. Most of the power produced by the dam has historically been dispatched to the South African utility ESKOM under long-term Rand-denominated contracts. An increasing proportion of the power is bought back from ESKOM by the national utility in Mozambique, Electricidade de Moçambique (EDM0, and a small proportion is sold to Zimbabwe (ZESA) and the Southern African Power Pool under short-term contracts.

Hidroeléctrica de Cahora Bassa (HCB) was established on June 23, 1975, just two days before Mozambican independence, and is responsible for the operation and maintenance of the Cahora Bassa Hydro-Electric Scheme. HCB was originally majority-owned by the government of Portugal until the Mozambican government became the majority shareholder in 2007.

HCB is also a joint partner with ESKOM in ownership and management of the closely associated Cahora Bassa Transmission Project. This includes a high-voltage direct current transmission line from Songo in Mozambique to the Apollo Station near Johannesburg. The commercial arrangements also include EDM which takes supply from Cahora Bassa through a wheeling arrangement with ESKOM in the south of the country, primarily for supply to Maputo.

Cahora Bassa Dam

Photo credit: Aida Khalil

Project	Cahora Bassa North Bank Extension
Country	Mozambique
Location	On the Zambezi River, Cahora Bassa District and Maravia District, Tete Province
Capacity	1245 MW
Developer / operator	Hidroeléctrica Cahora Bassa (HCB)
Dam height	171 m
Width at crest	303 m
Reservoir area	2,900 km^2
Units (number, type, MW)	Three Francis turbines of 415 MW each
Associated infrastructure: road(s) (length)	No additional roads; bridge to access the north bank
Associated infrastructure: transmission line(s)	No additional transmission line other than a line passing over the dam crest to the Songo sub-station

The Process

HCB assessed the CBN project using the Preparation stage tool of the Protocol. This was an assisted self-assessment with advice and support for the assessment provided by accredited assessors through a World Bank-supported program 'Application of the Hydropower Sustainability Assessment Protocol in the Zambezi River Basin'. Technical consulting services were provided by the International Hydropower Association (IHA).

The program consisted of introductory training, detailed training for the HCB team, the assessment (including support during interviews and a site visit from accredited assessors), and review of HCB's draft report by the accredited assessors. Table 3 provides a summary of the process and the people involved.

HCB's objectives for the assessment

- Understand sustainability and evaluate the Cahora Bassa Norte project in its preparation phase, using the Protocol;

- Identify improvement opportunities and indicate the positive aspects of project performance in the preparation phase;

- Ensure transparency and commitment of stakeholders;

- Analyze regulatory compliance performance against the requirements established under the Protocol to understand the synergies that exist;

- Disseminate evaluation information, benefits and results to stakeholders.

Dwellings within the Cahora Bassa buffer zone affected by the reservoir expansion under the Cahora Bassa North Bank Project
Photo credit: Aida Khalil

This was the first application of the Protocol by HCB. The process involved collection of verbal, visual and documentary evidence to appraise project processes and performance against the Protocol's Preparation tool scoring criteria. Interviews covered the views of the developer, employees, government institutions, and affected communities.

Interviewees shared their opinions and knowledge openly and professionally, and the established interview schedule allowed for daily feedback from accredited assessors on interview technique and findings.

Table 3. Key dates and participants

Location and key dates	
Introductory training	Livingstone, 31st May – 1st June 2016
HCB detailed training	Songo, September 2016
Assessment	October 2016 to March 2017
First experience-sharing workshop	January 2017
Mid-assessment visit (interviews, site visit)	27th February to 3rd March 2017
Draft report completed	August 2017
Second experience-sharing workshop	August 2017
Final report completed	September 2017
Third experience-sharing workshop	December 2017
Who was involved?	
HCB's internal client for the assessment	Eng. Nelson Beete (Executive Director)
HCB's lead assessor	Aida Mabjaia
HCB's assessors	Adelino Manuel, Binte Insa, Bruno Matsinhe, Celma Cuaira, Chico João, David Chirindza, Edite Nhantumbo, Ivo Pene, Ilídio Tembe, José Matola, Jeremias Manjate, Nico Savaio, Pamella Saunguene, Pedro Conhaque, Rosaque Guale
Interviewees	At least 15 interviews including senior internal and external representatives, and communities in Songo and Maravia
Accredited assessors	Doug Smith, IHA Consultant, and Aida Khalil, IHA Sustainability Specialist
Observers	Kimberly Lyon, Cecil Nundwe and Marcus Wishart of the World Bank

Action Planning for Improved Sustainability

The assisted self-assessment of Cahora Bassa North was an opportunity for HCB to understand how project preparation to date was performing in relation to international good practice and to identify areas where the process could be improved. It was also an opportunity for hands-on training in the Hydropower Sustainability Assessment Protocol.

The results of the self-assessment, though unofficial, are useful in highlighting areas for management attention and actions that can be taken to improve the project. This includes both the new facilities for the North Bank power station and the existing facilities that would be part of the project.

HCB's internal team of assessors, with guidance from Accredited Assessors, determined that the Preparation Stage tool was most appropriate and that three topics under that tool were not relevant for CBN: P-14 Resettlement, as no physical displacement expected for the expansion; P-15 Indigenous Peoples, as there are no people that meet the definition of indigenous peoples in the area; and P-17 Cultural Heritage, as there is no physical cultural heritage that could be affected by the project. Two topics, P-6 Integrated Project Management, and P-9 Financial Viability, are difficult to judge so early in the preparation of the project.

HCB trainee assessors on the initial training course

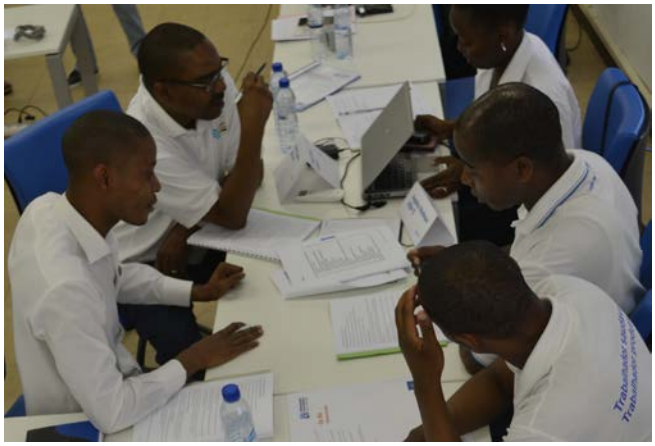


Photo credit: Rosaque Guale

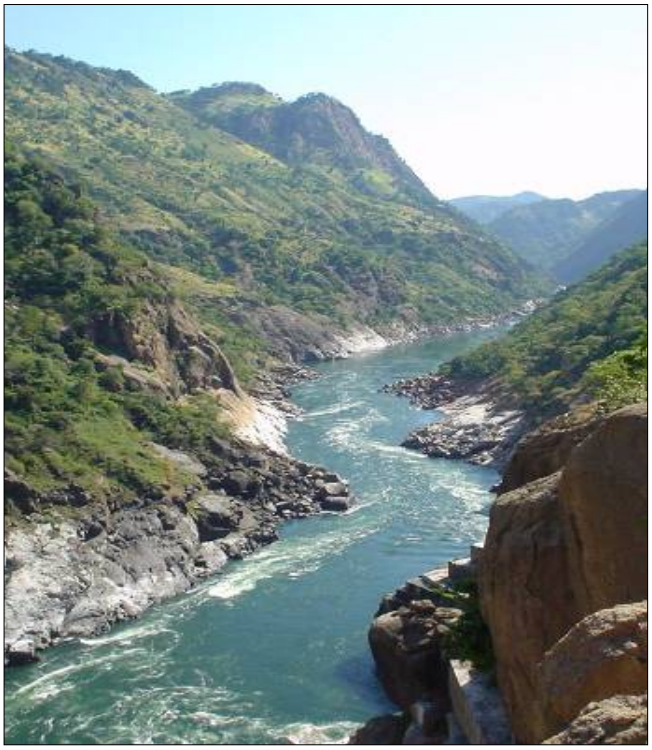


Photo credit: Louise Croneborg

HCB's team of assessors determined that CBN preparation met or exceeded Basic Good Practice for 4 topics: P-19 Biodiversity and Invasive Species; P-20 Erosion and Sedimentation; P-21 Water Quality; P-22 Reservoir Planning.

For other topics, where the assessors found gaps against Basic Good Practice, many were related to communications or stakeholder engagement and the Environmental and Social Impact Assessment study. The assessment also highlighted some additional studies and plans that have not yet been done but that are important for sound project preparation.

An Action Plan has been developed by HCB to address the priority gaps. This is focused initially on those gaps that have wider corporate applicability and that also affect existing Cahora Bassa facilities.

Disclaimer: This assessment is an Unofficial assessment as it does not comply with the necessary terms required of an Official assessment. The results of this assessment do not necessarily reflect the quality required of an Official assessment and may not be an accurate reflection of the sustainability of the assessed project.

Table 4. Initial draft of HCB's Action Plan

	Significant Gaps	Actions
P-1 Communications and Consultation	There are no ongoing processes are in place for stakeholders to raise issues and get feedback, including feedback on the ESIA results	Update mapping of the main stakeholders for CBN and CBS, both internal and external. Benchmarking with other institutions (national and international) Revise document on community relations Improve communication process and procedure (flow diagram) for community engagement Develop a policy on publication of reports
P-2 Governance	Internal Communication	Reinforce internal communication on strategic plan 2018-2022 Promote information-sharing on a timely basis
P-10 Project Benefits, P-13 Project-affected Communities and Livelihoods	Chipera (Maravia) community do not / will not receive additional benefits	Include Chipera in database of beneficiary communities Estimate number of people that might be affected by CBN
P-8 Infrastructure Safety	Issues such as the interaction with other projects (cascade failure) and public safety risks have not been analysed	Dam Break analysis for the whole basin (already underway) Develop and implement a project concept for disaster management (coordination mechanism) Check the report on Potential Failure Modes Analysis (PFMA) and the Emergency Preparedness Plan (downstream response and responsibility)
P-22 Reservoir Management / P-23 Downstream Flow Regimes	The need to consider aspects related to climate change and its implications on the availability of water for the purposes of electricity production	Review and update engineering design of the infrastructure to cover downstream Review/upgrade reservoir operation plan (new rule curve and exploration plan) Review operation optimization in view of opportunity for joint operation and climate change

Key Lessons Learned and Future Use of the Protocol

Choice of tool

The team from HCB used the Preparation stage tool for the CBN assessment and prepared a report similar to an official assessment. This includes a substantial project description, and findings on both basic good practice and proven best practice for each topic.

Availability of information

The success of the assessment relies on the availability of information. Using the Protocol to assess this project was challenging as it is very early in its preparation. It is also unlikely to be developed in the near future, and thus the findings have less immediate practical value to HCB. For this reason, action planning has been focused on the gaps with wider corporate or regional applicability.

Auditing or self-assessment?

The support to the application of the Protocol in the Zambezi River Basin was deliberately structured around self-assessment coupled with training and capacity building. HCB's assessment was a self-assessment, with the team conducting the assessment being drawn from specialists involved in the preparation of CBN. This contrasts with the approach of other utilities, such as ZESCO, whose team more resembled a corporate auditing team not involved in the operations.

Delivering a full assessment report requires dedicated effort

Producing a full assessment report proved to be challenge. Unlike an official assessment with dedicated Accredited Assessors, a self-assessment often relies on the developer's or operator's own staff to take on the role of internal assessor in addition to their normal responsibilities. In the case of the self-assessments under the Zambezi River Basin Program, all the operators chose to prepare substantial assessment reports in a style similar to an official assessment. While this helps the operators gain a deeper understanding of the Protocol and how to carry out an assessment, it may not be practical to do this on a continuous basis. This points to the need for a more concise, checklist style of reporting rather than a long and detailed full assessment report, particularly if it is to form the basis of a regular reporting tool.

Interviews require good preparation

In a Protocol assessment, assessors arrive at credible findings by collecting different types of evidence, including interviewing a diverse group of stakeholders. Project staff are among the most important stakeholders as they are most knowledgeable about the project. During the self-assessments, the internal assessors needed to interview project staff, including their own colleagues and sometimes their superiors. This can be challenging, especially on topics the interviewers are themselves very knowledgeable as their questions can give the impression they do not already know the answers. This can pose a risk of embarrassment and make it difficult to ask critical questions.

It can also be a challenge for operator/developer staff to interview external stakeholders as these stakeholders can be genuinely confused about the purpose of the interview. In the affected communities, for example, an interview for a Protocol assessment can draw large groups from the community, who are interested to learn about project progress or who have unresolved issues to raise. This can be very helpful to the assessor to get inputs from several different stakeholders at one time, but it can also make it difficult to ask follow-up questions, and there may not be enough time to get through the range of questions the assessor prepared in advance.

Conducting interviews for a Protocol assessment is a skill, which improves with practice. Throughout the process, many of the assessors proved that they were excellent interviewers by preparing questions related to the Protocol's criteria in advance, asking follow-up questions, identifying documentary evidence during the interviews, and summarizing the key points carefully at the close of the interview. It also helps to explain as clearly as possible the purpose of the interview and encourage interviewees to express their views openly.

Combining training and assessment

Continuity is important to sustaining the process and building capacity. There were long periods between the initial training and the mid-assessment visit by Accredited Assessors (which coincided with site-based interviews), as well as between the mid-assessment and delivery of the report. While intended to allow time for analysis of information and preparation of reports, future self-assessments should consider an initial round of internal interviews that can be arranged immediately following the training on the Protocol. The site visit and interviews with external stakeholders can then be arranged later to maintain momentum and distribute commitments over time.

Objectivity

It is inevitable in a self-assessment or internal audit that there would be some loss of objectivity compared to an independent official assessment. There was a tendency to over-score and significant gaps against basic good practice were reported against proven best practice in order to deliver a higher score. This may be driven partly by the possibility of the assessors' reluctance to present critical findings to their managers or to question the project. Solutions to this may include: review of the assessment reports by Accredited Assessors; review of initial drafts by a second internal assessor; and careful selection of the assessors, among others.

Future use of the Protocol

As part of the continued application of the Protocol in the Zambezi River Basin, a number of follow-up activities have been proposed:

- Development of annual project performance summaries across the basin for discussion within the JOTC and ZAMCOM;
- Review and integration of elements from the Protocol in Environmental and Social Management Systems;
- Undertaking official assessments for existing facilities under operation;
- Integrating elements of the Protocol into the assessments and management plans for new projects.

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