Itezhi-Tezhi Hydropower Project

A TATA POWER/ZESCO Joint Venture Company

Zambezi River Basin

Hydropower Sustainability Assessment Protocol

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iha international hydropower association

ZESCO

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.

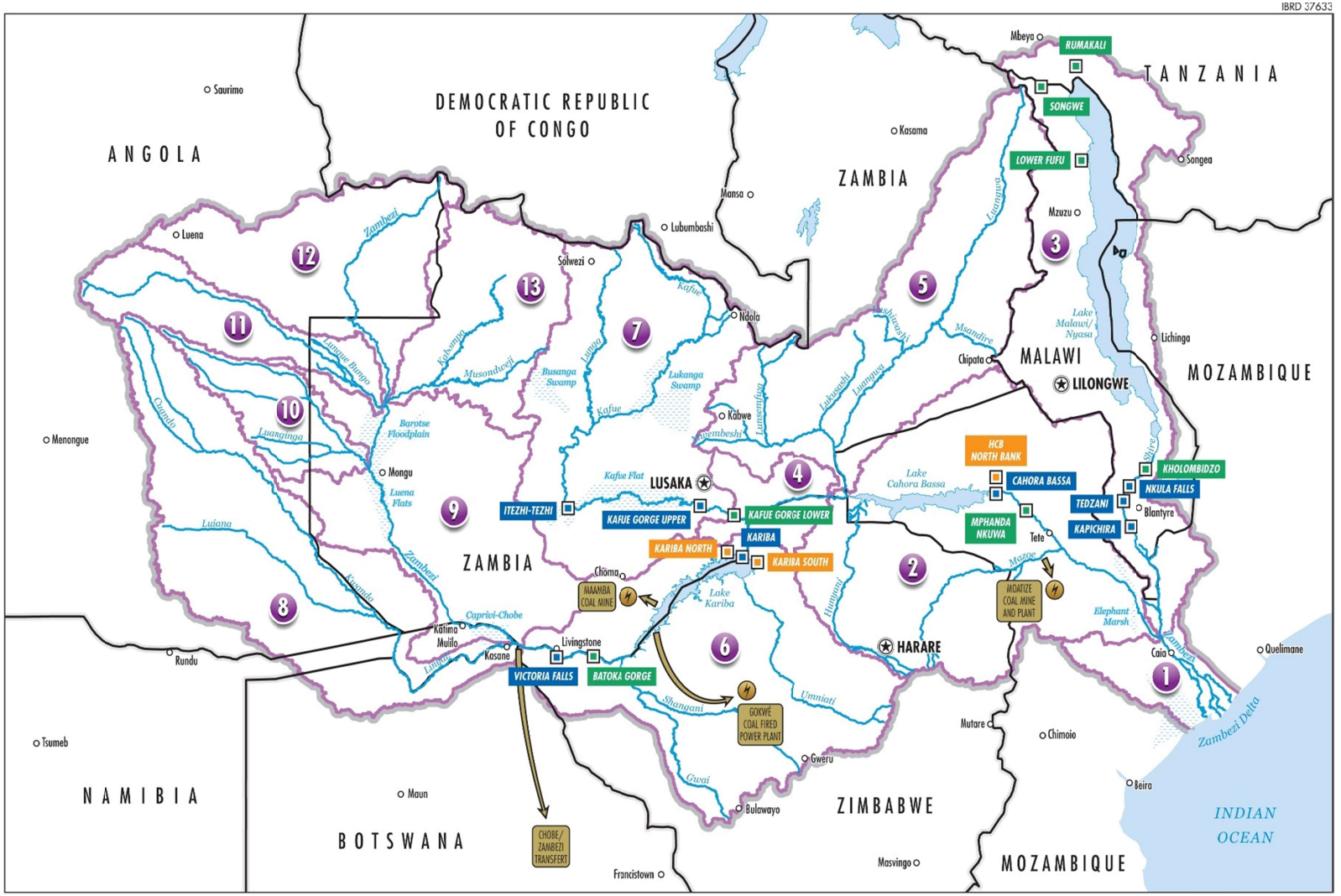
The Basin has close to 5,000 MW of installed hydropower generation capacity, with the potential approaching 15,000 MW. Development of the hydropower sector according to the generation plan of the Southern Africa Power Pool (SAPP) would include some 53 projects, over more than 15 years. If the full hydropower 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.

IBRD 37633

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

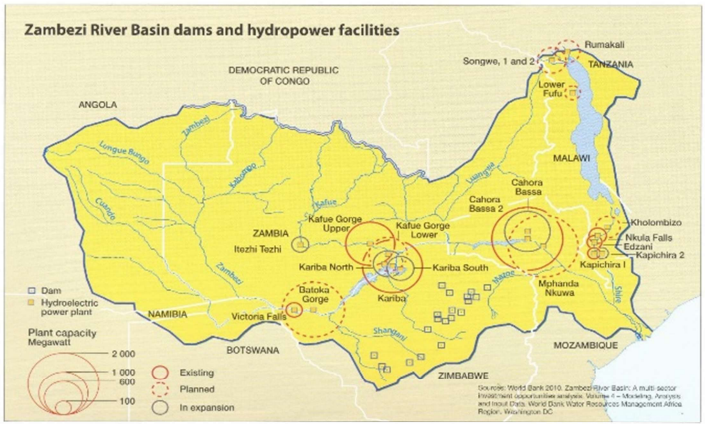


	1 ZAMBEZI DELTA		2 TETE		3 SHIRE RIVER/LAKE MALAWI-NYASA		4 MUPATA		5 LUANGWA		6 KARIBA		7 KAFUE	
	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED 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 (HLI)	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

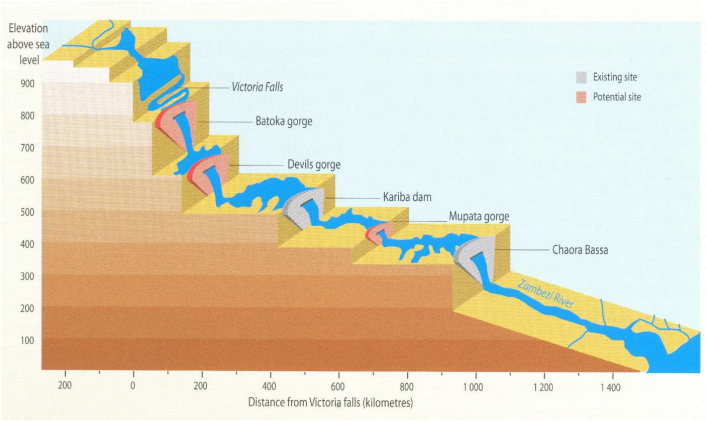
	8 CUANDO/CHOBE		9 BAROTSE		10 LUANGINGA		11 LUNGUE BUNGO		12 UPPER ZAMBEZI		13 KABOMPO	
	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (ha)	IRRIGATED AREA (ha/year)	EQUIPPED AREA (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 (HLI)	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.

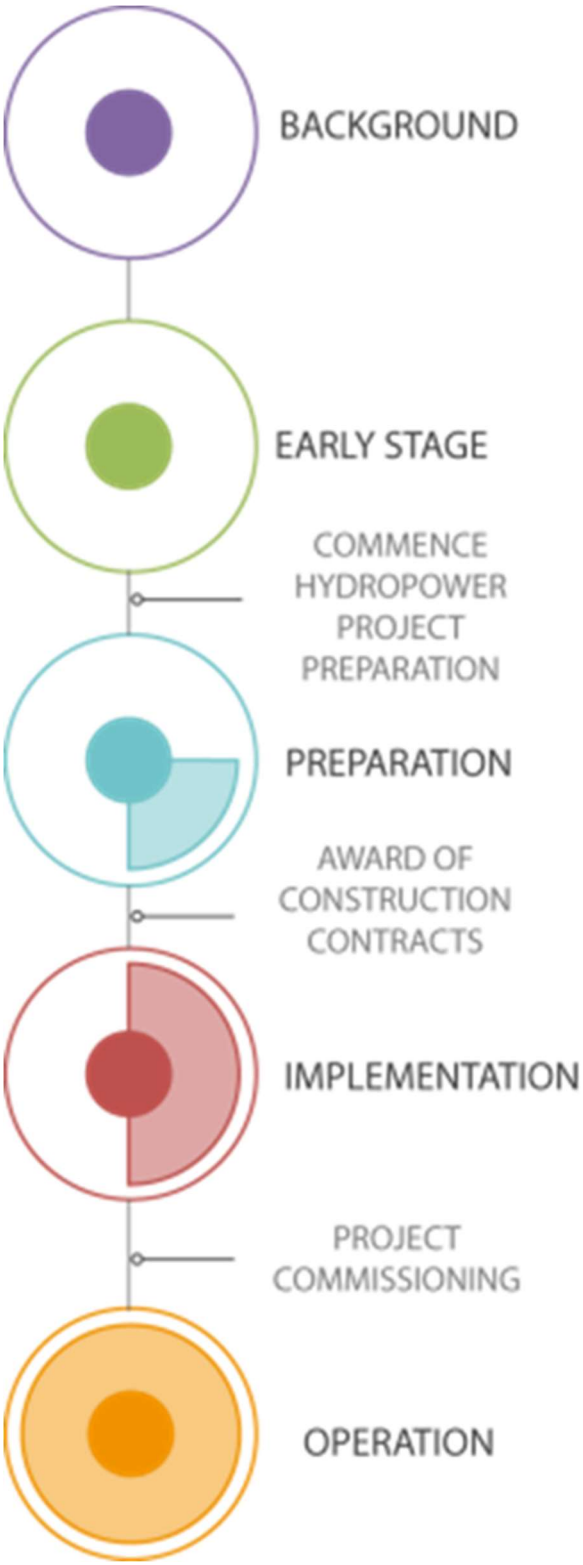
The Hydropower Sustainability Assessment Council consists of seven sectoral chambers. Each chamber represents a segment of stakeholders and ensure continuity in the multi-stakeholder approach that was used to develop the Protocol. The Chambers all elect two representatives to a Protocol Governance Committee (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.*

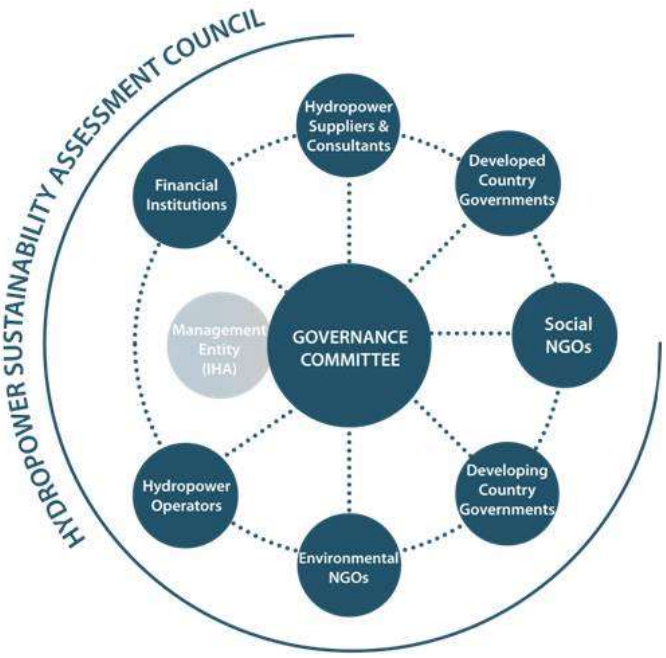
Verification. *An alternative to the assisted self-assessment is for Accredited Assessors to provide a verification of an internal self-assessment. This would require translation of the report into English and stakeholder interviews carried out by the accredited assessor. This process would deliver a 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 Itezhi-tezhi Dam was built between 1974 and 1977 to provide additional water storage for the 900 MW Kafue Gorge Upper Power Station situated roughly 260 km downstream. The Itezhi-tezhi dam is a 65-meter-high earth and rockfill embankment dam with a crest length of 1.8 km, which forms a 5.66 billion cubic meter reservoir with an area of 350 square kilometers at full supply level.

The original design and construction of the dam included facilities such as the intakes, spillway gates, tunnels and the regulation gate to allow for the future development of a power station. Upon completion of dam construction, the diversion tunnel on the south bank was closed to flow by a concrete seal plug, whilst a radial regulation gate was installed on the diversion tunnel to provide a low-level outlet for the reservoir.

Development of the 120 MW Itezhi-tezhi hydropower station at the southern end of the dam commenced in 2011; it was commissioned in 2016. The project involved modifications to the existing intake, construction of an underground cavern to house two 60 MW Kaplan turbines, an access tunnel to the underground cavern, and the placement of a switchyard at the outlet of the access tunnel along with a 300km 220/330kV transmission line to evacuate the power through substations at Mumbwa and Lusaka-West.

The Itezhi-tezhi power station was planned to provide base load, so the rate of discharge is roughly constant over a 24-hour period. The increased discharge associated with the operation of the power plant is coupled with an associated decrease in discharge through the main spillway to ensure overall flow downstream patterns are not significantly altered due to the generation.

The Itezhi-tezhi Dam is operated and maintained by ZESCO Limited, the national power utility in Zambia. The power station was developed and is operated by the Itezhi-tezhi Power Corporation (ITPC), a joint venture in equal shares between ZESCO Limited and the Tata Power Company Limited, India.

Project	Itezhi-tezhi
Country	Zambia
Location	On Kafue River, in Itezhi-tezhi district, directly upstream of the Kafue Flats
Capacity	120 MW
Annual generation (GWh/year)	Up to 1000 GWh per year
Developer / operator	Power Station: Itezhi-tezhi Power Company (ITPC) Dam: ZESCO
Dam height	65 m
Length at crest	1800 m
Reservoir area	350 km^2
Units (number, type, MW)	Two Kaplan turbines of 60 MW each
Associated infrastructure: road(s) (length)	An existing road, connecting Itezhi-tezhi to the Lusaka – Mongu Road
Associated infrastructure: transmission line(s)	A 220 kV transmission line to Mumbwa town, and 330 kV double circuit transmission line to Lusaka

Photo Credit: *Marcus Wishart*

The Process

ZESCO assessed the Itezhi-tezhi project using the Operation 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 ZESCO team, the assessment (including support during interviews and a site visit from accredited assessors), and review of ZESCO's draft report by the accredited assessors. Table 3 provides a summary of the process and the people involved.

ZESCO's objectives of the assessment

- Build capacity within ZESCO in the use of the Protocol as a guideline for assessing future projects;

- Use the Protocol to embrace best practices in the industry, benchmarking against international practices;

- Evaluate the sustainability of the Itezhi-Tezhi Hydropower Project using the Protocol; and

- Develop an action plan to address possible gaps.

This was the first application of the Protocol by ZESCO. The process involved collection of verbal, visual and documentary evidence to appraise project processes and performance against the Protocol's Operation scoring criteria. Interviews covered the views of the developer, employees and unions, government institutions and affected communities. For every topic, the ZESCO team tried to interview those with the responsibilities and most direct understanding of the issues. Some individuals were interviewed several times and on a variety of topics.

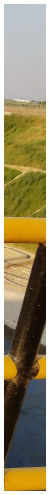
ZESCO Lead Assessor gathering photographic evidence

Photo credit: Douglas Smith

Action Planning for Improved Sustainability

Table 3. Key dates and participants

Location and key dates	
Introductory training	Livingstone, 31st May – 1st June 2016
ZESCO detailed training	Lusaka, July 2016
Assessment	August-December 2016
Mid-assessment visit (interviews, site visit)	7-11th November 2016
First experience-sharing workshop	January 2017
Draft report completed	June 2017
Second experience-sharing workshop	August 2017
Final report completed	September 2017
Third experience-sharing workshop	December 2017
Who was involved?	
ZESCO's internal client for the assessment	Romas Kamanga – Senior Manager Generation Support Services
ZESCO's lead assessor	Sonny Musakabantu – Environmental Scientist
ZESCO's assessors	Andrew Mabula – Graduate Hydrology Technologist Temwani Violet Chirwa – Economist Shepherd Ndhlovu - Senior Hydrology Technologist Robam Kankomba Musonda - Principal SHEQ Officer, Environmental Compliance
Interviewees	14 interviews with ITPC and ZESCO site-based staff and local stakeholders including upstream and downstream communities, as well as interviews in ZESCO headquarters.
Accredited assessors	Doug Smith, IHA Consultant, and Aida Khalil, IHA Sustainability Specialist
Observers	ITPC's station manager (Mr. Jones Nguluwe) and Chief Executive Officer (Kale Prabhakar) Kimberly Lyon, Cecil Nundwe and Marcus Wishart of the World Bank



The assisted self-assessment of Itezhi-Tezhi was an opportunity for

ZESCO to understand how the project was performing in relation to international good practice and to identify areas where project operations would 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 dam, which is managed by ZESCO, and the power station, managed by Itezhi-Tezhi Power Corporation (ITPC).

ZESCO's internal team of assessors, with guidance from Accredited Assessors, determined that the Operation Stage tool was most appropriate and that three topics under that tool were not relevant for Itezhi-Tezhi: O-10 Resettlement, as no physical displacement was required for the development of the power station and no commitments to displaced people were made at the time of the dam's development; O-11 Indigenous Peoples, as there are no people that meet the definition of indigenous peoples in the area; and O-13 Cultural Heritage, as there is no physical cultural heritage that could be affected by the project.

ZESCO's team of assessors determined that the Itezhi-Tezhi project met or exceeded the criteria of Basic Good Practice for 8 topics: O-2 Governance, O-3 Environmental and Social Issues Management, O-4 Hydrological Resource, O-5 Asset Reliability and Efficiency, O-12 Labor and Working Conditions, O-14 Public Health, O-15 Biodiversity and Invasive Species, and O-16 Erosion and Sedimentation.

For other topics, where the assessors found gaps against Basic Good Practice, there were some common issues. For some topics, there were gaps related to communications and stakeholder engagement. This included both internal and external communications and engagement with stakeholders. There were also some topics where ZESCO and ITPC have made commitments or where plans are in place but fulfilment of those commitments and implementation of those plans are yet to be completed.

Other gaps were more technical in nature. For example, the assessors identified the need for enhancing public safety measures around the upstream section of the dam. They also identified an issue that could occur during a forced outage, which would prevent the power station from being able to release the required downstream flow for a period of 30 to 40 minutes.

An Action Plan has been prepared by ZESCO to address the priority gaps. This is focused on closing gaps against Basic Good Practice before looking at gaps against Proven Best Practice. The first priority is those gaps relating to public safety, which are covered under the Infrastructure Safety topic.

Itezhi-tezhi power station and downstream Kafue River

Photo credit: Aida Khalil

Table 4. The proposed Action Plan for the Itezhi-tezhi Hydropower Station

	Significant Gaps	Actions
O-6 Infrastructure Safety	Emergency Action Plan is still in draft form and is yet to be approved by management	Updating the EAP 2. Engage approving authority for approval
	No emergency preparedness training has taken place for the stakeholders	Conduct periodic sensitisation workshops on the EAP Physical orientation stakeholders of the facility Conduct drills for some selected stakeholders
	No adequate measures put in place on the upstream section of the dam for public safety	Install safety barriers with signage at the power station intake, main spillway and emergency spillway for the dam Sensitisation of fishermen and other users of the lake on safety on water and importance of the above installations
O-3 Environmental and Social Issues Management	Plans and processes not yet embedded within an internationally recognised environmental system which is third party verified such as ISO 14001	Verify that SHEQ is in place at the dam
	Environmental management system for the dam not in place	Include dam and environmental management in the ZESCO Safety, Health, Environment and Quality (SHEQ) system
	There are no systematic processes to identify and respond to emerging risks and opportunities	Include procedures for re-evaluating environmental and social issues on a regular basis in the SHEQ
O-8 Project Benefits	Monitoring of delivery of CSR projects	Establish an internal ZESCO/ITPC monitoring mechanism that will generate reports to stakeholders
O-12 Labour and Working Conditions	There are no formal systems for the identification of on-going and emerging labour, occupational health and safety issues, or for monitoring the effectiveness of the labour, occupational health and safety measures There is no formal mechanism in place for feedback	Verify that the Union is place and OHS inspections by the local labour office are taking place.
O-19 Downstream Flow Regime	The risk of no down stream flows for 30 to 40 minutes during the changeover from power plant to spillway when there is a forced outage	Develop a procedure that would minimise the time of no flow downstream Automate operations of the Low Regulation gate.

Key Lessons Learned and Future Use of the Protocol

Choice of tool

The ZESCO team used the Operation Stage tool for the assessment of the Itezhi-Tezhi Hydropower Project as it has been in operation since 2016. This enabled ZESCO to identify gaps and actions relevant for ongoing operations and prepare a report similar to an official assessment. Though it would not have been possible to apply the Implementation Stage tool to the dam built in the 1970s, it has many topics not found in other tools that can help to build capacity for future developments. ZESCO should consider applying the Implementation Stage tool on another development.

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. The ZESCO assessment team consisted of officers from ZESCO's headquarters, resulting in an assessment that strongly resembled an internal audit by a corporate auditing team. This distance from the project gave the assessors the opportunity to be more objective than a true self-assessment team (assessing their own work). However, having two project entities, ITPC for power station and ZESCO for the dam, presented a number of challenges and required additional interviews and effort. The first draft of the assessment report focused on the power station with relatively limited consideration of the dam. When carrying out an assessment, it is important to consider all parts of the project.

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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