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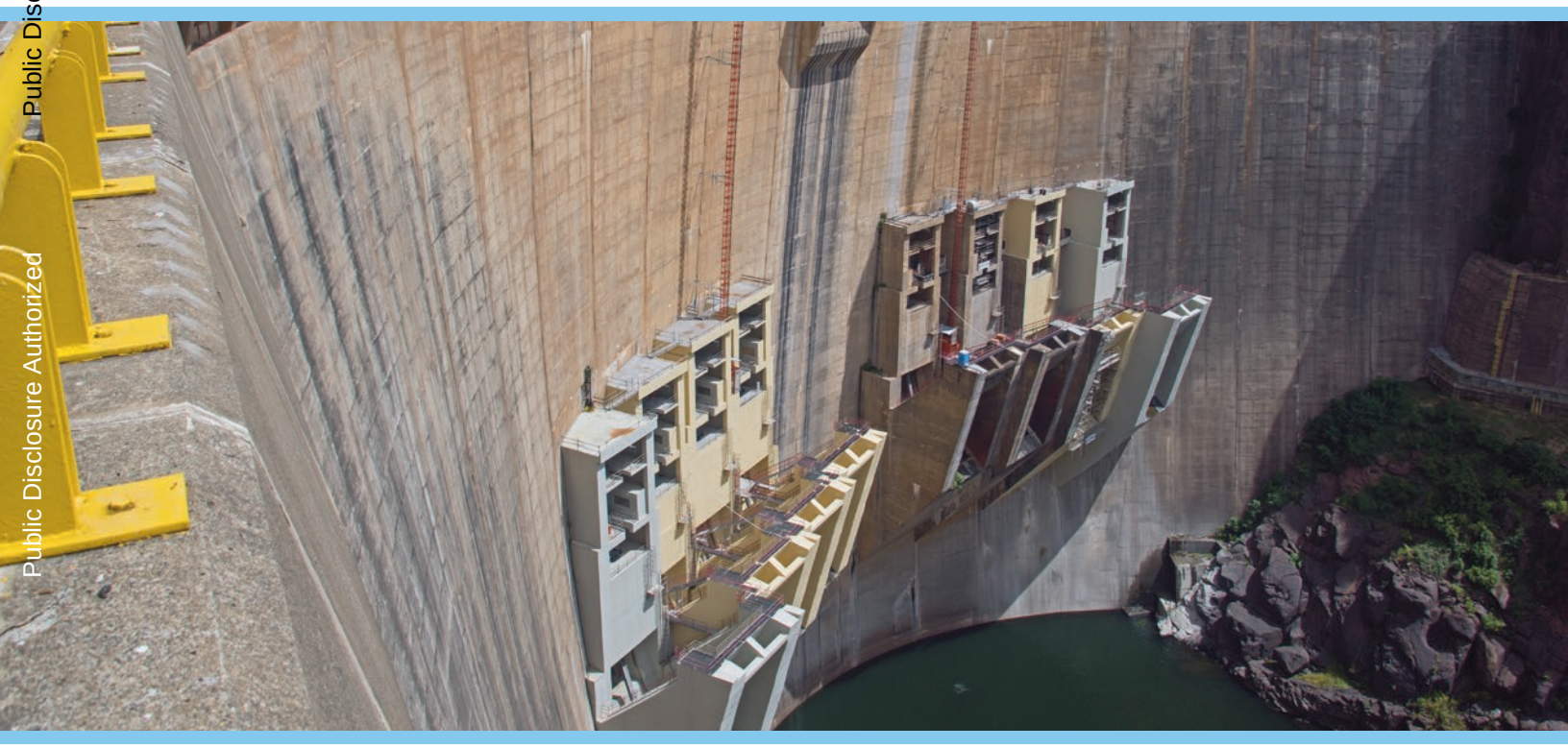
Using the Hydropower Sustainability Tools in World Bank Group Client Countries

Lessons Learned and Recommendations

DECEMBER 2020

Kimberly Lyon



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Executive Summary

Hydropower is the world's largest source of renewable energy, producing more than 15 percent of global electricity. With a relatively low levelized cost, it can help to reduce energy access deficits in low- and middle-income countries and has a major role to play in the decarbonization of the global energy system. Notwithstanding its contribution to development and climate change mitigation goals, the hydropower sector has been the subject of intense criticism due to the poor environmental and social performance of certain projects over the years.

As a response to recommendations of the World Commission on Dams, the Hydropower Sustainability Assessment Protocol (HSAP) emerged as the first hydropower-specific tool to measure and guide the performance of hydropower projects against globally applicable criteria for environmental, social, financial, and technical sustainability. The HSAP is the product of 30 months of review and engagement by the multi-stakeholder Hydropower Sustainability Assessment Forum, which was constituted in 2007 of representatives from industry, civil society, donors, developing country governments, and commercial and development banks. The World Bank was an observer to that process but has, over recent years, taken a more active role in the governance of the HSAP and been a key contributor to its further development.

Informed by lessons learned during the first few years of its application, a revised version of the HSAP was launched in 2018, featuring a new topic of climate change mitigation and resilience. At the same time, two new products were developed: the Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool (HESG) and the Hydropower Sustainability Guidelines on Good International Industry Practice (HGIIP). Together, these are referred to as the Hydropower Sustainability Tools (HSTs).

The HSAP and HESG were not developed as standards; rather, they are auditing tools, deliberately designed without a single scoring index and to avoid labeling projects as *sustainable* or *unsustainable*. After their application in several assessments, there is growing recognition of the HSTs' utility beyond auditing, including for building institutional capacity in environmental and social risk management.

To date, 31 official assessments have been carried out in 25 countries using the HSAP, approximately half of which were in low- and middle-income countries. This represents a significant increase in the tool's application in relatively low-capacity environments compared to its early years. In addition to assessments, there have been numerous other unofficial uses of the HSAP, and several trainings led by the International Hydropower Association.

So far, the new HESG has been used five times in unofficial contexts and once for an official assessment of a project in Gabon. Demand for HESG gap analyses is expected to rise with the adoption of the tool by the Climate Bonds Initiative in its hydropower standard, which will screen potential investments for their eligibility to receive green bond financing.

While the World Bank Group (WBG) finances only a small share of hydropower investments worldwide, it sees value in the availability of global tools to spur better project performance. The environmental, social, and governance topics addressed by the HSTs are deliberately aligned with WBG frameworks, which should give comfort to WBG staff that they can recommend the tools to client countries. There are, of course, practical considerations in using the HSTs in the context of WBG engagements, and WBG staff should give careful thought to selecting the tool that is most appropriate, given the nature and status of a project. It is important that any tools used complement relevant policy requirements so as to avoid an undue burden on WBG clients and maximize the value derived from their use.

In 2014, the World Bank published the report "The Hydropower Sustainability Assessment Protocol for Use by World Bank Clients: Lessons Learned and Recommendations" (Liden and Lyon 2014). Following from the conclusions of that report, the World Bank, together with the International Hydropower Association, conceived of an *assisted self-assessment*, whereby clients can evaluate their own projects and gain exposure to the tools through a hands-on learning experience. This was toward the goal of developing ways in which the HSAP could be used for capacity building in WBG client countries.

This report is an update to the 2014 report and reflects changes to the HSAP and the introduction of the new, derivative tools. It also offers an opportunity to reflect on the many experiences the WBG has had with the tools in the ensuing six years, including in Vietnam, Nepal, Costa Rica, Solomon Islands, Zambia, Zimbabwe, Mozambique, and Bhutan.

The findings in this report are based on the WBG's experience as part of the HSTs' governance structure, its experience using the tools (examined through case studies), as well as consultation with accredited assessors and WBG staff and clients. Key recommendations for how the HSTs can be used by WBG clients and staff include the following:

- The HSAP and HESG are useful for identifying how to improve hydropower projects. Third-party assessments by accredited assessors can provide a critical and objective evaluation of project performance. This, in turn, may encourage the project sponsor to strive for continuous improvement and also reduce asymmetry of information in transactions. The HSAP and HESG also have useful applications beyond audits. They can be used for capacity building, screening early stage investments, modeling regulatory reform, and more.
- While the HSTs are not substitutes for WBG requirements, they can be used to complement WBG sustainability frameworks and help clients meet environmental, social, and governance requirements for hydropower projects. WBG staff should be judicious in facilitating HSAP or HESG assessments during project preparation, with a clear understanding of how assessment results will be used in context, and the potential risks of conflict between the two processes.
- The HSTs can be used to develop the capacity of hydropower companies and other stakeholders in managing environmental and social issues during hydropower development and operation. The documents alone are insufficient for capacity building, so a program must be built around them for training centered on sustainable hydropower. Assisted self-assessments provide a learning-by-doing

opportunity, which can strengthen internal quality assurance units and prepare users for future assessments, including official assessments.

- As noted by both developers and operators, the HSAP and HESG may be leveraged as communications tools and useful learning materials.
- The HSTs are designed to be globally applicable, but projects tend to perform better in places with strong regulatory frameworks and commitment to transparency. Thus, in low- and middle-income countries, where regulatory environments tend to be weaker, the HSTs will have the most added value if used in a way that improves capacity to manage environmental and social issues. Incentives for using the HSTs may be necessary in lower-capacity environments.
- At all income levels, hydropower developers and operators see assessments as opportunities to develop internal capacity to support sustainable hydropower.
- Reports from official and unofficial assessments using the HSAP or HESG can be useful sources of information for WBG-financed projects but do not replace mandatory borrower requirements.
- HSAP or HESG assessments followed by a management plan to address identified gaps are likely the most powerful way to improve the sustainability performance of hydropower schemes. In most cases, hydropower developers and operators will derive more benefits from the HSTs if they are supported by accredited assessors or sustainability specialists of the International Hydropower Association.

Based on the above conclusions, some recommendations and practical considerations emerge for WBG staff and clients and for the governance of the tools:

- WBG staff should encourage clients to use the HSTs to strengthen their capacity and to help them meet WBG requirements. This is predicated, however, on increasing the level of knowledge among WBG staff, particularly energy, water, environmental, and social specialists. To this end, the WBG would do well to train staff in the use of the HSTs, with a focus on specialists working on hydropower projects, as well as legal and operational policy staff who guide project teams in the implementation of WBG policies and requirements.
- In encouraging the use of the tools, WBG staff should seek to avoid the perception that the tools are mandatory. The World Bank's own Environmental and Social Framework and the sustainability frameworks of the International Finance Corporation and Multilateral Investment Guarantee Agency govern the environmental and social standards for WBG-funded projects.
- The extent to which the HSTs will add value to WBG project operations depends on the type of engagement, the capacity of the client, and the stage at which the WBG becomes involved. For strategic exercises such as developing Country Partnership Frameworks, WBG staff may find the Early Stage tool of the HSAP useful in examining the strategic environment and guiding the early identification of project risk. Once a project starts to be defined, WBG staff can use the HGIIP and the HSAP's preparation-stage tool to inform important project documents such as prefeasibility studies and to screen for environmental and social issues. During the active preparation of lending operations, including the period close to appraisal, projects are already being assessed for compliance against

WBG standards. If there is a clear business case for commissioning an HSAP or HESG assessment during this intense period, WBG should consider carefully how this process will be managed so as not to create an undue burden on the client. The most straightforward purposes of HSAP or HESG assessments are to identify obstacles on the critical path of early implementation, enhance project supervision at key points, or to evaluate project performance at the end of implementation.

- In terms of the HSTs' governance, the Hydropower Sustainability Assessment Council and its management entity need to do more to promote post-assessment gap management, and clarify the value proposition of the full HSAP compared to the HESG.

Given the above considerations, it is important that the WBG remain involved in the tools' governance to ensure that they stay globally relevant and aligned with WBG standards.

Abbreviations

AVHPP	A Vương Hydropower Project
BGHES	Batoka Gorge Hydroelectric Scheme
CBI	Climate Bonds Initiative
CBN	Cahora Bassa North Bank Expansion
CBHES	Cahora Bassa Hydroelectric Scheme
CPF	Country Partnership Framework
DNHPP	Đại Ninh Hydropower Project
ECC	Electricity Construction Consultancy
EPC	engineering, procurement, and construction
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESG	environmental, social, and governance
ESIA	Environmental and Social Impact Assessment
ESS	Environmental and Social Standard
EVN	Vietnam Electricity
FPIC	free, prior, and informed consent
GENCO	power generation company
GW	gigawatt
GWh	gigawatt hour
HCB	Hidroeléctrica de Cahora Bassa
HESG	Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool
HGIIP	Hydropower Sustainability Guidelines on Good International Industry Practice
HSAC	Hydropower Sustainability Assessment Council
HSAF	Hydropower Sustainability Assessment Forum
HSAP	Hydropower Sustainability Assessment Protocol
HST	Hydropower Sustainability Tool
HSGC	Hydropower Sustainability Governance Committee
IBRD	International Bank for Reconstruction and Development
ICE	Instituto Costarricense de Electricidad
IDA	International Development Association
IFC	International Finance Corporation
IHA	International Hydropower Association
ITPC	Itezhi-Tezhi Power Corporation
ITT	Itezhi-Tezhi Hydropower Project
KAHEP	Kabeli-A Hydroelectric Project
km^2	square kilometer
K-water	Korea Water Resources Corporation
m^3	cubic meter
MHEP	Mangdechhu Hydroelectric Project
MHPA	Mangdechhu Hydroelectric Project Authority

MIGA	Multilateral Investment Guarantee Agency
MW	megawatt
NORAD	Norwegian Agency for Development Cooperation
PHR	Reventazón Hydropower Project
SECO	Swiss State Secretariat for Economic Affairs
THL	Tina Hydropower Limited
TRHDP	Tina River Hydropower Development Project
TSHPCo	Trung Sơn Hydropower Company Ltd.
WCD	World Commission on Dams
WBG	World Bank Group
ZRA	Zambezi River Authority

Chapter 1
Introduction

Hydropower is the world's largest source of renewable energy, producing more than 15 percent of global electricity, but there is still immense untapped hydropower potential worldwide, a huge share of which is in World Bank Group (WBG) client countries. In addition to countries with the largest potential, including India, Tajikistan, and the Democratic Republic of Congo, there are many small countries with significant hydropower potential, which could be economically transformative if leveraged sustainably.

Hydropower remains an important resource in the effort to improve energy access in countries with significant deficits and in the global fight against climate change. Hydropower offers more than just electricity; it can provide a range of services to enhance grid stability and pave the way for the integration of variable renewable electricity sources. Generally, hydropower, with its rapid ramping potential and low minimum operating levels, can add flexibility to a power system (IEA 2018). Hydropower's importance in this regard is gaining greater recognition, especially as other renewables become increasingly low-cost, competitive options for new generation.

Notwithstanding its contribution to achieving development and climate change mitigation goals, the hydropower sector has received intense criticism from civil society for the negative impacts of some projects on people and nature. In 1998, in the face of escalating pressure, the World Commission on Dams (WCD) was established by the World Bank and the International Union for Conservation of Nature to review the development effectiveness of large dams and establish a comprehensive set of guidelines for the design, implementation, and operation of dams and their decommissioning (WCD 2000).

The hydropower industry took many steps to operationalize these guidelines and to improve the environmental and social management of hydropower globally. In an effort to improve its performance and provide a consistent approach for assessment, the industry partnered with civil society, policy makers, and financiers around the principles of sustainable hydropower. The output of this process is the multi-stakeholder Hydropower Sustainability Assessment Protocol (HSAP).

The HSAP emerged as the first hydropower-specific protocol for measuring and guiding the performance of hydropower projects against globally applicable criteria for environmental, social, financial, and technical sustainability. Since its launch in 2011, it has also served as a useful reference document. It is governed by a forum that continues to consider issues surrounding the performance of the hydropower sector.

The HSAP was developed as a suite of tools that correspond to various stages of the project cycle: the early stage, preparation, implementation, and operation.

In 2018, two derivative tools were introduced to provide a more economical alternative to the HSAP and to compile further guidance for hydropower developers and operators in meeting assessment criteria. These are: (1) the Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool

(HESG); and (2) the Hydropower Sustainability Guidelines on Good International Industry Practice (HGIIP). Together, these three tools (HSAP, HESG, and HGIIP) are referred to as the Hydropower Sustainability Tools (HSTs).

The World Bank served as an observer to the forum that drafted the HSAP and, since then, has been supportive of its dissemination and use around the world. It has financed several assessments, in part to build a body of experience in low- and middle-income countries, where fewer assessments were being conducted before recent years. Since around 2014, the World Bank has had a more active role in the governance and further development of the HSTs. It has worked with the International Hydropower Association (IHA) and fellow members of the HST governance structure to diversify the ways in which the tools can be used, including for capacity building. Innovative uses spearheaded by the World Bank include assisted self-assessments, by which clients gain exposure to the tools through a learn-by-doing approach. The World Bank also supported the Hydropower Sustainability Governance Committee in developing the HESG tool and financed two of the earliest assessments using it.

The WBG remains committed to the responsible development of hydropower of all types and sizes, including off-grid projects to meet decentralized, rural needs. As part of its engagement in the sector, the WBG helps client countries strengthen their capacity to address the environmental and social dimensions of hydropower projects early on, including through consultations, benefit sharing, and inclusion of vulnerable groups and indigenous peoples (World Bank 2013). WBG staff see the HSTs as complementary to its sustainability frameworks and as tools that can help WBG clients meet the requirements of the World Bank's Environmental and Social Framework (ESF) and Performance Standards.

While the WBG is an influential player in the global hydropower sector, it finances only a small share of investments worldwide. According to a 2017 survey conducted by IHA, the WBG was ranked as having the most influence on global hydropower, and in terms of sustainability, the WBG's policies and standards are widely regarded as the yardstick for social and environmental management in development finance. However, these policies directly touch only a minority of hydropower projects worldwide. In a typical year, the WBG finances about 5 percent or less of hydropower investments.

Given that the WBG finances only a small share of total hydropower investments, it sees value in the availability of global tools to spur better project performance. The HSTs, deliberately aligned with WBG environmental and social frameworks, are useful, sector-specific tools and reference documents that can help low- and middle-income countries to better harness the benefits of hydropower even when WBG organizations are not involved as financiers.

The main purpose of this report is to reflect on the applicability of the HSTs in the context of low- and middle-income countries and offer direction on how they can be used to improve the performance of hydropower projects in WBG client countries. This report also seeks to clarify how the HSTs complement WBG policies and procedures, and inform the WBG's role in the governance of the tools. While the primary audience of this report is the management and staff of the WBG itself, the report

addresses many of the questions faced by other multilateral development banks and donors supporting hydropower development worldwide as well as by WBG country clients.

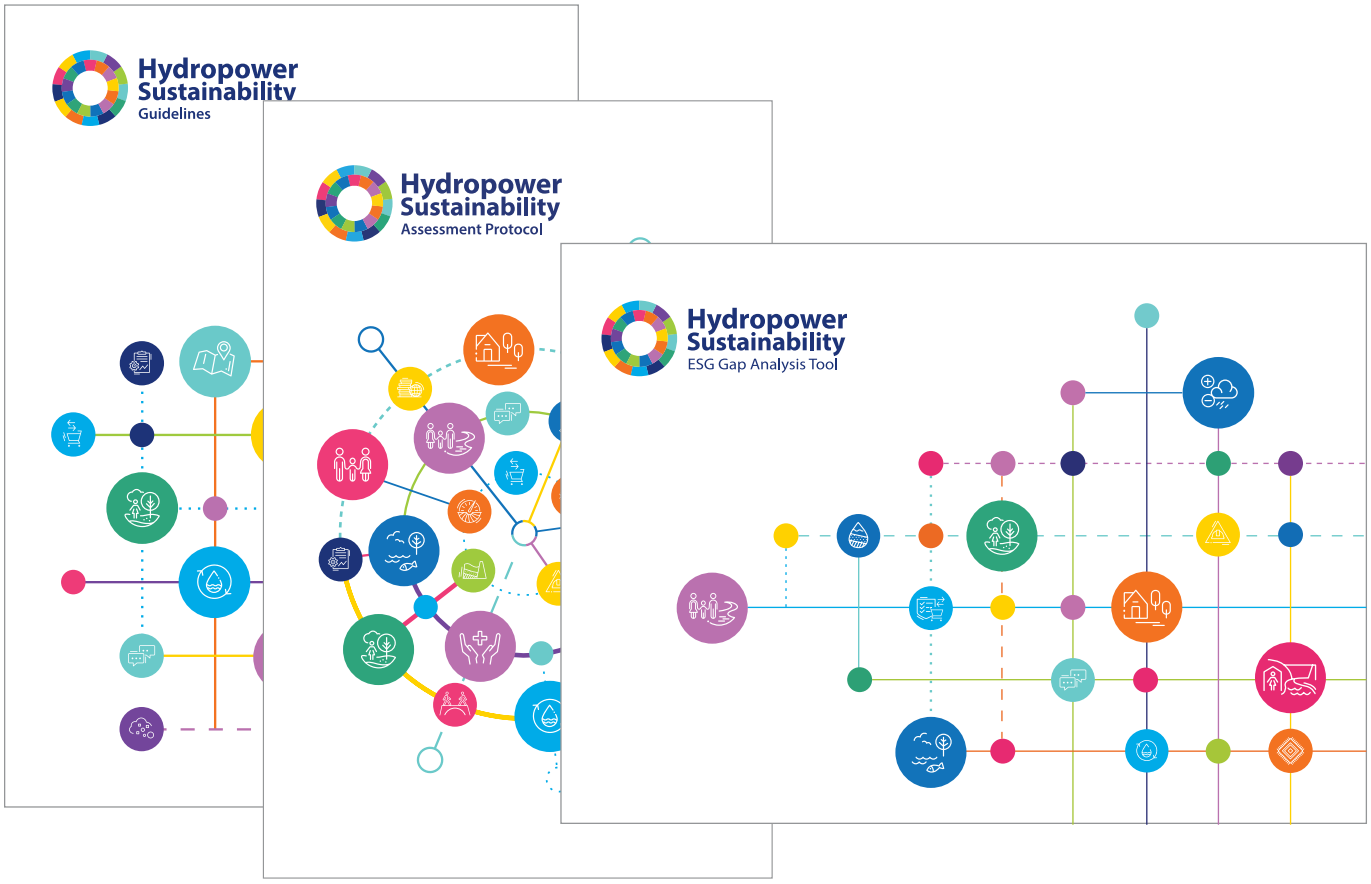
The lessons and recommendations presented here are based on case studies of assessments facilitated by the World Bank and in consultation with WBG staff, IHA, and accredited assessors. Because the report does not provide a detailed analysis of the HSTs' specific criteria, it highlights the need for a more in-depth study at the policy level.

Chapter 2
The Hydropower Sustainability Tools

2.1 Introduction to the Hydropower Sustainability Tools

The HSTs are composed of the HSAP (the standard-setting document), a derivative tool focused on the environmental, social and governance dimensions of hydropower, and a set of international guidelines for good industry practice (figure 2.1). The HSAP, as updated in 2018, is used to evaluate projects from the early planning phase through operation. The HESG is a lower-cost alternative derived from the HSAP. The HGIIP offers a comprehensive set of sector guidance also derived from the HSAP (table 2.1).

FIGURE 2.1. The Hydropower Sustainability Tools



Source: IHA.
Note: ESG = environmental, social, and governance.

TABLE 2.1. Comparison of the Hydropower Sustainability Tools

	Hydropower Sustainability Assessment Protocol (HSAP)	Hydropower Environmental, Social and Governance Gap Analysis Tool (HESG)	Hydropower Sustainability Guidelines for Good International Industry Practice (HGIIP)
Date of first edition	November 2010	July 2018	December 2018
Purpose statement	"The Hydropower Sustainability Assessment Protocol is a sustainability assessment framework for hydropower development and operation. It enables the production of a sustainability profile for a project through the assessment of performance within important sustainability topics."	"The Hydropower Sustainability Environmental, Social and Governance Gap Analysis Tool (HESG) enables hydropower project proponents and investors to identify and address gaps against good international industry practice. The HESG is based on the assessment framework of the Hydropower Sustainability Assessment Protocol (HSAP) and draws from the definitions of good international industry practice of the Hydropower Sustainability Guidelines on Good International Industry Practice (HGIIP)."	"The Hydropower Sustainability Guidelines on Good International Industry Practice (HGIIP) form the normative document on how sustainability practice should be defined and measured in the hydropower sector. The guidelines offer the most detailed descriptions of international good practice for sustainability in the hydropower industry and are intended to be used in a variety of different settings, either individually or as a compendium. They have been developed to bring definition to the processes and outcomes that constitute good international industry practice for topics relevant to preparing, implementing, and operating hydropower projects."
Topic scope	Full range of environmental, social, governance, and business and economic topics	Environmental, social, and governance topics only	Full range of environmental, social, governance, and business and economic topics
Number of chapters (topics)	Early stage 9 Preparation stage 23 Implementation stage 21 Operation stage 20	12	26
Levels covered	Basic good practice Proven best practice	Basic good practice	Basic good practice Proven best practice
Scoring	Gradational scoring by topic from 1 to 5, with 3 marking basic good practice and 5 marking proven best practice	Binary—meets basic good practice/ number of gaps against basic good practice	Not a scoring tool

Source: IHA 2020a, 2020b, 2020c.

2.2 The Hydropower Sustainability Assessment Protocol

The HSAP offers a framework for comparing the performance of hydropower projects using a defined set of globally applicable sustainability criteria. These criteria encompass a range of environmental, social, technical, and financial issues and provide a shared language for improved dialogue on sustainable hydropower (IHA 2020a).

The HSAP comprises a series of autonomous assessment tools corresponding to four different stages of the hydropower project cycle: (1) early stage, (2) preparation, (3) implementation, and (4) operation (figure 2.2). These tools address more than 20 sustainability-related topics, containing definitions of basic good practice and proven best practice at each stage of the project cycle. Not all topics are relevant at every stage (see table 2.2). The tools can be used separately, and it is not necessary to have used the tools for earlier stages in the project cycle to be able to use those applicable to later stages of a project.

The early stage[1] tool applies a methodology different from that of the other three tools in that it is not a scoring protocol. It is meant to examine project risks and opportunities from an early stage to inform more detailed investigations.

The HSAP is not a certification scheme for sustainable hydropower, nor is it a replacement for assessments of environmental and social impacts. Hydropower sustainability assessments provide a snapshot of project performance at a given point in time. They are undertaken by a team of accredited assessors, headed by a lead assessor, who visit the project site, review relevant documents, conduct interviews with stakeholders, and prepare a final assessment report. Such an assessment identifies gaps to be addressed, promoting the continuous improvement of sustainability performance. It also provides a platform for dialogue across a range of stakeholders, either through the sharing of results or engagement in the assessment process itself.

The HSAP is the product of an intensive, transparent dialogue convened by the multi-stakeholder Hydropower Sustainability Assessment Forum (HSAF) over the course of a decade. The HSAF was initiated in 2007 following a meeting of the World Wide Fund for Nature, the Nature Conservancy, and the International Hydropower Association (IHA) regarding support for the IHA Sustainability Assessment

FIGURE 2.2. Four Tools of the Hydropower Sustainability Assessment Protocol

Source: IHA.

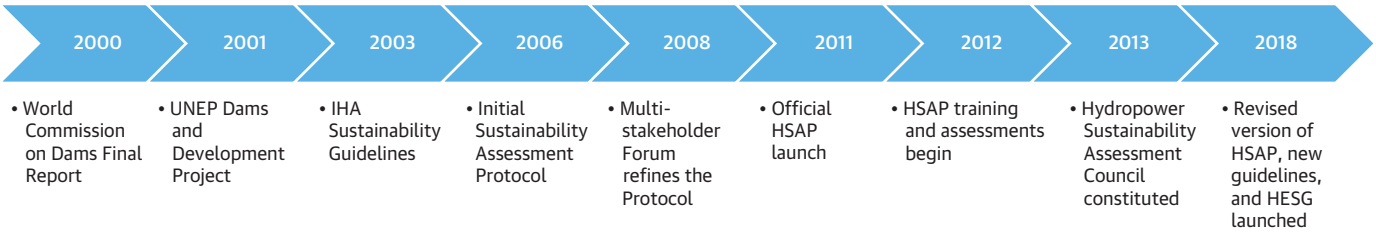
TABLE 2.2. List of Hydropower Sustainability Assessment Protocol Topics

	Sustainability Topics	Preparation	Implementation	Operation
Technical	Siting and Design	•	n.a.	n.a.
	Hydrological Resource	•	n.a.	•
	Demonstrated Need and Strategic Fit	•	n.a.	n.a.
	Infrastructure Safety	•	•	•
	Asset Reliability and Efficiency	n.a.	n.a.	•
Environmental	Environmental and Social Impact Assessment and Management	•	•	•
	Erosion and Sedimentation	•	•	•
	Water Quality	•	•	•
	Waste, Noise, and Air Quality	n.a.	•	n.a.
	Reservoir Planning/Preparation and Filling/ Management	•	•	•
	Downstream Flow Regimes	•	•	•
	Biodiversity and Invasive Species	•	•	•
	Climate Change Mitigation and Resilience	•	•	•
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	•	n.a.	n.a.
	Procurement	•	•	n.a.
	Governance	•	•	•
	Integrated Project Management	•	•	n.a.

Note: n.a. = not applicable.

Protocol of 2006 (figure 2.3). The HSAF's members included representatives of developed and developing country governments, the hydropower industry, social and environmental nongovernmental organizations, and commercial and development banks. The forum was tasked with recommending enhancements to IHA's assessment tool, which had been developed in response to the findings of the WCD to provide a standardized means of assessing the sustainability of hydropower projects. It was agreed that the IHA Protocol should be developed in a more inclusive way, with a greater variety of stakeholders, and so the HSAF was established. The World Bank served as an observer to the HSAF during this period.

FIGURE 2.3. Evolution of the Hydropower Sustainability Assessment Protocol



Note: HESG = Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool; HSAP = Hydropower Sustainability Assessment Protocol; IHA = International Hydropower Association; UNEP = United Nations Environment Programme.

The HSAP was widely socialized to reach consensus on good and best hydropower industry practices. Feedback was solicited from more than 1,300 participants, and pilot assessments were carried out in 16 countries across 6 continents. The final HSAP was compiled and adopted by IHA in November 2010 and formally launched in May 2011 at the World Hydropower Congress in Iguaçu, Brazil. A revised version, published in July 2018, included a new topic—climate change mitigation and resilience—for the three scoring tools (IHA 2020a). Following updates to the scoring statements related to indigenous peoples, revised versions of the HESG, HSAP, and HGIIP were then released in May 2020 (see box 2.1).

2.3 Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool

The HESG was developed, in part, to address cost concerns. Assessments conducted using its forebear, the HSAP, had been criticized for being costly and time-consuming. Thus, to reduce costs and complexity, IHA together with the Hydropower Sustainability Governance Committee (HSGC) developed a lower-cost alternative that can be used for a faster assessment, targeting a price point of about US$25,000 to US$50,000 compared to US$100,000 to US$200,000 for a full HSAP assessment.

The HESG differs from the full HSAP in scope. First, the tool is focused on only environmental, social, and governance topics and only at the basic good practice level (IHA 2020b). While it includes all but a few scoring statements from the full HSAP, the topics are configured to align with the Environmental and Social Framework of the World Bank and the Environmental and Social Performance Standards of the International Finance Corporation (IFC) (see section 3.1. on the Hydropower Sustainability Tools and the Sustainability Frameworks of the World Bank Group).

The HESG also presents its results differently. The reporting template is in table form to expedite the documentation of findings, and uses a yes/no checkbox to indicate whether the project has met a specific criterion. While this does not represent a substantive change to how projects are evaluated against the criteria, it is a significant departure from the gradational presentation of scores used in a full hydropower sustainability assessment, where the aim is to avoid presenting results as pass/fail. While accredited assessors are not supposed to provide advice during a full hydropower sustainability assessment,

BOX 2.1. Free, Prior, and Informed Consent (FPIC)

At the conclusion of the Hydropower Sustainability Assessment Forum, it was agreed by the various stakeholders that the free, prior, and informed participation of project-affected indigenous communities should be required at the proven best practice level. Thus, in the 2011 and 2018 versions of the Hydropower Sustainability Assessment Protocol (HSAP), these communities' free, prior, and informed participation was required in the Indigenous Peoples topics at the preparation, implementation, and operation stages. Under the stakeholder support criterion, "consent" was required, but "free, prior, and informed consent" (FPIC) was not explicitly mentioned.

With the development of the Hydropower Environmental, Social and Governance Gap Analysis Tool (HESG) and it being put forward to determine the eligibility of projects for green bond financing, civil society stakeholders recommended that FPIC be a requirement at the basic good practice level.

In 2019, a working group within the Hydropower Sustainability Governance Committee was convened to review the definition of FPIC in the Hydropower Sustainability Assessment Guidelines on Good International Industry Practice (HGIIP) and how it is assessed in both the HSAP and HESG. After reviewing the existing language in the Indigenous Peoples topic and its alignment with multilateral bank standards, the working group commissioned a study on the "duty to consult" and the scope of FPIC from the perspective of international law, then agreed to include it the criteria at the basic good practice level. A new version of the HESG was released in October 2019. In the weeks following, the International Hydropower Association worked together with accredited lead assessors to revise the language at proven best practice to ensure consistency with the notion of continuous improvement, which remains at the core of the Hydropower Sustainability Tools. Updated versions of all three tools were released in May 2020.

	P-15 Stakeholder Support Criterion (Original)	P-15 Stakeholder Support Criterion (Revised)
Level 3 (Basic good practice)	Directly affected indigenous groups generally support or have no major ongoing opposition to the plans for issues that specifically affect their group.	Free, prior and informed consent has been achieved with respect to the indigenous peoples' rights at risk following the principle of proportionality.
Level 5 (Proven best practice)	In addition, consent has been sought and gained by directly affected indigenous groups for the project.	In addition, free, prior, and informed consent of directly affected indigenous groups has been achieved for the entire project.

an assessment using the HESG is also accompanied by an Environmental and Social Action Plan, which guides the project sponsor in how to address identified gaps.

Many of the features of the HESG respond to demand from the Climate Bonds Initiative (CBI). This includes the yes/no presentation of results, emphasis on basic good practice, and the Environmental and Social Action Plan. These features enable CBI to use the HESG to determine the eligibility of hydropower

projects for green bond financing (see section 3.4 on Hydropower Sustainability Tools and Green Financing).

2.4 The Hydropower Sustainability Guidelines for Good International Industry Practice

Before the HSAP's launch, IHA had been working to develop sustainability guidance for many years. In 2004, IHA published its Sustainability Guidelines to provide a framework for good practice in accordance with the core values put forth in the final report of the World Commission of Dams (IHA 2004). Then in 2006, IHA published its Sustainability Assessment Protocol, to help its members assess their projects' performance against the criteria described in the IHA Sustainability Guidelines (IHA 2006). When the HSAP was launched in 2011, it superseded both the IHA guidelines and accompanying assessment protocol and became the main reference document for the sector on how to both define sustainability and measure it.

In 2018, some stakeholders pointed to the need for a comprehensive reference manual, based on the HSAP, that would provide more detailed requirements for achieving basic good practice, including definitions and examples. Thus, the HGIIP was developed (IHA 2020c). These guidelines are written so that they may be used or referenced in contractual arrangements or by labelling systems in their eligibility requirements. They are intended to complete the suite of sustainability tools that center on the HSAP and HESG.

Looking ahead, IHA plans to help the hydropower industry meet the criteria of the HSTs through a set of how-to guides that "describe the practical measures that practitioners and stakeholders can conduct to enhance sustainability performance in hydropower development and operation" (IHA 2020d).

2.5 Governance of the Hydropower Sustainability Tools

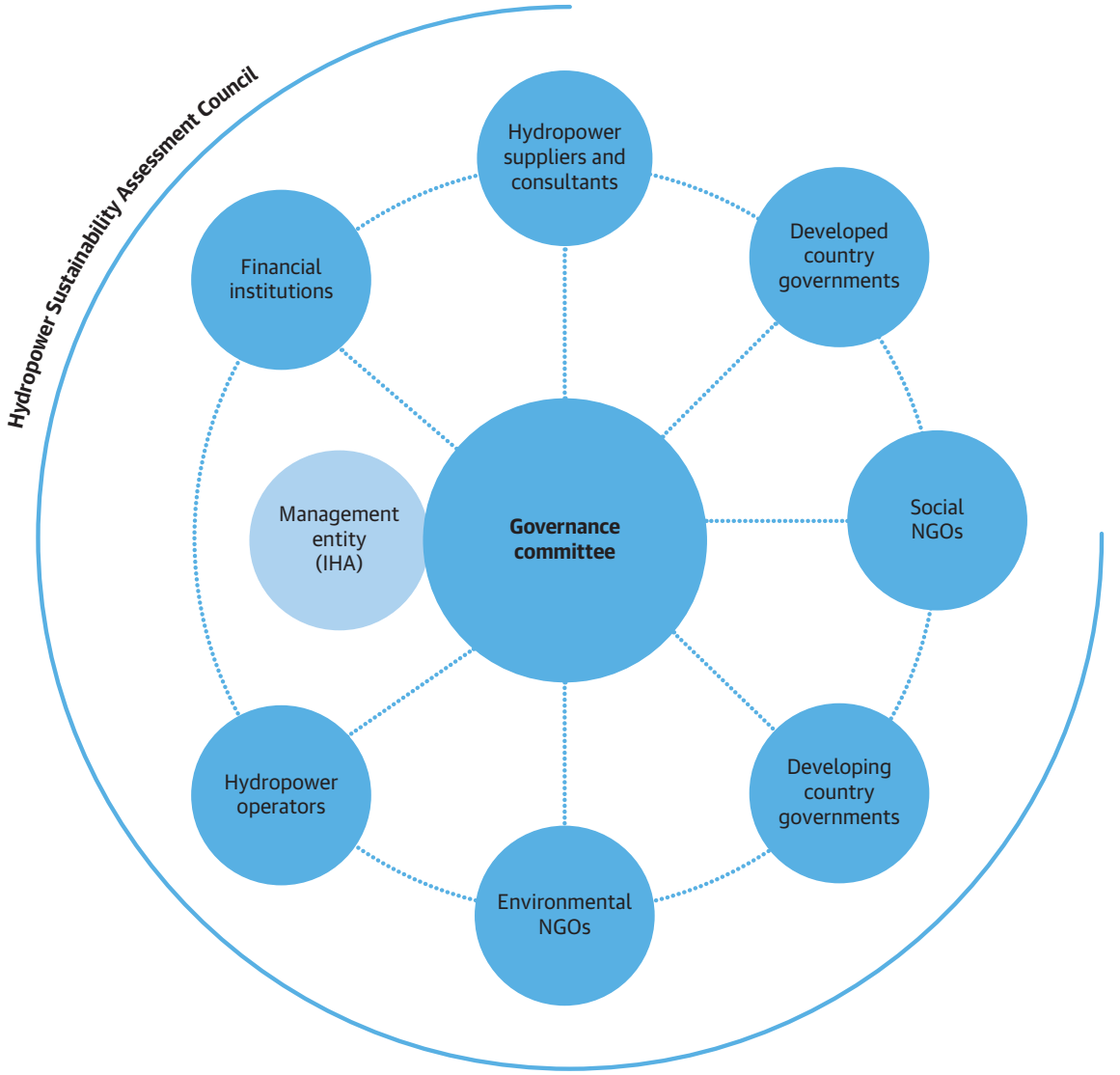
After the finalization of the HSAP, the Hydropower Sustainability Assessment Council (HSAC) was created. This is a multi-stakeholder body, loosely modeled on other sectoral sustainability initiatives such as the Forest and Marine Stewardship Councils and the Roundtables on Sustainable Biofuels, Palm Oil, and Soy. It comprises seven sectoral chambers (IHA 2019a):

1. Hydropower consultants, contractors, or equipment suppliers
2. Hydropower operators or developers
3. Environment or conservation organizations
4. Social impacts, project-affected communities, and indigenous peoples' organizations
5. Development, public, or commercial banks; financial organizations; and private investors/investment funds

6. Emerging and developing economy country governments (as classified in the most recent publicly available World Economic Outlook, put out by the International Monetary Fund)
7. Advanced economy country governments (as classified in the most recent World Economic Outlook)

The chambers each represent one of the stakeholder groups present in the HSAF (see figure 2.4). Each chamber elects a chair and an alternate chair to sit on the HSGC. The responsibilities of the HSAC chambers include representing their constituencies' interests in the council, participating in council dialogue, promoting the HSTs, and providing guidance to their representatives sitting on the HSGC.

FIGURE 2.4. Structure of the Hydropower Sustainability Assessment Council



Source: IHA 2019a.
Note: NGOs = nongovernmental organizations.

The HSAC works according to its Council Charter. Finalized in 2012, the Council Charter lays out the HSAC's objectives, including promoting widespread application of the HSAP and ensuring multi-stakeholder confidence in its content and use (IHA 2012). In June 2020, a new Council Charter was published, introducing the derivative tools launched in 2018 and defining the HSAP as the standard-setting document of the bunch (IHA 2020e).

The HSAC is supported by a management entity that oversees day-to-day implementation of the HSTs. IHA Sustainability Ltd., a not-for-profit corporate entity created to carry out the IHA's sustainability work program, has assumed this role in an arrangement that, as stipulated in the Charter, is reviewed every four years.

All of the tools are free to download, but the HSGC has created a quality control structure to ensure consistent and reliable results. The HSAP's "Terms and Conditions for Use" differentiate between commercial and noncommercial uses. For all commercial uses, where it is the intention to pay a third party for training, consulting, or assessments, the terms and conditions require that only accredited assessors be used. The terms and conditions also differentiate between official and unofficial assessments. For an assessment to be recognized as official, it must use an accredited assessor, obtain the full support of the project sponsor, and comply with the other guidelines, as determined by the HSAC. For any claims to be made about the results of an assessment, it must have been an official assessment, and the results must be publicly disclosed (IHA 2019b).

Accredited assessors are licensed through an agreement with the HSAC. All aspiring accredited assessors must complete a training program authorized by the HSAC and administered by the management entity. Before being fully accredited, they must also carry out an official assessment as a trainee. Assessors accredited to use the HSTs must have accreditation from an auditing course based on the principles of ISO 19001 in a relevant field (IHA 2019c).

During the HSAP's rollout, assessments were most often conducted through strategic partnerships. IHA established the Sustainability Partners Initiative, in which leading companies would partner with IHA to receive training in the HSAP and conduct a number of assessments. This initiative also served to invite feedback from industry members and build a reputation for the HSAP. During this time, international development organizations, including the Norwegian Agency for Development Cooperation (NORAD), the Swiss State Secretariat for Economic Affairs (SECO), and the WBG provided financing for assessments and capacity building in low- and middle-income countries in order to raise awareness and build a client base.

The financial sustainability of the HSTs remains an ongoing challenge. Until recently, the Sustainability Partners Initiative and partnerships with donors supplemented funding from the IHA central office for the governance and promotion of the HSTs. Going forward, the HSAC and HSGC are seeking to define an operating model for the HSTs that ensures its financial sustainability, based on a royalty fee charged for commercial use of the HSTs.

2.6 Process and Scoring for an HSAP Assessment

The on-site assessment is the cornerstone of both the HSAP and HESG, and lasts approximately one week, depending on the size, location, and complexity of the project. An assessment using the full HSAP takes in the range of 100 days, compared to about 20 days for an assessment done using the HESG[2]. A full assessment usually requires a team of three to four accredited assessors while an HESG assessment could be done by two assessors. The total time for a full assessment can vary significantly, from two months to over six months, depending on a number of factors, including whether it is a first-time assessment for the project sponsor, if training is involved, or if there are competing commitments for the project sponsor or the accredited assessors.

The cost of conducting an assessment is typically borne by the project sponsor, which may be the developer or operator. Once the project sponsor has decided to carry out an assessment, the project sponsor procures a team of accredited assessors, either through competitive tender or direct contracting. Accredited assessors may be individual consultants or the staff of hydropower consulting firms. The project sponsor negotiates with the accredited assessors on a tentative schedule and costs (table 2.3). The number of accredited assessors has grown significantly, from 6 in 2014 to 34[3] in 2020.

TABLE 2.3. Steps in an HSAP Assessment

Concept	
Project Sponsor	*Management Entity*
• Decide to carry out a Hydropower Sustainability Assessment Protocol (HSAP) Assessment • Procure consultancy services from accredited assessors	• Liaise with the accredited assessor community to circulate request for proposal (optional)
Pre-Assessment Visit	
Project Sponsor	*Assessor Team*
• Refine objectives for assessment • Identify single point of contact for assessment • Identify local support team for assessment	• Carry out training on the Hydropower Sustainability Tools (HSTs) (optional) • Translate materials into national language, if necessary • Guide local support team in identification of documentary evidence and interviewees • Plan an intermediate "readiness visit," if necessary
Preparation for On-Site Assessment	
Project Sponsor	*Assessor Team*
• Arrange interviews • Select and share relevant documentation with assessor team • Arrange logistics for on-site assessment, including local travel, accommodation, translation, etc.	• Begin review of available documentary evidence
On-Site Assessment	
• Interviews and Site Inspection	
Post-Assessment	
Project Sponsor	*Assessor Team*
• Review draft report and provide one round of comments • Prepare management plan to address gaps identified (optional) • Publish final report on hydrosustainability.org (optional)	• Prepare draft report • Upon receipt of comments, prepare final assessment report • Respond to public comments on published assessment, if necessary

Preparation begins long before the on-site assessment. Before an inspection, the lead assessor and lead trainer visit the project site to consider the logistical requirements, the time needed, and the size of the team required. The project sponsor appoints a single point of contact to interact with the assessor team. During the preassessment visit, the lead assessor works with the single point of contact and the rest of the local support team to identify potential interviewees and relevant documentation. The single point of contact is also a key participant during training.

An on-site assessment involves an intensive series of interviews and site inspections (photos 2.1 and 2.2). For a smaller project, the assessors may conduct up to 40 interviews and review more than 100 documents. For the largest projects to date, they have conducted over 100 interviews and reviewed more than 400 documents. At the end of the on-site assessment, the assessors determine initial scores for the project and request additional evidence, if needed. After considering the additional evidence, the assessment team prepares a draft report, which is circulated for one round of comments to the project sponsor, and then compiles a final assessment report, which may or may not be published at the discretion of the project sponsor.

When an external entity finances an assessment, for example, when the World Bank facilitates assessments, there are some additional steps. In all assessments facilitated by the World Bank to date, it has been

PHOTO 2.1. Interview Conducted in Eusa Village During an Official Assessment of the Mangdechhu Hydroelectric Project, Bhutan

Photo credit: © Bernt Rydgren.

PHOTO 2.2. Site Inspection during Official Assessment of the Mangdechhu Hydroelectric Project, Bhutan

Photo credit: © Kimberly Lyon / World Bank.

responsible for arranging financing, contracting accredited assessors, assisting with the logistical arrangements, and supplying documentary evidence. Bank staff have observed these on-site assessments, and provided feedback on the draft assessment reports.

The results of a full HSAP assessment are presented in a report that outlines the background, evidence, and assessment findings for each topic. The results are summarized in a sustainability profile (or "spider diagram"), with a score for each sustainability topic (figure 2.5). Scores for topics cannot be combined or averaged to present a single sustainability index. This is important, as the topics vary greatly in their implications for a project.

For each topic, two sets of scoring criteria are used: *basic good practice* (score of 3) and *proven best practice* (score of 5). A project must attain a *basic good practice* for a particular topic before it can be scored against *proven best practice* for that topic. In order to achieve a score of 3 on a topic, a project must satisfy all of the scoring statements with no significant gaps. If one significant gap from a *basic good practice* is noted, the project receives a score of 2, and if there are two or more significant gaps, the project receives a score of 1 (figure 2.6).

FIGURE 2.5. Generic Example of a Sustainability Profile for an Implementation-Stage Assessment

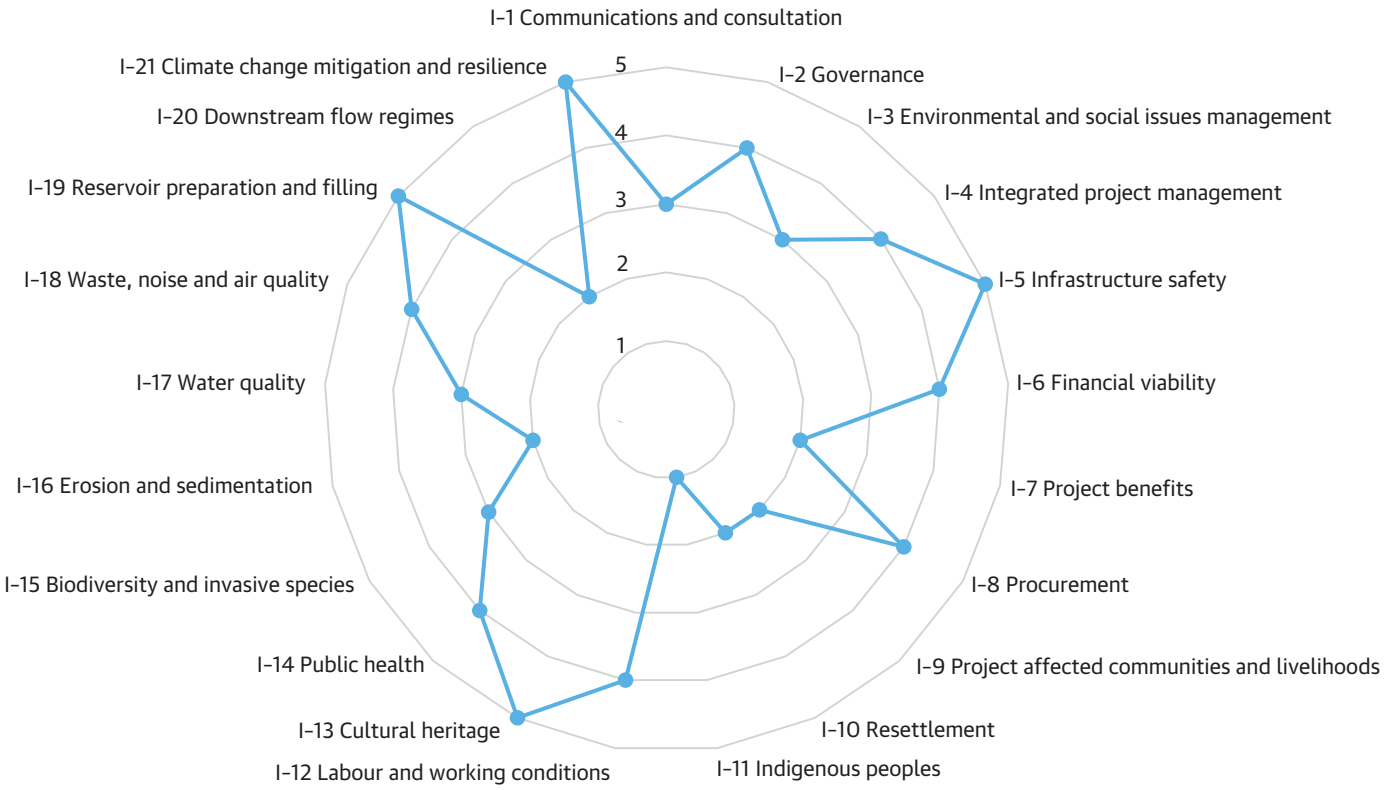
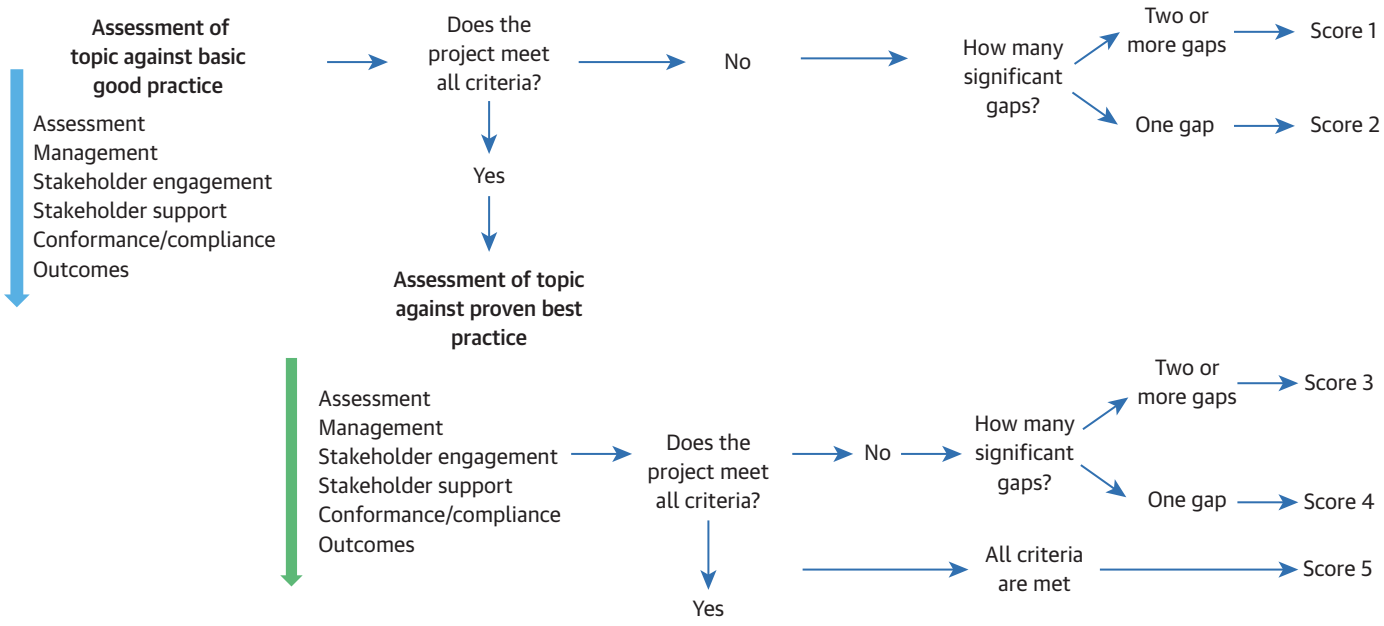


FIGURE 2.6. HSAP Scoring System



Source: Adapted from IHA (2019d).

If a project has met all of the criteria for *basic good practice* in a particular topic, it is then assessed at the level of *proven best practice*. If there are no significant gaps from these criteria, the project will receive a score of 5. A single significant gap will earn it a score of 4. If two or more significant gaps have been noted, the score for that topic will remain at 3.

The significance of a gap is determined based on the severity of the risk that it poses to the project. This includes whether or not plans are in place to address the gap and whether there is sufficient time to do so before it can have a major impact on the overall project. The issue of significance is an area of focus in the training and support materials for accredited assessors.

A project is typically scored for 20 to 24 sustainability topics, depending on the stage in the project cycle; there may be fewer topics if certain topics are determined as not relevant. For example, if no persons are resettled over the course of a project, the assessors would not consider the topic of Resettlement

TABLE 2.4. HESG: Summary of Significant Gaps

		Sections											
List of significant gaps:		1.Environmental and Social Assessment and Management	2.Labour and Working Conditions	3.Water Quality and Sediments	4.Community Impacts and Infrastructure Safety	5.Resettlement	6.Biodiversity and Invasive Species	7.Indige nous Peoples	8.Cultural Heritage	9. Governance and Procurement	10.Communications and Consultation	11.Hydrological Resource	12. Climate Change Mitigation and Resilience
1.													
2.													
3.													
4.													
5.													
6.													
7.													
8.													
9.													
10.													
11.													
12.													
13.													
14.													
15.													
NUMBER OF SIGNIFICANT GAPS BY SECTION:													
TOTAL NUMBER OF SIGNIFICANT GAPS:													

Source: IHA 2020b.

relevant for assessment. In the event that the accredited assessors do not find sufficient evidence to make a determination on a topic, that topic is noted as "not assessed." This status typically reflects the project sponsor's unwillingness to share information. For an HESG assessment, the results are summarized in a table with the number of gaps tallied for each of the 12 sections (table 2.4).

Starting in 2014, the HSGC introduced a process for remedial action if a project sponsor disputes the results of an assessment. When this occurs, the project sponsor has 30 days from receipt of the draft report to contact the management entity seeking reassessment of the topic(s) in question. This partial reassessment would be carried out by the assessor who originally scored the topic(s) in question, and the results must be endorsed by the lead assessor. The reassessment may or may not result in changes to the scoring of those topics (IHA 2014).

Notes

1. The nine topics covered under an early stage assessment are: demonstrated need, options, policies and plans, political risks, institutional capacity, technical issues and risks, social issues and risks, environmental issues and risks, and economic and financial issues and risks.
2. These estimates refer to the level of effort for accredited assessors.
3. As of February 2020, there were 9 fully accredited assessors, 5 of whom were accredited lead assessors, and 25 provisionally accredited assessors.

Chapter 3
The Hydropower Sustainability Tools and International Standards

The HSAP and HESG themselves are not standards, but many organizations refer to them in their own policies and standards. The HSAP and HESG are auditing tools designed to measure all aspects of a hydropower project's sustainability performance, providing a mechanism for continuous improvement.

A deliberate decision was made by the HSAF to design the HSAP, the tool from which all the others are derived, without a pass or fail result. Instead, the scoring levels of 3 and 5 (*basic good practice* and *proven best practice*, respectively) represent two levels of sustainability that are considered acceptable and desirable for a particular topic.

Because no single scoring index exists and the topics are not weighted according to their importance, it is not possible to say that a project is "sustainable" or "unsustainable" across all the relevant topics. Furthermore, because the scoring is based on a snapshot at a particular moment in time, there are limitations in extrapolating from an assessment whether the good practices observed will be sustained in the long term.

The HSGC seeks to develop a global hydropower sustainability standard based on the HSTs. There has been interest from HSAC members, especially members from industry, in developing a standard to further incentivize use of the tools.

3.1 The Hydropower Sustainability Tools and the Sustainability Frameworks of the World Bank Group

The HSAF aligned the HSAP, to the extent practical, with multilateral policies, including the World Bank's Environmental and Social Safeguards Policies and the IFC's Performance Standards. For this reason, there are many parallels between the HSAP content and the issues covered by the Safeguards and Performance Standards. As these policies have evolved over time, the HSTs have changed to preserve this alignment. For example, the grouping of topics for the HESG was inspired by the revised IFC Performance Standards and the new ESF of the World Bank (table 3.1).

The HSAP, however, is quite different in purpose from the WBG's environmental and social standards. Whereas activities financed by WBG institutions are required to comply with these standards, the HSTs remain voluntary tools aimed at continuously elevating the performance of the hydropower sector globally. According to a study commissioned by the HSAF, "Whilst the comparator systems (with the exception of the WCD) aim to establish minimum performance requirements for projects, the HSAP is designed to support a continuous improvement approach" (Wenban-Smith 2010). The HSTs can thus be viewed as complements to, but not substitutes for, the World Bank's ESF or the IFC's Sustainability Framework (table 3.2; see chapter 5 for more details).

TABLE 3.1. List of Topics Covered by the Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool

HESG Section	World Bank Environmental and Social Standards	IFC Performance Standards
1. Environmental and Social Assessment and Management	ESS1. Assessment and Management of Environmental and Social Risks and Impacts	PS1. Assessment and Management of Environmental and Social Risks and Impacts
2. Labor and Working Conditions	ESS2. Labor and Working Conditions	PS2. Labor and Working Conditions
3. Water Quality and Sediments	ESS3. Resource Efficiency and Pollution Prevention	PS3. Resource Efficiency and Pollution Prevention
4. Community Impacts and Infrastructure Safety	ESS4. Community Health, Safety, and Security	PS4. Community Health, Safety, and Security
5. Resettlement	ESS5. Land Acquisition and Involuntary Resettlement	PS5. Land Acquisition and Involuntary Resettlement
6. Biodiversity and Invasive Species	ESS6. Biodiversity Conservation and Sustainable Management of Living Natural Resources	PS6. Biodiversity Conservation and Sustainable Management of Living Natural Resources
7. Indigenous Peoples	ESS7. Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	PS7. Indigenous Peoples
8. Cultural Heritage	ESS8. Cultural Heritage	PS8. Cultural Heritage
9. Governance and Procurement	World Bank Procurement Framework; Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants; Access to Information Policy.	IFC Corporate Governance Methodology; Access to Information Policy. The IFC does not participate in the procurement processes for projects it finances.
10. Communications and Consultation	ESS10. Stakeholder Engagement and Information Disclosure	PS1. Assessment and Management of Environmental and Social Risks and Impacts
11. Hydrological Resource	ESS1. Assessment and Management of Environmental and Social Risks and Impacts ESS3. Resource Efficiency and Pollution Prevention	PS1. Assessment and Management of Environmental and Social Risks and Impacts PS3. Resource Efficiency and Pollution Prevention
12. Climate Change Mitigation and Resilience	ESS1. Assessment and Management of Environmental and Social Risks and Impacts ESS3. Resource Efficiency and Pollution Prevention ESS6. Biodiversity Conservation and Sustainable Management of Living Natural Resources	PS1. Assessment and Management of Environmental and Social Risks and Impacts PS3. Resource Efficiency and Pollution Prevention

Source: World Bank.
Note: The HSTs reflect good international industry practice on a wide range of issues related to hydropower, including on technical dimensions, whereas the WBG sustainability frameworks are primarily meant to guide the avoidance, minimization, and mitigation of environmental and social risks and impacts. As a result, the HSTs do not completely align with WBG sustainability frameworks, and for WBG projects, similar technical guidance is contained in Good Practice Notes and Technical Guidance Notes, which are not formally WBG policies.
HESG = Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool; IFC = International Finance Corporation.

TABLE 3.2. Comparison of World Bank Group Standards and the Hydropower Sustainability Tools

	World Bank ESF	IFC Sustainability Framework	Hydropower Sustainability Tools (HSTs)
Characterization	The ESF consists of: • The World Bank's Vision for Sustainable Development • The Environmental and Social Policy for Investment Project Financing, which sets out the requirements that apply to the Bank. • The 10 Environmental and Social Standards (ESSs), which set out the requirements that apply to Borrowers. • Bank Directive—Environmental and Social Directive for Investment Project Financing. • Bank Directive on Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups.	The Sustainability Framework consists of: • The Policy on Environmental and Social Sustainability, which defines IFC's commitments to environmental and social sustainability. • The Performance Standards, which define clients' responsibilities for managing their environmental and social risks. • The Access to Information Policy, which articulates IFC's commitment to transparency.	The HSTs include: • The HSAP—a suite of four assessment tools to evaluate the performance of individual hydropower projects. • The HESG—a suite of three gap analysis templates to summarize a project's gaps against basic good practice criteria and a plan for managing those gaps. • The HGIIP—a comprehensive set of guidelines on how to achieve basic good practice on a range of sustainability topics.
Purpose	To enable the World Bank and Borrowers to better manage environmental and social risks of projects and to improve development outcomes.	To support the IFC's approach to risk management and guide clients on identifying risks and impacts so that they can avoid, mitigate, and manage those risks and impacts as a way of doing business.	To help hydropower developers understand how they match up to good industry practices and identify areas for improvement.
Applicability	Required for World Bank–financed projects.	Required for all direct investments by the IFC, including project and corporate finance provided through financial intermediaries.	Any hydropower project at any stage of development or operation.
Sectoral coverage	ESSs apply to all investment projects and are not sector or industry specific.	Performance Standards apply to all investments and are not sector- or industry-specific.	The HSTs are specifically designed for application to hydropower projects.
Compliance	ESSs must be met by Borrowers. Compliance is monitored by the World Bank.	Performance Standards must be met by clients throughout the life of an investment by the IFC. Compliance is monitored by the IFC.	The HSTs are used voluntarily by project developers and operators, and accredited assessors must be used for assessments to be considered official. No specific compliance is required except in the case of CBI eligibility for green bond financing for which a project would need to meet minimum criteria set by the CBI.

Source: Based on World Bank (2019) and IFC (2012a).
Note: CBI = Climate Bonds Initiative; ESF = Environmental and Social Framework; HESG = Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool; HGIIP = Hydropower Sustainability Guidelines on Good International Industry Practice; HSAP = Hydropower Sustainability Assessment Protocol; HSTs = Hydropower Sustainability Tools; IFC = International Finance Corporation.

3.2 The Hydropower Sustainability Tools and the World Commission on Dams Recommendations

The HSTs meet WCD aspirations for some but not all topics. The final report of the WCD establishes a set of core values and seven strategic priorities. While the WCD recommendations address planning at the sectoral or basin level, the HSAP looks at individual projects with the aim of urging them toward best practice over time. A 2014 review by the International Institute for Environment and Development considers whether WCD guidelines are met by HSAP criteria for proven best practice (table 3.3). Given the WCD's focus on how decisions are made, the review focuses on the early stage and preparation-stage tools of the HSAP, and specifically those topics equivalent to the WCD "comprehensive

TABLE 3.3. Comparison of the World Commission of Dams Recommendations and the HSAP

HSAP Topic	Level at Which Compatibility with WCD Reached: Level 3 (Basic Good Practice)	Level at Which Compatibility with WCD Reached: Level 5 (Proven Best Practice)	Comment
P-1 Communications and Consultation	■	■	
P-3 Demonstrated Need and Strategic Fit		■	Level 3 does not require participation of stakeholders.
P-5 Environmental and Social Impact Assessment and Management			Insufficient clarity concerning ecological baseline surveys. Reference to human rights is a Level 5 requirement but was fundamental to the WCD construct.
P-10 Project Benefits	■	■	
P-13 Project-affected Communities and Livelihoods		■	The WCD put significant emphasis on negotiation and demonstrable agreements. The latter is a Level 5 requirement for the HSAP.
P-14 Resettlement		■	As above.
P-15 Indigenous Peoples		■	Free, prior, and informed consent is a Level 5 requirement.*
P-19 Biodiversity and Invasive Species			The HSAP gives insufficient weight to the importance of ecological baseline surveys and special treatment of endangered and threatened species.
P-23 Downstream Flow Regimes	■	■	

Generally meets WCD aspirations (Strategic Priorities)	■
Generally does not fully meet WCD aspirations (Strategic Priorities)	

Source: Adapted from Skinner and Haas (2014).

Note: HSAP = Hydropower Sustainability Assessment Protocol; WCD = World Commission on Dams.

* Following a process in 2019 to review the language in the HSAP and its derivative tools pertaining to indigenous peoples, revisions were made to include free, prior, informed consent as a Level 3 requirement (basic good practice). Level 3 must be attained on a particular topic before a project can be assessed against the Level 5 criteria for that topic.

options assessment." The review concludes that the HSAP "explicitly incorporates the concept of risk management into planning as articulated by the WCD." A number of WCD provisions are not integrated in the preparation stage, however, including the WCD's strong stance on legally binding agreements with local communities, legal support to compensate for power imbalances, and the use of national policy frameworks, for example, in the case of transboundary waters. Despite these departures, the review credits the HSAP with making key elements measurable and concludes that the HSAP "represents the best currently available measuring stick for respect for WCD provisions in individual projects" (Skinner and Haas 2014).

3.3 The Hydropower Sustainability Tools and Standards for the Commercial Banking Sector

In the commercial banking sector, the HSAP is mentioned by major players, usually in the context of enhancing a bank's due diligence under its own existing standards. For example, UBS considers large dams an area of concern; it will only do business under stringent criteria, triggering an enhanced due diligence and approval process whereby it assesses projects using the HSAP and against the WCD recommendations (UBS 2019). Similarly, Societe Generale has guidelines, which look to the HSAP to guide its environmental and social assessments in the hydropower sector (Societe Generale 2014). The HSAP has also been mentioned in reports put out by Standard Chartered and Citi Group.

3.4 The Hydropower Sustainability Tools and Green Financing

As introduced in box 2.1, the HESG has been put forward to determine whether projects meet aspects of the Climate Bonds Initiative (CBI) Hydropower Criteria. The CBI describes itself as an investor-focused not-for-profit organization, promoting "investment in projects and assets necessary for a rapid transition to a low carbon and climate resilient economy." It seeks to develop the market for Green and Climate Bonds in emerging markets. One of the ways it does this is through the administration of the Climate Bonds Standard and Certification Scheme, which targets bond issuers, investors, and financial markets to prioritize investments that address climate change (CBI 2019a). The CBI has developed criteria for various sectors to determine their eligibility to be labeled under the certification scheme.

The CBI criteria for hydropower is under development. In June 2016, the CBI launched a Technical Working Group to develop the criteria to identify and monitor hydropower investments, and in July 2017, it established an Industry Working Group to consult on the structure and content of the hydropower standard (CBI 2019b). From June to August 2019, the CBI released its draft hydropower standard for public consultation, putting forth the HESG to determine whether a project meets CBI's Adaptation and Resilience test[1] (CBI 2019c). The revised HESG, including new language on indigenous peoples, was shared with CBI in October 2019 and, at the time of this report, the final hydropower criteria were expected to be released by the end of 2020.

The HSAP has also been suggested as an alternative to compliance assessments for carbon markets. This includes the Clean Development Mechanism (Hass, Skinner, and Soanes 2015), but to date, the tools have not been formally adopted by other carbon finance schemes.

Note

1. Before being assessed using the HESG for CBI's Adaptation and Resilience test, a project must first pass the mitigation test using a predictive screen or, failing that, a greenhouse gas assessment.

Chapter 4
Using the Hydropower Sustainability Tools

4.1 Types of Assessments

The intended use of the HSAP was to provide performance snapshots at different stages of a project's life in order to drive continuous improvement. An assessment would measure how well a project was doing relative to defined levels of *basic good practice* and *proven best practice* at a given moment in time. Assessments could be repeated to record a project's progress toward higher levels of performance over time.

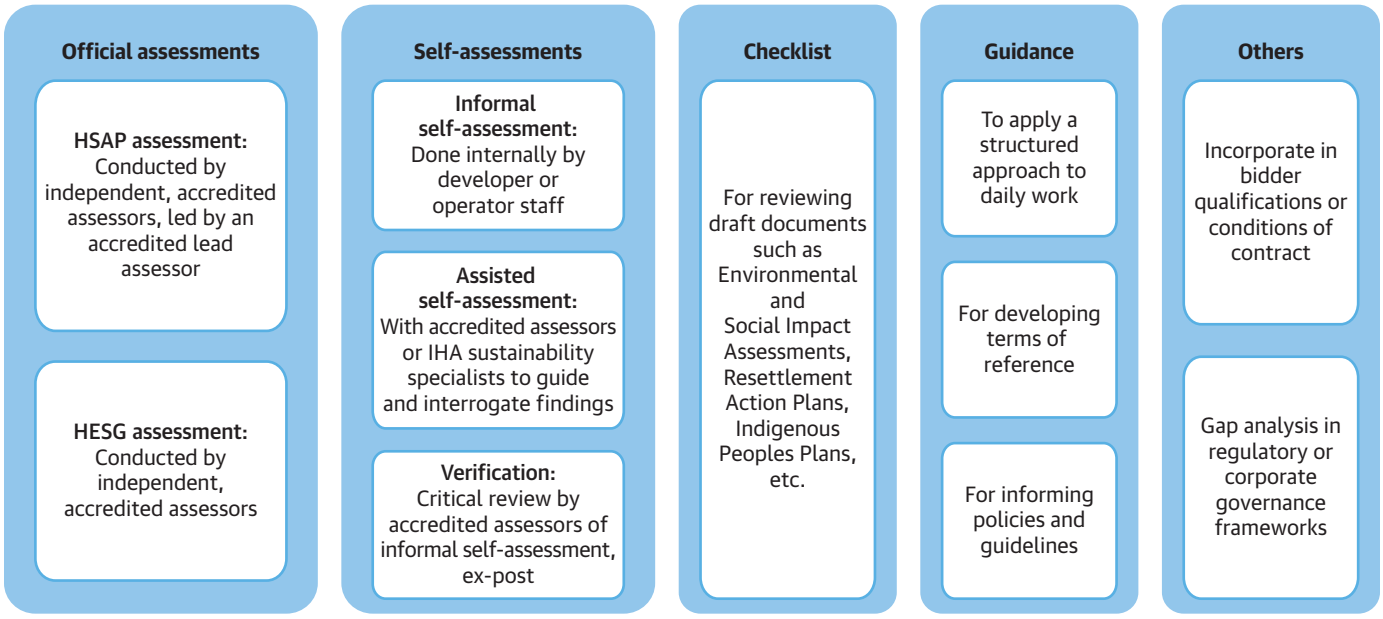
Hydropower sustainability assessments (using the HSAP or HESG) can either be recognized as official or considered unofficial.[1] Official assessments, because they are carried out by accredited assessors according to the terms and conditions of the tools, must adhere to certain quality standards. Assessments can be carried out unofficially to provide more flexibility in the approach, but this comes with trade-offs in rigor, independence, and the way the results can be disseminated.

Over time, there has been a diversification in the ways the tools have been used. Acknowledging the role of official assessments, the World Bank's 2014 report on the HSAP sought to define potential uses that more directly contribute to the WBG's work of building capacity in client countries (Liden and Lyon 2014). This led to the concept of assisted self-assessments, around which the World Bank and IHA collaborated to develop a program for the Zambezi River Basin. Since then, and as the HSAP was used by more hydropower operators and developers, interest grew in diversifying the way the HSAP could be used and in the development of derivative tools. As the product of an intensive, multi-stakeholder process, the HSAP and its derivatives represent a tremendous body of work that has many applications beyond official assessments (figure 4.1). Examples include the following:

- *HSAP assessment*. This is an assessment conducted by a team of independent accredited assessors. Assessments rely on objective evidence to support findings that are factual, reproducible, objective, and verifiable, and 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 a hydropower company. If the HSAP is used informally in this way, there are fewer restrictions on format. For example, the report can be in any language, or a shorter version of the report could be produced. Depending on the purpose of the assessment, it could be done with a selection of specific topics instead of the full tool. If made public, the report is required to carry a disclaimer stating that it is not an official assessment, in keeping with the HSTs' terms and conditions.

FIGURE 4.1. Ways of Using the Hydropower Sustainability Tools



Source: Adapted from World Bank (2018).
Note: HESG = Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool; HSAP = Hydropower Sustainability Assessment Protocol; IHA = International Hydropower Association.

- *Assisted self-assessment.* This is similar to an informal self-assessment, the main difference being that accredited assessors or IHA sustainability specialists work with the developer or operator to advise them on how to interpret and use the HSAP. Using the findings of an assisted self-assessment, assessors can work with the hydropower company to identify an action plan, setting out the measures they will take to improve the sustainability of a particular project or the company itself. This approach is very useful for capacity building as staff from the hydropower company will have been trained to carry out an HSAP assessment, making it easier in future for the company to repeat assessments or take a portfolio perspective on sustainability. This approach also offers useful analysis of any gaps between observed variables and basic good practice, and may be used to suggest how to enhance capacity to address some of them. An assisted self-assessment may be followed by an official assessment after remedying some of the identified issues.
- *Verification.* An alternative to the assisted self-assessment is to have accredited assessors provide verification of an internal self-assessment. This may require translation of the report depending on the accredited assessor's language skills as well as stakeholder interviews carried out by the accredited assessor. The objective would be to deliver a critical review of the assessment report and its findings. This application remains an unofficial use of the HSAP, and, as such, the findings would be for internal use of the hydropower company.

- *HESG assessment.* A derivative of the HSAP, the HESG assessment focuses on the basic good practice scoring statements of only the environmental, social, and governance (ESG) topics. The HESG assessment provides a faster, less expensive alternative to a full assessment, which is appropriate for contexts where only the ESG topics are of concern. These tools (for preparation, implementation, and operation stages) also include an Environmental and Social Action Plan setting out the actions necessary to close the gaps. In principle, an HESG assessment could also be used informally by a hydropower company itself, but the process of assessing a project is not materially different from a full assessment using the HSAP, and thus, the main difference would be the focus on basic good practice only and the use of the HESG reporting format.

- *Guidance.* The HGIIP can be used by developers, operators, financiers, regulators, consultants, contractors, equipment suppliers, and civil society as a reference document on expectations of good industry practice for hydropower. For example, the staff of a hydropower developer can refer to it in their day-to-day work, such as in developing terms of reference for an Environmental and Social Impact Assessment (ESIA). The assessment tools (HSAP and HESG) can also serve as models for internal audit procedures or compliance assessment methodologies.

- *Checklists.* The HSTs can be used to develop checklists of topics that can be applied quickly and with minimal effort during the review of important project documentation such as the ESIA and associated plans.

Other potential uses of the HSTs include carrying out gap analyses of corporate sustainability frameworks or government regulatory frameworks. They may be included in contract conditions, or in selection criteria for potential bidders.

Each type of assessment has merits and limitations, and choosing which one is best for a given context depends on a range of factors. These include the objectives of the assessment, the stage of project development, particular project concerns, operator or developer familiarity with and capacity to use the tools, cost constraints, time constraints, and desired level of visibility (table 4.1). A full discussion of the different uses of the tools in the context of World Bank operations can be found in chapter 5.

TABLE 4.1. Important Considerations for Choosing an Assessment Type

Considerations	Official HSAP	Official HESG	Assisted Self-Assessment	Informal Self-Assessment
Scope	Holistic—all topics	ESG topics	Flexible	Flexible
Assessment criteria	Up to proven best practice	Up to basic good practice	Flexible	Flexible
Cost[2]	US$100,000–US$200,000[3]	US$25,000–US$50,000	US$200,000–300,000	Internal cost only
Developer/operator staff time requirements	Medium	Low to medium	Very high	High

table continued on next page

TABLE 4.1. Continued

Considerations	Official HSAP	Official HESG	Assisted Self-Assessment	Informal Self-Assessment
Time considerations	2–6 months	1–2 months	More than 6 months, flexible	Flexible
Information disclosure	Assessors require access to information that may be sensitive. Reports can be published (optional).	Assessors require access to information that may be sensitive. Reports can be published (optional).	Trainers may need access to sensitive information to peer review assessment findings.	No external consultants involved.
Quality	Independent, trained assessors	Independent, trained assessors	Trainer inputs mitigate some internal bias	Subject to internal bias
Environmental and social action planning	Findings must be translated into action items	Included in assessment	Support for action planning can be included in trainer's scope of work	Can be done as part of the self-assessment process
Capacity building potential	Medium	Low	Very high	Medium
Reputational considerations	Can be published	Can be published	Internal use only	Internal use only

Note: ESG = environmental, social, and governance; HESG = Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool; HSAP = Hydropower Sustainability Assessment Protocol.

4.2 Global Uptake of the Hydropower Sustainability Assessment Protocol

As of March 2019, 31 official assessments using the HSAP had been conducted in 25 countries. These include three with the early stage tool, seven with the preparation-stage tool, ten with the implementation-stage tool, and ten with the operation-stage tool (IHA 2019e). The projects range from the 3 megawatt (MW) Semla IV project in Sweden to the 14,000 MW Itaipu project in Brazil and Paraguay, the largest power station in the world in terms of annual electricity generation. Of these 31 official assessments, the reports of 19 are publicly available on the website for HSTs.[4]

Approximately half of the official assessments have been carried out in low- and middle-income countries. While there have been multiple assessments in some countries, such as Colombia, Brazil, and Iceland, there are several major hydropower markets where no assessments have been done, including the United States, Japan, and China. Uptake in emerging hydropower markets such as Sub-Saharan Africa remains low, with only two official uses to date (table 4.2).

Despite lower-than-expected uptake in some regions, there is interest in training and opportunities for capacity building. There have been numerous known unofficial uses of the HSAP and several trainings led by IHA. Several development partners have taken an active role in trying to grow the market for hydropower sustainability assessments.

TABLE 4.2. HSAP Official Assessments

Project Name	World Bank Region	Country	Protocol Stage	Project Size (MW)
Pelosika	East Asia and the Pacific	Indonesia	Early stage	21
Program Sava	Europe and Central Asia	Croatia	Early stage	156
Volta River Basin	Sub-Saharan Africa	Ghana	Early stage	353
Kaunertal Expansion	Europe and Central Asia	Austria	Preparation	1,015
Semla IV	Europe and Central Asia	Sweden	Preparation	3
Hvammur	Europe and Central Asia	Iceland	Preparation	82
Cañafisto	Latin America and the Caribbean	Colombia	Preparation	960
Santo Domingo	Latin America and the Caribbean	Colombia	Preparation	56
Keeyask	North America	Canada	Preparation	695
Kabeli A	South Asia	Nepal	Preparation	38
Trung Sơn	East Asia and the Pacific	Vietnam	Implementation	260
Murum	East Asia and the Pacific	Malaysia	Implementation	944
Devoll	Europe and Central Asia	Albania	Implementation	265
Romanche-Gavet	Europe and Central Asia	France	Implementation	94
Reventazón	Latin America and the Caribbean	Costa Rica	Implementation	306
Chaglla	Latin America and the Caribbean	Peru	Implementation	456
Santo Antônio	Latin America and the Caribbean	Brazil	Implementation	3,568
Jirau	Latin America and the Caribbean	Brazil	Implementation	3,750
Sogamoso	Latin America and the Caribbean	Colombia	Implementation	820
Mangdechhu	South Asia	Bhutan	Implementation	720
Trevallyn	East Asia and the Pacific	Australia	Operation	96
Nam Lik 1-2	East Asia and the Pacific	Lao PDR	Operation	100
Kárahnjúkar	Europe and Central Asia	Iceland	Operation	690
Blanda	Europe and Central Asia	Iceland	Operation	150
Jostedal	Europe and Central Asia	Norway	Operation	288
Walchensee	Europe and Central Asia	Germany	Operation	124
Shardara	Europe and Central Asia	Kazakhstan	Operation	100
Miel I	Latin America and the Caribbean	Colombia	Operation	396
Itaipu	Latin America and the Caribbean	Brazil/Paraguay	Operation	14,000
Teesta-V	South Asia	India	Operation	510
Cahora Bassa	Sub-Saharan Africa	Mozambique	Operation	2,075

Source: Data from IHA (2019e, 2019f).
Note: MW = megawatt.

4.3 Global Uptake of the Hydropower Environmental, Social, and Governance Gap Analysis Tool

An early draft of a rapid assessment tool, derived from the HSAP, was used to assess the Tina River Hydropower Project in the Solomon Islands. The project was under preparation at the time by the World Bank and other partners (see section 6.2.4), and the World Bank facilitated the assessment. Further refined using the HESG, the tool was then piloted in the operation-stage assessment of Cahora Bassa in April 2018.

Since its official launch in June 2018, the tool has been used in four assessments. The first project was in Zambia, where it was used to inform a financial decision. For two projects in India, the analyses supported the due diligence process during the potential acquisition of hydropower assets. Most recently, it has been used in Gabon for a project under preparation, the results of which are published (Trias 2020).

Notes

1. For an assessment to be recognized as official, it must use an accredited assessor, obtain the full support of the project sponsor, and comply with other guidelines determined by the HSAC. For any claims to be made about the results of an assessment, it must have been an official assessment, and the results must be publicly disclosed (IHA 2020b).
2. Costs are estimated for a single project and do not include internal costs borne by the developer or operator such as staff time and travel and use of company vehicles. According to interviews of the IHA Sustainability Partners in 2014, the internal costs of full HSAP assessments have been estimated to be in the range of US$50,000 to nearly US$750,000.
3. HSAP assessments commissioned by the World Bank have cost between US$139,000 and US$214,000.
4. HST website: http://hydrosustainability.org.

Chapter 5
The Hydropower Sustainability Tools and World Bank Operations: Seeking Complementarity

The HSTs have many potential uses in World Bank client engagements, whether as audit tools or through more diversified applications. They may be used for the strengthening of hydropower utilities and environmental and social regulators or to support World Bank due diligence. They can inform global knowledge activities and the development of internal sector guidance. Below is a discussion on which tools to use under which circumstances. While the HSTs have potential uses across WBG institutions, this chapter is focused on World Bank activities with public sector clients. This chapter is informed by consultations with World Bank staff and the World Bank's prior experiences using the HSTs (described in the case studies in chapter 6).

5.1 Using the Hydropower Sustainability Tools to Improve World Bank Client Capacity and Performance

For utilities, long-term capacity development programs could include training in sustainable hydropower, supported by HSAP or HESG assessments (official or unofficial) and Environmental and Social Action Plans. The HSTs can also inform the development of environmental and social management systems for public and private utilities. For regulators or government planning departments, capacity development programs could emphasize procedures and skills for internal auditing. In the provision of advisory services to develop or update national policies and guidelines for hydropower, the HGIIP can complement WBG Environmental, Health, and Safety (EHS) Guidelines and other good practice materials. The early stage tool of the HSAP can also be used during basin planning and to facilitate dialogue among riparian states in transboundary river basins. All these services are best carried out by accredited assessors as external consultants.

The HSTs can be used to help World Bank clients meet environmental and social requirements. Improving World Bank client systems and capabilities for environmental and social risk management is one of the ways to make World Bank ESF and Performance Standards[1] requirements less onerous for Borrowers to implement. As Borrowers' environmental and social risk management systems and capacity improve, World Bank requirements become easier to meet. The HSTs can be used to supplement client training and institutional strengthening efforts with content specific to the hydropower sector, and assessments can help to orient training activities around a particular project context. Hands-on training through assisted self-assessments can be used to strengthen client organization units that have responsibility for environmental and social management for a project or, more generally, support the institutionalization of sustainability requirements in policy development, performance monitoring, and capacity development.

The HGIIP can provide sector-specific guidelines to supplement World Bank standards and official guidance material to improve the quality of key documents and project design for overall enhanced sustainability.

World Bank clients can use the HGIIP as a source of detailed sector-specific guidance, supplementing WBG's EHS Guidelines, Good Practice Notes, and Guidance Notes to inform the preparation of key environmental and social instruments. For example, the HGIIP can provide sector-specific guidance on good practices that can be incorporated in the Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), Labor Management Procedures, Stakeholder Engagement Plan, Resettlement Plan, and other relevant plans. It may be stipulated in the terms of reference for consultants preparing the instruments that they should consult the HGIIP and potentially include assessments as part of the project monitoring program.

5.2 Using the Hydropower Sustainability Tools to Support World Bank Due Diligence and Compliance Monitoring

The HSTs do not replace World Bank policies and standards, but the tools are still useful at different stages of an investment project as complements to official guidance. This section examines how the tools can be used in the context of World Bank processes and procedures, including the application of the ESF and Performance Standards to investment projects. While this section looks at potential uses of the tools in the project cycle, it does not contain a comparison of the language in the HSTs vis-à-vis the ESF and Performance Standards. It may be desirable for WBG staff to carry out such an analysis to determine areas of equivalence or departure to enable an informed discussion on whether the HSTs should be integrated more formally in World Bank guidance materials.

The extent to which the HSTs will add value in project operations depends on the type of engagement (greenfield, brownfield, or refurbishment), the capacity of the client, and the stage at which the World Bank becomes involved (table 5.1). It is important to note that while the tools broadly consider the

TABLE 5.1. Using the Hydropower Sustainability Tools in World Bank Group Operations

Use Case	HSAP Early-Stage Tool	HSAP/HESG Preparation-Stage Tool	HSAP/HESG Implementation-Stage Tool	HSAP/HESG Operation-Stage Tool	HGIIP
Country Partnership Framework	X	X			
Advisory Services					
Capacity development	X	X	X	X	X
Policy and regulatory framework	X	X	X	X	X
Basin/system planning	X				
Transboundary cooperation	X				
Investment Project Financing					
Identification	X	X		X	
Preparation		X		X	
Implementation		X	X		
Project completion			X	X	X

Note: HESG = Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool; HGIIP = Hydropower Sustainability Guidelines on Good International Industry Practice; HSAP = Hydropower Sustainability Assessment Protocol.

issues associated with dam development, they are specific to hydropower projects and thus have limitations in the context of multipurpose reservoirs.[2] If the client, of its own accord, is interested in commissioning an assessment, the World Bank should be supportive of this while ensuring that the client is aware that the results of the assessment will be informative only during its due diligence process.

5.2.1 World Bank Group Country Engagement

During the formulation of the WBG Country Partnership Framework (CPF), WBG staff may find the early stage tool of the HSAP or preparation-stage tool of the HSAP/HESG as useful reference documents during their screening of risks. The CPF describes proposals from WBG institutions on how to support a government's development vision. It also integrates information from the government's Environment Action Plan as appropriate. In this context, the early-stage tool can be used as a guide for examining the strategic environment in which hydropower development is proposed. The preparation-stage tool can also help to screen potential projects early in their preparation for environmental, social, and governance risks, which can inform risk ratings in the CPF for the proposed country program.

5.2.2 World Bank Investment Project Preparation

The HSTs are useful as reference documents during project scoping and the development of terms of reference for early project preparation. The HSTs can act as checklists while writing terms of reference for both technical studies, such as feasibility or prefeasibility studies, as well as the ESIAs. The HSTs can also be included in the selection criteria for consultants, requiring that consultants utilize the HSTs in their work or that accredited assessors are part of the consultant team. An evaluation of environmental and social risks during this period, either through an assessment or guided by the topics of the HSTs, can serve as the environmental and social screening report carried out early in project preparation. It can also help WBG staff determine the preparation time and budget needed for the project.

HESG assessments can be performed rapidly as gap analyses for early drafts of ESF documents or technical studies, so that missing aspects can be addressed with sufficient time before finalization. Depending on how early the World Bank becomes involved in the project, either the early stage or preparation-stage content would be relevant for greenfield, brownfield, or major refurbishments. For minor refurbishment projects, the operation-stage content may be most relevant.

Assessments carried out during project preparation can provide inputs to or form part of environmental and social management instruments. HSAP and HESG assessments are very effective for improving stakeholder engagement in a structured way and could be used as part of the Stakeholder Engagement Plan. Environmental and Social Action Plans generated through an HESG assessment can become part of the ESIA/ESMP or other more specific plans disclosed before project approval. Assessments during preparation should be timed appropriately, and intentions should be communicated clearly to clients to facilitate seamless integration with required ESF or Performance Standards instruments to avoid two sets of plans proceeding in parallel. Specifically, in the case of existing projects seeking World Bank support, an HESG assessment, with its Environmental and Social Action Plan, can form part of the Environmental and Social Audit, used to determine the nature and extent of all environmental

and social areas of concern as well as the necessary measures and actions to mitigate those areas of concern.

HESG assessments during the later stages of project preparation (closer to appraisal) may be used to provide detailed interrogation of particular environmental and social issues of concern or to provide broad reassurance that key ESF and Performance Standards instruments are comprehensive and well prepared. Where there are concerns over gaps in draft studies and plans before project approval, there may be a good business case for using the HESG assessment to provide an additional perspective from independent assessors on those areas of concern. However, given that projects will already be subject to compliance assessments for World Bank requirements, there is the risk of creating an undue burden on the Borrower during a very intense and important time. It is thus important to consider scheduling requirements and potential impacts on the project preparation schedule, and how the HESG assessment can be integrated into the compliance assessment.

Reports from HSAP and HESG assessments can inform risk identification and risk management measures for World Bank-financed projects under preparation and in implementation. Third-party assessments by accredited assessors provide a critical and objective evaluation of project performance based on evidence, including that obtained through skillful interviewing. They can support identification of risks and red flags, which World Bank environmental and social specialists can refer to when determining or updating project risk ratings. The sustainability profiles generated through an assessment provide a crisp visual representation of project performance and risks, allowing the overall situation to be understood more quickly than would be possible with lengthier documentation.

Preparation-stage content is most relevant for greenfield, brownfield, or major refurbishments during project preparation and in early implementation. Some degree of project "preparation" is often carried over into implementation after a project is approved by the WBG Board, and in such cases, a preparation-stage assessment during this early implementation period could provide an opportunity to identify gaps, especially for those activities on the critical path, while there is ample time to address them before construction works begin.

5.2.3 World Bank Investment Project Implementation

The HSAP and HESG are potentially valuable tools for monitoring project performance during implementation. Implementation-stage assessments are widely regarded among accredited assessors as the most difficult on which to score well due to the complexity of project construction. An assessment by independent, accredited assessors at key junctures in the implementation schedule can provide a broad snapshot of performance, beyond the scope of normal project supervision. Such assessments would provide input to implementation milestones, including the midterm review or if project restructuring is under consideration.

HSAP and HESG assessments can be stipulated in the Environmental and Social Commitment Plan (ESCP) to support compliance monitoring during implementation. The ESCP sets out material measures and actions as well as the timing for each of these that are required for the project to achieve compliance with the ESF.

The ESCP is agreed to by both the Borrower and the World Bank and forms part of the project's legal agreement. As part of the ESCP, the Borrower may commit to carrying out HSAP or HESG assessments at specified intervals or to including provisions from the HGIIP into tender documents for contractors.

Introducing hydropower sustainability assessments into project implementation, however, must be accompanied by careful planning during the preparation phase, in liaison with the developer, to assure full ownership. It is envisaged that such assessments would be commissioned by the Borrower, either as an official or unofficial assessment using the implementation-stage tool. For projects with a capacity-building component, assisted self-assessments by the developer can enhance its project quality assurance monitoring.

5.2.4 World Bank Investment Project Completion

One of the clearest use cases for an HSAP or HESG assessment during a World Bank–financed project is toward the end of implementation or during project completion reporting. An assessment by independent accredited assessors could provide valuable information about a project's performance as World Bank staff prepare the project's final completion report. For projects being implemented in phases or for which follow-up investments are being prepared, an end-of-project assessment can identify gaps to be addressed with subsequent investments. Depending on how advanced contractor demobilization and site clearance is, such an assessment could be done using the implementation- or operation-stage tool.

The HSTs can also support good practices in project operation after World Bank engagement has ended. World Bank staff can advise clients to incorporate the HSTs in operations and maintenance contractors' or concessionaire agreements to further ensure good project outcomes after the World Bank is no longer involved. For example, in asset transfers at the end of a build-operate-transfer or build-own-operate-transfer arrangement, the contract could require that an assessment be carried out and gaps be addressed before handover or that contractors achieve a minimum level of performance on issues of particular importance to the client.

5.2.5 Risks and Limitations of Using the HST in World Bank Operations

HSAP scoring may create potentially difficult discussions with World Bank clients. World Bank experience with HSAP assessments and experiences from other benchmarking exercises suggests that low scores on an assessment, especially on sensitive issues, can create tension in the relationship between the World Bank team and the Borrower. It is important not to overemphasize the importance of scores and to set realistic expectations ahead of an assessment. Scores are most useful when considering project-specific performance over time rather than for international comparison. Even though the tools are designed to be globally applicable, very different circumstances across jurisdictions make such comparisons less meaningful.

World Bank clients may be reluctant to mobilize an HSAP or HESG assessment if they perceive it as a risk. Clients may be concerned that poor performance in an HSAP or HESG assessment may trigger further investigation into their management of sustainability issues, or they may even worry that poor performance will affect the World Bank's (or another financier's) support for the project. Early discussion on

the role of assessments in project risk management and clarity around the objectives and implications of an assessment will go toward mitigating these concerns. World Bank teams should also seek to introduce clients to the tools through training, so that they understand what the tools are, how they work, and the potential benefits and risks of their use.

World Bank clients may also be concerned about the cost and time requirements for carrying out an assessment. While the overall cost of an assessment is low compared to the financing required to implement a hydropower project, it is still important to select the right tool given the project context (see table 4.1). In some cases, it may be preferable for the World Bank to support assessments using Bank-executed trust fund resources—this may provide additional incentive for using the tools, especially when there is a business case for an assessment prior to the approval of project financing. Ultimately, it will be important to emphasize that an independent assessment of project performance with globally recognized tools can only help a hydropower developer or operator to improve its management of environmental, social, and governance risks.

Though the early stage tool of the HSAP is designed for early screening of environmental, social, and governance risks, it may not be sufficiently detailed to take a decision on whether to proceed with a project. The early stage tool does not replace the master planning process required to examine system-scale issues and consider trade-offs among projects, and while topics ES-1 and ES-2 on *Demonstrated Need* and *Options Assessment*, respectively, provide a strategic perspective on a proposed project, these topics are also well developed in the preparation-stage tool. For this more strategic perspective, depending on the availability of documentation, one could consider procuring an accredited assessor to examine topics P-3 and P-4[3] using the preparation-stage tool instead. The early-stage tool can still be informative during the early screening of environmental and social risks, but assessments of topics ES-7 and ES-8 in *Social Issues and Risks* and *Environmental Issues and Risks*, respectively, are not sufficiently detailed to provide the basis of a "go" or "no go" decision.

Notes

1. The World Bank ESF, launched in 2018, replaces the Operational Policy (OP) and Bank Procedures (BP) that address environmental and social issues (known as the "Safeguard Policies"). It does not replace OP/BP 4.03, Performance Standards for Private Sector Activities, which remain in effect for World Bank projects that are owned, constructed, and/or operated by the private sector.
2. The HSTs are useful for multipurpose projects in which hydropower is the primary purpose. For projects where hydropower is a secondary or tertiary purpose, some expectations in the HSTs may be particularly burdensome, for example, with regard to climate change mitigation. Also, aspects that are fundamental to the sustainability of irrigation or water supply investments, for example, may be missing.
3. Topics P-3 Demonstrated Need & Strategic Fit and P-4 Siting and Design.

Chapter 6
The World Bank Group's Experience with the Hydropower Sustainability Tools

6.1 Summary of the World Bank Group Experience

To inform the guidance presented in the World Bank's 2014 report on the HSAP (Liden and Lyon 2014), it was judged necessary to do a pilot assessment. Through this experience, the authors gained first-hand knowledge of the process, challenges, and benefits of using the HSAP in a World Bank–financed project. At the time, the Trung Sơn Hydropower Project was identified as an ideal candidate. It was a medium-sized storage project, and the project sponsor had requested capacity building to bring its hydropower projects up to international standards. This experience was documented in the report and informed its conclusions and recommendations. Since then, the WBG has facilitated a number of official assessments as well as spearheaded other innovative uses of the tools.

Of all the assessments financed by the WBG, five have been in the context of WBG-financed investment operations (Trung Sơn, Kabeli-A, Tina River, Batoka Gorge, and Reventazón). The remaining assessments have been facilitated in the context of advisory services activities with the aim of improving client capacity in the management of environmental and social issues (figure 6.1 and figure 6.2). Nearly all assessments facilitated by the WBG so far have been financed with Bank-executed trust fund resources and have had the additional benefit of informing future use of the HSTs. For future assessments that are more integrated into project preparation and implementation, provisions can be made in the project design to finance them out of the project loan or recipient-executed grant.

At the time of the 2014 report, the World Bank was already in the process of reviewing and updating its safeguards policies, and it was the consensus during staff consultations to focus on how the tools could be used by World Bank clients rather than in World Bank–financed projects. This led to several applications with a capacity-building lens, including assessments of projects that were not subject to

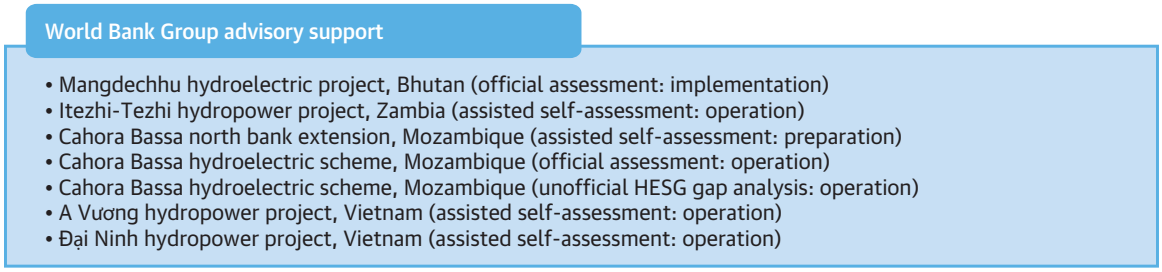
FIGURE 6.1. Assessments in WBG Operations

World Bank Group investment projects

- Trung Son hydropower project, Vietnam (official assessment: implementation)
- Kabeli-A hydropower project, Nepal (official assessment: preparation)
- Reventazón hydropower project, Costa Rica (official assessment: implementation)
- Tina River hydropower project, Solomon Islands (unofficial HESG gap analysis: preparation)
- BatokaGorge hydroelectric scheme, Zambia and Zimbabwe (assisted self-assessment: preparation)

Note: HESG = Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool.

FIGURE 6.2. Assessments Facilitated through WBG Advisory Services



Note: HESG = Hydropower Sustainability Environmental, Social, and Governance Gap Analysis Tool.

World Bank policies. For this reason, most of the case studies examined below do not have a clear link to World Bank operational procedures or compliance with safeguards requirements.

6.2 Official Assessments of World Bank Group Investment Projects

6.2.1 Trung Sơn Hydropower Project, Vietnam (Official HSAP Assessment: Implementation)

6.2.1.1 Project Background

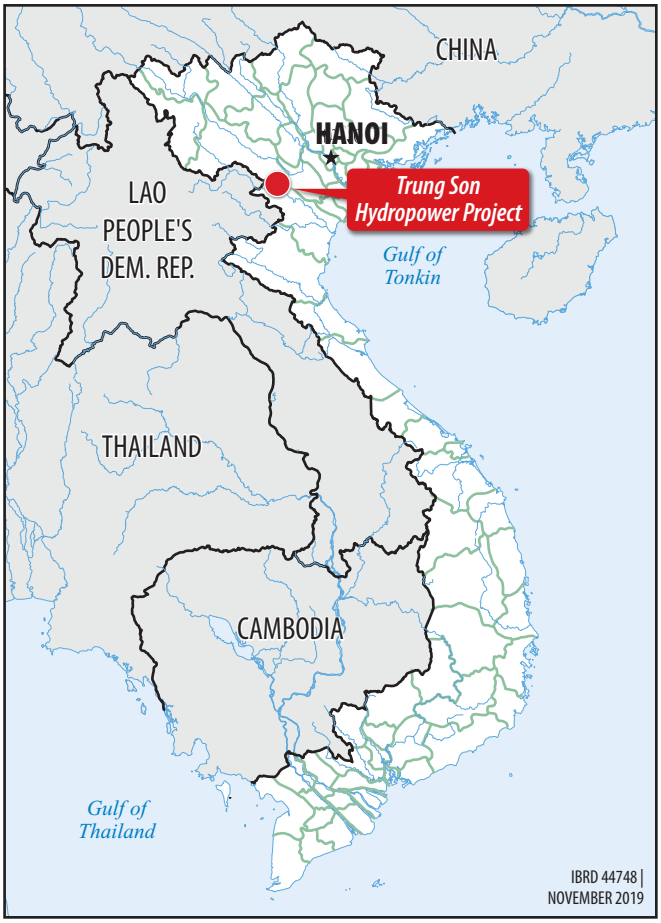
The Trung Sơn Hydropower Project is a multipurpose endeavor that aims to supply low-cost electric power to Vietnam while also delivering benefits from flood control and irrigation. With an installed capacity of 260 MW, the project is expected to generate an average of 1,019 gigawatts (GW) of energy per year. It began commercial operations in June 2017, and in the year 2018, it exceeded designed output with an accumulated generation of 1,079 gigawatt-hours (GWh), which is helping to meet the growing demand for energy in an urbanizing and industrializing Vietnam (Gerner 2019). The project is located on the Ma River in the Quan Hóa district of Thanh Hóa Province (map 6.1). The reservoir volume is estimated at 384.5 million cubic meters (m^3) and covers an area of 13.13 square kilometers (km^2) in both the Thanh Hóa and Sơn La provinces (World Bank 2011).

The project is owned by the Trung Sơn Hydropower Company Limited (TSHPCo), which is a wholly owned subsidiary company under the state-owned Vietnam Electricity (EVN). The total cost of the project was US$355.4 million, of which US$291 million was financed by an investment loan from the World Bank. The World Bank project closed in December 2019 (World Bank 2020).

6.2.1.2 Rationale and Objectives for HSAP Assessment

A full assessment using the HSAP was carried out for the project using the implementation-stage tool. The objectives of the assessment, as agreed between EVN and TSHPCo, were to: (1) assess the sustainability performance of the Trung Sơn Project and identify opportunities to improve performance during the construction phase; and (2) benchmark the project's performance and the practices of EVN against international practice in hydropower, as defined by the HSAP.

MAP 6.1. Location of Trung Sơn Hydropower Project



Source: World Bank.

As this was the first time an official assessment had ever been conducted with the direct involvement of a project financier—that is, the World Bank—great care was taken during the early phases of the process to emphasize the objectives of EVN and TSHPCo. While the World Bank had its own internal objective to understand how the HSAP could support its engagement with clients on sustainable hydropower, the World Bank team made clear to EVN and TSHPCo that the HSAP was not being applied to the project as part of the World Bank safeguards requirements.

6.2.1.3 Assessment Experience

The entire assessment, including the preparation prior to the on-site assessment and the finalization of the report following the assessment, took place over a period of one year (photo 6.1). The project was assessed against all topics contained in the implementation stage tool, with each accredited assessor being responsible for a group of topics. By the end of the assessment, the accredited assessors had reviewed 200

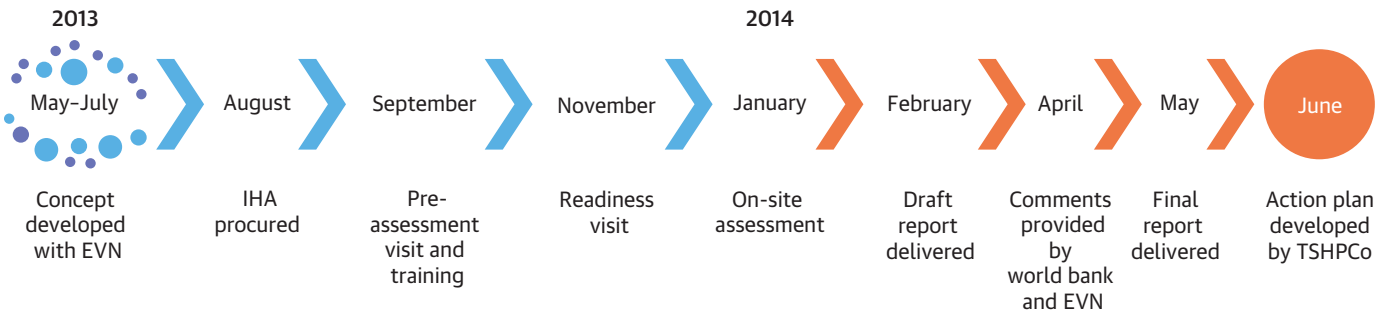
pieces of documentary evidence, held 72 interviews, and took more than 100 photos. The on-site assessment took place in January 2014 (figure 6.3).

The assessment was done by four accredited assessors and one trainee assessor. As is common during an assessment, the accredited assessors divided the topics so that each assessor would be responsible for a group of related topics, for example, environmental topics, social topics, and so forth. The ultimate allocation of topics, however, was also influenced greatly by assessment logistics. An assessment team must often split up to ensure the efficient use of time. In this case, some interviewees were located very far away from the project site, requiring a full day's journey, and in some cases, an overnight stay. For example, one accredited assessor traveled to the provincial capital of Thanh Hóa and collected evidence on behalf of the other accredited assessors who required interviews with provincial officials for their respective topics.

Despite its solid design, the assessment identified "a number of interrelated problems with the practical management and monitoring of various issues." The assessment concluded at the time that most of these issues could still be "successfully rectified if proper and timely management attention [was] paid to them." For many of the gaps that were identified, the source was the "late procurement of consultants and experts to assist TSHPCo's own staff with the implementation of studies and monitoring programmes." For example, delays in procuring the independent social and environmental consultant resulted in the late start of monitoring, which affected environmental and social issues management, erosion and sedimentation, and water quality (Rydgren et al. 2014).

Another source of gaps was the existence of parallel processes and documents. There were plans and processes originating in the national context and those developed in accordance with the World Bank's policies and procedures. For example, the report stated that "the quality of the environmental and social action plans is generally high" but that the "managing for and monitoring against two separate sets of plans and requirements (Vietnamese government and World Bank) is confusing." The report concludes that supervision was less effective than it could have been had the two sets of plans been fully integrated (Rydgren et al. 2014).

FIGURE 6.3. Timeline of an Official Assessment, Trung So'n Hydropower Project



Note: EVN = Vietnam Electricity; IHA = International Hydropower Association; TSHPCo = Trung Sơn Hydropower Company Limited.

PHOTO 6.1. Planning during Pre-Assessment Visit, Trung Sơn

Photo credit: © Thi Ba Chu / World Bank.

Given that Trung Sơn was very early in its construction schedule at the time of the assessment, there were initial discussions about which stage tool would be most appropriate for the assessment. Ultimately, it was decided to conduct the assessment using the implementation-stage tool instead of the preparation-stage tool in order to provide the most useful and actionable information to EVN and TSHPCo about the sustainability performance of Trung Sơn.

6.2.1.4 Outcomes

The HSAP assessment identified a number of areas where the project could be improved, and as the project was early in implementation, there was sufficient time to address those issues. The project was ultimately completed with cost savings and has been recognized for its good management of environmental and social issues.

Following the assessment, EVN requested additional support to deepen its staff's understanding of the HSAP and strengthen its environmental and social management capacity. EVN requested World Bank

support to translate the HSAP into Vietnamese, carry out an in-depth comparison of HSAP criteria and the Vietnamese regulatory framework for hydropower development and operation, and train its staff to use the HSAP internally. This follow-up program is discussed further in section 6.4.2—Vietnam Sustainability Support Program.

6.2.1.5 Key Lessons

Though the HSAP assessment found gaps against basic good practice, many issues were already known through regular project supervision. There was no clear rationale before the assessment on how it would enhance project supervision by the World Bank team. At the same time, low scores on selected topics, where the clients were actively working to address known shortcomings, initially created some disappointment and questions around the fairness of the criteria. This could be avoided in future assessments though early discussions with the client on how assessments can support project monitoring during implementation and the status of assessment reports vis-à-vis existing plans for managing project risks, including environmental and social risks.

6.2.2 Kabeli-A Hydroelectric Project, Nepal (Official HSAP Assessment: Preparation)

6.2.2.1 Project Background

The Kabeli-A Hydroelectric Project (KAHEP) is a peaking run-of-river scheme under construction in Nepal. It will increase energy generation and help to mitigate the power shortage constraining development and industrialization in the country. The project is located about 800 km east of Kathmandu (map 6.2.), and utilizes a 15 km long loop of the Kabeli River formed with the Tamor River. It will have an installed capacity of 37.6 MW and, at completion, the project is expected to generate an average energy of 206 GWh per year (Rydgren, Howard, and Xiao 2014). The project includes a 14.3-meter-high and 60-meter-long dam creating a live storage of 335,000 m^3; a 4,327 meter long tunnel; and a powerhouse with a design discharge of 37.73 m^3/sec. The tailrace will discharge directly into the Tamor River (Rydgren, Howard, and Xiao 2014).

A project development agreement was signed in January 2010 between the Government of Nepal and Kabeli Energy Limited (KEL; a subsidiary of the Butwal Power Corporation) for the development, construction, operation, and transfer of the project. The concession period is 35 years, during which KEL will build, own, and operate the project. After the concession period, the ownership will be transferred to the Government of Nepal. The power will be sold to the Nepal Electricity Authority through a 25-year power purchase agreement (IFC 2013). The proposed cost of the project is US$102.6 million, which is being financed by a US$40.0 million International Development Association (IDA) credit, US$38.6 million IFC senior loan, US$1.0 million commercial bank senior loan, and US$23.1 million KEL equity reserve (Rydgren, Howard, and Xiao 2014).

6.2.2.2 Rationale and Objectives for HSAP Assessment

An official HSAP assessment of KAHEP was carried out in 2014, using the preparation-stage tool of the HSAP. The main objectives of the assessment, which was facilitated by the IFC, were to identify gaps in project plans, build employee capacity, and demonstrate the sustainability of the project to project

MAP 6.2. Location of the Kabeli-A Hydroelectric Project

Source: World Bank.

stakeholders (Rydgren, Howard, and Xiao 2014). While the Trung Sơn assessment offered some insight into how the HSAP could be used with public sector clients, it was desirable in the case of Kabeli-A to explore the HSAP in a WBG project with private sector participation.

6.2.2.3 Assessment Experience

The on-site assessment took place in late August to early September 2014 (photo 6.2). A total of 22 topics were assessed, with topic P-14 Resettlement deemed not relevant given that there would be no physical displacement stemming from the project. As a WBG-financed project, the documentation for the World Bank Safeguards and IFC Performance Standards were important reference documents for the assessment team. The assessment had a team of three accredited assessors and was financed by the Norwegian Agency for Development Cooperation (NORAD) through a partnership between NORAD and IHA.

The project met or exceeded basic good practice on all assessed topics, achieving proven best practice on 11 topics. The assessment concluded that the project generally demonstrated very high standards in terms of sustainability management, further enhanced by the support of the World Bank and IFC. It stated that, "if [the management plans under development] are completed in time for construction, and their compliance/conformance, monitoring and follow-up is implemented in a satisfactory manner, the project will likely meet at least basic good practice for all sustainability topics of the Implementation and Operations tools" (Rydgren, Howard, and Xiao 2014).

PHOTO 6.2. Interview with an Indigenous Peoples Group during Official Assessment of the Kabeli-A Hydroelectric Project, Nepal

Photo credit: © Bernt Rydgren.

6.2.2.4 Outcomes

At the time, the Kabeli-A assessment was the first and only assessment from a low-income country to be publicly disclosed. The full preparation-stage assessment report for KAHEP is published on the HST website.[1]

Due to implementation delays, the KAHEP project was closed before completion. The original closure date for the project was December 2019, but KAHEP was only midway through its construction at that time. The Government of Nepal did not request an extension of the IDA credit, and as a result, the project was closed in December 2019.

6.2.2.5 Key Lessons

The KAHEP project scored very highly on the preparation-stage HSAP assessment, but a multitude of issues arising early in project implementation led to significant delays in project mobilization. It is important to recognize that an HSAP or HESG assessment is a snapshot of project performance at a given moment in time, and while the assessment attempts to look for potential risks to the project, a good performance during project preparation is not necessarily an indication of successful project implementation in the future.

6.2.3 Reventazón Hydropower Project, Costa Rica (Official HSAP Assessment: Implementation)

6.2.3.1 Project Background

The Reventazón Hydroelectric Project (PHR) is a 305.5 MW reservoir project built and operated by the Instituto Costarricense de Electricidad (ICE), the national electricity company of Costa Rica. The rationale behind the project was to add baseload power, helping to meet increased demand being driven by Costa Rica's growing economy, and displacing fossil fuel generation (IFC 2012b). It is the largest hydropower project in Central America.

MAP 6.3. Location of Reventazón HPP

Source: World Bank.

PHR was developed by a special purpose vehicle—a fiduciary trust formed by ICE and Scotiabank. The project was financed with US$475.4 million in equity from ICE and US$903.7 million in loans. The loan financing was provided by six senior lenders: the Inter-American Development Bank (US$335 million), the IFC (US$100 million), and four Costa Rican banks (US$468.7 million). The trust appointed ICE through an engineering, procurement, and construction (EPC) contract to develop PHR (Smith et al. 2017).

PHR is the most downstream project in a hydropower cascade on the Reventazón River, which includes three other hydropower projects owned by ICE (map 6.3). The project has a 130-meter-high concrete-face rock-fill dam, creating a reservoir 7 km^2 in area. There is a main powerhouse with four 73 MW turbines and a small additional 13.5 MW powerhouse, which provides an environmental flow to the dewatered section of the river. It began construction in 2010 and commercial operations in September 2016 (photo 6.3). It is expected to generate an average of 1,465 GWh/year (Smith et al. 2017).

PHOTO 6.3. View of Reventazón Powerhouse Downstream of the Dam

Photo credit: © Doug Smith.

6.2.3.2 Rationale and Objectives for HSAP Assessment

The assessment was part of a World Bank Advisory Services and Analytics activity to support hydropower sustainability in Costa Rica. It was financed through a Bank-executed trust fund. ICE selected PHR for the assessment in order to reflect on its current practices in environmental and social issues management, especially in light of civil society concerns raised earlier during project implementation. The objectives of the HSAP assessment for ICE were to identify opportunities for improvement for the entire ICE Group project portfolio, build capacity of ICE Group staff, and identify and address gaps in the company's planning and development process to inform future projects.

It was initially envisaged as an operation-stage assessment, but a decision was made to use the implementation-stage tool. While the project had already begun commercial operations, minor construction works were still ongoing, and site clearance and rehabilitation works had not yet been completed (Smith et al. 2017). In addition, there was strong interest from ICE in evaluating its performance during construction as that would provide more valuable lessons for its other ongoing projects.

6.2.3.3 Assessment Experience

The official HSAP assessment was carried out over a period of six months in 2017 with the on-site assessment taking place in July 2017. It was carried out by a team of four accredited assessors. All trainings were conducted in both English and Spanish, and the reports were provided in both languages.

The project met or exceeded basic good practice on all assessed topics, one of only two projects to achieve this during an implementation-stage assessment to date (IHA 2019e). PHR met proven best practice on five topics and was commended for its "ambitious" river offset program, which establishes a protected corridor along the Reventazón River to compensate for "residual and cumulative impacts on the aquatic biodiversity and environmental services" of the river (Smith et al. 2017).

6.2.3.4 Outcomes

On the basis of the HSAP assessment, PHR was awarded the IHA Blue Planet Prize, which is awarded to hydropower projects that demonstrate excellence in sustainability. The award was announced at the 2019 World Hydropower Congress in Paris, France. The full assessment report for PHR is published on the HSAP website.

6.2.3.5 Key Lessons

An HSAP or HESG assessment can provide visibility for high-performing projects and enable other projects and countries to learn from the experience. Having done an independent assessment of PHR, ICE could credibly showcase its environmental and social management practices, including innovations like the aquatic offset, which was implemented to compensate for residual impacts on biodiversity, including fish and wildcat migration. After the assessment, ICE hosted an international workshop to share its experience on PHR and exchange information with other developers and operators that had carried out an HSAP assessment.

6.2.4 Tina River Hydropower Project, Solomon Islands (Unofficial HESG Assessment: Preparation)

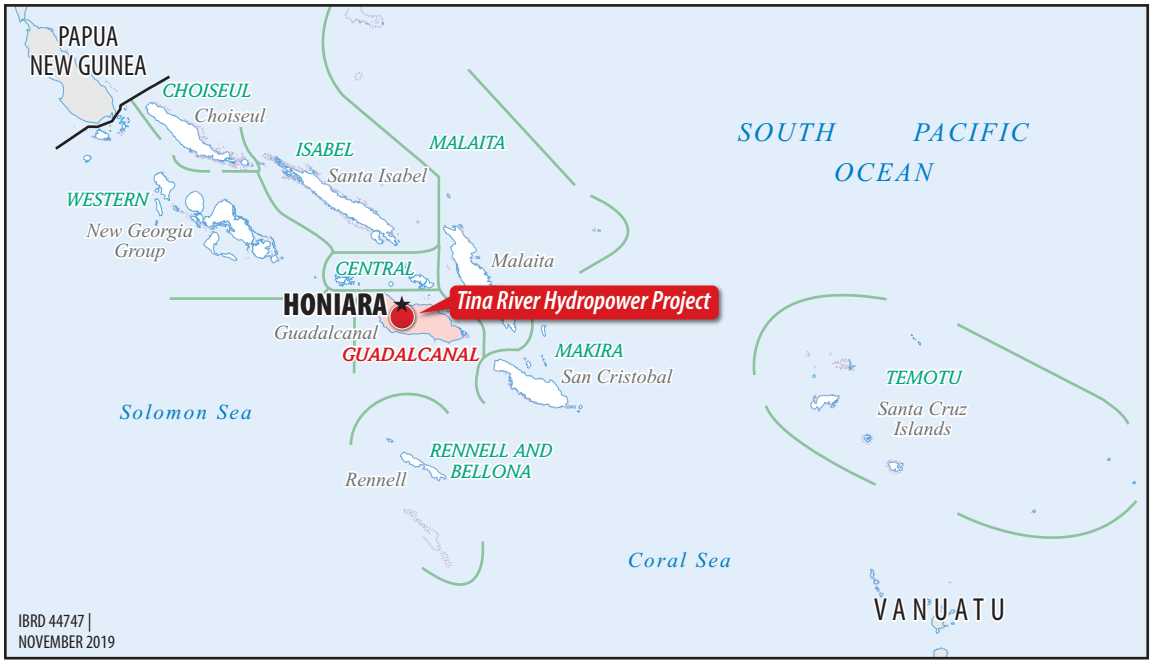
6.2.4.1 Project Background

The Tina River Hydropower Development Project (TRHDP) is a 15 MW reservoir hydropower project on the Tina River on the island of Guadalcanal in the Solomon Islands (map 6.4.). It will have a 72-meter-high roller-compacted concrete dam and a reservoir storage of 4.7 million m^3. It is the first utility-scale renewable energy project in the Solomon Islands and the first to be developed through a public-private partnership, which was apt as there was a moratorium on government borrowing at the time. The project will displace diesel fuel generation in the Honiara grid by almost 70 percent (Dockreay 2020).

The project is being developed through a build-own-operate-transfer (BOOT) model by international private sponsors. The project company, Tina Hydropower Limited (THL) was established under a shareholders' agreement between the Korea Water Resources Corporation (K-water) and Hyundai Engineering Co. Ltd. (HEC). THL is the operations and maintenance contractor, while HEC signed an EPC contract in 2019 for a 54-month construction period (Dockreay 2020).

TRHDP is supported by six financiers. Providing financing are the World Bank (US$33.63 million), Green Climate Fund (US$86 million), Abu Dhabi Fund for Development (US$15 million), Asian Development Bank (US$30 million), Government of Australia through the Australia-Pacific Islands Partnership Trust Fund (US$12.7 million), and the Economic Development Cooperation Fund of Korea (US$31.6 million). The project is also insured by the Multilateral Investment Guarantee Agency (MIGA) to provide sponsors with the confidence to invest and to enter into a long-term power purchase agreement in a country

MAP 6.4. Location of the Tina River Hydropower Project



Source: World Bank.

where this has not been done before (World Bank 2017). As a PPP project, TRHDP was prepared according to World Bank Performance Standards for activities to be undertaken by the private sponsors.

6.2.4.2 Rationale and Objectives for HSAP Assessment

Toward the end of project preparation, the financiers were interested in a rapid, independent screening of the environmental and social management of the project ahead of the US government's affirmative investigation.[2] Of particular interest were the challenges around acquisition of customary land and the provision of project benefits to indigenous groups. This was at the same time that the World Bank, IHA, and HSGC sought to develop a faster and lower-cost derivative of the HSAP. Thus, a business case was established for drafting a template for the new tool and using it to perform a gap analysis of TRHDP, which would guide the preparatory work and ensure that social and environmental management would be in accordance with international good practice. The assessment was funded with Bank-executed trust fund resources.

6.2.4.3 Assessment Experience

The preparation-stage screening was done toward the end of the project preparation process by the international financiers. It took place over a two-month period, including five days of on-site interviews by one accredited assessor. The screening identified some gaps and issues to be resolved by the project to fully meet basic good practice, but generally the project team felt that the screening validated the environmental and social management of the project. Financial close was achieved in December 2019, and the project is currently under implementation.

6.2.4.4 Outcomes

The World Bank team and other financiers for the TRHPD project found the unofficial rapid assessment useful in strengthening internal processes and raising awareness of the client government. In the face of the US government's affirmative investigation, the assessment findings, which were mostly favorable, gave confidence to the World Bank team as the project had to be approved by the World Bank's Board of Executive Directors.

6.2.4.5 Key Lessons

An HESG assessment can be used to quickly evaluate the readiness of complex hydropower operations, especially if there are particular issues of concern. This type of assessment can be mobilized within a relatively short time frame to provide an independent perspective on the project's readiness and give recommendations to address any remaining shortcomings before the project goes before the Board for approval. Given the TRHPD's small footprint, it was possible to use only one accredited assessor, but it is recommended that most assessments have at least two accredited assessors so as not to rely on the judgment of one person.

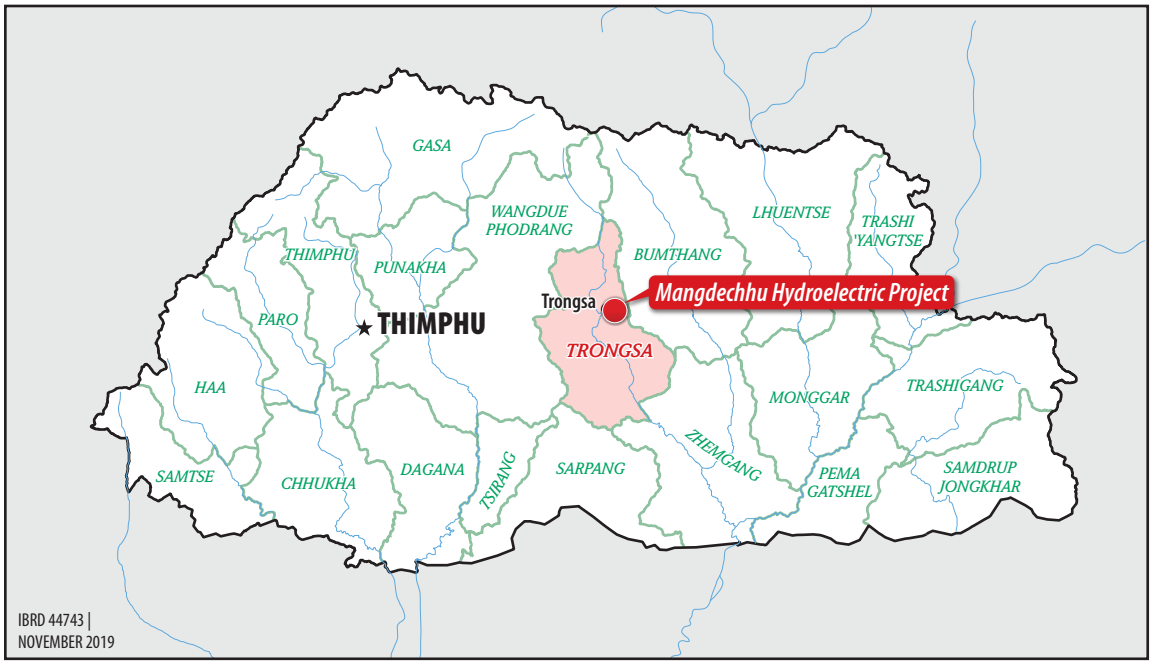
6.3 Official Assessments Mobilized through World Bank Group Advisory Support

6.3.1 Mangdechhu Hydroelectric Project, Bhutan (Official HSAP Assessment: Implementation)

6.3.1.1 Project Background

The Mangdechhu Hydroelectric Project (MHEP) is a 720 MW run-of-river hydropower project in central Bhutan on the Manas River, which is a tributary of the Brahmaputra River in India (map 6.5). MHEP is part of

MAP 6.5. Location of Mangdechhu Hydroelectric Project



Source: World Bank.

Bhutan's 10,000 MW initiative to develop selected hydropower projects in an accelerated manner to spur economic growth, increase revenue from electricity exports, and improve living standards in the country (World Bank 2016).

The project was developed by the Mangdechhu Hydroelectric Project Authority (MHPA), a special purpose vehicle established in accordance with an intergovernmental agreement between the Royal Government of Bhutan and the Government of India (World Bank 2016). The project was financed by the Government of India through a grant (30 percent of project costs) and repayable loan financing (70 percent of project costs). At the time of the assessment, the cost of the project was estimated at US$600 million (World Bank 2016).

Project construction commenced in early 2011, and the first unit was commissioned in June 2019 with full commissioning achieved in August 2019. The operation of the hydropower project and the repayment of the loan is the responsibility of the Druk Green Power Corporation, a fully government-owned utility.

6.3.1.2 Rationale and Objectives for HSAP Assessment

The Royal Government of Bhutan has ambitious plans for the development of its hydropower potential as a means to grow its economy and regional exports. At the same time, there is significant national importance attached to Bhutan's rich cultural heritage and biodiversity. As such, the government has a strong desire to balance its development ambition with the protection of its natural and cultural resources. In service of this goal, the government requested support from the World Bank to assess its capabilities for managing the environmental and social impacts of hydropower development.

In 2016, the World Bank facilitated an official HSAP assessment of MHEP as part of a broader assessment of Bhutan's environmental and social management. This study, "Managing Environmental and Social Impacts of Hydropower in Bhutan," would inform a longer-term strategy for sustainable hydropower development. The study and the assessment were both financed by Bank-executed trust fund resources. The HSAP assessment of MHEP provided an opportunity to understand the manner in which policies and regulations in Bhutan were being applied in practice.

6.3.1.3 Assessment Experience

At the time of the assessment, the project was 60–70 percent complete, and thus the implementation-stage tool was used (photo 6.4). The on-site assessment took place in January 2016 with a team of three accredited assessors and one trainee assessor (Locher et al. 2016). The on-site assessment was undertaken during the winter low-flow season. Travel times and logistics in the steep mountainous environment required careful planning. Throughout the process, it was made clear to all stakeholders that the assessment was to inform a broader study on the management of social and environmental issues in Bhutan and not part of any due diligence by the World Bank, as the project was not being financed in any way by the World Bank.

The project was assessed on 18 out of 20 topics. The topics of I-10 Resettlement and I-11 Indigenous People were considered not relevant as there was no physical displacement resulting from the project and no communities meeting the definition of "indigenous" under the HSAP within the project area (Locher et al. 2016).

PHOTO 6.4. Overview of Dam-Site Works, Mangdechhu Hydroelectric Project, November 28, 2015

Photo credit: © Bernt Rydgren.

The assessment report showed that the project generally demonstrated good international practice with 12 out of the 18 topics meeting or exceeding basic good practice. The project met proven best practice on two topics: I-14 Public Health and I-19 Reservoir Preparation and Filling. Among the gaps against basic good practice, several reflected shortcomings in the ESIA conducted for the MHEP and the processes related to public disclosure (World Bank 2016).

6.3.1.4 Outcomes

The environmental and social management study made a number of recommendations to the government, including the need to develop Bhutan's own national guidelines for hydropower development and operation against which compliance can be assessed. This led to follow-up support from the World Bank to help Bhutan develop its own national guidelines for hydropower development. Accredited assessors were hired as part of the team to incorporate aspects of World Bank sustainability frameworks as well as aspects of the HSAP in both the guidelines and the internal audit procedures. Bhutanese government officials received training on the new procedures, and the Bhutanese Guidelines for Development of Hydropower were released by the Government of Bhutan in June 2018.

6.3.1.5 Key Lessons

HSAP assessments are not only useful for assessing individual project performance but also for assessing the effectiveness of the regulatory framework for hydropower development in a country. In Bhutan, the assessment was done alongside a review of the regulatory and institutional framework. Together, these two studies offered insight into the implementation gap between the *de jure* regulatory environment for hydropower and the *de facto* regulatory environment. This approach is helpful in making recommendations to improve the framework itself as well as the enforcement mechanisms of the framework.

6.3.2 Cahora Bassa Hydroelectric Scheme, Mozambique (Official HSAP Assessment: Operation)

6.3.2.1 Project Background

The Cahora Bassa Hydroelectric Scheme (CBHES) is a 2,075 MW reservoir hydropower scheme on the main stem of the Zambezi River, downstream of the Kariba Dam Complex (map 6.6). Built between 1969 and 1974, it is one of the largest storage projects in Africa (photo 6.5). CBHES is operated and maintained by Hidroélectrica de Cahora Bassa (HCB), a power generation company in which the Government of Mozambique is the majority shareholder (World Bank 2018). CBHES supplies electricity to Mozambique, South Africa, and Zimbabwe and is one of the biggest suppliers to the Southern African Power Pool. CBHES has a 171-meter-high, double-curvature arch dam, which forms a 55.8 billion m^3 reservoir at full supply level.

While the original project was designed to have two powerhouses, one on each riverbank, only the south bank powerhouse was built and is in operation. The south bank powerhouse is situated in a high cavern and houses five 415 MW Francis turbines (World Bank 2016).

6.3.2.2 Rationale and Objectives for HSAP Assessment

HCB participated in a World Bank technical assistance program (see section 6.4.1) aimed at increasing the capacity of regional hydropower operations to sustainably manage their hydropower resources through

MAP 6.6. Location of Cahora Bassa Hydroelectric Scheme

Source: World Bank.

assisted self-assessments using the HSAP. Following the self-assessment of the Cahora Bassa North Bank Expansion (CBN), HCB requested that the World Bank facilitate an official assessment of the existing CBHES and its south bank powerhouse. The assessment was funded through a Bank-executed trust fund as part of the technical assistance program.

The objectives of the assessment included benchmarking HCB operations against international standards, identifying opportunities for improvement, building HCB staff capacity for future use of the HSAP, and improving stakeholder relations. The assessment was done in 2018 with the on-site assessment taking place in April 2018. The operation-stage tool of the HSAP was used, and the project was assessed on 14 of the 19 topics with 5 topics considered "not relevant." The topics O-8 Project Benefits, O-9 Project-Affected Communities and Livelihoods, O-10 Resettlement, and O-11 Indigenous People were not considered relevant because there were no established baselines and no commitments against which to assess these. This is not to say that there were no impacts pertaining to these topics. The fifth topic considered not relevant was O-13 Cultural Heritage as there was no physical cultural heritage affected by the project operations (Rydgren, Smith, and Howard 2018).

6.3.2.3 Assessment Experience

The assessment was carried out by a team of three accredited assessors. The timing of this assessment also presented opportunities for the assessors to test the draft criteria for the Climate Change Mitigation and Resilience topic[3] and the final format of the HESG[4] tool prior to their release. As such the final

PHOTO 6.5. A Mosaic Mural Showing the Story of Cahora Bassa, Songo Town

Photo credit: © Bernt Rydgren.

assessment report was delivered in both the long HSAP format and the shorter HESG format, in both English and Portuguese. There were, however, some challenges during the assessment due to hesitation on the part of HCB to share highly sensitive project and corporate information.

According to the assessment report, "[the] project tends to score better in areas that are core concerns to the business such as management of the hydrological resource, assets and financial aspects. It also scores well in areas in which HCB has made a particular effort to improve in recent years such as safety, for example. Where HCB management chooses to invest, the Cahora Bassa project tends to be effective in meeting high performance criteria. It scores less well in areas that have received less management attention, such as social aspects, biodiversity" (Rydgren, Smith, and Howard 2018).

6.3.2.4 Outcomes

Since 2018, HCB has embarked on a major 10-year refurbishment plan to improve the reliability of the CBHES. HCB's capital expenditure (CAPEX) vital investment plan, aimed at modernizing its generating equipment, improving data collection, and enhancing the safety of the scheme, is estimated at about €500 million. Also, in 2018, HCB listed on the Bolsa de Valores de Moçambique (Mozambique Stock Exchange) with an initial public offering of 7.5 percent of its shares (HCB 2018).

6.3.2.5 Key Lessons

An HSAP or HESG assessment requires a commitment by the developer or operator to facilitate access to necessary documents so that the accredited assessors can fully prepare for interviews and make

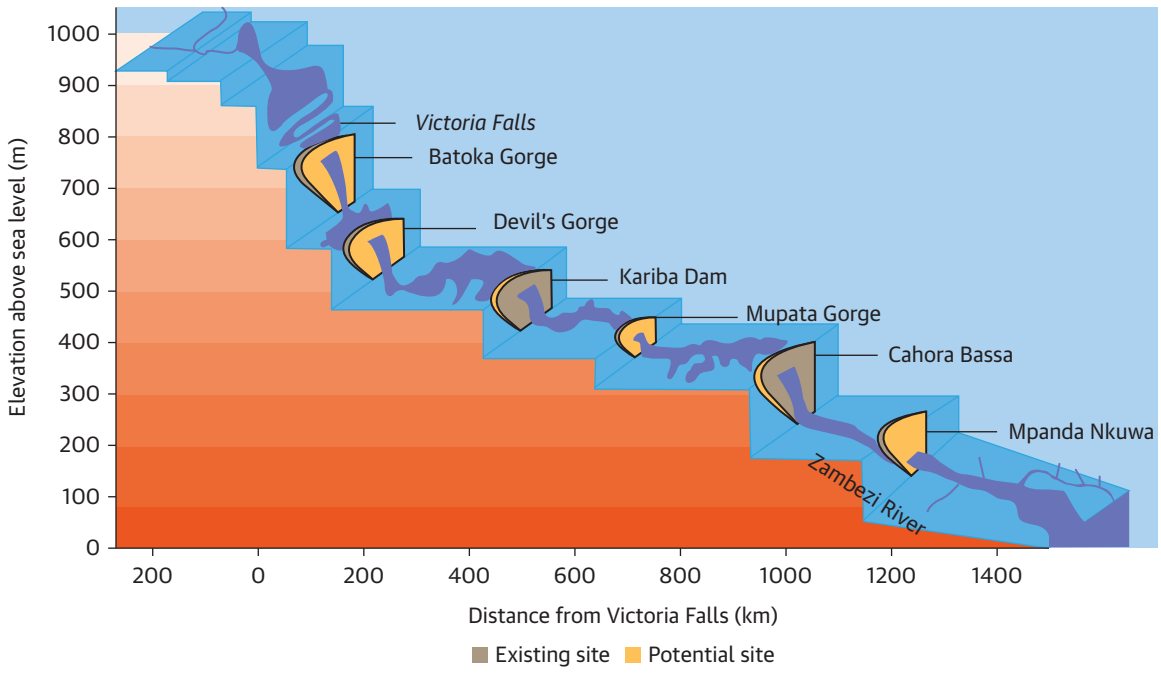
evidence-based conclusions. This invariably means providing access to privileged information that would not usually be shared with persons outside of the hydropower company or the government. Early in the assessment of Cahora Bassa, there was miscommunication about how the assessment would be carried out, with HCB not initially comfortable with sharing confidential information with third-party consultants. This speaks of the importance of setting expectations and ensuring that there is clarity among all parties about the assessment process. This is a challenge primarily for assessments carried out as Bank-executed consultancies, where the client is not directly involved in the contracting process. The onus is thus on the World Bank team to ensure mutual acceptability of the arrangements prior to proceeding with the assessment.

6.4 Self-Assessment Programs for Institutional Capacity Building

6.4.1 Zambezi Hydropower Sustainability Assessment Program

The Zambezi Watercourse is the fourth-largest river basin in Africa (after the Congo, Nile, and Niger) and one of the continent's most diverse and valuable natural resources in Africa. Its waters are critical to sustainable economic growth and poverty reduction in the region. In addition to meeting the basic needs of more than 47 million people and sustaining a rich and diverse natural environment, the river plays a central role in the economies of the eight riparian countries—Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, and Zimbabwe. There is a long history of cooperative efforts directed toward development of the basin (figure 6.4).

FIGURE 6.4. Hydropower Resources in the Zambezi River Basin



Source: World Bank 2018, adapted from SADC/ZRA (2007).
Note: m = meter.

From 2016 to 2018, the World Bank financed a technical assistance program to assist dam operators in the Zambezi River Basin in the development and utilization of the basin's hydropower potential in a sustainable and responsible way to ensure its benefits for present and future generations. The program was implemented in collaboration with the members of the Zambezi Dam Operators Joint Operations Technical Committee and in coordination with the Zambezi Watercourse Commission. The program was based around a model of assisted self-assessment using the HSAP.

Through this approach, the dam operators were supported by accredited assessors to conduct their own assessment of a project selected by their organization. The program supported three dam operators: (1) ZESCO in Zambia, which is a co-owner of the Itezhi-Tezhi Hydropower Project (ITT); (2) the Zambezi River Authority (ZRA), which is owned by Zambia and Zimbabwe, and is responsible for the Kariba Dam Complex and development of the shared sections of the Zambezi River, including the Batoka Gorge Hydroelectric Scheme (BGHES); and (3) HCB in Mozambique, which is responsible for the operation of the CBHES. The three operators selected staff members to function as their internal assessor teams. These teams carried out interviews, reviewed documents, and performed a site inspection with the support of accredited assessors. Each team then produced a self-assessment report, closely following the structure of an official assessment report.

The program commenced with an introductory launch workshop in June 2016 and culminated in a post-assessment workshop of the official assessment of the Cahora Bassa project in May 2018. As part of the program, the operators prepared an action plan with measures to address prioritized gaps coming out of their assessments. Details of the three self-assessments are provided below. More detail on the program and the self-assessments can be found in the report "Application of the Hydropower Sustainability Assessment Protocol in the Zambezi River Basin," published by the World Bank in 2018.

6.4.1.1 Batoka Gorge Hydroelectric Scheme, Zambia and Zimbabwe (Assisted Self-Assessment: Preparation)

The Zambezi River Authority (ZRA) is a corporation jointly and equally owned by the governments of Zambia and Zimbabwe. It is responsible for developing and managing the shared sections of the Zambezi River between the two countries. ZRA currently operates the Kariba Dam Complex, and has a pipeline of projects for future development, including the Batoka Gorge Hydroelectric Scheme (BGHES), which is currently under preparation by ZRA. The World Bank financed the preparatory studies for BGHES, that is, a feasibility study and an ESIA but has decided not to invest in project construction.

ZRA selected BGHES for the assisted self-assessment under the technical assistance program. The proposed BGHES is a 2,400 MW project on the main stem of the Zambezi River, approximately 50 km downstream of the Victoria Falls and upstream of the existing Kariba Dam (map 6.7). The design for BGHES includes a 181-meter-high, roller-compacted concrete gravity arch dam and a surface power station on each riverbank. The reservoir would be contained within a deep gorge, and the project is proposed to be operated as a run-of-river plant, conjunctively with the Kariba Dam (World Bank 2018).

At the time of the self-assessment, the engineering and social and environmental studies were advanced, and as such, the preparation-stage tool was used. The main objectives of ZRA's assessor team included

MAP 6.7. Location of Proposed Batoka Gorge Hydroelectric Scheme

Source: World Bank.

enhancing risk identification and management, building internal capacity, and improving corporate governance of ZRA (World Bank 2018).

The assessment team conducted interviews in both countries, and the site inspection took place on the Zambian side in Livingstone (photo 6.6). The team prepared an assessment report and an action plan, which was reviewed by accredited assessors and shared with ZRA management for its consideration. In developing the action plan, the assessors chose to focus on gaps in basic good practice. As the preparatory studies were ongoing at the time of the assessment, this presented an opportunity to raise issues and address them prior to finalization of the studies (World Bank 2018).

6.4.1.2 Itezhi-Tezhi Hydropower Project, Zambia (Assisted Self-Assessment: Operation)

ZESCO is the national electricity utility in Zambia. It is fully state owned and is responsible for the generation, transmission, and distribution of electricity. ZESCO's generation is almost entirely based on hydropower.

The Itezhi-Tezhi Dam was built between 1974 and 1977 to provide additional water storage for the 900 MW Kafue Gorge Upper Power Station which is roughly 260 km downstream and is operated and maintained by ZESCO Limited (Source: World Bank. 8). 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 (World Bank 2018).

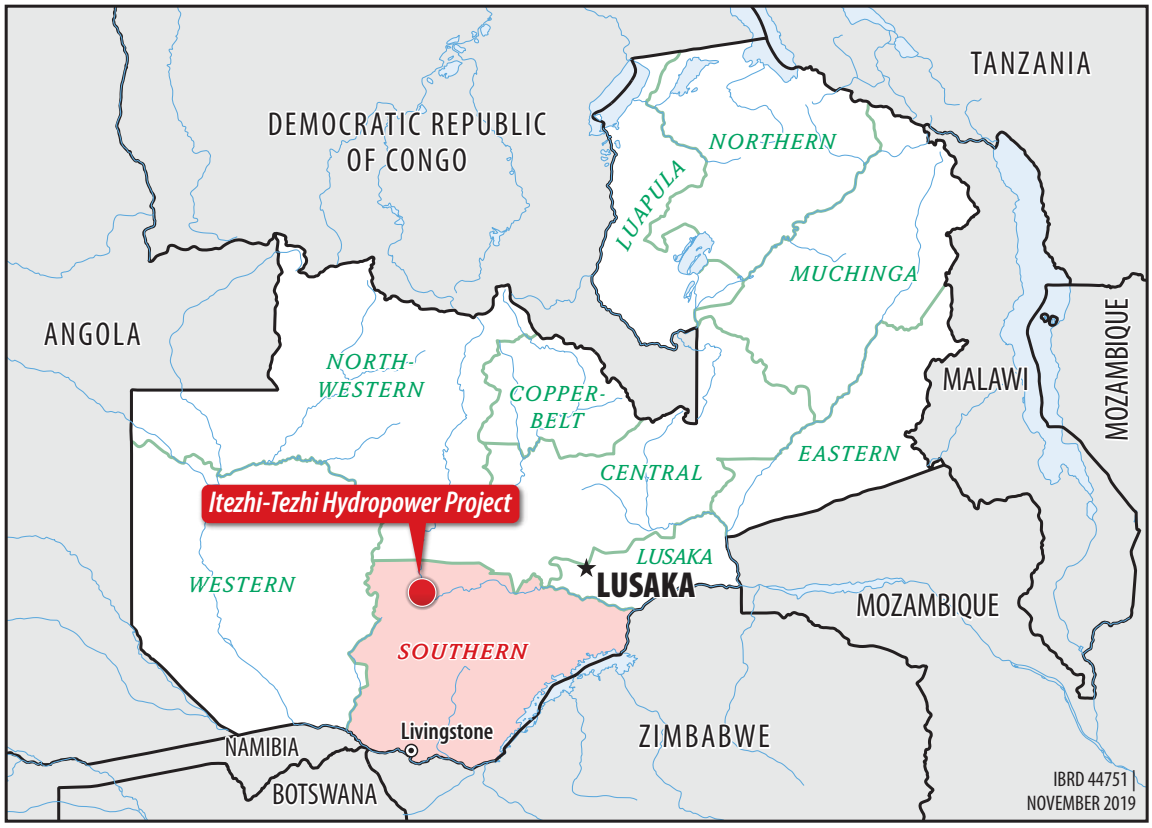
PHOTO 6.6. Interviewed Community Members in the Batoka Gorge Hydroelectric Project Area

Photo credit: © Kimberly Lyon / World Bank.

Development of the 120 MW ITT project at the southern end of the dam commenced in 2011; it was commissioned in February 2016. 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 Tata Africa Holdings (SA) Pty Limited (World Bank 2018). The project and transmission lines were financed by the African Development Bank (AfDB), European Investment Bank, India Exim Bank, Development Bank of Southern Africa, Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden (FMO), Proparco, and the AfDB-managed Nigeria Trust Fund (AfDB 2012). On November 22, 2016, the MIGA issued guarantees of US$29.1 million to the Tata Power Company Limited covering its equity investments in ITPC (MIGA 2020).

ZESCO selected the ITT project to be assessed under the program, using the operation-stage tool. The project is located on the right bank of the Kafue River and utilizes the existing Itezhi-Tezhi Dam,

MAP 6.8. Location of the Itezhi-Tezhi Hydropower Project



Source: World Bank.

constructed in the 1970s to store water for the Kafue Gorge Upper Power Station downstream (photo 6.7). The Itezhi-Tehzi Dam is operated and maintained by ZESCO, and the Itezhi-Tezhi Power Station is owned and operated by the ITPC, a joint venture between ZESCO and Tata Africa Holdings in equal shares. The dam is a 65-meter-high earth and rockfill dam, holding back a 350 km² reservoir. The original design and construction of the dam included facilities, such as the intakes, spillway gates, and tunnels, to allow the future development of a power station (World Bank 2018).

ZESCO's main objectives for the self-assessment of the ITT project included building ZESCO staff capacity in the use of the HSAP, benchmarking with international practices, and evaluating the project to identify gaps and address them. At the time of the assessment, the project was in its early stage of operations, and the contractor had not fully demobilized. Consideration was given to using the implementation-stage tool, but it was agreed to use the operation stage as this was determined to be more relevant and useful for addressing gaps in the ITT project. Additionally, it would have been impossible to use the implementation-stage tool for the entire project, given that the dam was constructed decades prior and had been in operation for the Upper Kafue Gorge Power Station (World Bank 2018).

PHOTO 6.7. Sign above the Tailrace of the Itezhi-Tezhi Hydropower Project, Zambia

Photo credit: © Kimberly Lyon / World Bank.

Given that the internal assessors were all ZESCO staff not working specifically on the ITT project, the internal assessors had more professional distance from ITPC and the project, compared to the experiences of ZRA and HCB. In developing an action plan, ZESCO and ITPC sought to close all of the gaps identified at the basic good practice level, but as a first priority, focused on infrastructure safety (World Bank 2018).

6.4.1.3 Cahora Bassa North Bank Extension, Mozambique (Assisted Self-Assessment: Preparation)

HCB selected the proposed Cahora Bassa North Bank (CBN) Expansion project for self-assessment using the preparation-stage tool of the HSAP. CBN is proposed to add 1,245 MW of installed capacity to the existing CBHES (see section 6.3.2) for a total of 3,320 MW. The new powerhouse would be developed in an underground cavern on the north bank of the river and use the existing dam, reservoir, and other facilities in use at CBHES (photo 6.8). Two new tunnels would be excavated, and a new bridge would be constructed directly downstream of the dam to enable access to that side of the river during construction. As the original project was designed with provisions for both powerhouses, there would be no need to increase the dam height, but the level of the reservoir would be raised from its current operating level to provide

PHOTO 6.8. Cahora Bassa Dam and Tailrace Seen from Downstream

Photo credit: © Kimberly Lyon / World Bank.

the additional water. The two powerhouses would be operated conjunctively with the south bank powerhouse continuing to provide baseload generation and the north bank powerhouse operating as a peaking plant during periods of high demand (World Bank 2018).

HCB's objectives for the self-assessment were to identify opportunities for improvement in CBN's preparation, ensure a transparent process with stakeholders, and analyze how regulatory requirements for the project compare to good practice criteria as established in the HSAP. The internal assessor team from HCB was the largest of the three operators, with each assessor having responsibility for just one or two topics. In addition, HCB introduced a cross-checking mechanism between assessors on their topics to maximize learning (World Bank 2018).

At the time of the self-assessment, CBN was very early in its preparation. Many studies had not yet been completed and several plans not yet developed. This posed many challenges for the assessor team, but it provided an opportunity to incorporate new thinking around certain issues at a very early stage. Stemming from this, HCB's assessor team focused its action planning on measures that could improve

the corporate performance of HCB and the operation of the CBHES, including an official assessment of the CBHES (see section 6.3.2).

6.4.1.4 Key Lessons

Self-assessments can allow for deeper internalization of principles, but there are limitations to the perceived credibility of findings as they do not carry the quality assurance of independent audits carried out by third parties. In both the Zambezi River Basin and Vietnam self-assessment programs (section 6.4.2—Vietnam Sustainability Support Program), the level of understanding that internal assessors had of the HSTs far exceeded that of project staff who participated in an assessment carried out by third-party accredited assessors. However, as the trainees were typically project technical staff without specific auditor training, many struggled to form judgments about project performance, especially on topics outside of their core disciplines, often turning to the accredited assessors to guide them in drawing conclusions. In both programs, the trainees were eager for more exposure to the tools after the self-assessments and showed interest in embedding the principles of the HSTs into their organizations.

Even though some internal assessors were overly harsh in their evaluations, there was a general tendency to overscore. Having accredited assessors on site during key interviews was helpful in ensuring a more rigorous process, and their critical review of the self-assessments highlighted areas of weakness that the internal assessors were able to address before finalizing their reports.

6.4.2 Vietnam Sustainability Support Program

Vietnam Electricity (EVN) is a vertically integrated state-owned enterprise, the largest power company in Vietnam and one of the largest corporate enterprises in the country. At the end of 2015, EVN contributed 61 percent of the national power generation capacity (23,580 MW out of the national total of 38,553 MW), from sources including hydropower, coal, oil, gas, and wind. EVN also fully owns the national power transmission and distribution systems, and sells electricity to end users, through wholly owned subsidiaries.

The Vietnamese electricity generation market was formed in 2006 and has grown rapidly since then. Significant reforms are underway, aimed at liberalizing the electricity market and encouraging foreign investors. Electricity market reforms are being implemented in three main phases. The first was to establish a competitive generation market by 2015. The next two were to establish a wholesale electricity market by 2021, and a retail electricity market by 2023. In creating the competitive generation market, in 2012, the Ministry of Industry and Trade approved establishment of three power generation companies (GENCOs) as wholly owned subsidies of EVN, referred to as GENCO 1, GENCO 2, and GENCO 3. Each GENCO was given a mix of power plants of different generation types and profitability.

Following the assessment of the Trung Sơn Hydropower Company (see section 6.2.1), EVN requested a World Bank technical assistance program to further introduce the HSAP to the hydropower sector in Vietnam. The scope of this assistance included translation of the HSAP into Vietnamese, a gap analysis between the HSAP criteria and Vietnamese government requirements for hydropower, and training for EVN staff to conduct internal assessments. EVN nominated two hydropower projects for the self-assessments,

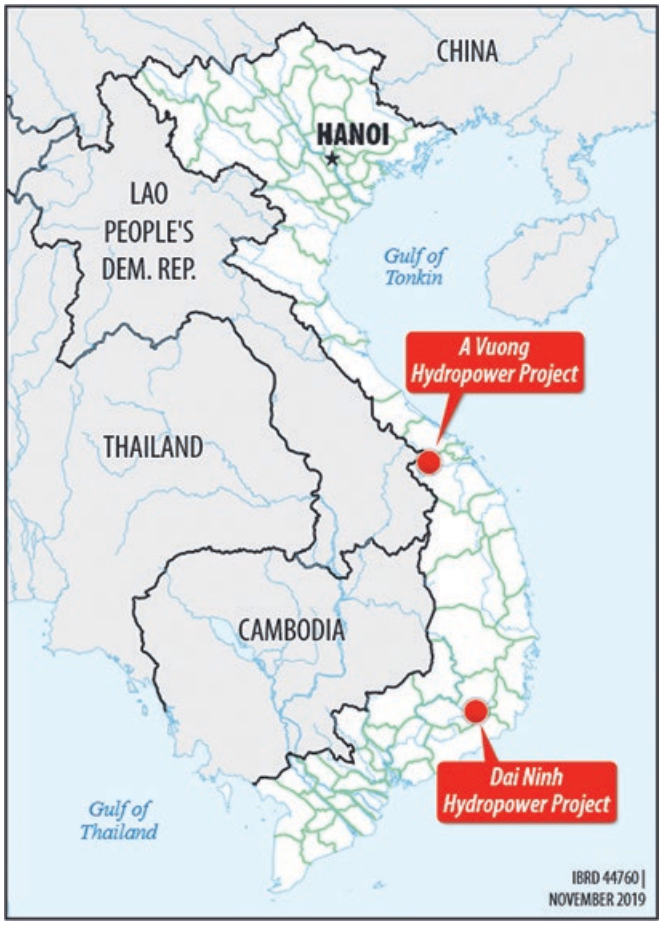
one owned by GENCO 1 (Đại Ninh HPP) and the other by GENCO 2 (A Vương HPP) (map 6.9). Both HPPs are considered strong performers by their relevant GENCOs.

A checklist-style tool based on the HSAP basic good practice criteria was developed for the program to enable faster compilation of results compared to a lengthy report. The tool broke down the HSAP criteria into its individual scoring statements and adopted traffic-light visualization, which allowed the assessors to identify areas where the project may partially or potentially meet the criteria.

In addition to the training and assisted self-assessments using the HSAP, the program included a capacity building component to address gaps highlighted by the internal assessments. This was seen as an important component of the overall project by EVN and the World Bank to further improve sustainable hydropower development and operation in Vietnam.

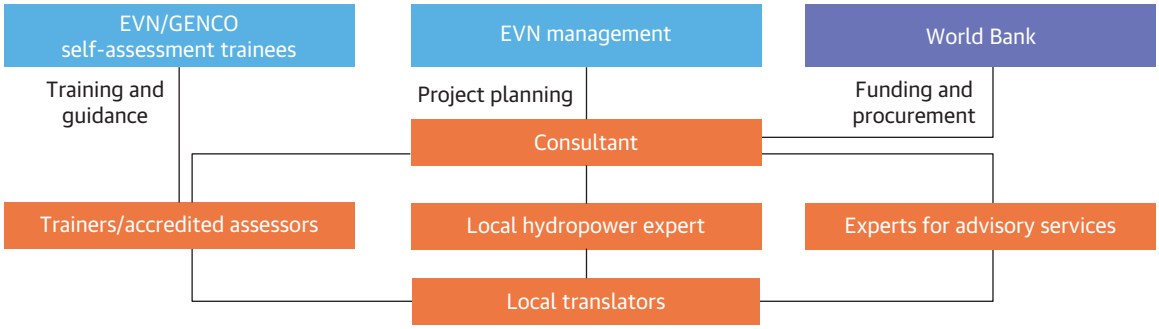
The accredited assessors who led the training and supported the self-assessments hired a local hydropower expert and a team of local translators. This proved essential to the success of the program. A roster of

MAP 6.9. Locations of A Vương and Đại Ninh Hydropower Projects



Source: World Bank.

FIGURE 6.5. Organization of the Self-Assessment Program



Source: World Bank.

hydropower experts was also made available to conduct expert appraisals as part of the capacity-building component (figure 6.5).

6.4.2.1 A Vương Hydropower Project, Vietnam (Assisted Self-Assessment: Operation)

A Vương Hydropower Project (AVHPP) is a 210 MW single-purpose hydropower project located in the mountains of central Vietnam. The AVHPP has an 80-meter-high dam and a reservoir with active storage of 266.5 million m^3 (photo 6.9). It generates an estimated 815 GWh per annum. AVHPP began construction in 2003 and was commissioned in 2008. The A Vương Hydropower Company is a joint stock company in which GENCO 2 has a majority stake (87.5 percent).

The project is part of a cascade in a very developed river basin. Downstream of the dam, the A Vương river flows through a steep forested and unpopulated valley to where it meets the Sông Bung River. The Sông Bung 4 HPP powerhouse is upstream of the river confluence, and the Sông Bung 4a HPP is downstream of the confluence. Sông Bung 5 is located just downstream of the AVHPP tailrace with Sông Bung 6 further downstream. Upstream of AVHPP dam there is a small reservoir for the Zia Hung HPP.

The self-assessment was carried out using the customized checklist tool based on the operation-stage tool of the HSAP. The project was assessed on all 19 topics. The EVN assessor team for AVHPP was comprised of staff from various parts of the organization, including EVN's central corporation, GENCO 2, GENCO 3, Electricity Construction Consultancy (ECC) 2, and ECC 4. The internal assessors identified actions to address the scoring statements that they determined were not fully met, prioritizing them based on their significance and urgency.

6.4.2.2 Đại Ninh Hydropower Project, Vietnam (Assisted Self-Assessment: Operation)

The Đại Ninh Hydropower Project (DNHPP) is a 300 MW multipurpose project that serves to expand downstream irrigation and generate electricity. Like AVHPP, it began construction in 2003 and was commissioned in 2008. DNHPP is fully owned by GENCO 1. The average power generation of DNHPP is 1,178 GWh per annum.

PHOTO 6.9. Communal House in a Resettled Village on the Left Bank of the A Vương Reservoir

Photo credit: © Kimberly Lyon / World Bank.

The project is located near the coast in Southern Vietnam, and like AVHPP, is part of a cascade in a highly developed river basin. DNHPP has two main dams (Da Nhim and Queyon) and two main reservoirs, connected by a canal. It also has four saddle dams. The DNHPP powerhouse discharges into the Ma Tin stream, which flows into the Song Luy River. The Da Nhim Dam, one of the two main dams, is on the Da Nhim River, which is a tributary of the Dong Nai River. The Dong Nai River has several power stations along it.

As with AVHPP, the project was assessed using the operation-stage checklist tool on all 19 topics, and the team identified and prioritized actions to address the gaps. The EVN assessor team for DNHPP was comprised of staff from various parts of the organization, including EVN's central corporation, GENCO 1, GENCO 3, and ECC 3.

6.4.2.3 Key Lessons

Any translation of written material in support of an assessment or a capacity-building program using the HSTs should be performed by bilingual hydropower practitioners. In contexts where translation is

required, the use of professional translators is essential in meetings and during site visits, especially if simultaneous translation is required. For written material, however, experience from assessments presents a strong argument for using bilingual hydropower experts to perform or support document translation because of the specialized sector knowledge required to produce good-quality translation of technical documents.

Notes

1. HST assessments are published on the website https://hydrosustainability.org/published-assessments.
2. The United States' International Financial Institutions Act (IFIA), Title XIII, Section 1303(a)(1), requires the United States Agency for International Development (USAID) to review multilateral development bank project proposals to determine whether the proposals will contribute to the country's sustainable development. Proposals that are considered by the US government as likely to have substantial adverse environmental and social impacts are candidates for an affirmative investigation under Section 1303(a)(3) of the IFIA. USAID leads the affirmative investigation process in consultation with the Department of the Treasury, the Department of State, and other relevant federal agencies.
3. As the Climate Change Mitigation and Resilience topic was still in draft form and had not yet been approved by the HSGC, the official assessment report of the CBHES did not include an evaluation against the criteria for this topic; however, there was an unofficial version of this evaluation for internal use by HCB only.
4. As the HESG had not formally been launched, the report using this format was delivered as an unofficial application of the HESG for internal use by HCB only.

Chapter 7
Conclusions

7.1 Alignment of Hydropower Sustainability Tools with World Bank Group Sustainability Frameworks

The environmental, social, and governance topics in the HSTs are deliberately aligned with the World Bank's ESF and the IFC's and MIGA's Sustainability Frameworks. The development of the HSAP, at the time, was informed by the World Bank Safeguards and IFC Performance Standards, and over the years, the strong performance of WBG-financed projects confirms alignment between the tools and WBG frameworks. With the introduction of the World Bank's ESF and the development of the HESG, the alignment is even stronger than before. While this should give comfort to WBG staff that they can recommend the tools for use by their clients, a more in-depth comparison of the language of the HSTs against WBG standards would be helpful in defining the precise ways in which the tools complement WBG policy.

Findings from assessments of WBG-financed projects generally reflect well on the quality of project preparation. This shows that WBG-financed projects generally meet multi-stakeholder definitions of basic good practice during preparation and that the HSTs sufficiently capture principles and processes as laid out in the World Bank's ESF and the IFC Sustainability Framework.

7.2 Usefulness of the Hydropower Sustainability Tools

The HSTs are helpful reference documents on good international industry practice. Because they are hydropower specific, the tools are readily applicable; project developers and operators do not need to consider how generalized principles can be applied to their specific context. Covering multiple dimensions of sustainability, the tools are a convenient one-stop shop for guidance on hydropower projects, and as a multi-stakeholder product, they represent balanced definitions of good and best practice that apply to all countries.

The HSTs can help World Bank clients meet ESF and Performance Standards requirements. The HSTs can help to improve World Bank client systems and capabilities for environmental and social risk management, making it easier to meet the requirements of World Bank standards. The tools can provide sector-specific guidance to supplement World Bank standards and official guidance material to improve the quality of key documents and procedures.

The HSAP and HESG are useful for identifying areas for improvement in hydropower projects. In all the assessments observed by the WBG, the process led to constructive and systematic identification of shortcomings, and specified which could be easily addressed and which would require more substantial efforts from the project sponsor. More often than not, the findings led to management action to address some of the gaps identified. The HSTs can also introduce useful principles and processes in projects that are not financed by the WBG and thus not required to comply with its environmental and social frameworks.

For high-performing projects, the assessments can improve the reputation and enhance the visibility of a project or company. In the case of the assessment for PH Reventazón, ICE was awarded the IHA Blue Planet Prize, providing a platform for it to share its experience and innovations with the rest of the industry.

Hydropower sustainability assessments (HSAP and HESG) also promote greater transparency and better engagement of stakeholders. In virtually all the assessments observed by the WBG, the assessment process resulted in additional public disclosure of important project documents. The process also provided a forum for stakeholder feedback. Project-affected communities were typically grateful for the opportunity to raise issues important to them during interviews.

Third-party assessments by accredited assessors can provide a critical and objective evaluation of project performance for continuous improvement by the project sponsor or to reduce asymmetry of information in transactions. The tools have been used informally by potential buyers during the acquisition of hydropower facilities, but it could be beneficial to have an official assessment to establish project performance during government divestment, private asset sales, or transfers at the end of build-operate-transfer or build-own-operate-transfer contracts.

The HSAP and HESG have useful applications beyond audits. They can be used for capacity building, screening early stage investments, modeling regulatory reform, and more. They can be mainstreamed into the systems of developers and operators to improve management of environmental, social, and governance risks at the corporate level.

7.3 Shaping the Hydropower Industry with the Hydropower Sustainability Tools

The HSAP is recognized by WCD advisers as a practical way to measure against the WCD. According to a 2014 article by Skinner and Haas, the HSAP "represents the best currently available measuring stick for respect for WCD provisions in individual projects" (Skinner and Haas 2014).

The governing bodies of the HSTs remain relevant and important for multi-stakeholder dialogue. The HSTs have benefitted from more than 100 years of lessons learned in the global development and operation of hydropower and are the product of a multi-stakeholder process. As perspectives on good practice in the hydropower industry evolve over time, it is necessary to have a forum for continued dialogue and consensus building among industry, civil society, governments, and financiers. Currently, the Hydropower Sustainability Assessment Council and the Hydropower Sustainability Governance Committee are effectively performing this function as evidenced by the activities of the FPIC Working Group.

7.4 Objectives and Motivations for Adoption

There is demand from the hydropower industry for sustainability tools for gap analysis and benchmarking. Identifying opportunities for improvement and benchmarking against international good practice were among the objectives of virtually all of the hydropower sustainability assessments observed by the WBG.

Developers and operators also see the HSAP and HESG as communications tools. In relatively developed hydropower markets, project sponsors have sought to showcase project performance using a hydropower sustainability assessment, either for general brand management or for specific goals such as obtaining carbon financing and framing discussions for licensing agencies. In many settings, project sponsors have also stated objectives around stakeholder engagement and improving stakeholder relations.

Users of the tools are also motivated to learn. At all income levels, hydropower developers and operators see the hydropower sustainability assessments as opportunities to develop internal capacity for sustainable hydropower and to use the tools internally.

7.5 The Hydropower Sustainability Tools for Capacity Building

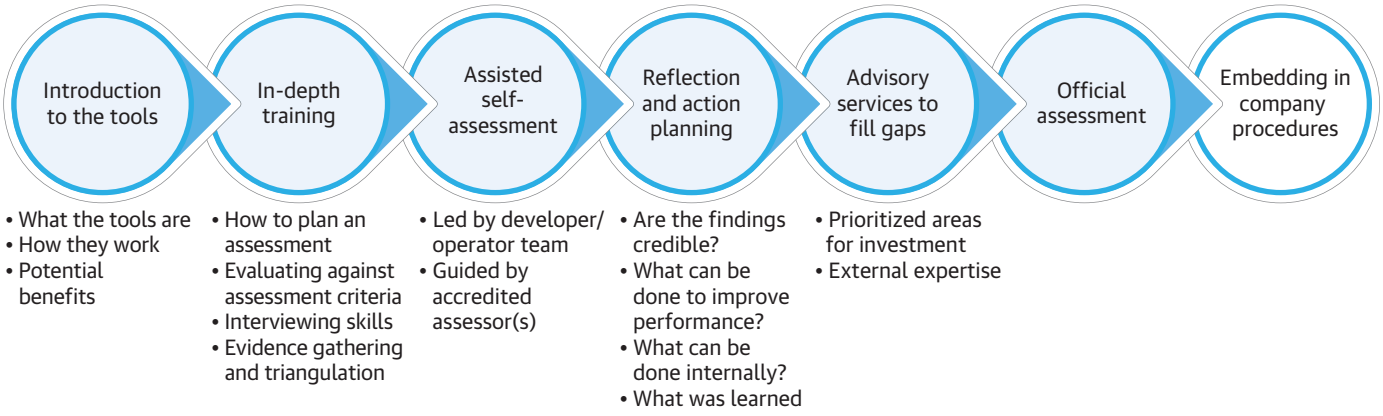
The HSTs can be used to develop the capacity of hydropower companies and other stakeholders in managing environmental and social issues during hydropower development and operation. The HST documents introduce a logical, easy-to-remember structure for considering various issues in the hydropower project cycle. The process of identifying gaps in a specific project often generates lessons at the portfolio level or for corporate governance. The documents also clearly articulate expectations of good practice, which hydropower companies can use to identify weaknesses to address.

The HST documents are insufficient for capacity building; a program must be built around them for training on sustainable hydropower. Although the HSAP and HESG documents are extensive in addressing all aspects of sustainable hydropower development, they are designed, first and foremost, to support the structured process of an assessment. The HGIIP describes expectations of good practice more fully, but guidelines alone are not enough for training. A training program should assess learning needs, consider organizational objectives, and deliver learning modules with the help of customized pedagogic materials. HST documents can be adapted into customized training materials for specific issues or for a general approach to sustainability management in the hydropower sector. Longer-term institutional capacity development may require addressing skills gaps that cannot be filled through short training courses alone.

Assessments can help to measure institutional progress toward sustainability goals. Repeated hydropower sustainability assessments, whether official or unofficial, can establish a baseline and measure improvements on sustainability topics. Assessments can be repeated for the same projects at different time periods or for different projects to show if a hydropower developer or operator has successfully applied lessons learned over time and across its portfolio. While the ability to manage certain environmental and social issues depends greatly on site conditions, some HST topics like communications and consultation, governance, and labor and working conditions speak to institutional procedures. Recording improved performance on these will likely elevate an entire company.

Assisted self-assessments provide a learning-by-doing experience, which can strengthen internal quality assurance units and prepare users for future assessments, including official assessments (figure 7.1). This can be particularly helpful in situations where a project may have significant gaps compared to basic

FIGURE 7.1. Core Components of a Sample Self-Assessment Program



good practice. The process can engender continuous improvement without the pressure of having external auditors. An assisted self-assessment can also support the refinement of important project documents. The involvement of accredited assessors at key junctures in the process, such as the site inspection and during stakeholder interviews, will ensure higher-quality outputs. Any capacity development program based on assisted self-assessments should incorporate a local hydropower expert if language translation is involved; this is key in bridging the communication gap between translators and highly technical content. Commitment and engagement of senior management is also critical to the success of any program aimed at organizational change. Managers and, in some cases, board members should be included in introductory training as well as in the development of Environmental and Social Action Plans in order to ensure that assessment findings are translated into action.

7.6 The Hydropower Sustainability Tools across Income Levels and Political Systems

The HSTs are designed to be globally applicable, but projects tend to perform better in places with strong regulatory frameworks and commitment to transparency. Participatory processes, regulatory compliance, and public disclosure are among the principles underlying the HSTs. Based on the official assessments reviewed for this report, projects in high- and upper-middle-income countries generally had fewer gaps against basic good practice compared to those in low- and lower-middle-income countries.

Thus, in low- and middle-income countries, the HSTs will have the most added value if used in a way that contributes to improved capacity to manage environmental and social issues. In lower-capacity environments, compliance tends to be the main driver for improved sustainability outcomes as there are fewer incentives to go beyond what is required by regulation. Translating the principles and methods used in the HSTs into national tools and guidelines can increase their impact. Marketing the tools as a way to showcase good performance and brand recognition are more likely to be effective motivators for developers and operators in higher-income environments.

Incentives for using the HSTs may be necessary in lower-capacity environments. Even though the costs of carrying out an assessment are small in the context of a project budget, they may present a barrier for

first-time use, particularly in low- and middle-income contexts, where institutional capacity for managing environmental and social issues is lower. Careful planning, realistic time frames and budgets, coordination with other development activities, and capacity building are essential for creating the buy-in needed for the experience to be well received and not seen as an added burden during project development.

7.7 Practical Considerations in Using the Hydropower Sustainability Tools

Training is an important part of an HSAP assessment, especially where it is the first use of the tools by the project developer or operator. Every assessment (whether an official or self-assessment) facilitated by the WBG has begun with at least one day of training to provide a basic introduction to the tool. Training typically includes the content and structure of the tools, the business case for their use, examples from past assessments, roles and responsibilities, instructions on how to prepare for the assessment, and a self-assessment exercise. Though the tools are logically structured, there are nuances to the scoring mechanism and judgements of significance that are best understood with the help of a qualified trainer and real-world examples.

In all cases, the level of understanding among stakeholders increased significantly after even one day of training. Dual language training is particularly important where the main language spoken is not one in which an official translation of the tools is available (photo 7.1). Training is also an important part of

PHOTO 7.1. Planning during Pre-Assessment Visit, Trung Sơn

Photo credit: © Thi Ba Chu / World Bank.

setting expectations for the assessment; the more the project developer or operator understands how the tools work, the more likely it is that the findings will be accepted and considered fair. It is also helpful to include a wider group of stakeholders, including senior management from the company and, in some cases, government officials, so they can better appreciate their role during the assessment itself or as a recipient of its findings.

Client ownership is essential to a credible HSAP assessment. The experience to date shows that the assessment process and scoring are based heavily on documentary evidence, some of which is not public. This must be supplied by the developer or operator. In addition, assessments rely on several interviews with a broad range of stakeholders, including contractors, design and/or supervision consultants, project-affected people, government agencies, and civil society. Reticence on the part of the project sponsor to provide necessary documents or facilitate interviews will hinder the ability of accredited assessors to triangulate their conclusions and may even result in a topic or topics being "not scored."

While it is not reasonable to expect that project staff put all of their day-to-day duties on hold for an HSAP assessment, it is critical that the project company commit fully to the process and prepare accordingly. This means timely provision of documentation to accredited assessors and disciplined scheduling. On-site assessments take place over a short, intense time frame, and thus, if key interviews do not take place, this could have a detrimental impact on the assessment of the project's performance.

The resources required to mobilize a full HSAP assessment are not insignificant. In addition to fees and travel for accredited assessors, an assessment also requires substantial effort on the part of project staff, who are responsible for attending training, interview scheduling, document collation, and liaising with government stakeholders and project-affected communities. In some cases where it made sense to do so, the project developer or operator also coordinated lodging and transportation for accredited assessors and observers. Estimates from project sponsors on the total cost of their first assessment, including project staff costs and overheads, vary widely from US$50,000 to nearly US$750,000.

While the costs of a full HSAP assessment are very small compared to the budget of a hydropower development project, it should be recognized that the responsibilities of the project staff during an assessment are typically in addition to their day-to-day duties in the preparation or operation of the project. An assessment may seem particularly onerous if scheduled around critical milestones in the construction schedule. In the case of Trung Sơn, for example, the original date of the on-site assessment was shifted by two months to allow the project staff to focus on works related to the diversion of the river. When scheduling an assessment, it is best to avoid major events on the project calendar if possible.

Costs are lower for subsequent assessments. If a project developer or operator chooses to assess a second project or conduct a follow-up assessment of the same project, in-house knowledge would enable more efficient assessment preparation and potential cost savings if there is no additional training needed.

An HESG assessment offers significant cost savings over a full HSAP assessment but is focused on only basic good practice. With the introduction of the HESG as a derivative of the HSAP, it is possible to analyze project performance at a much lower price point. The scope of the gap analysis is narrower as it only

considers basic good practice criteria and is focused primarily on the environmental, social, and governance topics. A gap analysis can be done with a smaller group of accredited assessors, and the table-based template for the report be prepared in less time.

Good document management will make for an easier assessment experience. Accredited assessors may review hundreds of documents during the course of an official assessment. This can be done much faster if documents are digitized and searchable. Poor document management, including undated documents and versioning issues, will undoubtedly result in the need for follow-up queries and may even cause accredited assessors to come to incorrect conclusions. In most of the assessments facilitated by the WBG, an online document-sharing platform was used, which proved very helpful as a secure platform that could be accessed for free by accredited assessors and project staff alike. Accredited assessors have also indicated that the involvement of international financiers in a project improves document management.

Chapter 8
Recommendations

Based on the above conclusions, the following recommendations are offered for use of the Hydropower Sustainability Tools.

8.1 For World Bank Group Clients Using the Tools

Hydropower developers and operators in WBG client countries should consider using the HSTs to improve the performance of their projects. The WBG, through its environmental and social standards and other guidelines, seeks to develop Borrower capacity while preparing and implementing investment projects. In the absence of this project architecture, however, developers and operators in client countries can better understand risks and opportunities associated with their projects with the help of the HSTs. Hydropower companies can apply the tools at the project scale or the portfolio scale. The HSTs can also be useful for companies seeking to improve their corporate governance.

World Bank clients should understand the HSTs as having a subsidiary relationship to WBG standards in the case of WBG-financed projects. The WBG has policies and procedures in place that Borrowers are required to follow for their investment projects. Borrowers should refer to the World Bank's Environmental and Social Policy for Investment Project Financing, the IFC's Policy on Environmental and Social Sustainability, and MIGA's Policy on Environmental and Social Sustainability for an overview of each institution's mandatory requirements in relation to environmental and social issues management for investment projects. The WBG institutions also have policies and requirements related to procurement and financial management. While the HSTs can help clients to meet the requirements of WBG standards, they do not replace the formal requirements for project investment finance.

Environmental and Social Action Plans following an HESG assessment should be time bound and as detailed as possible. They should include realistic estimations of cost and specify who is accountable for taking action and monitoring if necessary. Environmental and Social Action Plans must be developed with full commitment from senior management or they risk being disregarded. HESG assessments (or HSAP assessments) followed by a management plan to address identified gaps are likely the most powerful existing tools to improve the sustainability performance of hydropower schemes.

Hydropower developers and operators should seek to use accredited assessors in carrying out an HESG or HSAP assessment. Accredited assessors are specifically trained to use the HSTs to deliver replicable and high-quality outputs. They are experienced hydropower professionals with auditing skills, bringing independence and objectivity to the process. Many are also good trainers. Furthermore, any commercial use of the tools requires the use of accredited assessors, as per the terms and conditions of the HSAP.

8.2 For World Bank Group Staff Using the Tools

WBG staff should consider potential applications of the HSTs in their projects in a way that is complementary to WBG procedures. Any mention of desired or minimum scores should be avoided, and if clients choose to do an assessment during preparation or implementation of a WBG-financed project, care should be taken to clarify how information from an assessment will be used by the WBG. It may also be prudent to avoid assessments during times when project preparation or implementation is particularly intense so as not to create an undue burden on the client.

WBG staff should ensure that assessments are linked to operations or that sufficient resources are available for follow-up actions. As most of the assessments commissioned by the WBG have been funded through Bank-executed trust funds, there has been limited ability to address gaps identified through HSAP and HESG assessments. Most gaps that were identified were not resolved quickly or easily, and advisory services and analytic activities are simply too short to meaningfully address the problems raised. This is difficult to plan for at the start of an advisory services activity as the potential needs are unknown at the time the grant financing is secured. This is not to say that advisory services cannot support the use of HESG or HSAP assessments, but there should be sufficient time and resources allocated for these follow-up actions.

The WBG should value both official and unofficial uses of the tools without any requirement for public disclosure. Given that the primary impetus for the WBG to promote or be involved with the HSTs is the continuous improvement of hydropower performance in its client countries, any use of the tools toward that goal is desirable. The WBG promotes transparency but respects its clients' rights not to publish assessment results if this will create an easier path for addressing gaps and improving hydropower practice and development.

The staff of the WBG should encourage clients to use the HSTs throughout their project portfolios. Given the alignment between the topics of the HSTs and the policies and standards of WBG institutions, WBG staff can feel comfortable referring developers and operators in client countries to the HSTs as reference documents, project evaluation tools, and potential training material, especially for projects that are not being financed by the WBG.

The WBG should train staff members who work on hydropower projects in the use of these global tools. In order to provide effective advice to clients, WBG staff should be well versed in the substance and potential applications of the HSTs. It is not envisaged that WBG staff need to become accredited assessors, but specialists in relevant fields may find it useful to participate in certified user training.

The WBG should also consider carrying out an in-depth analysis of the criteria of the HSTs against the language in its policies and standards. This will inform any recommendations to improve the tools as well as internal decisions on how to further integrate the tools in WBG good practice materials. For example, a review of the infrastructure safety topic by World Bank dam safety experts suggests that, while the HSTs include a broad range of considerations on dam safety and public safety, there have been several

advances in what is considered good international industry practice, including greater use of risk-informed approaches. In the HGIIP in particular, more specific references to the essential aspects of dam safety would enhance the quality of the guidance. Improvements could also be made to the topics dealing with transboundary waters, where clear requirements arising from international law on transboundary water management are missing. Such an in-depth review would also identify any potential risks from a mismatch of expectations. In particular, the WBG policy and legal teams should consider how to reconcile the potential issue of WBG document clearance in the context of preparation-stage HESG or HSAP assessments, where projects score below basic good practice on one or more topics.

8.3 For the Governance of the Hydropower Sustainability Tools

There is a need for greater emphasis on gap management by promoters of the HSTs. Consistent with the goal of continuous improvement, the HSAC and management entity should give greater attention to the management of gaps identified during hydropower sustainability assessments. While the inclusion of an Environmental and Social Action Plan as a standard component of an HESG responds to this need, the full HSAP remains without a standardized approach to managing gaps. A shift in focus toward learning and improving will bolster the tools' value proposition in lower-capacity environments where much of the world's untapped hydropower potential remains.

In training and marketing for the HSTs, more clarity should be provided on the value proposition of the full HSAP vis-à-vis the HESG. The HESG responds to demand for a quicker, lower-cost alternative to an assessment using the full HSAP. It also satisfies the demand for an eligibility screening tool for green finance and has the added feature of a management plan. However, since the HSAP contains proven best practice criteria, promoters of the HSTs should take care not to neglect its potential to elevate industry performance beyond basic good practice.

The WBG should continue its engagement with the governance of the HSTs. Through its participation in the Financial Institutions Chamber and role on the HSGC, the WBG has the opportunity to influence decisions over the management and evolution of the tools. The WBG has an interest in doing this for the following reasons:

- Given that WBG finances only a small portion of hydropower investments worldwide, it is important that its clients have access to good tools to guide sustainable hydropower outside of WBG project architecture.

- While these may improve over time, there is currently an imbalance in the governance structures of the HSTs. There is a dedicated chamber for low- and middle-income country governments and one for high-income country governments, but the other chambers for civil society and industry are disproportionately made up of individuals and organizations from high-income countries. As a leader in development finance, the WBG can provide a financier's perspective as well as advocate for the development needs of low- and middle-income countries.

- The WBG is in a unique position to leverage its global experience in the hydropower sector to ensure the tools remain globally applicable and relevant.
- As WBG policies and standards evolve, a role in the governance of the HSTs enables the WBG to reflect these evolving perspectives in the tools as they also change over time.
- Better performance of hydropower companies globally increases the likelihood of WBG investments sustaining their development objectives over the long term.

The WBG should leverage its role as a global convener to help the HSAC achieve financial independence. With a growing number of accredited assessors and the potentially large increase in demand for assessments from the green bonds market, more resources than ever will be needed to ensure high quality and uniformity in the use of the HSTs. Additionally, it is envisaged that the tools would gain wider acceptance if their governance was financially independent of IHA. The WBG can help the HSAC be financially sustainable, either by seeking donor funding or helping to define another model.

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