

THE HYDROPOWER SUSTAINABILITY ASSESSMENT PROTOCOL IN PRACTICE: LESSONS LEARNED FROM ITS FIRST APPLICATION IN EUROPE—A UTILITY’S PERSPECTIVE

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Abstract: Sustainability has become a highly important consideration for utilities as they strive for competitive advantage through differentiation. The HSAP, comprehensive in scope and endorsed by multiple stakeholders, is a recommended tool for the assessment of a hydropower project’s or plant’s sustainability performance. The value created during this assessment and by the derived sustainability profile justifies the investment necessary to conduct such a protocol application. Finally, not only does the HSAP provide a channel for successfully demonstrating good corporate citizenship, it also supports organizations in the successful management of complex hydropower projects’ sustainability issues on a day-to-day basis.

1 Introduction

Being a first-mover always bears the risk of making costly mistakes and suffering losses through painful learning experiences. In some cases however, innovation and entrepreneurial courage can provide a competitive advantage, allowing businesses to thrive using cutting-edge technology and innovative management. In this context, a famous example in hydropower industry is the 124 MW Walchensee Power Plant in Bavaria. Commissioned in 1924, this landmark of electricity generation was thought to be far too large in relation to the power demand at that time, which was hardly enough to justify the plant’s construction; history has indeed proved such critics wrong. Even today, this storage facility in the south of Germany remains one of the most valuable assets of E.ON’s Hydro Fleet – all thanks to the forward-looking Oskar von Miller who created an industrial monument for ages (see Figure 1).

The 21st century brings about different challenges for European utilities. New build activities and renewals of existing concessions are of central importance in growing and maintaining a robust portfolio of hydro assets. In addition to strategically sound and economically viable opportunities, corporations must begin to explore “sustainable” developments if they are to meet stakeholder expectations and reflect good corporate citizenship. In order to differentiate themselves, firms can choose to apply the so-called Hydropower Sustainability Assessment Protocol (“HSAP” or

“Protocol”), which provides a comprehensive tool to measure the sustainability performance of hydro projects in various stages of their life cycle.

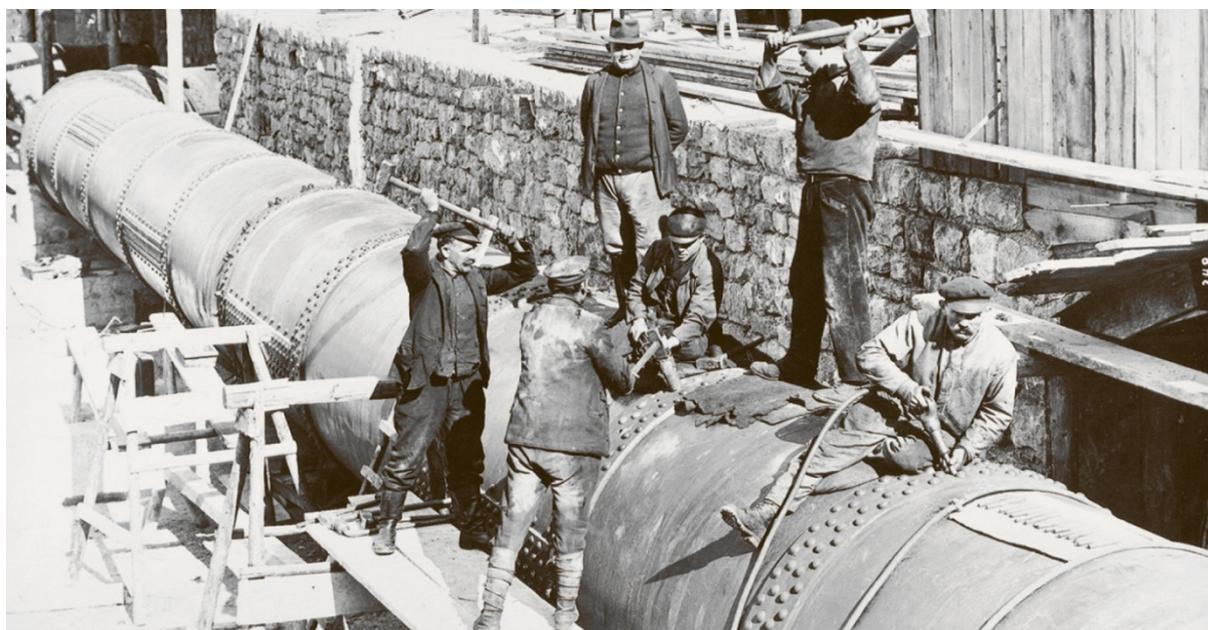


Figure 1: Construction of the penstocks in the early 1920s¹

E.ON, shortly after becoming a sustainability partner of the International Hydropower Association (IHA), conducted such an assessment at the Walchensee Power Plant in February 2012 – the first formal sustainability evaluation of a hydropower plant in Europe. The main objective of this pilot assessment was to study the possible advantages of using the HSAP. In order to share this learning experience with a broader community, this paper (1) reviews the motivation of a private utility to apply the Protocol, (2) describes the core components of its systematic assessment of the sustainability performance of a hydropower project or plant, (3) summarizes the resource requirements involved based on empirical evidence, (4) identifies drivers of value creation linked to advancing hydropower sustainability, and (5) provides insights on how to implement the Protocol into corporate processes.

2 The HSAP in practice

The first part of this article investigates a utility’s rationale behind using an internationally recognized and broadly endorsed instrument for creating a sustainability profile and eventually sharing it with the public. The presented assessment methodology shows that the HSAP is neither superficial nor a tool to green-wash corporate performances. The resources necessary to actually conduct the Protocol application will also be critically reviewed.

¹ Source: [3]

2.1 Motivation to apply the HSAP

E.ON has a clear incentive to pursue sustainable developments. As a successful hydropower operator in four different European countries, E.ON Hydro Fleet governs 212 plants in diverse geographical and regulatory environments and interacts with a large group of stakeholders on a daily basis. Therefore, the motivation to test an innovative sustainability performance assessment includes (a) the commitment to produce “cleaner and better” energy in accordance with group-wide strategy, (b) the aim to advance sustainable developments as part of corporate responsibility initiatives, (c) the promotion of an international tool to increase public acceptance of hydropower technology, and (d) the strategic incentive to create competitive advantage through reducing project risks and environmental impacts while improving the firm’s reputation.



Figure 2: The Walchensee Power Plant, commissioned 1924²

The concrete assessment of the Walchensee Power Plant (see Figure 2) was guided by clear objectives set by E.ON, which aimed to support a transparent case for promoting hydropower production in line with E.ON’s “cleaner and better” strategy. Other factors and goals also played a significant role in setting the context for the pilot assessment; these included capacity building to organize Protocol applications in various environments in and outside Europe, the identification of sustainability performance gaps by using the likely high-performing Walchensee Power Plant as a

² Source: [3]

potential control, and the identification of opportunities to acquire an outstanding result (proven best practice).

2.2 Assessing hydropower sustainability³

The HSAP addresses a specific shortcoming of other existing international guidelines; though most of them describe how a project or plant should be ideally sustainable, they usually fail to state in concrete terms what this means. The Protocol, by contrast, makes use of a well-structured approach to define and measure sustainable actions. Thus, the key goal of the HSAP is to describe, guide, and measure sustainable performance in the hydropower sector. Over the past few years, a multi-stakeholder body comprised of environmental non-government organizations (NGOs), governments, banks, and the hydropower sector have worked to develop the Protocol. The beauty of the tool is that it individually addresses the four main phases of hydropower development: the Early Stage, Preparation, Implementation, and Operation. Much of what the Protocol assesses relates to corporate management systems and processes (safety, environment, stakeholder management, operations, maintenance, asset performance, human resources, finance, etc.). Additionally, it is the only instrument to-date that clusters hydro sustainability aspects using precise categories, thereby providing a clear 'language' with which to further the dialogue between different interest groups and balance divergent claims.

Despite its comprehensiveness and complexity, the Protocol is a ready-to-use tool for any project manager who wants to actively manage the sustainability profile of her hydropower project. The sustainability assessment itself builds on objective, empirical evidence such as site visits, interviews with a broad range of stakeholders, and a comprehensive set of project documents in order to create an evaluation score for each of some 20 topics. Detailed matrices and explanations assist in evaluating each sustainability criterion accordingly. Moreover, the applied scoring system allows project owners to measure individual sustainability performance against international basic good practice and proven best practice. These comparative results are accompanied by concrete improvement measures that suggest possible ways to further advance the hydropower project's sustainability.

2.3 Resources required⁴

Conducting a Protocol assessment requires both financial and human resources. The total cost for the Walchensee Power Plant assessment, including fees for assessors,

³ Source: [1], [2]

⁴ Source: [3]

travel, accommodation, and site visits, amounted to 50,000 EUR. Travel costs might however vary substantially for future assessments depending on the accessibility of the site (see Figure 3 showing the physical project environment around the Walchensee and Kochelsee). Additionally, two man months of internal resources were needed to prepare, host, and evaluate the HSAP application. Approximately 200 internal and external documents were prepared before and during the assessment week, and 30 interviews with E.ON employees and external stakeholders took place both in offices and on site during the two-day visit of the power plant.

From an organizational perspective, a local team numbering up to ten people was managed by the sustainability project’s single-point-of-contact. The interface management between IHA and the external lead assessor ensured a constant flow of information prior to, during, and after the assessment. In terms of planning, at least three months should be allotted to coordinate the assessment with the IHA, involve assessors, organize venues, collect data, engage stakeholders, brief the participants, communicate with the corporate project sponsors, and align schedules. Clearly, the formal assessment of a hydropower project’s or plant’s sustainability performance requires considerable efforts and resources.

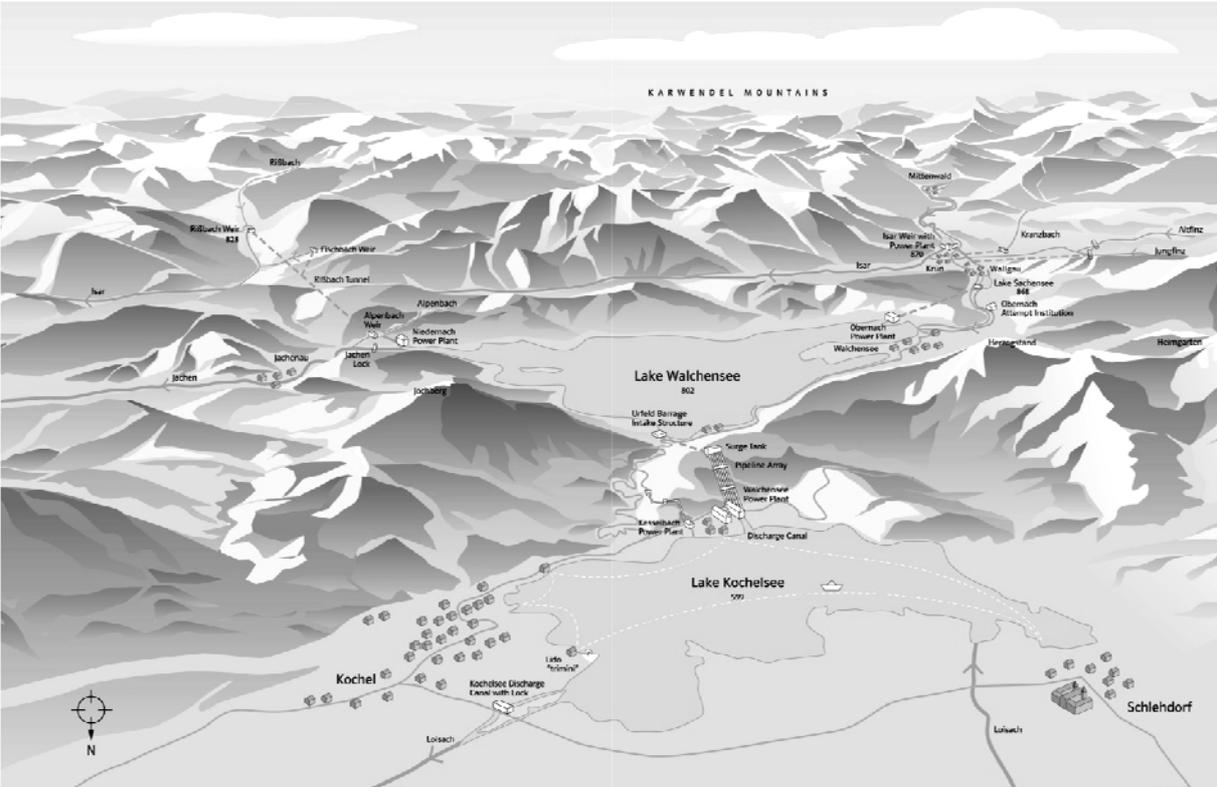


Figure 3: A schematic overview of the Walchensee Power Plant⁵

⁵ Source: [4]

3 Lessons learned from a utility's perspective

The second part of this paper enumerates the benefits of promoting sustainable performance and discusses the lessons organizations can learn by being involved in the HSAP initiative. The Walchensee case study succeeded in identifying concrete value drivers, and insights gained during its pioneering execution might pave the way for embedding the HSAP into gated project decision-making processes.

3.1 Drivers of value creation

After examining how a somewhat abstract concept can become a concrete reality in the corporate world, this section concentrates on the correlation between sustainability initiatives and the financial performance of the hydropower business. Generally, there are three approaches that a firm can take in proving the relevance of sustainability to its shareholders: first, that new knowledge and capabilities generated in pursuit of sustainability initiatives can enrich the company in diverse ways; second, by demonstrating that a consideration of sustainability issues reduces business risks; and finally, by showing that responsible actions also increase profits. The latter can be achieved by adding revenues through additional sales and/or by improving the margin of electricity sales through increasing the customer's willingness to pay for 'sustainably produced' energy. In other words, creating a competitive advantage by promoting and pursuing sustainable hydropower may not only be beneficial to hydropower companies' brand reputation, it may also be financially beneficial.

For day-to-day business operations, however, the value of the HSAP lies in the concrete messages it provides to both the management and the operations team. Following the successful assessment at the Walchensee Power Plant, E.ON concluded that the study's results can be translated into real benefits because they provide insights for:

- External stakeholder communication;
- Operational excellence and continuous improvement initiatives;
- Higher employee productivity and excellence in project management; and
- Corporate decision-making regarding prioritization of investments.

In short, the experience an organization gains during the preparation and execution phase of the HSAP application is highly valuable in several ways. The main justification of the Protocol assessment however is its comprehensive search for sustainability-related risks, which importantly includes, in addition to technical, environmental, and social concerns, financial risks. Minimizing these risks lies at the

heart of project management; thus it is highly recommended to use the content of the HSAP to effectively manage challenging development projects, regardless of their type, location, or complexity.

Needless to say, only officially assessed projects can publicly claim a strong position on sustainability issues, but the circumstances surrounding certain projects (such as their size or time and budget constraints) are not always conducive to such detailed investigations. Still, the Protocol itself is a great source for project managers needing to structure risk and sustainability and address key issues early in the development phase. The HSAP further provides a conclusive framework for communicating sustainability topics both internally and with the public at large, prior to any official assessment taking place. In summary, even smaller projects can significantly benefit from the content of the Protocol, while an official evaluation of larger projects could further substantiate a company's public sustainability stance and contribute to maintaining a top-tier profile of responsibly developed hydropower plants.

3.2 Advancing better investment decisions

Having put forth quantitative cost and qualitative benefit analyses, the following discusses how hydropower firms can implement sustainability assessment tools into project development cycles and investment decision-making processes to promote sustainable hydropower development. The vast majority of hydropower developers and operators do not include a project's sustainability profile as an equally important factor to strategic fit or economic viability. Nevertheless, the implementation of a third investment criterion could take much the same approach as internally defined hurdles both strategic and financial in nature. Such project sustainability targets might relate to minimum achievement scores in selected sustainability areas, for instance those topics evaluated by the Protocol. Gradually, the corporate performance benchmarks of strategic fit and economic viability are thus augmented by a consideration of sustainability performance.

In principle, there are four different applications of the HSAP useful to arriving at informed investment decisions. One of these could be aiding an informed selection of the most promising projects across a larger portfolio. In complex natural, political and regulatory project environments, the "Early Stage" part of the Protocol might be a very helpful tool in support of an evidence-based decision making process. The second application of the HSAP could assist large-scale projects in their "Preparation". A concrete sustainability profile, combined with follow-up actions to improve areas of weaker-performance, has the potential to foster internal consensus and fuel external acceptance of the hydro project, thus furthering the chances of its ultimate realization. If a project is already under "Implementation", the corresponding part of the Protocol can be used by a potential buyer to better evaluate the risk profile

of the asset under construction (e.g. during an acquisition process). The fourth application supports internal investment decisions concerning resource allocation to balance the efforts behind certain sustainability topics of a plant under “Operation”. The outcome of the assessment, the so-called spider diagram, clearly reveals areas where improvement is necessary (e.g. to be addressed by performance target setting) as well as high-scoring items where, depending on the perceived relevance for the company and its stakeholders, additional spending might make less sense. Taken together, these four principal applications provide an integrated picture of project opportunities and help to balance associated inequalities and risks, which may not be addressed by purely strategic considerations or stand-alone financial parameters.

4 Conclusions

Hydropower developers and operators alike face tremendous challenges in proving the sustainability of their projects; there is broad agreement among industry experts that sustainability is not as easily quantified as engineering or economics. Additionally, measuring the impact of sustainability on the financial performance of a business is a similarly difficult task, and corporate investment decision-making does not (yet) demand sustainability requirements alongside strategic and financial hurdles. Thus, companies have little incentive to promote or even consider sustainability past fulfilling minimum legal or funding requirements for environmental and social performance. The HSAP is soon to change the first argument as an assessment tool that elevates the discussion of sustainability topics to a new level. The lessons learned from its first application in Europe demonstrate that thinking critically about sustainability does create value for corporations – particularly when large-scale projects are assessed. Finally, the Protocol application can be usefully integrated into gated decision-making processes concerning green-field developments, acquisitions, and improvement of existing plants. Utilities should praise the HSAP above all for its content – it helps to advance hydropower sustainability, which can only be achieved through the constant repetition of responsible actions. The HSAP is a novel way to objectively measure this performance.

References

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