



Hydropower Sustainability Assessment Protocol

Unofficial Assessment

TIWAG-Tiroler Wasserkraft AG

Kaunertal Extension Project

Austria

Assessor: Dr Joerg Hartmann

Final



31/10/2013

Disclaimer: This assessment is an Unofficial assessment as it does not comply with the necessary terms required of an Official assessment. The results of this assessment do not necessarily reflect the quality required of an Official assessment and may not be an accurate reflection of the sustainability of the assessed project. Furthermore, this assessment does not have the benefit of evidence that would have been supplied by the Project Sponsor to complete the assessment.

Client: WWF Österreich, Ottakringer Straße 114 – 116, A-1160 Wien

Contact: thomas.diem@wwf.at

Assessor: Dr Joerg Hartmann

Contact: Joerg.hartmann.water@gmail.com

Assessment Date: 31/10/2013

Project Size: 900 MW

Project Stage: Preperation

Project Type: Pumped Storage

Table of Contents

Table of Contents.....	2
Executive Summary	3
Sustainability Profile.....	5
Introduction	5
1 Communications & Consultation (P-1)	13
2 Governance (P-2)	17
3 Demonstrated Need and Strategic Fit (P-3).....	22
4 Siting and Design (P-4)	25
5 Environmental & Social Impact Assessment & Management (P-5)	29
6 Integrated Project Management (P-6)	33
7 Hydrological Resource (P-7)	35
8 Infrastructure Safety (P-8).....	39
9 Financial Viability (P-9).....	42
10 Project Benefits (P-10)	45
11 Economic Viability (P-11).....	49
12 Procurement (P-12).....	52
13 Project-Affected Communities & Livelihoods (P-13).....	54
14 Resettlement (P-14)	58
15 Indigenous Peoples (P-15)	58
16 Labour & Working Conditions (P-16)	59
17 Cultural Heritage (P-17).....	61
18 Public Health (P-18)	65
19 Biodiversity & Invasive Species (P-19).....	69
20 Erosion & Sedimentation (P-20)	73
21 Water Quality (P-21)	76
22 Reservoir Planning (P-22)	79
23 Downstream Flow Regimes (P-23)	82
Appendix A: Visual Evidence	86
Appendix B: Documentary Evidence.....	88

Executive Summary

This report represents an Unofficial Assessment conducted in accordance with the Preparation Tool of the Hydropower Sustainability Assessment Protocol. The assessment is conducted for the planned 900 MW Kaunertal Extension Project, which is located in the Ötztal Alps in Tyrol, Austria. The assessment does not focus on wider sustainability performance of TIWAG-Tiroler Wasserkraft AG (TIWAG). This said, under several Protocol topics, the corporate-level performance of TIWAG is relevant.

TIWAG intends to build and operate the Kaunertal Extension Project. TIWAG is an energy business entirely owned by the Province of Tyrol, with about 1,300 employees. It owns and operates nine large (above 10 MW) and ca. 40 small hydropower plants and generated 3,599 GWh in 2012, to which the existing Kaunertal project contributed 661 GWh. Total sales of the TIWAG group in 2012 were EUR 1,457 million.

The assessment was undertaken in the context of a complex regulatory environment in which the provincial, federal and European Union authorities have requirements for multiple aspects of planning, assessment and management.

The client for this assessment is WWF-Austria. WWF at a global level was involved in the design and governance of the Protocol. This assessment may be the first case globally in which an NGO has engaged an accredited Protocol assessor to investigate the sustainability performance of a hydropower project. The assessment is unofficial because the project sponsor TIWAG was not involved in it. It therefore had to fully rely on publicly available materials and a site visit, and did not benefit from evidence provided by the project sponsor. Since the Environmental Impact Declaration, which was submitted by TIWAG to the Austrian authorities in 2012, has not been made public, and neither have many other substantial background documents, the assessment results should be treated as preliminary and provisional. Because of absence of evidence some topics could not be assessed or scored with high confidence. The visual representation of the assessment results, in the form of a 'spider diagram', should be treated with caution, as it suggests a degree of confidence which is not warranted because of the multiple uncertainties around scoring.

The Kaunertal Extension Project is likely to not meet basic good practice (i.e., a score of less than 3) for the topics P-2 Governance, P-3 Demonstrated Need and Strategic Fit, P-4 Siting and Design, P-5 Environmental and Social Impact Assessment and Management, P-11 Economic Viability, P-13 Project-Affected Communities and Livelihoods, P-19 Biodiversity and Invasive Species, and P-23 Downstream Flow Regimes. Key gaps with respect to basic good practice are the following:

- On Governance (P-2), there is a lack of disclosure and perceptions of conflicts of interest, resulting in a loss of trust in TIWAG acting in the best interest of the citizens of the province.
- Regarding Demonstrated Need and Strategic Fit (P-3), while multiple guidelines have been prepared at various government levels as well as by NGOs to guide hydropower planning, the only analysis of strategic fit of the Kaunertal Extension Project which is publicly available is an analysis by WWF Austria that showed a low level of compliance with the national-level criteria catalogue.
- On Siting and Design (P-4), TIWAG has presented several alternatives over time, partly in response to public opposition, but there is no comparative analysis or meaningful stakeholder interaction to evaluate their advantages and disadvantages. Basic questions such as whether the project could be implemented without the pumped storage component, or without the catchment augmentation component, or whether the pumped storage component could be implemented elsewhere (for example, between the Gepatsch reservoir and a lower reservoir at Prutz), have not been addressed publicly.
- On Environmental and Social Impact Assessment and Management (P-5), the late public disclosure of the EIA after the expert review does not allow an appropriate degree of stakeholder involvement.

- On Economic Viability (P-11), neither TIWAG nor the provincial government have made an effort to substantiate (for example, through a cost-benefit analysis) their claims that the project is overall a good investment for the province.
- On Project-Affected Communities and Livelihoods (P-13), there is major on-going opposition to the Kaunertal Extension Project in the project-affected communities, organised through citizens initiatives and at the sectoral level (for example, the Ötztal tourism chamber).
- On Biodiversity and Invasive Species (P-19), with about 1,000 hydropower projects already operating in Tyrol, protecting biodiversity project-by-project is not likely to be effective; the unavoidable residual impacts of the Kaunertal Extension Project can only be addressed through a regional program to protect remaining wilderness areas, in particular the last waterbodies that have not been directly impacted by hydropower development.
- On Downstream Flow Regimes (P-23), significant cumulative impacts on the flow regime along ca. 82 km of rivers and streams are expected which have not been discussed with stakeholders; there is particular uncertainty whether the outcome for the Ötztal is balanced.

The project is likely to perform at the level of basic good practice (a score of 3, with two or more significant gaps at the level of proven best practice), for the topics P-1 Communications and Consultation, P-8 Infrastructure Safety, P-10 Project Benefits, P-17 Cultural Heritage, P-18 Public Health, P-20 Erosion and Sedimentation, and P-21 Water Quality.

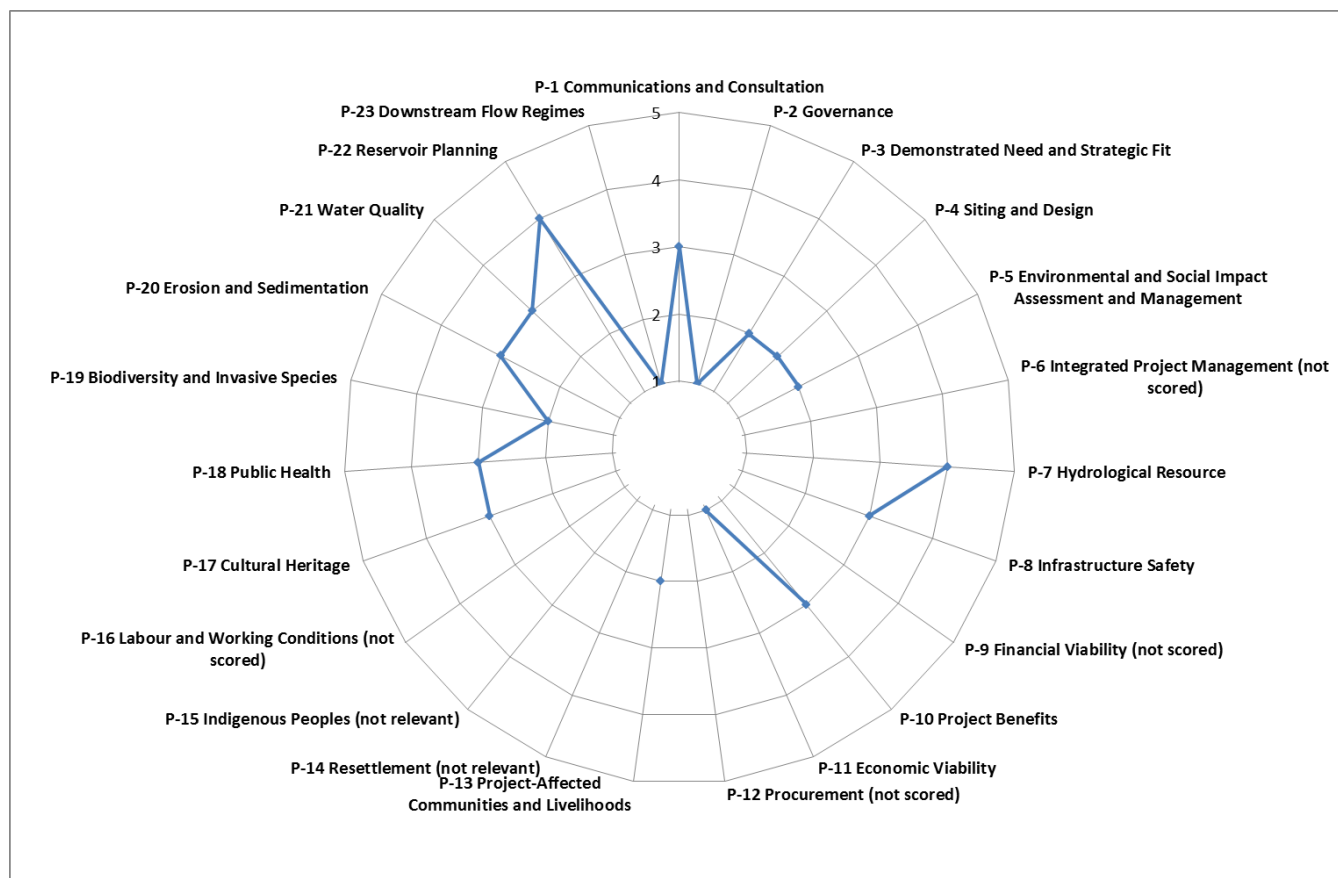
The project is likely to perform with one significant gap at the level of proven best practice (a score of 4) on the topics P-7 Hydrological Resource and P-22 Reservoir Planning.

Topics P-6 Integrated Project Management, P-9 Financial Viability, P-12 Procurement and P-16 Labour and Working Conditions could not be meaningfully assessed because of a lack of publicly available materials and access to the developer. A general impression is that the developer TIWAG is not proactive enough in public disclosure and stakeholder engagement. One result is that a topic of high public interest, P-9 Financial Viability, could not be assessed. According to the Assessor's experience, the total cost of the project publicly indicated by the developer ('over EUR 1 billion') may be a very significant underestimate, considering that two large power stations, many kilometres of tunnels, a 120 m high dam and other infrastructure would need to be built under difficult conditions and in a high-cost environment. It is not unusual for infrastructure projects to be initially presented to the public with a low estimate of costs and a high estimate of revenue. Particularly in the case of TIWAG as a public sector enterprise, owned by the citizens of Tyrol, they should be fully and realistically informed about the financial implications.

Topic P-14 was not assessed as it is considered "Not Relevant" for this project, as there would be no physical displacement resulting from the Kaunertal Extension Project development. Topic P-15 was also not assessed as it is considered "Not Relevant" for this project, as there are no indigenous communities in the Kaunertal Extension Project area.

The spider diagram below summarises the Kaunertal Extension Project assessment scores.

Sustainability Profile



Disclaimer: This assessment is an Unofficial assessment as it does not comply with the necessary terms required of an Official assessment. The results of this assessment do not necessarily reflect the quality required of an Official assessment and may not be an accurate reflection of the sustainability of the assessed project. Furthermore, this assessment does not have the benefit of evidence that would have been supplied by the Project Sponsor to complete the assessment.

Introduction

The Hydropower Sustainability Assessment Protocol

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.

To reflect the different stages of hydropower development, the Protocol includes four assessment tools that have been designed to be used as standalone documents.¹ Through an evaluation of basic and advanced expectations, the Early Stage tool may be used for risk assessment and for dialogue prior to advancing into detailed planning. The remaining three assessment tools, Preparation, Implementation and Operation, set out

¹ The Protocol assessment tools can be downloaded from www.hydrosustainability.org.

a graded spectrum of practice calibrated against statements of basic good practice and proven best practice. The graded performance within each sustainability topic also provides the opportunity to promote structured, continuous improvement.

The Protocol structure, scope and scoring criteria are the product of a rigorous multi-sectoral process called the Hydropower Sustainability Assessment Forum, which took place over almost three years (2008-10) involving representatives of the hydropower industry, development and commercial banks, social and environmental NGOs, and developing and developed country governments all with knowledge and experience in hydropower. Important reference documents that informed the Protocol include the World Bank safeguards policies², the Performance Standards of the International Finance Corporation³, the report of the World Commission on Dams⁴, and the 'Guiding Principles on Business and Human Rights: Implementing the United Nations 'Protect, Respect and Remedy' Framework'⁵

Assessments rely on objective evidence to support a score for each topic that is factual, reproducible, objective and verifiable. The Protocol will be most effective when it is embedded into business systems and processes. Assessment results may be used to inform decisions, to prioritise future work and/or to assist in external dialogue.

A wide application of the Protocol is desired; it should be applied in a collaborative way, to ensure the best availability of information and points of view. The development and evaluation of a hydropower project will involve many actors with different roles and responsibilities. It is recognised that both development and operation may involve public entities, private companies or combined partnerships, and responsibilities may change as the project progresses through its life cycle.

This assessment has been conducted using the *Preparation* assessment tool, which contains 23 individual topics addressing governance, technical, financial, social and environmental issues. Embedded within the Protocol topics are a number of important cross-cutting issues such as climate change, human rights and transboundary issues. Topics 14 and 15 have been determined to be Not Relevant to this assessment, as there will be no resettlement as a result of the Kaunertal Extension Project development and no indigenous groups affected. Topics 6, 9, 12 and 16 have not been scored due to a lack of evidence.

Assessment Objectives

WWF's objectives in commissioning this assessment were

- To understand the overall sustainability of the Kaunertal Extension Project in the Preparation phase as benchmarked against international good and best practices;
- To use the information obtained through the assessment, in particular regarding topics where the project shows weaknesses, in its campaign for more sustainable hydropower and the protection of Austrian rivers.

Project Description

The existing Kaunertal project, built between 1961 and 1964 with financial support from German utilities who acquired long-term delivery rights, is one of Austria's major storage projects and uses the drop of ca. 863 m

²<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,menuPK:584441~pagePK:64168427~piPK:64168435~theSitePK:584435,00.html>, accessed 09 Oct 2012

³http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+Sustainability/Sustainability+Framework/Sustainability+Framework+-+2012/Performance+Standards+and+Guidance+Notes+2012/, accessed 09 Oct 2012. The Forum referred to the 2006 version.

⁴http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+Sustainability/Sustainability+Framework/Sustainability+Framework+-+2012/Performance+Standards+and+Guidance+Notes+2012/, accessed 09 Oct 2012.

⁵<http://www.business-humanrights.org/Documents/UNGuidingPrinciples>, accessed 09 Oct 2012.

between the upper Kaunertal (Kauner valley) and the Inntal (Inn valley) near Prutz. At 1,660 masl in the Kauner valley, the Gepatschspeicher (Gepatsch reservoir) has 139 Mio. m³ active storage and 2.6 km² surface area at full supply level. It is fed largely by glacial and snow melt; its catchment was augmented by transfers of creeks from the neighboring Pitz and Radursch valleys and from lower tributaries in the Kaunertal from 109 km² to a total of 279 km².

At its inauguration the Gepatsch dam was the tenth highest rockfill dam in the world, at 153 m; today it is still Austria's highest. Its crest is 600 m long. The reservoir is filled up in summer, using melt- and rainwater, and is drawn down during the rest of the year. The variation in level is unusually high and creates significant exposed drawdown areas. Depending on the level of the reservoir, the maximum possible generation at the Prutz power station (the largest hydropower station in Austria until 1979) is between 325 and 392 MW. In an average water year, with a total of 323 million m³ of water, 661 GWh can be generated. The power station is operated at full capacity for about 1,750 hours per year; about 1,000 hours of this are considered peak load hours.

Figure 1: Average seasonal Gepatsch reservoir storage management between normal upper and lower operating levels (1965-2005)

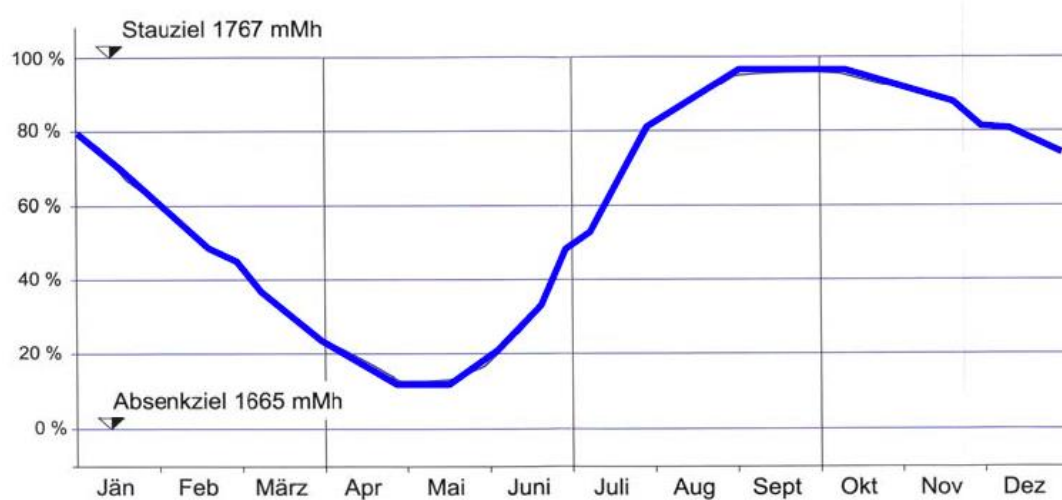


Figure 2: Gepatsch reservoir at its lowest level (May 2010)



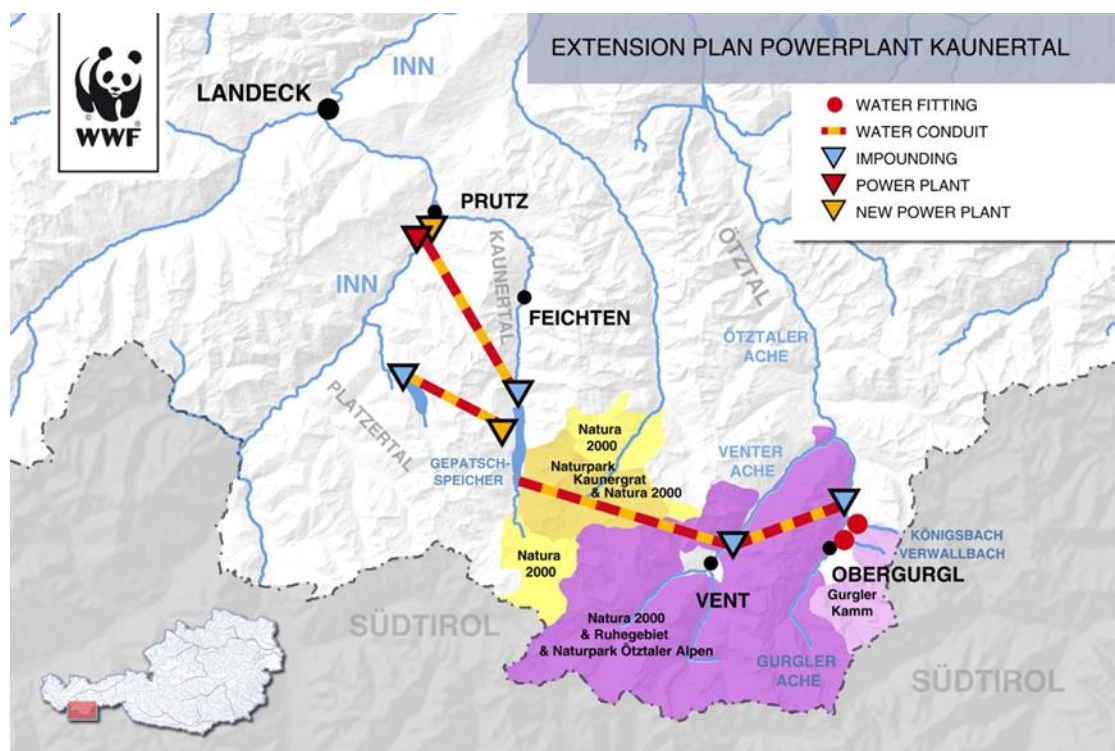
The Kaunertal is one of a series of parallel valleys opening to the north from one of the major massifs in the Austrian High Alps, the Ötztal Alps. From east to west, the relevant valleys are the Ötztal (with its tributaries,

the Gurgler and Ventner Ache, Koenigs- and Verwallbach), the Pitztal, the Kaunertal, and the Inntal (with its tributary valley, the Platztal). All the creeks eventually feed into the Inn, which is a tributary to the Danube.

The planned Kaunertal Extension Project would roughly double the catchment area, by connecting all of the mentioned upper valleys. The additional water availability would enable the generation of 621.5 GWh in an average water year. The project would also add an upper step of 647 m to the generation complex, above the Gepatsch reservoir, which will be operated largely as a pumped storage facility. The extension would consist of the following main infrastructure components:

- Rockfill dam of ca. 120 m height in the Platztal at ca. 2,300 masl, with a catchment of 8.2 km², forming a reservoir with 40 million m³ active storage;
- Upper power and pump station Versetz (400 MW), at the existing Gepatsch reservoir;
- Additional lower power station Prutz 2 (500 MW), next to the existing Prutz 1 (370 MW), and additional works on the tailrace and re-regulation reservoir (Runserau weir);
- Pressure tunnel between existing Gepatsch reservoir and new Platztal reservoir;
- Transfer tunnels from the upper Ötztal across the Pitztal to the Gepatsch reservoir (length 22.7 km; diameter 4.9/6 m);
- Several water intakes, partially with small reservoirs, in the upper Ötztal (catchment 272 km²).

Figure 3: Plans for the Extension of the Kaunertal Project



The diagram above shows the additional intakes (red dots) and reservoirs (blue triangles) in the upper Ötztal; the tunnels (red-yellow lines) leading west to the Gepatsch reservoir, up to the Platztal reservoir (blue triangle) and down to Prutz; the existing power station (red triangle) at Prutz as well as the new power stations (yellow triangle) at Prutz and at the Gepatsch reservoir. A new pressure tunnel between the Gepatsch reservoir and the Prutz power station had become necessary in any case and is currently being built, in a separate project. The upper step of the complex is between the Platztal and the Gepatsch reservoirs, the lower step between the Gepatsch reservoir and the Inn at Prutz.

It also shows a number of protected areas of different categories in the upper valleys towards the border with the Italian province of South Tyrol. The Ötztal Alps contain the largest connected glaciated area and are one of the most extensive high alpine wilderness areas in the Eastern Alps, with relatively low human pressures from traffic and other infrastructure, human settlements, tourism, cattle, and other uses. Tourism is an important economic basis of the region and highly sensitive to changes in the landscape.

While the footprint of the project is relatively large, affecting three valleys, significant mitigation measures are planned. For example, it is intended to construct the Platzertal dam through an access tunnel from the Gepatsch reservoir in the Kaunertal (to avoid the need for an access road from the Inntal) and to maintain environmental flows below the Platzertal dam, thus reducing the impact downstream of the new dam. Much of the infrastructure, including one of two power houses, water tunnels, parts of the road on the west shore of the Gepatsch reservoir, and the transmission line from the Versetz power plant to the substation at Prutz, would be hidden from view. Quarries and spoil areas would be revegetated after construction is finished.

The following images show the most visible, aboveground components of the planned Kaunertal Extension Project, the Platzertal dam and the intake on the Gurgler Ache, as an example for the Ötztal intakes.

Figure 4: Artist's rendering of planned Platzertal dam

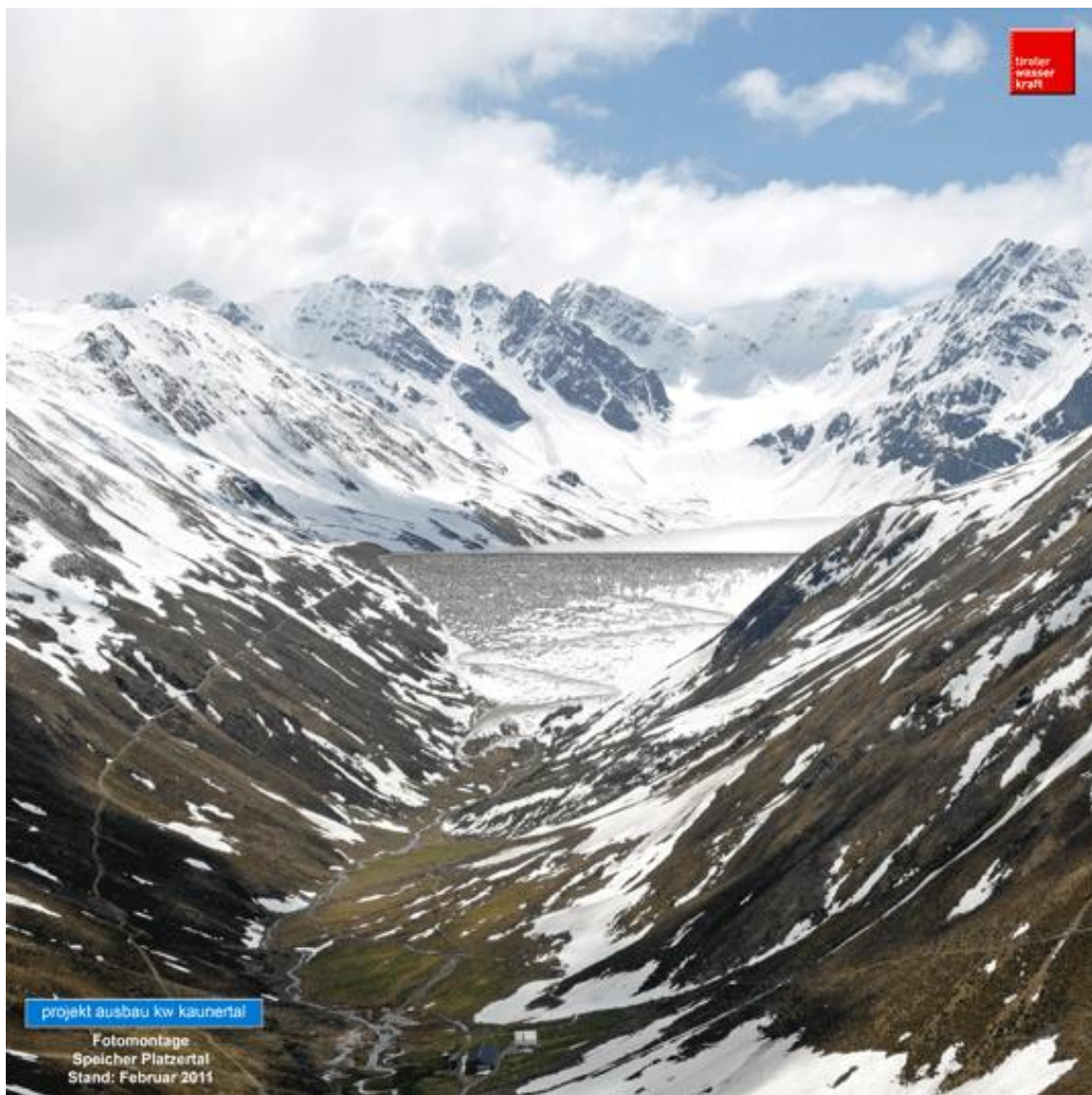
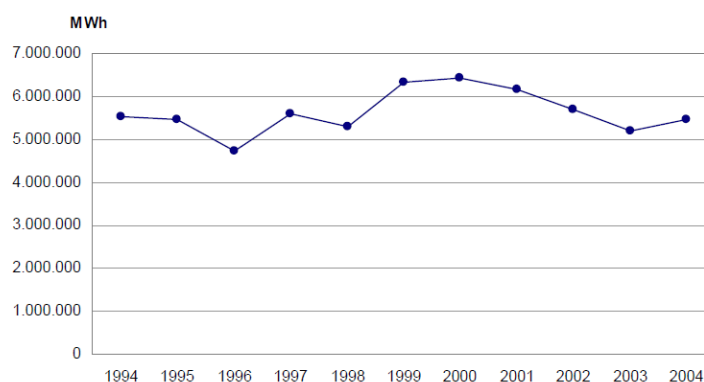


Figure 5: Artist's rendering of planned intake on the Gurgler Ache (upper Ötztal)

The hydroelectric energy produced by the Kaunertal Extension Project would be integrated into TIWAG's electric system for use in Tyrol and for export. The project is the result of a decade-long identification process. After the last medium-sized project was commissioned in 1998, TIWAG considered a number of options for new facilities in Tyrol, by way of an options assessment report in 2004, and four of those were selected in 2006 by the Tyrolean government to be further developed, among those the Kaunertal Extension Project. Originally, two other locations for an upper storage reservoir were considered: one in the Taschachtal (in the upper Pitztal) and one in the Kaunertal above the Gepatsch reservoir. Both were dismissed, for geological and other reasons, before the Platzertal was identified as the current preferred site. The Platzertal site is located higher than the two other sites, creating a higher head, reducing the storage requirements, and requiring a smaller reservoir.

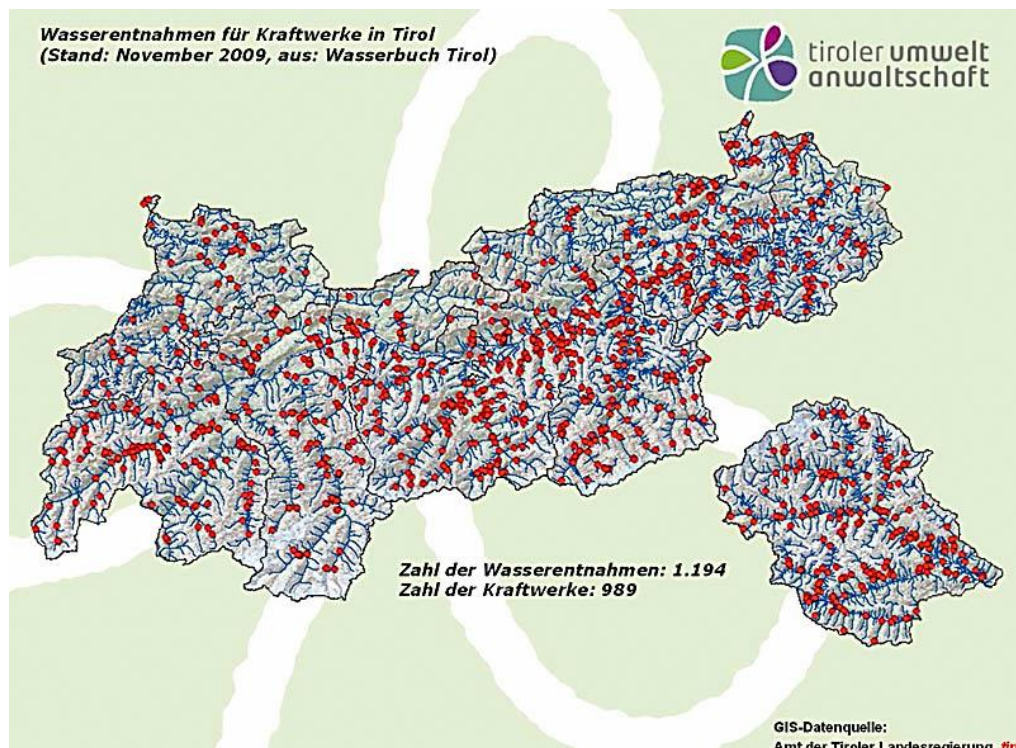
Figure 6: Hydropower generation in Tyrol 1994-2004 (fluctuations caused largely by water availability)

The larger background of TIWAG's desire to increase its generation capacity and to add pump storage facilities is its interest in providing high-value peaking power into the European grid, and particularly to the southern German market, which is characterized both by large-scale base load facilities (coal and nuclear) and by an increasing amount of intermittent renewables (wind and solar). In 2009, 62% of Austria's gross electricity generation of 69,000 GWh came from hydropower, Austria was the fourth largest producer of hydropower in the European Union, and its imports and exports of electric energy had roughly the same value. Tyrol is connected by 380 kv lines to Germany and Switzerland, and by 220 kv lines to the rest of Austria. Other hydropower generation enterprises besides TIWAG exist in Tyrol, including AHP (Austrian Hydro Power, part of the Verbund group, with ca. 1,600 GWh/a).

There is government support in Austria for expansion of hydropower, particularly of pumped storage. The remaining technical-economic hydropower potential has been estimated as 17,900 GWh (1,400 GWh from modernisation of existing and 16,500 GWh from new facilities). 5,100 GWh of the remaining potential would be located in National Parks and World Heritage Sites.

Tyrol is the province with the highest remaining technical-economic potential, with 6,100 GWh. However, with 326 significant and a total of 989 hydropower stations with 1,194 water intakes already operating, and 4,524 barriers already existing on Tyrolean rivers, concerns from environmental groups and local citizens' initiatives, often connected with farming, tourism and sports (for example, kayaking and angling) interests, over any new construction are strong. Discussions over hydropower expansion in Tyrol appear to have turned increasingly contentious.

Figure 7: Density of hydropower installations in Tyrol



The additional electric energy in the lower step (Gepatsch-Prutz) would help to avoid ca. 500,000 tons of CO₂ emissions annually from thermal power plants. Any water diverted to the Prutz power stations will also increase the generating potential of the downstream diversion projects on the Inn, the Prutz-Imst project (existing, 89 MW) and the Imst-Haiming project (planned, 46 MW). However, this would be reduced somewhat

by the energy losses in the pump-generation cycle in the upper step (Gepatsch-Platzertal). The environmental benefit of pump storage is its ability to provide peaking power, which is required to integrate increasing amounts of intermittent renewables into the European grid.

Assuming that the project is able to obtain all permits and financing as planned, it would be built over a period of ca. 6.5 years and be commissioned approximately in 2023.

Assessment Process

The Kaunertal Extension Project assessment process started with a site visit of the Platzertal and Kaunertal during July 2012, combined with an introduction of the client (WWF-Austria) to the Protocol assessment methodology and a discussion of the assessment objectives. The assessor then undertook a literature search which was complemented by documents from WWF (see annex for evidence list), and evaluated the documentary and visual evidence. This final version is being submitted to WWF-Austria as of end-August, after comments on a draft were received. WWF-Austria will determine the further use of the report in accordance with the Terms & Conditions of Use of the Protocol.

Triangulation of evidence – visual, verbal and documentary – is an important requirement for the evidence-collection process and could only be partially accomplished in this assessment, because of the lack of documentary evidence from the project sponsor and of verbal evidence (interviews).

The assessor has assigned preliminary topic scores by identifying gaps against the Protocol criteria and by evaluating the significance of identified gaps. Scoring is assigned for each topic as follows:

- A score of 1:** There are two or more significant gaps against the Basic Good Practice criteria;
- A score of 2:** There is one significant gap against the Basic Good Practice criteria;
- A score of 3:** There are two or more significant gaps against the Proven Best Practice criteria;
- A score of 4:** There is one significant gap against the Proven Best Practice criteria;
- A score of 5:** All Proven Best Practice criteria are met with no significant gaps.

1 Communications & Consultation (P-1)

This topic addresses the identification and engagement with project stakeholders, both within the company as well as between the company and external stakeholders (e.g. affected communities, governments, key institutions, partners, contractors, catchment residents, etc.). The intent is that stakeholders are identified and engaged in the issues of interest to them, and communication and consultation processes establish a foundation for good stakeholder relations throughout the project life.

1.1 Background Information

Stakeholders in the Kaunertal Extension Project that are directly affected are: the population and businesses in the valleys where the project is built and operated (Ötz-, Kauner- and Platztal and to a lesser degree, a part of the Inntal) and tourists visiting the Ötztal Alps region; TIWAG employees; contractors involved in implementation; and public agencies with responsibilities for the Project and local communities. Additional stakeholder groups that are not directly affected are: the general public of Tyrol as ultimate owners of TIWAG; electricity customers throughout the grid; and the global population benefitting from reductions in CO₂ emissions.

P-1 addresses the management of communications and consultation, and overall performance in stakeholder engagement, whilst subsequent topics in this assessment, where appropriate, focus on stakeholder engagement particularly relevant to the individual topic.

TIWAG has received significant support from a public relation agency contracted in 2005 (Hofherr kommunikation) including the following advisory services: development of a holistic, long-term communications concept; avoidance, recognition and solution of conflicts; target group-specific information and communication; moderation of larger information events. During the period evaluated by the Tyrol Accountant General (2008-2010), TIWAG paid a total of EUR 730,000 to the agency.

1.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *Stakeholder mapping has been undertaken to identify and analyse stakeholders, to establish those that are directly affected, and to establish communication requirements and priorities, with no significant gaps.*

The Protocol states that “stakeholder mapping refers to identification and grouping of stakeholders in a meaningful way, for example based on stakeholder rights, risks and responsibilities”, and that directly-affected stakeholders are those with “substantial rights, risks and responsibilities” including regulators and investment partners.

The public relations agency appointed by TIWAG apparently identified stakeholders and their interests and views of the Platztal dam, and TIWAG or this agency may have done so for other sites. The agency advised that since this was the “last opportunity to implement the project in its basic configuration” (after other sites had been rejected), preparation should be kept confidential and only the finalized project should be presented.

However systematic TIWAG approaches stakeholder mapping and identification, given that the project is of high public interest and the political and regulatory processes offer many opportunities for interested parties

to self-identify and contribute their opinions (through public hearings, consultations etc.), it is likely that stakeholders are now comprehensively known.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the stakeholder mapping takes broad considerations into account.*

Public acceptance of hydropower expansion in Tyrol appears to have been dropping in recent years, which has been attributed to various communications failures such as TIWAG prematurely announcing projects which then could not be implemented due to various reasons, and then surprising other communities with options in their valleys. Given these developments, it is unlikely that TIWAG undertook a comprehensive comparative assessment of stakeholders affected by the various project variants. It would appear that TIWAG did not fully understand the interests and dynamics of public opinion in the affected valleys and underestimated resistance; this has exposed the Kaunertal Extension Project to political and permitting risks and is considered a significant gap against best practice.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Communications and consultation plans and processes, including an appropriate grievance mechanism, have been developed at an early stage applicable to project preparation, implementation and operation that outline communication and consultation needs and approaches for various stakeholder groups and topics.*

After a long period of not building major projects and during which public opinion had shifted significantly against hydropower, TIWAG certainly had a need to develop systematic approaches to communications and consultation and learn how to publicly make the case for new major projects. However, it is unknown to which extent internal communications and consultation plans and processes were developed, and no external plans have been released. In the absence of more information, this criterion is assumed to be met.

One of the criticisms of TIWAG is that it invested heavily in public relations, marketing and lobbying efforts, in effect spending public money to influence public opinion, in a non-transparent manner.

Thorough communications plans and processes, which would tailor communications needs and approaches for all stakeholder groups, and include a full grievance mechanism, should be in place prior to the implementation stage.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, communication and consultation plans and processes show a high level of sensitivity to communication and consultation needs and approaches for various stakeholder groups and topics; and processes are in place to anticipate and respond to emerging risks and opportunities.*

While TIWAG appears to be learning from some of its communication problems, plans and processes still do not show a high level of sensitivity to the needs of all stakeholder groups. Some stakeholder groups appear to believe that their concerns have been casually dismissed or glossed over. TIWAG's communications approach appears to have been mostly reactive, justifying the many consecutive changes in project design, and overbearing rather than soliciting inputs to the process of siting, design and operations planning. There is suspicion among stakeholder groups that TIWAG's communication and consultation efforts are a 'front', while the real discussions to ensure project approval are held in the background at all political levels, from

communes to the European Union. This (perceived) lack of sensitivity is considered a significant gap against best practice.

It is unknown whether TIWAG maintains a systematic process to anticipate and respond to public acceptance risks and opportunities, during a critical period in the project's licensing process.

Criteria met: No

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The project preparation stage has involved appropriately timed communications and engagement, often two-way, with directly affected stakeholders on topics of interest and relevance to them; engagement is undertaken in good faith; on-going processes are in place for stakeholders to raise issues and get feedback.*

To date, preparation for the Kaunertal Extension Project has involved appropriately-timed release of some limited information, when important decision points were reached. There are complaints, however, that disclosure has been selective and that TIWAG has not encouraged or taken seriously input provided by some stakeholders. Opinions differ whether engagement with directly-affected stakeholders has always been conducted in good faith, although it is likely that critical stakeholders may have interpreted unskilled communications as undertaken in bad faith. The amount of project information released by TIWAG through newsletters, project presentations and on their website is relatively low compared to international practices. Some additional information is provided to communities directly and made available on their websites. It is unknown to which extent the public is using the contact information provided by TIWAG and how public inquiries and complaints are dealt with by TIWAG. Little effort appears to be made to directly engage with opposition groups. In the absence of more information, this criterion is assumed to be met.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; negotiations are undertaken in good faith; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

All indications are that engagement with directly-affected stakeholders has not been inclusive and participatory. It is unlikely that the widespread opposition against the project, including from members of the coalition government in Tyrol, could have emerged if it had been developed in an inclusive and participatory manner. Given that key project information, such as the EIA and financial/economic analyses, are not publicly available, the partners in negotiations (for example, the valley communities waiting for the compensation packages that TIWAG has announced it will offer) cannot identify and raise issues that affect them, and negotiate as equals.

Criteria met: No

Conformance / Compliance

Analysis against basic good practice

Scoring statement: *Processes and objectives relating to communications and consultation have been and are on track to be met with no major non-compliances or non-conformances, and any communications related commitments have been or are on track to be met.*

It is likely that TIWAG is complying with regulatory requirements for communications and consultation, and is in conformance with its own corporate plans and the commitments it has made. No indications could be found otherwise.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, there are no non-compliances or non-conformances.*

There are no indications for non-conformances or non-compliances.

Criteria met: Yes

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

TIWAG is unlikely to have undertaken a comprehensive comparative assessment of stakeholders affected by the various project variants. TIWAG did not fully understand the interests and dynamics of public opinion in the affected valleys and underestimated public resistance; this has exposed the Kaunertal Extension Project to political and permitting risks.

There is a (perceived) lack of sensitivity to the needs of all stakeholder groups.

All indications are that engagement with directly-affected stakeholders has not been inclusive and participatory.

2 or more significant gaps

1.3 Scoring Summary

Stakeholder identification and engagement requirements are much higher than when TIWAG implemented the original Kaunertal project in the 1960s. It would appear that while TIWAG did engage some stakeholder groups, such as the Tyrolean government and some local mayors, quite successfully, its approaches to engage with the directly affected stakeholders and opposition groups were uneven and have to date not been successful in convincing stakeholders of the need for and the appropriate design of the project. Engagement has been rather one-way, and the quantity and quality of communications products disseminated through the TIWAG website and other channels is not high. Important groups such as farmers and tourism businesses in the Ötztal have expressed their opposition to the project. Avoidance and mitigation measures foreseen under the project have either not been presented properly, or many stakeholders are simply fundamentally opposed to further large infrastructure projects in the Ötztal Alps.

There are three significant gaps against proven best practice, resulting in a score of 3.

Topic Score: 3

2 Governance (P-2)

This topic addresses corporate and external governance considerations for the project. The intent is that the developer has sound corporate business structures, policies and practices; addresses transparency, integrity and accountability issues; can manage external governance issues (e.g. institutional capacity shortfalls, political risks including transboundary issues, public sector corruption risks); and can ensure compliance.

2.1 Background Information

TIWAG is an integrated electricity utility 100% owned by the province of Tyrol, and the proponent of the Kaunertal Extension Project, one among 4 major expansion projects approved for further development by the Tyrolean government. TIWAG is overseen by a board representing the interests of the province, and is regulated by various public authorities.

When considering transparency and accountability, two of the principal pillars of good governance, Austria and by extension the province of Tyrol, are not ranked very highly. According to Transparency International's latest publication of the Corruption Perceptions Index (2012), which ranks countries on how corrupt a country's public service is perceived to be, Austria is ranked # 25 out of 176 countries, a relatively low value for European countries. Transparency requirements for the public sector are also relatively low. The Centre for Law and Democracy's latest Right To Information survey of the quality of countries' access-to-information laws ranked Austria # 93 out of 93 countries.

According to a recent survey on public trust in Austrian electricity utilities, TIWAG came second last among 18 utilities, with slightly more respondents expressing distrust than trust. This has been attributed to political attacks and discussions around new power stations, water transfers, cross-border-leasing contracts and a EUR 230 million emergency financial support for the public Hypo Bank Tirol in 2011. Internal surveys have confirmed that TIWAG receives higher public acceptance on issues like 'reliability of supply' than on 'open and honest information policy'.

TIWAG has been accused of unethical behaviour including supporting political parties and politicians which are supportive of its expansion plans, both at the provincial and at the communal level in the Kaunertal, and of 'buying support' for its projects through sponsoring (average expenditures per year: EUR 5 million). In 2011, the Tyrol Accountant General issued a special report on TIWAG's Kaunertal project and the use of resources for public relations, communications and sponsoring. There was no specific evidence for TIWAG directly paying for election campaign expenditures of the Kaunertal mayor, but the involvement of Hofherr kommunikation and local sponsoring in the Kaunertal has been incompletely documented and accounted for and may have involved some irregularities. The Accountant General emphasized that lobbying should be conducted within the international discussion about good governance and transparency.

In addition to small-scale sports and cultural sponsoring, TIWAG provides major support for communities in affected valleys through a variety of mechanisms. In the Kaunertal, for example, the Tyrol Accountant General registered in his report for 2008-2010 contributions to avalanche protection works (EUR 450,000), compensation payments under a 'valley contract' concluded in the 1960s, and 3% of the value of the electricity generated by the Kaunertal project which are transferred to the provincial government, and distributed among affected communities. It is uncertain how these contributions are allocated and to which extent they are transparently disclosed.

TIWAG is a member of the International Hydropower Association (IHA) but does not appear to have actively participated in and benefitted from the sustainability initiatives of the Association.

2.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: Assessments have been undertaken of political and public sector governance issues, and corporate governance requirements and issues, through the project development cycle with no significant gaps.

TIWAG mentions in its Annual Report 2010 (no later Annual Reports appear to be publicly available) that it follows economic, political and regulatory developments in Austria and its main export market Germany, and that it has upgraded its internal risk controlling process. Changes in the regulatory environment are mainly driven by European Union legislation to increase competition and reduce conflicts of interest between electricity companies operating in generation, transmission and distribution, as well as by the implementation of the European Water Framework Directive, and hydropower-specific policies such as the 'criteria catalogues' issued by the provincial and federal governments.

It is unknown what processes TIWAG specifically uses to assess governance issues. No other information (such as minutes of board meetings) has been made publicly available. The critique TIWAG has received for its public relations and sponsoring activities, and the lack of public commitment to changing its practices, suggests that there is insufficient analysis and awareness of conflicts-of-interest problems and perceptions. This is considered a significant gap against basic good practice.

Criteria met: No

Analysis against proven best practice

Scoring statement: In addition, there are no significant opportunities for improvement in the assessment of political and public sector governance issues and corporate governance requirements and issues.

Not assessed.

Management

Analysis against basic good practice

Scoring statement: Processes are in place to manage corporate, political and public sector risks, compliance, social and environmental responsibility, grievance mechanisms, ethical business practices, and transparency; policies and processes are communicated internally and externally as appropriate; and independent review mechanisms are utilised to address sustainability issues in cases of project capacity shortfalls, high sensitivity of particular issues, or the need for enhanced credibility.

Public electricity utilities are generally driven by multiple expectations from their owners, customers and employees who are difficult to balance (regional supply security, commercial success, environmental and social leadership). Board and management need to manage such expectations through clear and clearly communicated processes.

Given that TIWAG appears to have an incomplete process for detecting governance issues (see above), it appears to be fairly successful at managing those issues it becomes aware of. For example, out of awareness that its main skills were in engineering and commercial operations, it hired multiple advisors (legal, contractual, PR etc.) to compensate for capacity shortfalls. TIWAG and its owner, the provincial government, also appointed a series of external experts to review its options assessment report, particular technical issues such as geological feasibility and the contribution of its projects to flood control, and the environmental impact declaration for the Kaunertal Extension Project. Some of these have been criticized as not being sufficiently independent.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, contractors are required to meet or have consistent policies as the developer; and processes are in place to anticipate and respond to emerging risks and opportunities.*

It is unknown to which extent contract documents (including pre-qualification documents) explicitly address corruption risks, whether these are emphasised in procurement planning, whether bidders need to provide evidence that they can adhere to any other sustainability requirements, or whether TIWAG screens companies to have sustainability policies within their own organisations which are consistent with TIWAG's.

Since no sustainability issues are mentioned on TIWAG's procurement website, including the General Conditions for contractors, it is assumed that this criterion is not met.

Criteria met: No

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The business interacts with a range of directly affected stakeholders to understand issues of interest to them; and the business makes significant project reports publicly available, and publicly reports on project performance, in some sustainability areas.*

TIWAG communicates directly or through its advisors with a number of directly affected stakeholders, although much of that communication appears to consist of lobbying and trying to convince stakeholders of the benefits of the project.

No company-wide environmental, corporate social responsibility, or sustainability reports have been issued; the latest company annual reports are either overdue or not presented on its website. Some project information has been made publicly available. However, considering the size of the project, the intense public interest and the range of reports apparently available (including an Environmental Impact Declaration of more than 10,000 pages), the project website and the range of publicly available materials are clearly insufficient. In particular, TIWAG does not make any information about the financial implications of the project available to its ultimate owners, the citizens of Tyrol, and quite possibly also not to their representatives on the board. Some relevant information is better available as leaked documents on the websites of TIWAG's critics. Disaffected employees have provided anonymous interviews and may also have provided such leaked documents. The information policy is considered a significant gap against basic good practice.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, the business makes significant project reports publicly available and publicly reports on project performance in sustainability areas of high interest to its stakeholders.*

Not assessed.

Conformance Compliance

Analysis against basic good practice

Scoring statement: *The project has no significant non-compliances.*

Regulators do not appear to have identified any non-compliance.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *The project has no non-compliances.*

See statement above under basic good practice.

Criteria met: Yes

Outcomes

Analysis against basic good practice

Scoring statement: *There are no significant unresolved corporate and external governance issues identified.*

The credibility and legitimacy of TIWAG and its Kaunertal Extension Project have suffered as a result of inadequate handling of corporate governance issues. TIWAG has not assumed visible leadership with regards to governance (for example, by voluntarily disclosing more than what the outdated Austrian laws require). The Tyrolean government also has not provided strong oversight and has not managed TIWAG at arm's length, so that TIWAG is often seen as too closely connected with the provincial government, if not with the majority party in the coalition government. As a result, public trust in management and political decisions of high importance to the province, as they could result in very large public capital expenditures and revenues, and very significant socio-environmental changes, is currently undermined.

There is seen as a significant gap against basic good practice.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, there are no unresolved corporate and external governance issues identified.*

Not assessed.

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

The critique TIWAG has received for its public relations and sponsoring activities, and the lack of public commitment to changing its practices, suggests that there is insufficient analysis and awareness of conflicts-of-interest problems and perceptions.

Considering the size of the project, the intense public interest and the range of reports apparently available (including an Environmental Impact Declaration of more than 10,000 pages), the project website and the range of publicly available materials are clearly insufficient. Some relevant information is better available as leaked documents on the websites of TIWAG's critics.

Public trust in management and political decisions of high importance to the province, as they could result in very large public capital expenditures and revenues, and very significant socio-environmental changes, is currently undermined.

2 or more significant gaps

Analysis of significant gaps against proven best practice

Not assessed.

2.3 Scoring Summary

The Kaunertal Extension Project is noteworthy, within the context of a highly developed European country, for the lack of attention paid to governance issues by the project sponsor. An investigative report by the provincial

Accountant General has remained inconclusive. Public disclosure is low, and there appear to be few systematic processes in place to manage emerging risks and opportunities.

There are several significant gaps against basic good and proven best practice, resulting in a score of 1.

Topic Score: 1

3 Demonstrated Need and Strategic Fit (P-3)

This topic addresses the contribution of the project in meeting demonstrated needs for water and energy services, as identified through broadly agreed local, national and regional development objectives and in national and regional policies and plans. The intent is that the project can demonstrate its strategic fit with development objectives and relevant policies and plans can be demonstrated, and that the project is a priority option to meet identified needs for water and energy services.

3.1 Background Information

Due to the integration of the very large European electricity grid and the rapid changes in policies, costs and technologies, the market potential for new hydropower projects is substantial. Relevant strategies which call for the expansion of hydropower include the Austrian and German energy strategies and the 2012 joint declaration of the Austrian, Swiss and German governments to develop the pumped storage potential in the three countries. The project has also recently been designated a 'Project of Common Interest' under EU Regulation 347/2013; it is uncertain what the practical implications of this designation are.

The provincial government of Tyrol conducted a strategic planning exercise for the energy sector in 2007 which emphasizes energy efficiency and the use of domestic renewable energy sources to mitigate climate change and reduce the costs of and dependence on imports of fossil energy sources. This is against the background of continuing population and economic growth, which led to primary energy demand growth of 48% between 1994 and 2004. Further growth of 3-15% until 2020 is forecasted, depending on the success of energy efficiency measures. The implementation of the European Water Framework Directive may reduce hydropower generation by some 10% due to the release of environmental flows and the introduction of stricter ramping up and down rules. The strategy contemplates two scenarios; in one case hydropower is expanded by 1,100 GWh (equivalent to the four projects approved by the provincial government in 2006); in a second, more aggressive case by an additional 200 GWh.

The strategy was complemented in 2011 by a catalogue of criteria for hydropower, developed by the provincial government with multi-stakeholder input. The purpose was to make the evaluation of river stretches and hydropower projects more objective, and to reflect a fair balancing of and enable consensus building between all interested groups regarding 'where' and 'how' projects should proceed, as an intermediate step towards the permitting of individual projects and the definition of smaller-scale river management plans. Projects are assigned scores on a number of topics, with a relatively complex overall evaluation methodology. The draft version of the catalogue was not accepted by the hydropower industry, and the final version was not accepted by some environmental groups.

The evaluation of the 2004 TIWAG Options Report already used a multi-criteria approach to prioritize the best option. A comparable criteria catalogue was also developed at national level. Austria has also developed a National Waterbody Management Plan 2009-2027 to comply with European water legislation. Development planning has also been undertaken at the communal level in the Kaunertal valley. WWF-Austria with other environmental groups has developed an Eco-Masterplan to show high-conservation value river stretches. None of these provincial and national level documents represent complete consensus, but in principle they are important advances because they now enable more reasonable, fact-based discussions on how to balance energy development and conservation. It is uncertain how the Kaunertal Extension Project would be evaluated under any of these catalogues and plans; the only publicly available analysis has been provided by WWF and showed that the Kaunertal Extension Project would be problematic if compared to the national level criteria catalogue. The plans and criteria catalogues do not replace the existing formal permitting procedures.

This topic is closely inter-related to P-4 Siting and Design and P-11 Economic Viability. P-4 covers the strategy-related design choices and P-11 deals with the strategic fit of the Kaunertal Extension Project in terms of economic viability.

3.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment has been undertaken of needs for water and energy services, of options to meet water and energy needs; and of national and regional policies and plans relevant to those needs, with no significant gaps.*

An extensive array of assessments and planning exercises has been undertaken. Planning objectives have been established by democratically elected governments at all levels (communal, provincial, national and European-wide) and in some cases (as with European water legislation and the tri-national commitment to pumped storage) represent international commitments.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment is based on dialogue with government planners, policy makers and key stakeholder groups; and the assessment shows a strong emphasis on social and environmental related needs, policies and plans including the need for sustainable development of the river basin and integrated water resource management.*

TIWAG's options planning has been reviewed and updated in dialogue with government planners. Stakeholders have opportunities to input into and comment on planning documents. The European Water Framework Directive and other relevant legislation provide for strong emphasis on social and environmental needs.

Criteria met: Yes

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The results of the assessment of strategic fit are publicly disclosed.*

The original 2004 TIWAG options assessment was not published but was leaked by critics of TIWAG.

Its evaluation by the Tyrolean government was published and did address multiple criteria. However, the current project design with the upper reservoir in the Platzertal was not available at the time and therefore not evaluated.

The Environmental Impact Declaration by TIWAG was not published.

Its initial evaluation by the Tyrolean government (for completeness) was published but does not contain an assessment of the strategic fit of the project with the above mentioned catalogues and plans.

Criteria met: No

Analysis against proven best practice

Scoring statement: *No addition to basic good practice.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *The strategic fit of the project with needs for water and energy services, and relevant policies and plans can be demonstrated.*

It is unknown at this stage whether the Kaunertal Extension Project has been evaluated against and how it will fit into the plans and catalogues established at various levels. While the project was identified as one of the priority options by the provincial government in 2006, many of today's plans and catalogues had not been established at the time and one main component (the upper reservoir) was located in a different valley. Therefore, the project in its current configuration may not be a priority option from today's point of view. The connection between the project and the plans has not yet been demonstrated.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition the project is one of the priority options to address demonstrated needs.*

Not assessed.

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

Whether the Kaunertal Extension Project in its current configuration is a priority option, has not been publicly discussed and demonstrated. To avoid double counting between the Stakeholder Engagement and Outcomes criteria, this is considered only one gap.

1 significant gap

Analysis of significant gaps against proven best practice

Not assessed.

3.3 Scoring Summary

The need for additional renewable projects in the European electricity markets is well established. Multiple plans and criteria catalogues have been prepared at various political levels as well as by NGOs to guide hydropower planning. However the only analysis of strategic fit of the Kaunertal Extension Project which is publicly available is an analysis by WWF that showed a low level of compliance with the national-level criteria catalogue.

This is seen as a significant gap at the level of basic good practice, resulting in a score of 2.

Topic Score: 2

4 Siting and Design (P-4)

This topic addresses the evaluation and determination of project siting and design options, including the dam, power house, reservoir and associated infrastructure. The intent is that siting and design are optimised as a result of an iterative and consultative process that has taken into account technical, economic, financial, environmental and social considerations.

4.1 Background Information

The Kaunertal Extension Project essentially consists of two sub-projects; one to transfer additional water from the Ötztal to the Gepatsch reservoir and to use it to operate a second power station at Prutz; the second one to establish a pumped storage loop between the Gepatsch reservoir and the new Platzertal reservoir. It is unknown whether any of the two sub-projects could be implemented on its own.

The siting of the second sub-project has evolved through several stages. Early versions considered sites for the additional upper reservoir in other high valleys, but these were reportedly removed from consideration because of geological reasons or because of local resistance. It is unclear whether a pumped storage sub-project could be implemented between the Gepatsch reservoir and a lower reservoir at Prutz instead.

The design of the project as a whole considers many positive features which enhance its safety and reduce its environmental impact, for example the underground location of a number of facilities (power stations, roads, transmission lines, water transfer and pressure tunnels). The project may enable other benefits such as flood control and compensation for affected valleys. However, it is unknown which alternatives were considered, how they were selected, and which other ones may be feasible because only the final configuration has been publicly presented, in a rather superficial manner, and no information on costs and revenues has been made public.

This topic is inter-related to P-3 Demonstrated Need and Strategic Fit, which deals specifically with the strategic fit of the Kaunertal Extension Project in terms of policies and plans, rather than project design. It also relates to P-9 and P-11 due to the financial and economic consequences of siting and design choices.

4.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *Technical information has been analysed at an early stage alongside social, environmental, economic, financial, and regulatory considerations in order to develop a preliminary project design and some options around this.*

The 2004 TIWAG options report considered some environmental and financial issues alongside the technical feasibility to identify preferred options. The evaluation of the report by the Tyrolean government then introduced a total of 16 criteria, and all options were scored against those criteria. For the two variants of the Kaunertal Extension Project then under consideration, the results were:

- Highly negative: 3 / 3 scores
- Negative: 6 / 5 scores
- Neutral: 3 / 4 scores
- Positive: 2 / 3 scores
- Highly positive: 2 / 1 scores

Despite this mixed evaluation, further development of a third variant of the Kaunertal Extension Project was decided upon by the provincial government in 2006. This third variant (Taschachtal) was described as of lower ecological impact; among other reasons because water intakes in the upper Ötztal could be sited lower (below the villages of Vent and Obergurgl). Development of this variant was discontinued after geological investigations.

The Platzertal reservoir site was the fourth variant and became first known publicly in 2010.

Due to a lack of disclosure about the selection process, it is not clear whether and how information other than technical feasibility influenced the site selection process; however it will be assumed that this was the case. Regarding design options, there would certainly be lower-cost and technically simpler alternatives, so that other considerations must have been taken into account.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, options take into consideration sustainable river basin design and integrated water resource management.*

Sustainable river basin design is usually considered to involve balancing development and conservation in a river basin or between neighbouring river basins; integrated water resource management to involve maximizing the value of water in its different uses, including environmental uses. No information could be located on how TIWAG or the provincial government took water resource management considerations into account. No analysis has been provided how compatible the project is with the National Waterbody Management Plan (2009). This is considered a significant gap.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *An optimisation process has been undertaken to assess the project siting and design options.*

The optimisation process may not have been conducted in a systematic and transparent manner, but the current configuration appears to be an improvement over early variants (for example, regarding the inundation area of the upper reservoir and regarding the transmission line through the Kaunertal valley).

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *No addition to basic good practice.*

See above.

Criteria met: Yes

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The siting and design optimisation process has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; on-going processes are in place for stakeholders to raise issues and get feedback.*

Due to the lack of disclosure and comparative analysis between the project variants, no meaningful involvement of directly affected stakeholders has been possible. Their involvement appears reduced to village-

by-village bargaining over compensation options. TIWAG and provincial-level politicians have informed mayors and communities at various stages about progress in the siting and design process, and have received support, demands for compensation, and opposition. However it is not apparent whether and how feedback has influenced siting and design. There may be further opportunities for interested parties to influence the design of mitigation, compensation and offsetting measures during the environmental assessment and permitting process, including legal challenges or through the democratic process.

The lack of substantive engagement on the previous steps in the mitigation hierarchy (avoidance, minimisation and mitigation) must be considered a significant gap.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive, and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *The final project siting and design has responded to many sustainability considerations for siting and design.*

The selected development option, in terms of both siting and design, has taken into account a number of environmental and social as well as technical feasibility considerations and may be further amended during the permitting process.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *The final project siting and design is optimal with respect to sustainability considerations for siting and design.*

It is impossible to determine whether the current project siting and design could be considered optimally balanced between different sustainability criteria, simply because neither the general public nor, quite possibly, TIWAG and the provincial government have the required information or have approached the project from that perspective.

Criteria met: No

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

The lack of substantive stakeholder engagement on the steps in the mitigation hierarchy previous to compensation (i.e. avoidance, minimisation and mitigation) must be considered a significant gap.

1 significant gap

Analysis of significant gaps against proven best practice

Not assessed.

4.3 Scoring Summary

The technical and commercial potential for an extension of the Kaunertal project beyond its original configuration from the 1960s has led TIWAG to develop several variants. The internal optimization process is not transparent. TIWAG must have compared alternative sites and designs if only because that is required for an Environmental Impact Declaration. There is little public confidence in the final configuration representing an optimal balance. There has been no meaningful stakeholder interaction to evaluate advantages and disadvantages and develop improvements; instead communities have been presented with new variants and then negotiated with individually.

There is one significant gap against basic good practice, resulting in a score of 2.

Topic Score: 2

5 Environmental & Social Impact Assessment & Management (P-5)

This topic addresses the assessment and planning processes for environmental and social impacts associated with project implementation and operation throughout the area of impact of the project. The intent is that environmental and social impacts are identified and assessed, and avoidance, minimisation, mitigation, compensation and enhancement measures designed and implemented.

5.1 Background Information

Austria and the province of Tyrol have well developed regulatory systems that include some public access to information and opportunities to contribute to certain stages of the approvals process. Both jurisdictions have extensive experience in the assessment, permitting and management of hydropower systems.

The main regulatory review and approvals process for the Kaunertal Extension Project is the environmental impact assessment, led by the provincial government's Department of Environmental Conservation, which also includes a number of social issues. TIWAG submitted its Environmental Impact Declaration and requested project approval in 2012. A group of independent experts contracted by the Department of Environmental Conservation submitted its Report on the Evaluation of Completeness in May 2013. The Environmental Ombudsman of the province of Tyrol also submitted an analysis. TIWAG will now have to add to or clarify information contained in its Environmental Impact Declaration, which reportedly will take about one year.

The Report on the Evaluation of Completeness and the analysis by the Environmental Ombudsman are currently the main sources of publicly available information on the environmental assessment, since the underlying impact declaration does not need to be made public until after TIWAG has improved it and submitted it again. After 6 weeks of public disclosure the authorities will produce an Environmental Impact Assessment which is disclosed to TIWAG and the public for 4 weeks before public hearings. The authorities then issue an approval (or not) which may be subject to legal challenges.

Disclosure and public involvement has been relatively low until this stage. Communication and consultation is dealt with in detail in P-1. Many other topics also look at assessment and management of environmental and social issues. The detailed evaluation is dealt with under those topics, and the overall analysis of assessment and management processes is covered here.

5.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *Assessments of project environmental and social impacts have been undertaken for project implementation and operation, including evaluation of associated facilities, scoping of cumulative impacts, role and capacity of third parties, and impacts associated with primary suppliers, using appropriate expertise and with no significant gaps; and a baseline has been established and well-documented for the pre-project condition against which post-project changes can be compared.*

The content of the Environmental Impact Declaration can only be inferred from the comments in the Report on the Evaluation of Completeness. According to this report, for most of the 40 different areas of evaluation, an approval of the project appears possible if current gaps are addressed through conditions, time limitations, project modifications and compensation measures. Doubts as to the 'approvability' of the project under

Austrian law arose in 6 areas of evaluation and will need to be addressed through project modifications or compensation measures, after which conflicts have to be evaluated again.

Gaps that are mentioned in the Report on the Evaluation of Completeness refer either to the assessment or to the management aspect. Reportedly the Impact Declaration documents contain some 10,000 to 13,000 pages and so are likely to be relatively comprehensive and detailed, reflecting the experience within TIWAG and their consultants, and public authorities with hydropower development. Even though the evaluators have identified a number of areas for improvement, it is likely that TIWAG will be able to come up with a final Impact Declaration that meets the definition of basic good practice for assessment.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition the assessment takes broad considerations into account, and both risks and opportunities; and the social impact assessment incorporates assessment of human rights.*

Judging from the Report on the Evaluation of Completeness and from the general experience with European legislation on environmental impact assessments, it appears likely that the assessments when completed and released will cover a broad range of issues. There will also be some attention paid to assessing risks and opportunities from the original 1960s Kaunertal project.

While there is often no specific assessment against human rights, in countries that have a solid human rights record, it appears likely that the assessments and the consultation process will be undertaken in a manner that is aware of and consistent with human rights, including the rights of local communities and workers.

Criteria met: Yes

Management

Analysis against basic good practice

Scoring statement: *Environmental and social issues management plans and processes have been developed with appropriate expertise (internal and external) for project implementation and operation with no significant gaps; in addition to key social and environmental issues relating to the hydropower project, plans address construction related waste, noise, air quality, land disturbance and rehabilitation; the environmental and social impact assessment and key associated management plans are publicly disclosed.*

The Report on the Evaluation of Completeness reported that 6 thematic areas in the Environmental Impact Declaration demonstrated conflicts which raise doubts about the ultimate 'approvability' of the project. These can be grouped as 1) noise and air quality issues, 2) flood/sediment management, and 3) biodiversity. In these areas, the project in its current configuration and with its current plans for avoidance, minimization, mitigation and compensation may currently not comply with Austrian standards, and it remains to be seen which improvements TIWAG will develop to come into compliance. In principle, all issues appear to be technically resolvable if sufficient resources would be applied. The question then becomes whether the project will still be economically viable.

Under Austrian law the project will need to formally comply with some disclosure requirements; for the purposes of this assessment this is sufficient even if such disclosure is late in the process, incomplete and only consists of public displays of hardcopies.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; plans are embedded within an internationally recognised environmental management system which is third party verified, such as ISO 14001; and independent review mechanisms are utilised.*

The Report on the Evaluation of Completeness mentions monitoring requirements in a number of places, which would indicate that there will be processes to identify and, if regulatory conditions apply, to respond to emerging risks and opportunities.

No indication (press releases, certificates, sustainability reports or similar) could be found that TIWAG maintains a third party verified environmental management system, which is considered a significant gap.

The provincial government and to some extent, also TIWAG use independent review mechanisms for quality control. For example, the 2004 Options Report and the 2012 Environmental Impact Declaration were evaluated by teams of independent reviewers. Independent reviews are more valuable when not just the evaluation report but also the underlying document is disclosed, unless there are overriding reasons not to do so such as commercial confidentiality, national security etc.

Criteria met: No

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The environmental and social impact assessment and management planning process has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; on-going processes are in place for stakeholders to raise issues and get feedback.*

Ultimately, the democratic process in the province of Tyrol should ensure that TIWAG as a public utility only undertakes significant projects which have majority support at the provincial level. However, involvement of directly affected stakeholders in the assessment and planning process has been relatively superficial to date. While some stakeholder input has been possible, it is unknown to which extent it has influenced project siting, design and operational plans to date as there is no systematic feedback from TIWAG. There will be more opportunities for stakeholder interaction as the Environmental Impact Declaration and other documents will be published. However, this will only be after expert evaluations have already been conducted and responded to, and it is unlikely that major project modifications will still emerge after that point. Therefore, stakeholder engagement is not considered to have been appropriately timed, which is considered a significant gap.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *Environmental and social plans avoid, minimise and mitigate negative impacts with no significant gaps.*

Given the status achieved to date and the remaining steps for review and detailed elaboration of plans, the project appears to be on track to deliver a comprehensive set of assessment studies and management plans.

No non-compliances with provisions under the approvals process have been registered so far. It is likely that all relevant impacts will be addressed in some way, to bring the project into compliance with Austrian law so that it could receive a permit; even if there is some uncertainty regarding the implications of governments declaring the project of 'overriding public' or 'common' interest, which has been interpreted to mean that the approvals process is streamlined or simplified.

A number of residual negative impacts are expected to remain after mitigation. An open question at this stage is whether these negative social effects and environmental effects will be deemed to be acceptable by (most) local stakeholders given their temporary or spatially limited nature, the compensation programmes that will be put in place, and the benefits of the project. However, for the purposes of this assessment against good practice, it is sufficient to demonstrate that all impacts are being addressed.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, environmental and social plans avoid, minimise, mitigate and compensate negative project impacts with no identified gaps; and plans provide for enhancements to pre-project environmental or social conditions or contribute to addressing issues beyond those impacts caused by the project.*

There are no indications at this stage that the level of ambition in the preparation of the Kaunertal Extension Project would be sufficient to meet these criteria of proven best practice. Isolated issues resulting from the original Kaunertal project (such as the reforestation of spoil areas) will be addressed, however.

Criteria met: No

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

Engagement of directly affected stakeholders is not considered to have been appropriately timed.

1 significant gap

Analysis of significant gaps against proven best practice

Not assessed.

5.3 Scoring Summary

In general, Austria has competent environmental assessment specialists and sufficient experience in hydropower-related assessment and management, and a modern environmental assessment and approvals mechanism in place. The main exceptions appear to be the late and incomplete public disclosure of documents, which limits meaningful stakeholder involvement in the process, and the lack of integration of the project-level environmental assessment and management into larger-scale systems such as corporate environmental management systems, and regional-scale or strategic environmental assessments.

There is one significant gap against basic good practice, resulting in a score of 2.

Topic Score: 2

6 Integrated Project Management (P-6)

This topic addresses the developer's capacity to coordinate and manage all project components, taking into account project construction and future operation activities at all project-affected areas. The intent is that the project meets milestones across all components, delays in any component can be managed, and one component does not progress at the expense of another.

6.1 Background Information

The Kaunertal Extension Project is by far the largest new hydropower project that TIWAG has planned since 1981, when the Silz (500 MW) and Kühtai (289 MW) projects were commissioned. In an organisation with little current experience with the planning, procurement, implementation and commissioning of new large projects, the parallel implementation of the Kaunertal Extension Project and a series of other projects will be a challenge. Furthermore, the construction schedule for Kaunertal will be complex, with long tunnels and other underground works, subject to geological uncertainties; works distributed over a series of valleys in multiple locations; tight construction arrangements, in particular in the Gepatsch dam area; the need to limit construction traffic, noise and other emissions; compensation measures over a wide area; multiple contractors and consultants; etc.

Integrated project management is an internal topic that cannot be meaningfully evaluated without access to the developer. This topic will therefore not be scored in this assessment; however, the challenges and the resulting risks for cost and schedule overruns should be noted. Large infrastructure projects tend to be underestimated even by experienced developers, contractors and consultants.

6.2 Detailed topic evaluation Management

Analysis against basic good practice

Scoring statement: *An integrated project management plan and processes have been developed that takes into account all project components and activities with no significant gaps; and a construction management plan has been developed that identifies construction risks and describes processes that contractors and others are required to follow to manage these risks.*

Not assessed.

Analysis against proven best practice

Scoring statement: *In addition, the integrated project management plan sets out measures to manage interface and delay issues without impinging on overall project timetables and budgets; construction management plans ensure that land disturbance and waste generation activities will be managed so that later rehabilitation activities can be undertaken efficiently and effectively; and processes are in place to anticipate and respond to emerging risks and opportunities.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *The project is likely to meet overall budget and timing objectives and targets, and plans avoid, minimise and mitigate construction risks with no significant gaps.*

Not assessed.

Analysis against proven best practice

Scoring statement: *In addition, the project is highly likely to meet overall budget and timing objectives and targets; and plans avoid, minimise, mitigate and compensate construction risks with no identified gaps.*

Not assessed.

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

Not assessed.

Analysis of significant gaps against proven best practice

Not assessed.

6.3 Scoring Summary

Not assessed.

7 Hydrological Resource (P-7)

This topic addresses the level of understanding of the hydrological resource availability and reliability to the project, and the planning for generation operations based on these available water inflows. The intent is that the project's planned power generation takes into account a good understanding of the hydrological resource availability and reliability in the short- and long-term, taking into account other needs, issues or requirements for the inflows and outflows as well as likely future trends (including climate change) that could affect the project.

7.1 Background Information

The Inn is one of the most important rivers of the European Alps, rising in Switzerland and flowing through Austria into Germany. It is a 517 km long tributary of the Danube with an average flow at the confluence of 738 m³/s, with highly seasonal flows (higher in the summer and lower in the winter).

The creeks of the Ötztal Alps flowing northward towards the Inn are relatively well monitored, especially the creeks contributing to the existing Kaunertal project whose hydrology is well understood after a half century of operations monitoring. Other rivers in the neighbouring valleys, in particular the Ötztal with a total catchment of 893 km², have also been long subject to monitoring. Meteorology services are of high quality and able to predict short-term runoff quite accurately. One factor contributing to the predictability of medium-term flows is that the snowpack as one of the most important determinants of spring and summer flows can easily be measured.

As many other world regions, the Alps are expected to experience significant hydrological changes from long term climate change. More snow would either fall as rain in the winter or melt earlier in the year, shifting higher runoff into the winter season and causing droughts in the late summer. Such changes would differ according to the characteristics of each catchment. Glaciers would use large parts of their mass, contributing to temporarily higher flows over the coming decades. The Gepatsch glacier in the Kaunertal, for example, retreated by 73m between 2011 and 2012.

Figure 8: Changes in average seasonal flows in the Central Alps, between 1961-1990 and 2071-2100⁶

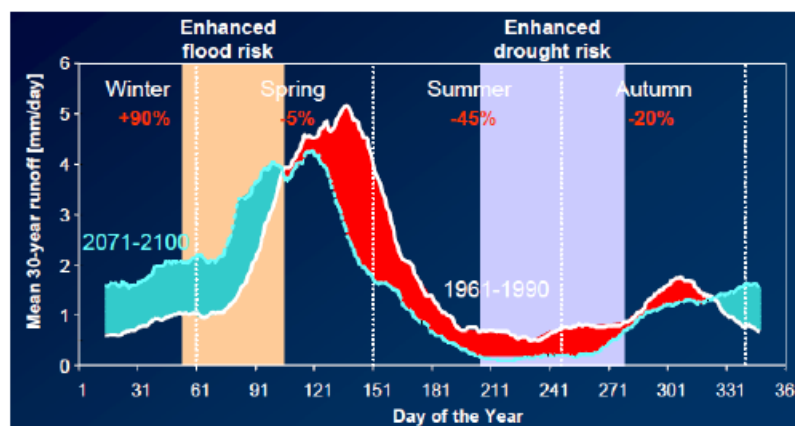


Abbildung 22: Veränderungen im mittleren saisonalen Abfluss der Zentralalpen zwischen 1961 - 1990 und 2071 - 2100^{60/}

According to Austria's 2012 National Climate Change Adaptation Strategy, the hydropower sector is considered sensitive and will need to adapt to a number of changes. Storage reservoirs will become even more important for security of supply. Where they are located in alpine regions, the disappearance of glaciers will cause

⁶ Amt der Tiroler Landesregierung (2011)

reduction in flows at the latest by 2050. The total hydropower generation from existing plants is expected to drop by between 6% and 15%.

7.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment of hydrological resource availability has been undertaken utilising available data, field measurements, appropriate statistical indicators, and a hydrological model; issues which may impact on water availability or reliability have been identified and factored into the modelling; and scenarios, uncertainties and risks have been evaluated.*

While it is not publicly known how TIWAG has estimated future resource availability, it can be inferred from the independent 2013 Report on the Evaluation of Completeness that the experts saw the information as sufficient for climatology and glaciology, and required some additional information for hydrography and hydrology, mostly in terms of the presentation of information, and in terms of using the latest available hydrographic data. Their perspective would have been from the point of view of an EIA, not from the long-term technical and commercial operational requirements. TIWAG would however have a solid knowledge of operational hydrology from their half-century of operations of the existing Kaunertal project, including some awareness of long-term hydrological trends.

Neither the 2004 TIWAG Options Report for Tyrol nor the 2008 Pöyry Resource Potential Study for Austria mention climate change influences on hydrology. The 2005 evaluation of the Options Report uses sensitivity to climate change as one of the evaluation criteria, but in a rather preliminary way (for example, by scoring higher water intakes as more sensitive).

In the absence of more information, this criterion is assumed to be met.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, issues that may impact on water availability or reliability have been comprehensively identified; and uncertainties and risks including climate change have been extensively evaluated over the short- and long-term.*

TIWAG has publicly only reported that it did not take the expected increases in flows from glacial melt until 2050 (plus 25% to 30%) into account and that it expects future flows beyond that to display higher variation, which is why storage reservoirs are so beneficial. Given the lack of more substantive attention that TIWAG and the Austrian hydropower industry in general have displayed towards climate change adaptation, there is no confidence that TIWAG has comprehensively identified issues that may affect water-resource availability and reliability, and that in particular, an understanding of climate change at a level that could inform the design of the Kaunertal Extension Project has been achieved. This is considered a significant gap at the level of proven best practice.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *A plan and processes for generation operations have been developed to ensure efficiency of water use, based on analysis of the hydrological resource availability, a range of technical considerations, an understanding of power system opportunities and constraints, and social, environmental and economic considerations including downstream flow regimes.*

There is no publicly known operations plan for the Kaunertal Extension Project, and none could be found for the existing Kaunertal project either. While TIWAG is assumed to operate all its generating stations as an integrated system to maximise return on the available water resource, this may be constrained by individual contracts. (Under current arrangements, 2/3 of the power generated in the Prutz power station is provided to the German utilities RWE and E.ON, which presumably also influence or control operations.) It is further assumed that constraints such as minimum flows and flood management requirements have been considered in the planning of the project. Safety issues are further addressed in topic P-8, downstream flows in topic P-23.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, generation operations planning has a long-term perspective; takes into consideration multiple uses and integrated water resource management; fully optimises and maximises efficiency of water use; and has the flexibility to adapt to anticipate and adapt to future changes.*

It is unknown whether TIWAG has a long-term generation planning process, considering demand growth, relative prices, technological change, the condition of existing assets, and resource availability. Within such a framework, water management for multiple uses and purposes could then be optimized, and projects could be sited, designed and operated to provide efficient water resource management over time. Many utilities also have rolling investment and operational plans which are updated annually or at other regular intervals. Public utilities often make their investment and operational plans publicly available in order to provide predictability to other stakeholders.

The availability of significant active storage in the Gepatsch and Platzertal reservoirs allows some flexibility in adapting to future runoff conditions and to constraints that may arise out of the approvals process or future changes in the demand for different water uses. These could arise, for example, if climate change leads to an increased need to store flood waters, or to use water for irrigation (the Kaunertal for example already has irrigation systems, as it is a relatively dry valley) or for snow generating machines to extend the skiing season.

TIWAG has claimed that the project will increase the efficiency of water use in the project region, including the use of existing water infrastructure. It will be assumed that if relevant long-term, optimized generation operations plans are not already available, they will need to be produced to bring the project into compliance with Austrian and European water legislation, which have advanced requirements in this regard.

Criteria met: Yes

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There is no confidence that TIWAG has comprehensively identified issues that may affect water-resource availability and reliability, and that in particular, an understanding of climate change at a level that could inform the design of the Kaunertal Extension Project has been achieved.

1 significant gap

7.3 Scoring Summary

Long term flow records are available for the waterbodies in the project area. As most utilities with multiple generation assets, TIWAG is likely to have operation planning systems available that maximize the value of water resources available. While these models may not include the value of water in other uses, regulatory systems (in particular, based on the European Water Framework Directive) would take such other uses of water into account.

There is one significant gap against proven best practice, that climate change impacts on runoff do not seem to have informed the design of the project, resulting in a score of 4.

Topic Score: 4

8 Infrastructure Safety (P-8)

This topic addresses planning for dam and other infrastructure safety during project preparation, implementation and operation. The intent is that life, property and the environment are protected from the consequences of dam failure and other infrastructure safety risks.

8.1 Background Information

The topic of infrastructure safety is focused on public safety, while the safety of TIWAG and contractors' employees is considered under P-16 Labour and Working Conditions.

Dam safety in Austria is regulated between dam owners, an independent Reservoir Commission, and the authorities. There are guidelines regarding design, operations, monitoring and emergency preparedness plans.

Under the right design criteria, geological conditions and operating procedures, rockfill dams such as the existing Gepatsch and the planned Platzertal dam are inherently safe. While Tyrol is the province of Austria with the most earthquakes, these are of medium intensity and occur mostly in the northern part of the province, not in the project area. The most significant risks could result from overtopping (and possibly, subsequent breach) of the dam as a result of under-dimensioned or blocked spillways, gates or other outlets, or of rockfalls/slides and avalanches into the reservoir. Rock instabilities were originally noted on the west side of the Gepatsch reservoir, delayed the first complete filling of the reservoir until 1969, and are continuously monitored by TIWAG. Since 1964 annual reports on monitoring results of the reservoir slopes are presented to the responsible federal ministry and the communal council in the Kaunertal. Reservoir operations are constrained in order to reduce stress on the reservoir slopes and avoid triggering rockslides; this may become a more relevant issue during pumped storage operations in the future.

In upper parts of the valleys, melting of permafrost due to climate change may increase soil instabilities, and the retreat of glaciers leaves significant amounts of sediment exposed which may add to the sediment already in movement.

The spillway and the bottom outlet of the Gepatsch reservoir appear to have been used only for test purposes (status 2010), and one of the bottom outlets may be covered in fine sediment; apparently opinions differ between TIWAG and the authorities whether this is relevant from a safety perspective.

Safety hazards can also result from pressure tunnel or penstock failure, in particular in high head projects such as Kaunertal. The shaft of the Burgschrofen surge tank above the Prutz power station failed in 1982 and had to be repaired. Currently a project is underway to entirely replace this facility as well as the pressure tunnel between the Gepatsch reservoir and the Prutz power station.

Safety evaluations also have to consider population exposure and early warning and evacuation systems. There is a significant number of people at risk in the lower Kaunertal and near the confluence with the Inn River; and fewer but still substantial numbers downstream of the Platzertal dam. Emergency preparedness plans and early warning systems exist. An inundation analysis for the Kaunertal in case of a dam break was undertaken during construction but may need to be updated, according to the Report on the Evaluation of Completeness of the Environmental Impact Declaration.

The contribution of project infrastructure to public safety also has to be taken into account. Roads and bridges may be damaged, but may also be improved through the project (such as protecting the road along the Gepatsch reservoir from avalanches). Reportedly, the Gepatsch reservoir reduced peak flows 12 km downstream by 92% and 79% during the two main flood events in recent decades (1987 and 2005). According to one study the implementation of the intakes in the upper Ötztal will reduce flood damages in the Ötztal, over a period of 100 years, by EUR 28 to 43.5 million. Pump storage facilities provide some additional flood management capacity by being able to divert water into higher reservoirs during floods. Most flood

management functions of hydropower facilities depend on appropriate operations. Safety risks may increase if water is transferred from a valley with low flood risks to another with higher flood risks during the relevant period, and vice versa. Safety risks may also increase if as a consequence of flood protection, people increase their exposure to the infrequent largest flood events which reservoirs cannot effectively control.

Safety risks from increased traffic may result during the construction period as all traffic necessarily has to go through narrow valleys and in some cases, through villages.

8.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment has been undertaken of dam and other infrastructure safety risks with appropriate expertise during project preparation, construction and operation, with no significant gaps.*

The social, environmental and economic consequences in the unlikely case of a dam failure at the Kaunertal project would be extreme. While no primary evidence for this could be found, given the experience TIWAG and the Austrian authorities have with regards to dam safety, it is likely that a thorough professional review of the dam and other infrastructure safety risks for project preparation, construction and operation with no significant gaps has been conducted or will be conducted before construction. The 2013 Report on the Evaluation of the Completeness of the Environmental Impact Declaration does not raise relevant concerns.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment includes consideration of a broad range of scenarios, and includes both risks and opportunities.*

It is understood that Austrian dam safety guidelines include broad considerations, and that both the risks from flood events and the opportunities to contribute to the management of floods, especially in the Ötztal, have been assessed. However, in the absence of additional information, it is uncertain how the pumped storage operations with frequent changes in the level of the Gepatsch reservoir will influence slope stability; this is considered a significant gap until otherwise resolved.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Dam and other infrastructure safety management plans and processes have been developed for project implementation and operation in conjunction with relevant regulatory and local authorities with no significant gaps and provide for communication of public safety measures; emergency response plans include awareness and training programs and emergency response simulations; and dam safety is independently reviewed.*

The Austrian dam safety procedures are considered to be adequate. Some public safety measures – such as emergency procedures – are communicated by TIWAG. It is assumed that some awareness, training and emergency response simulation is conducted although little relevant information could be located. Dam safety is reviewed both by the Austrian authorities and by an independent commission. In the absence of further information, this criterion is assumed to be met.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; plans provide for public safety measures to be widely communicated in a timely and accessible manner; and emergency response plans are independently reviewed.*

Not enough information is available to confirm any of these points. Safety, emergency response, evacuation and other plans for the Kaunertal are currently not easily accessible although they are reportedly available to the Kaunertal commune.

Criteria met: No

Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimise and mitigate safety risks with no significant gaps.*

While details are not available, it can be assumed that the Kaunertal Extension Project will only be constructed if safety risks can be controlled as per Austrian standards.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans contribute to addressing safety issues beyond those risks caused by the project itself.*

Plans as currently known will provide some contribution to addressing external flood and traffic safety risks.

Criteria met: Yes

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

In the absence of additional information, it is uncertain how the pumped storage operations with frequent changes in the level of the Gepatsch reservoir will influence shore stability.

Safety, emergency response, evacuation and other plans for the Kaunertal are currently not easily accessible.

2 or more significant gaps

8.3 Scoring Summary

TIWAG is assumed to have undertaken, and to be required to undertake a thorough professional assessment of the dam and other infrastructure safety risks for project preparation, construction and operation with no significant gaps, based on Austrian dam safety guidelines. One of the most interesting aspects of the Kaunertal Extension Project is whether pumped storage operations may deteriorate slope stability above the Gepatsch reservoir. Unfortunately, neither the answers to this question nor the relevant safety procedures for the Kaunertal downstream of the reservoir are easily publicly accessible. These are two significant gaps at the level of proven best practice, resulting in a score of 3.

Topic Score: 3

9 Financial Viability (P-9)

This topic addresses both access to finance, and the ability of a project to generate the required financial returns to meet project funding requirements, including funding of measures aimed at ensuring project sustainability. The intent is that projects proceed with a sound financial basis that covers all project funding requirements including social and environmental measures, financing for resettlement and livelihood enhancement, delivery of project benefits, and commitments to shareholders/investors.

9.1 Background Information

The Kaunertal Extension Project is a major financial commitment for TIWAG and the province of Tyrol, one of the largest infrastructure projects ever undertaken in the province.

International benchmark prices for hydropower projects are difficult to establish because of the highly site-specific nature of this technology. In the case of the Kaunertal Extension Project, the following factors will influence cost:

- one reservoir and other project infrastructure, such as the new Gepatsch-Prutz pressure tunnel and surge shaft, already exist or are being built separately;
- a major part of the new infrastructure will be underground, distances are relatively long, there are multiple construction sites, and there are climatological, environmental and social constraints on construction, all increasing the cost;
- pump storage facilities are more expensive than pure generating facilities;
- mitigation and compensation costs are not yet determined;
- the competitive situation in the construction market at the time of contracting.

The only indications of the project cost estimated by TIWAG are those quoted in the press, with no substantiating evidence, of 'somewhat more than EUR 1 billion', equivalent to about one year of sales, 10 years of profits, and more than TIWAG's equity. This would be at the lower end of the range for a 900 MW project in Europe. The average cost per installed KW for large hydropower with storage has been recently given as between USD 1,050 and USD 7,650, while adding additional capacity at existing hydropower schemes can be significantly cheaper, and can cost as little as USD 500/kW.

On the revenue side, the main factor is the differential between base load and peak power in relevant markets between the time of commissioning and the end of the useful life of the project. The financial attractiveness of pumped storage has been reduced recently in the German market because peak power is often available from solar installations and the closing of nuclear stations has reduced the availability of cheap base load power. Other developers – such as the Schluchseewerke, sponsor of a planned 1,400 MW pumped storage plant – are reconsidering their investments. It is uncertain whether (pumped) storage operators will receive financial compensation for the ancillary services they provide to the grid. A second consideration is the availability of runoff in the long term, even under conditions of climate change.

No internal rate of return, payback period or any other financial indicators have been provided, which is surprising given that the project represents a large commitment of public expenditures and/or a large assumption of public risks. It is unknown how major investment decisions are prepared internally and how external institutions (in particular, the Tyrolean government and external financial advisors) are involved.

The project is part of an overall capital expenditure program of TIWAG, which also includes the transmission lines which are required to bring power to load centres. Depending on how they are financed, borrowing for these projects will likely reduce TIWAG's equity/debt ratio. It may also increase the borrowing costs of the province. While the province of Tyrol has relatively low debts, it has recently been downgraded to an AA+ rating by Standard & Poor's.

Financial viability is an internal topic that cannot be meaningfully evaluated without access to the developer. This topic will therefore not be scored in this assessment. However, it should be noted that many hydropower developers are overly optimistic in their cost and revenue assumptions.

9.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment of corporate financial viability, including potential project costs and likely revenue streams, has been undertaken using recognised models with no significant gaps; analyses include risk assessment, scenario testing and sensitivity analyses.*

Not assessed.

Analysis against proven best practice

Scoring statement: *In addition, project costs and revenue streams are fully detailed; and financial viability of the project has been analysed and optimised including extensive scenario testing, risk assessment, and sensitivity analyses.*

Not assessed.

Management

Analysis against basic good practice

Scoring statement: *Financial management plans and processes have been developed for project implementation and operation with no significant gaps, and opportunities for project financing have been evaluated and pursued.*

Not assessed.

Analysis against proven best practice

Scoring statement: *In addition, financial management plans provide for well-considered contingency measures for all environmental and social mitigation plans and commitments; and processes are in place to anticipate and respond to emerging risks and opportunities.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *The project can manage financial issues under a range of scenarios, can service its debt, can pay for all plans and commitments including social and environmental, and access to capital can be demonstrated.*

Not assessed.

Analysis against proven best practice

Scoring statement: *In addition, the project can manage financial issues under a broad range of scenarios.*

Not assessed.

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

Not assessed.

Analysis of significant gaps against proven best practice

Not assessed.

9.3 Scoring Summary

Not assessed.

10 Project Benefits (P-10)

This topic addresses the additional benefits that can arise from a hydropower project, and the sharing of benefits beyond one-time compensation payments or resettlement support for project affected communities. The intent is that opportunities for additional benefits and benefit sharing are evaluated and implemented, in dialogue with affected communities, so that benefits are delivered to communities affected by the project.

10.1 Background Information

The original Kaunertal project led to substantial improvements in infrastructure and tourism opportunities. In particular, the road into the upper valley was improved and prepared the opening of the road to the glacier skiing area, one of the highest paved roads in the Alps. TIWAG also concluded revenue-sharing agreements with the province and indirectly, the affected valleys.

The preparation of the Kaunertal Extension Project has raised expectations among the affected communities. The Kaunertal commune has conducted a number of planning exercises to prepare a position regarding the extension project, compile catalogues of questions for TIWAG, and conclude a Development Program 2013-2017. The purpose of the Development Program was to develop a vision based on the two most important economic sectors, tourism and agriculture, and independent of the hydropower project; however financing for some of the actions may not be available unless the hydropower project goes ahead, and may become part of the negotiations with TIWAG. TIWAG has already signalled a willingness to change the original revenue sharing contracts and make them more uniform across Tyrol. It is reportedly envisaged to pay about EUR 1,500 – 1,600 for storage projects, and up to EUR 1,900 for pumped storage projects, per GWh to the communes for 'other unspecified damages'; those funds may be divided between the affected communes according to the proportion of water used and the proportion of infrastructure on their territories. Preliminary numbers of EUR 2.1 million annually for the enlarged Kaunertal project have been mentioned.

There may also be a number of other benefits for the communities including improved infrastructure, contracts for local companies, employment during construction and operation, local taxes etc. A comprehensive overview is not yet available. There is some overlap with issues covered under topics P-11 to P-13 and P-16 (Economic Viability, Procurement, Project-Affected Communities and Livelihoods, Labour and Working Conditions).

10.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment of opportunities to increase the development contribution of the project through additional benefits and/or benefit sharing strategies has been undertaken; and the pre-project baseline against which delivery of benefits can be evaluated post-project is well-documented.*

It is unknown whether a specific assessment of opportunities has been undertaken. However through the on-going contacts between TIWAG, provincial authorities and communes in the affected valleys, TIWAG would be well aware of local conditions and demands, as is shown by its initiative for changing and improving the 'valley contracts' (revenue sharing agreements). The local communities have already considered for themselves how to best benefit from and negotiate with TIWAG. Baseline conditions in the project area are also well documented already through public statistics, independently of TIWAGs project preparation. Further baseline information is likely to be contained in the Environmental Impact Declaration.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, broad considerations have been taken into account in identifying opportunities.*

While TIWAG appears to have been more reactive, waiting for demands and opportunities to be identified by the affected communities, some of those have already prioritized their demands. For example, the Kaunertal commune identified as the most important and urgent projects: improvement of the swimming pool and leisure centre; improvement of safety of main road in lower valley; extension of the glacier skiing area; safer and toll-free road into upper valley; strengthening of agriculture; improvement of communal power station. It is unknown whether other affected communities are undertaking similar exercises, but all of these have elected representatives and regular budgeting processes that will come into play when required.

Criteria met: Yes

Management

Analysis against basic good practice

Scoring statement: *Project benefit plans and processes have been developed for project implementation and operation that incorporate additional benefit or benefit sharing commitments; commitments to project benefits are publicly disclosed.*

Negotiations over commitments have not yet publicly started, although there may be preliminary conversations. TIWAG has announced its intention to change and improve the revenue sharing arrangements, and that the area affected by the Kaunertal Extension Project will be one of the first to be covered under the new arrangements. It is assumed that the new revenue sharing agreements will be disclosed, although some of the existing arrangements appear difficult to locate.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes have been developed to anticipate and respond to emerging risks and opportunities.*

It is unclear whether any potential future risks and opportunities have been incorporated into the development of the negotiating positions on the parts of TIWAG, the provincial government and the communes of the project area. This would require, for example, an analysis of long-term trends affecting key economic sectors such as tourism, agriculture and electricity, such as climate change and changing consumer preferences. In some projects, revenue-sharing arrangements may protect local communities from downside risks resulting from trends they cannot influence or foresee, for example reduced generation in the future due to climatic or market reasons, or they may have clauses for re-negotiation and adaptation. Since no awareness of these long-term issues could be found in the publicly available information, this criterion is assumed to be not met.

Criteria met: No

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The assessment and planning process relating to project benefits has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; on-going processes are in place for stakeholders to raise issues and get feedback.*

Specifically regarding project benefits, TIWAG and the provincial government have long been aware that elements of revenue sharing would need to be integrated into the contractual arrangements for the Kaunertal Extension Project.

At least one of the affected communes (Kaunertal) has taken the initiative and started to develop negotiating positions and questions regarding project benefits. It would appear that all parties are still developing approaches to project benefits negotiations and that these have not been finalized; for example, it is also uncertain what will happen if the project as a whole or a TIWAG compensation offer is rejected by a commune. However, in general it is assumed that this criterion will be met.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

The engagement of stakeholders cannot at this stage be considered inclusive and participatory. Some engagement by TIWAG may have happened at the level of mayors but has not been completely transparent at community level. Engagement with different affected communities has been uneven. Where questions have been raised by communities, as in the case of Kaunertal, initial answers by TIWAG were considered superficial and unsatisfactory, although later improved.

Criteria met: No

Outcomes

Analysis against basic good practice

Scoring statement: *Plans deliver benefits for communities affected by the project.*

Current plans do foresee substantial (if compared to other sources such as local taxes) and continuous additional revenue as well as other economic benefits for the affected communes.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans deliver significant and sustained benefits for communities affected by the project.*

See above.

Criteria met: Yes

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

No awareness of long-term trends and resulting potential future risks and opportunities has been incorporated into the development of the negotiating positions on the parts of TIWAG, the provincial government and the communes of the project area.

The engagement of stakeholders in discussions about project benefits cannot at this stage be considered inclusive and participatory.

2 or more significant gaps

10.3 Scoring Summary

The implementation of the Kaunertal Extension Project will provide significant and sustained additional revenue for the affected communities. It is largely in the communities' own responsibility to identify spending priorities. Some other additional economic benefits will also arise.

Negotiations over benefit sharing are just starting. They could be more inclusive and participatory, and could be more aware of long-term trends which might influence both the level of benefits and how appropriate they are going to be seen by future generations.

These are two significant gaps at the level of proven best practice, resulting in a score of 3.

Topic Score: 3

11 Economic Viability (P-11)

This topic addresses the net economic viability of the project. The intent is that there is a net benefit from the project once all economic, social and environmental costs and benefits are factored in.

11.1 Background Information

The province of Tyrol has a population of 710,000 with the lowest population density in Austria, and a diversified, slowly growing economy, with one third of all tourist overnight stays in Austria. About one third of all employment and income in Tyrol also depend on tourism.

Electricity generation from hydropower also makes an important contribution. Electricity rates are among the lowest in Austria, which increases real incomes of households and makes businesses more competitive. In spite of low rates, TIWAG also pays significant dividends and taxes to the Austrian, Tyrolean and communal governments.

No economic impact or cost benefit analyses could be located regarding TIWAG overall or the Kaunertal project in particular. The main factors to be quantified would be the synergies and trade-offs between different economic sectors resulting from new hydropower projects. For example, what is the impact, positive or negative, of the diversion of water from the Ötztal to the Kaunertal on economic activities in both valleys? In the Ötztal, while there may be an economic loss to the tourism industry, which is why the industry has already declared its opposition to the project, other sectors may benefit, for example the construction industry, people with properties close to rivers where flooding may now be reduced, or taxpayers. An economic analysis is required to quantify gains and losses and to determine whether 'losers' can be compensated by 'winners'. The main categories of costs and benefits that require quantification are the following:

- Environmental costs and benefits that remain after mitigation, for example the value that people assign to the loss of wilderness, the value of lost fish populations, or the value of displaced greenhouse gas emissions (to the extent that peak power from the project displaces thermal peak power, for example from gas turbines; given that the project combines storage and pumped storage, such displacement is difficult to predict with certainty);
- Social costs and benefits that remain after mitigation, for example employment within the local communities, or effects of improved access and increased traffic on communities;
- Economic costs and benefits to citizens of the province, for example as recipients of increased taxes and fees paid by TIWAG and as guarantors of TIWAG's incremental debt,
- Economic costs and benefits to customers, regarding the implications of the project for rates paid by TIWAG customers in the province and in export markets. (A cost-benefit analysis undertaken from the perspective of the province only, would disregard transboundary economic effects).

In terms of the larger European economy, the main positive impact of the project would be in terms of contributing to the integration of electricity markets. Allowing trading between low- and high-price areas improves economic welfare in both trading partners. For example, if wind and solar capacities in Germany are operating at high load factors, prices in the European electricity spot markets tend to go down, and Austrian pumped storage operators can purchase power for pumping purposes. If wind and solar facilities are down, pumped storage operators can generate and sell power at higher prices. They thus stabilise both the grid and the market for electricity.

11.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment of economic viability has been undertaken with no significant gaps; the assessment has involved identification of costs and benefits of the project and either valuation in monetary terms or documentation in qualitative or quantitative dimensions.*

Many elements of and data required for an economic analysis are likely to be already available in the project documentation and would just need to be structured and combined appropriately. However, Austrian utilities such as TIWAG traditionally do not undertake economic or cost-benefit analysis. Not even partial assessments, for example forecasts of the impact of the project on tourism in the affected valleys, appear to have been undertaken. Except for one PhD dissertation estimating one isolated economic aspect (flood control benefits in the Ötztal), there is a surprising lack of attention to the costs and benefits of the project.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and includes sensitivity analyses.*

Not assessed.

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The results of the economic viability analysis are publicly disclosed.*

TIWAG discloses almost no project or utility-level documents with relevance to financial and economic viability, not even summary results.

Criteria met: No

Analysis against proven best practice

Scoring statement: *The economic viability analysis is publicly disclosed.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *From an economic perspective, a net benefit can be demonstrated.*

It is possible that an overall net benefit of the current expansion plan of TIWAG, including the Kaunertal Extension Project, could be achieved. In addition to that, there are several aspects (compared to an alternative scenario without major new hydropower generating stations) not fully captured in a summary value such as the net present value of the project, namely rates for TIWAG customers in the long term, dividends to the provincial government, reduced greenhouse gas emissions (and their impacts on citizens of jurisdictions not included in the economic analysis), reduced dependence on imports, and high asset values at the end of a typical economic assessment period.

However, TIWAG or the provincial government have made no effort to substantiate their claims that the project is overall a good investment for the province. Experience suggests that the potential economic benefits

but also the risks to the TIWAG expansion plan, including the Kaunertal Extension Project, are higher than for an alternative scenario without major new hydropower generating stations. No scenario analysis appears to have been conducted, disclosed or publicly discussed.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, the project benefits outweigh project costs under a wide range of circumstances.*

Not assessed.

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

Austrian utilities such as TIWAG traditionally do not undertake economic or cost-benefit analysis. Not even partial assessments, for example forecasts of the impact of the project on tourism in the affected valleys, appear to have been undertaken.

TIWAG discloses almost no project or utility-level documents with relevance to financial and economic viability.

TIWAG or the provincial government have made no effort to substantiate their claims that the project is overall a good investment for the province.

2 or more significant gaps

Analysis of significant gaps against proven best practice

Not assessed.

11.3 Scoring Summary

There is no indication that an economic analysis of the Kaunertal Extension Project has been undertaken or is intended. There are several significant gaps against basic good practice, resulting in a score of 1.

Topic Score: 1

12 Procurement (P-12)

This topic addresses all project-related procurement including works, goods and services. The intent is that procurement processes are equitable, transparent and accountable; support achievement of project timeline, quality and budgetary milestones; support developer and contractor environmental, social and ethical performance; and promote opportunities for local industries.

12.1 Background Information

The Kaunertal Extension Project would be a complex undertaking with multiple construction sites, goods and services. The volume handled by TIWAG's central procurement department annually is about EUR 70 million, consisting of 20,000 individual orders. TIWAG has not implemented projects of comparable size and complexity for a considerable time, which poses challenges for its project planning and procurement departments.

While TIWAG is generally subject to public procurement legislation, last modified in 2012, its generation operations have been exempted because Austria has sufficiently liberalized its electricity generation market. This enables TIWAG to be relatively flexible with its procurement practices; for example, to prefer local contractors.

It is unknown how TIWAG intends to procure the project components, whether from one general contractor or from a series of contractors coordinated by TIWAG staff; whether TIWAG intends to obtain support from an owner's engineer or similar construction manager; whether local contractors will receive preferential treatment and if so, how conflicts of interest can be prevented; and indeed, whether such decisions have already been made. TIWAG's procurement website makes no indications that sustainability and anti-corruption criteria are used in the selection of contractors.

Procurement is an internal topic that cannot be meaningfully evaluated without access to the developer. This topic will therefore not be scored in this assessment. However, it should be noted that the selection of responsible contractors with clear contractual requirements can make a large difference in the successful implementation of projects.

12.2 Detailed topic evaluation Assessment

Analysis against basic good practice

Scoring statement: *An assessment of major supply needs, supply sources, relevant legislation and guidelines, supply chain risks and corruption risks has been undertaken with no significant gaps.*

Not assessed.

Analysis against proven best practice

Scoring statement: *In addition, the assessment includes opportunities for local suppliers and local capacity development.*

Not assessed.

Management

Analysis against basic good practice

Scoring statement: *Procurement plans and processes have been developed for project implementation and operation with no significant gaps.*

Not assessed.

Analysis against proven best practice

Scoring statement: In addition, processes are in place to anticipate and respond to emerging risks and opportunities; sustainability and anti-corruption criteria are specified in the pre-qualification screening; and anti-corruption measures are strongly emphasised in procurement planning processes.

Not assessed.

Conformance / Compliance**Analysis against basic good practice**

Scoring statement: Processes and objectives relating to procurement have been and are on track to be met with no major non-compliances or non-conformances, and any procurement related commitments have been or are on track to be met.

Not assessed.

Analysis against proven best practice

Scoring statement: In addition, there are no non-compliances or non-conformances.

Not assessed.

Outcomes**Analysis against basic good practice**

Scoring statement: Procurement of works, goods and services across major project components is equitable, efficient, transparent, accountable, ethical and timely, and contracts are progressing or have been concluded within budget or that changes on contracts are clearly justifiable.

Not assessed.

Analysis against proven best practice

Scoring statement: In addition, opportunities for local suppliers including initiatives for local capacity development have been delivered or are on track to be delivered.

Not assessed.

Evaluation of Significant Gaps**Analysis of significant gaps against basic good practice**

Not assessed.

Analysis of significant gaps against proven best practice

Not assessed.

12.3 Scoring Summary

Not assessed.

13 Project-Affected Communities & Livelihoods (P-13)

This topic addresses impacts of the project on project affected communities, including economic displacement, impacts on livelihoods and living standards, and impacts to rights, risks and opportunities of those affected by the project. The intent is that livelihoods and living standards impacted by the project are improved relative to pre-project conditions for project affected communities with the aim of self-sufficiency in the long-term, and that commitments to project affected communities are fully delivered over an appropriate period of time.

13.1 Background Information

The most important project-affected communities are the populations of the Kauner and Ötz valleys as well as the part of the Inn valley affected by project construction and operation. While the Platzer valley has no permanent inhabitants, the population of the Kaunertal is 608 people, and the Ötztal and Inntal have much larger populations. Temporary visitors such as summer and winter tourists and seasonal workers in tourism and agriculture may also be affected.

Key impacts will be on livelihoods in the tourism industry, with some impacts also on agriculture, particularly on summer grazing on higher altitude pastures (alms). Key impacts on living standards are likely to result from indirect economic and socio-cultural effects, including the impact on community cohesion. Some impacts are likely to be more negative during the construction period and then turn positive during the operations period; others (such as employment on the project) will drop off after construction (for example, the new pumping and generation station in the Kaunertal will be remotely controlled). During the construction period, when several hundred workers will be present in the Kaunertal valley, and although they will be housed in a work camp with its own medical and food supplies several kilometres away from the villages, there will inevitably be a variety of positive and negative impacts on the local communities.

This topic is closely inter-dependent with several other topics, the most notable being: P-1 which deals with general aspects of consultations and communications; P-10 which deals with project-derived benefits and the sharing of those with the affected peoples; P-17 which deals with physical cultural heritage and P-18 which covers public health.

13.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment of issues relating to project affected communities has been undertaken with no significant gaps, utilising local knowledge.*

It can be inferred from the Report on the Evaluation of the Completeness of the Environmental Impact Declaration that a comprehensive range of issues affecting livelihoods and living standards of affected communities has been assessed. These assessments are specific for the Kaunertal Extension Project, based on the experience with operations of the existing project, and not just generic.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

There has been little interaction between TIWAG's and the provincial government's expert assessments and the community assessment in the Kaunertal, and there appear to have been no organised community assessments in the other affected valleys.

It is also not apparent that long-term trends and how they might create new risks and opportunities have been taken into account.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Management plans and processes for issues that affect project affected communities have been developed with no significant gaps including monitoring procedures, utilising local expertise when available; and if there are formal agreements with project affected communities these are publicly disclosed*

It can be inferred from the Report on the Evaluation of the Completeness of the Environmental Impact Declaration that impacts have not just been described but that responses to many impacts have also been included. Many of these responses have been calibrated to ensure compliance with different Austrian standards. Monitoring arrangements have been described in various areas. Local expertise was utilized in a number of areas, mainly based on interactions with local authorities, but not other stakeholders. It is assumed that once formal licensing conditions and agreements with affected communities will be negotiated, that these are going to be publicly disclosed.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

It is unknown how operational arrangements, agreements with affected communities or other aspects of the project might be adapted in the future to respond to new situations. It is assumed however, that because monitoring mechanisms are put in place, TIWAG has an interest in maintaining good community relations, and ultimately responds to the democratic provincial process in Tyrol, that emerging risks and opportunities can be addressed.

Criteria met: Yes

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *Engagement with project affected communities has been appropriately timed and often two-way; on-going processes are in place for project affected communities to raise issues and receive feedback.*

Engagement with project-affected communities has followed the steps prescribed in the regulatory process. In parallel, TIWAG and their public relations advisers have engaged in the project-affected communities to promote and gain acceptance for the project; this has involved many livelihoods and living standards discussions. Project-affected communities have various options to raise issues, and have received some useful feedback, although this often takes time and effort which could be avoided if TIWAG were to disclose more information voluntarily.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with project affected communities has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

As mentioned before, engagement efforts by TIWAG and their advisers have often been seen as tactical and not entirely open and honest by parts of the communities. Conflicts within and possibly, between communities over livelihoods and living standards issues have emerged. Feedback on community questions has often been seen as superficial and reactive.

More details regarding general stakeholder engagement is given under P-1 Communications and Consultation.

Criteria met: No

Stakeholder Support

Analysis against basic good practice

Scoring statement: *Affected communities generally support or have no major on-going opposition to the plans for the issues that specifically affect their community.*

There is major on-going opposition to the Kaunertal Extension Project in the project-affected communities, organised through citizens initiatives and at the sectoral level (for example, the Ötztal tourism chamber). Both at the communal and at the provincial level there is opposition to the project among elected representatives. While some of this opposition may be a negotiating stance, in the expectation of receiving more compensation or contributions to the development plans of the communities, for other citizens this appears to be more of a fundamental issue, and their opposition will likely be non-negotiable. This is considered a significant gap.

Even if majorities in those communes eventually vote for the agreements (directly in referenda or through the elections of their councillor and mayors) and it may be possible to reach formal agreements with some if not all of the valley communes, it is likely that these will not be seen as legitimate by a significant section of the community. It is also unknown how the provincial government would react if a license is approved and upheld by the courts, but the mitigation, management and compensation measures are ultimately rejected by the local democratic process as insufficient.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, formal agreements with nearly all the directly affected communities have been reached for the mitigation, management and compensation measures relating to their communities.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *Plans provide for livelihoods and living standards impacted by the project to be improved, and economic displacement fairly compensated, preferably through provision of comparable goods, property or services.*

Although plans have not been finalized, it is to be expected that the project will only be accepted by majorities in the project affected communities if it could be demonstrated that their livelihoods and living standards will be at least restored, if not improved by the project. For most affected communities, the key material concern in that regard is ensuring that any disruptions or disadvantages for tourism and agriculture, their key economic bases, even if only temporary during construction, are overcompensated by other measures. It will be assumed

that with the support of the Tyrolean government, the final negotiated ‘packages’ for each community would provide for this outcome.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition plans provide for livelihoods and living standards that are impacted by the project to be improved with the aim of self-sufficiency in the long-term; and the project contributes to addressing issues for project affected communities beyond impacts caused by the project itself.*

Current discussions over compensation do not aim specifically at self-sufficiency but at support with immediate investments (some of which may be unrelated to the project, such as touristic infrastructures) and through long-term subsidies. There is currently no indication that the affected valley communities would not be self-sufficient.

Criteria met: Yes

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There is major on-going opposition to the Kaunertal Extension Project in the project-affected communities, organised through citizens initiatives and at the sectoral level (for example, the Ötztal tourism chamber). Both at the communal and at the provincial level there is opposition to the project among elected representatives. While some of this opposition may be a negotiating stance, in the expectation of receiving more compensation or contributions to the development plans of the communities, for other citizens this appears to be more of a fundamental issue, and their opposition will likely be non-negotiable.

1 significant gap

Analysis of significant gaps against proven best practice

Not assessed.

13.3 Scoring Summary

While there may still be some knowledge gaps regarding specific impacts of the project on community livelihoods and living standards, and how they can be minimized, for most communities the focus is moving to negotiations over compensation measures. If such compensation measures are perceived to be generous, the proportion of community members that continue to reject the project on principle may be relatively small, so that it becomes politically feasible for communal and provincial decision-makers to support the project. The dynamics of these negotiations are difficult to predict without direct conversations with community members and negotiators.

There is one gap against basic good practice, resulting in a score of 2.

Topic Score: 2

14 Resettlement (P-14)

This topic addresses physical displacement arising from the hydropower project development. The intent is that the dignity and human rights of those physically displaced are respected; that these matters are dealt with in a fair and equitable manner; and that livelihoods and standards of living for resettles and host communities are improved.

14.1 Background Information

Topic P-14 was not assessed as it is considered “Not Relevant” for this project, as there will be no physical displacement resulting from the Kaunertal Extension Project development (except possibly a temporary displacement of one household during the construction period).

15 Indigenous Peoples (P-15)

This topic addresses the rights, risks and opportunities of indigenous peoples with respect to the project, recognising that as social groups with identities distinct from dominant groups in national societies, they are often the most marginalized and vulnerable segments of the population. The intent is that the project respects the dignity, human rights, aspirations, culture, lands, knowledge, practices and natural resource-based livelihoods of indigenous peoples in an on-going manner throughout the project life.

15.1 Background Information

Topic P-15 was not assessed as it is considered “Not Relevant” for this project, as there are no indigenous people or ethnic minorities in the project area.

16 Labour & Working Conditions (P-16)

This topic addresses labour and working conditions, including employee and contractor opportunity, equity, diversity, health and safety. The intent is that workers are treated fairly and protected.

16.1 Background Information

TIWAG has a total of about 1,300 employees. The Kaunertal Extension Project will take several years to construct and will be operated for many decades. 600 to 800 workers will be employed during construction. TIWAG and contractors' employees engaged on the project will be exposed to difficult (and sometimes dangerous) high alpine climatic and geological conditions. Camps for construction workers will be established close to the Gepatsch dam, which will host between 180 and 590 persons during the main construction years, 3 through 6. This site was also used during the construction of the original project in the 1960s and is considered safe from avalanches. Minor camps may be established in other sites. A procedure for camp safety from meteorological hazards is established. Parts of the worksites, such as quarries, may have to be closed during times of high avalanche risks. Construction sites are also audited for regulatory compliance.

Labour and working conditions is an internal topic that cannot be meaningfully evaluated without access to the developer. This topic will therefore not be scored in this assessment. However, it should be noted that Austrian labour regulations and working conditions are generally compliant with international good practices and in some regards, close to best practices.

16.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: An assessment has been undertaken of human resource and labour management requirements for the project, including project occupational health and safety (OH&S) issues, risks, and management measures, with no significant gaps.

Not assessed.

Analysis against proven best practice

Scoring statement: In addition, the assessment takes broad considerations into account, and both risks and opportunities.

Not assessed.

Management

Analysis against basic good practice

Scoring statement: Human resource and labour management policies, plans and processes have been developed for project implementation and operation that cover all labour management planning components, including those of contractors, subcontractors, and intermediaries, with no significant gaps.

Not assessed.

Analysis against proven best practice

Scoring statement: In addition, processes are in place to anticipate and respond to emerging risks and opportunities.

Not assessed.

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *On-going processes are in place for employees and contractors to raise human resources and labour management issues and get feedback.*

Not assessed.

Analysis against proven best practice

Scoring statement: *In addition, feedback on how issues raised have been taken into consideration has been thorough and timely.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *There are no identified inconsistencies of labour management policies, plans and practices with internationally recognised labour rights.*

Not assessed.

Analysis against proven best practice

Scoring statement: *In addition, labour management policies, plans and practices are demonstrated to be consistent with internationally recognised labour rights.*

Not assessed.

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

Not assessed.

Analysis of significant gaps against proven best practice

Not assessed.

16.3 Scoring Summary

Not assessed.

17 Cultural Heritage (P-17)

This topic addresses cultural heritage, with specific reference to physical cultural resources, at risk of damage or loss by the hydropower project and associated infrastructure impacts (e.g. new roads, transmission lines). The intent is that physical cultural resources are identified, their importance is understood, and measures are in place to address those identified to be of high importance.

17.1 Background Information

Cultural heritage is an important part of the identity of the population as well as the attractiveness of the region for tourism. The project is located in an area with a long record of human occupation and may have been inhabited at least as early as 3,300 BC, which is the estimated age of the natural mummy called 'Ötzi' found in the Ötztal Alps.

This topic addresses physical heritage resources. A number of heritage sites in the general project area are listed in the Austrian national register, such as a mine site in the Platzertal and a number of cemeteries, churches and chapels, as well as a historic mountain tourist hut above the Gepatsch reservoir. None of these are expected to be impacted by the project. The Austrian heritage laws do not require absolute protection, and recommendations by the Austrian Heritage Office can be overruled.

The Office has already contributed a report to the 2012 Environmental Impact Declaration. No significant issues were identified that would call into question the approvability of the project. It should be noted, however, that any physical changes to this old cultural landscape and natural features considered having spiritual and cultural importance may be seen negatively by affected people, including visitors. This may refer to roads, quarries, the new reservoir in the Platzertal, or other project features. The character of the Kaunertal has already been irreversible changed with the Gepatsch reservoir and the road to the Glacier skiing area. There is some overlap with intangible or cultural issues, addressed under P-13 Project-Affected Communities and Livelihoods.

17.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *A cultural heritage assessment has been undertaken with no significant gaps; the assessment includes identification and recording of physical cultural resources, evaluation of the relative levels of importance, and identification of any risks arising from the project.*

While the assessment by the Austrian Heritage Office was considered largely complete in the Report on the Evaluation of Completeness of the Environmental Impact Declaration, it is unknown how broad this report was, i.e. to what extent it covered protected objects, sites, designated areas of heritage value, heritage sites and objects, archaeological, paleontological, pre-historic, historic, cultural, natural, and scientific or aesthetics features. Given the mission of this Office, it is believed that the report would largely refer to buildings and archaeological sites.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

While the assessment report has not been released, it is assumed that it was limited in scope and did not cover the impact of the project on cultural landscapes.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address physical cultural resources have been developed for project implementation and operation with no significant gaps; plans include arrangements for chance finds, and ensure that cultural heritage expertise will be on site and regularly liaised with by the project management team during construction.*

The Report on the Evaluation of Completeness of the Environmental Impact Declaration mentions a number of procedures such as archaeological surveys that would need to be conducted before or in conjunction with certain construction activities.

It is otherwise unknown whether the project documents foresee any special procedures or will maintain expertise on site. In the absence of this, according to the law any chance finds need to be reported to the Austrian Heritage Office, which can demand an interruption of construction.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and plans are supported by public, formal and legally enforceable commitments.*

Risks and opportunities for cultural heritage assets may still emerge during the approvals process. It is assumed that any TIWAG plans of relevance to cultural heritage will be evaluated and turned into license conditions by the Austrian authorities. It is unknown how TIWAG and the authorities will deal with unexpected archaeological or other finds; if they are in areas required for project infrastructure it is likely that finds will be preserved ex-situ.

Criteria met: Yes

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The assessment and planning for cultural heritage issues has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; on-going processes are in place for stakeholders to raise issues and get feedback.*

There is no evidence that the assessment and planning for the project involved engagement with directly affected stakeholders. In particular, the appreciation of local communities for their valley landscapes which have evolved through centuries of settlement, agriculture and early mountain tourism does not seem to have paid a major part in project preparation. However, independent of the project, there is a well-known process for identifying and protecting cultural heritage assets, in which stakeholder can get engaged. If stakeholders had specific issues regarding the impact of the project on cultural heritage, they would find it easy to address these either to TIWAG or to relevant authorities.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Because of the lack of disclosure at this stage of the approvals process, stakeholders have not had a chance to review and understand how cultural heritage assets have been identified and how they will be preserved. While the general heritage protection mechanisms may well be sufficiently inclusive and responsive in normal times, the preparation of a project leading to large-scale landscape changes raises participation requirements to a different level. The fact that no significant engagement has been undertaken is considered a significant gap against proven best practices.

Criteria met: No

Stakeholder Support

Analysis against basic good practice

Scoring statement: *There is general support or no major on-going opposition amongst directly affected stakeholder groups for the cultural heritage assessment, planning or implementation measures.*

There is no indication that directly-affected stakeholders are opposed to the handling of cultural-heritage issues in assessment, planning or implementation. Except for the general desire to maintain the cultural landscape, no major cultural heritage issues appear to have been raised to date by the Kaunertal population.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, formal agreements with the directly affected stakeholder groups have been reached for cultural heritage management measures.*

It is uncertain whether formal agreements will be required. If they are a high priority for the affected communities, they may become part of the 'valley contracts'.

Criteria met: Yes

Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimise, mitigate, and compensate negative impacts on cultural heritage arising from project activities with no significant gaps.*

Except for some losses of landscape there are unlikely to be significant impacts of the project on cultural heritage assets. The cultural landscape will be permanently altered with the loss of the upper Platzertal, smaller sites in the upper Ötztal, and some other sites (not all of them permanently). The significance of the upper Platzertal is limited as it has likely never been settled, been used only for summer grazing and hunting, and the mine was established above and the processing facilities below the reservoir.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans avoid, minimise, mitigate and compensate negative cultural heritage impacts with no identified gaps; and contribute to addressing cultural heritage issues beyond those impacts caused by the project.*

It would be too early to say that plans handle all cultural heritage issues with no gaps, as it is uncertain how unexpected impacts would be dealt with. Also, there do not appear to be any efforts to identify other outstanding or unresolved heritage issues in the region and address them with resources of the project.

Criteria met: No

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

While the assessment report has not been released, it is assumed that it was limited in scope and did not cover the impact of the project on cultural landscapes.

Because of the lack of disclosure at this stage of the approvals process, stakeholders have not had a chance to review and understand how cultural heritage assets have been identified and how they will be preserved. While the general heritage protection mechanisms may well be sufficiently inclusive and responsive in normal times, the preparation of a project leading to large-scale landscape changes raises participation requirements to a different level.

It would be too early to say that plans handle all cultural heritage issues with no gaps, as it is uncertain how unexpected impacts would be dealt with. Also, there do not appear to be any efforts to identify other unresolved heritage issues in the region and address them with resources of the project.

2 or more significant gaps

17.3 Scoring Summary

Cultural-heritage impacts have been assessed in the Environmental Impact Declaration, which did not identify impacts that would make approvals difficult. While the assessment is likely to have taken a rather narrow approach, the known impacts on other heritage issues such as cultural landscapes are also limited. Nevertheless, cultural landscapes are important aspects of cultural identity and tourism potential and should have required a more active stakeholder engagement. The potential for making positive contributions to regional cultural heritage has not been explored.

There are several significant gaps against proven best practice, resulting in a score of 3.

Topic Score: 3

18 Public Health (P-18)

This topic addresses public health issues associated with the hydropower project. The intent is that the project does not create or exacerbate any public health issues, and that improvements in public health can be achieved through the project in project-affected areas where there are significant pre-existing public health issues.

18.1 Background Information

Austria has a highly developed health system, and the life expectancy and health expenditures per capita are slightly higher than in the average of OECD countries. 69% of Austrians consider themselves to be in good health, in line with the OECD average. There are no particular pre-existing regional health issues in the project region, and no known health effects of the existing Kaunertal project.

The Environmental Impact Declaration's chapter on human health and environmental health was considered not satisfactory by the Report on the Evaluation of Completeness. It asked for a re-evaluation of the effects of noise, dust, other air pollutants, smells, light, and electro-magnetic fields in view of the fact that several Austrian standards were not met by the project. According to the authors of the Impact Declaration, this was ascribed to overestimated emissions. A revised assessment and mitigation measures will only be publicly disclosed at a later stage.

Other relevant public health issues that are often raised during the construction of hydropower projects is that health services may be overburdened by workers and other 'project followers'; that these may also bring infectious diseases, including sexually transmitted diseases, into the community; and that increased traffic may bring more traffic accidents.

18.2 Detailed topic evaluation Assessment

Analysis against basic good practice

Scoring statement: *A public health issues assessment has been undertaken with no significant gaps; the assessment includes public health system capacities and access to health services, and has considered health needs, issues and risks for different community groups.*

Public health issues appear to have been assessed in different parts of the Environmental Impact Declaration. It is expected that after the on-going revision, this document will meet Austrian standards.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

There is no information to substantiate that broad considerations have been taken into account. For example, little attention may have been paid to the potential health risks from worker interaction with the local communities, to the psychological effects of loss of community cohesion and cultural landscape, fear of safety risks etc., or to opportunities to enhance health services through the project (for example, by assessing the feasibility of locating health services for workers in the Kaunertal commune or making them accessible to non-workers). One of the significant positive side effects is the contribution to flood management in the Ötztal, where 13 people died in the last major floods in 1987. Nevertheless, it has not been demonstrated that this is the most effective and efficient way to manage floods. Until otherwise demonstrated this criterion will be assumed to be not met.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address identified public health issues have been developed for project implementation and operation with no significant gaps.*

The main plans and processes with relevance to public health that are being developed concern the construction management. By locating a substantial part of the construction underground and in areas with sufficient distances from settlements, health impacts are avoided. By placing the transmission line from the upper to the lower power station in the former pressure tunnel, the exposure of the lower Kaunertal to electro-magnetic fields is reduced. Some efforts have been made to reduce traffic. It is assumed that through the environmental assessment and approvals process, further minimization and mitigation measures will be identified to manage health issues and adhere to Austrian emissions and imissions standards.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

There is currently no information publicly disclosed on the intentions regarding health monitoring. It can be assumed that the Austrian public health system, independent of project arrangements, is well capable of detecting health trends both among the local population and among workers. This would include non-communicable diseases, especially alcohol and drug abuse and related violence, and mental health. One risk that does need to be anticipated and responded to is access to health services, food etc. in averse winter conditions, for example, when the road into the Kaunertal is closed because of avalanche danger. This has been planned for.

Criteria met: Yes

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The assessment and planning for public health has involved appropriately timed, and often two-way, engagement with directly affected stakeholders, including health officials and project affected communities; on-going processes are in place for stakeholders to raise issues and get feedback.*

As with other sustainability topics, engagement with directly-affected stakeholders on health issues has been relatively low at this stage but will become more extensive as the approvals process progresses.

On-going processes for overall engagement with directly-affected communities are set out in P-1 Communications and Consultaton. There do not appear to be on-going processes in place that are specific to public health or focused on health-service providers, although there is general on-going dialogue with some health-service providers, fire services etc.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

As with other sustainability topics, engagement with directly-affected health service providers, officials and community representatives and members is not conducted in an inclusive and participatory manner. Some feedback that has been provided to the Kaunertal community must be considered rather superficial.

Criteria met: No

Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimise and mitigate negative public health impacts arising from project activities with no significant gaps.*

Given the relatively low level of exposure of the communities to emissions and other health risks from the project, the plans under development in accordance with Austrian standards and Austrian practices are likely to be broadly sufficient to avoid, minimise and mitigate the predicted public health risks of the Kaunertal Extension Project.

In addition there is the possibility that, in the long term, communities will emotionally adapt to changes and benefit from additional resources, contributing to enhanced health.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans avoid, minimise, mitigate and compensate negative public health impacts with no identified gaps; and provide for enhancements to pre-project public health conditions or contribute to addressing public health issues beyond those impacts caused by the project.*

It is unlikely that the plans will prevent all significant negative impacts; there are no plans to compensate for residual impacts, for example by ensuring improved health services; and there are no plans to use project resources to address other health issues in the project area.

Criteria met: No

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There is no information to substantiate that broad considerations have been taken into account in the assessment of health risks.

As with other sustainability topics, engagement with directly-affected health service providers, officials and community representatives and members is not conducted in an inclusive and participatory manner. Some feedback that has been provided to the Kaunertal community must be considered rather superficial.

It is unlikely that the plans will prevent all significant negative impacts; there are no plans to compensate for residual impacts, for example by ensuring improved health services; and there are no plans to use project resources to address other health issues in the project area.

2 or more significant gaps

18.3 Scoring Summary

TIWAG has a substantial responsibility to ensure the health of communities in the project area. While there are no major negative health impacts foreseen for the operations phase, during the construction phase many health impacts are possible and need to be properly understood and addressed. The current level of assessment and management of health issues is not impressive, and as with other topics, has suffered from a lack of interaction with stakeholders.

There are several gaps against proven best practice, resulting in a score of 3.

Topic Score: 3

19 Biodiversity & Invasive Species (P-19)

This topic addresses ecosystem values, habitat and specific issues such as threatened species and fish passage in the catchment, reservoir and downstream areas, as well as potential impacts arising from pest and invasive species associated with the planned project. The intent is that there are healthy, functional and viable aquatic and terrestrial ecosystems in the project-affected area that are sustainable over the long-term, and that biodiversity impacts arising from project activities are managed responsibly.

19.1 Background Information

The Kaunertal Extension Project is located within and below one of Austria's largest intact high alpine areas. For an area in the centre of Europe, the Ötztal Alps are still quite remote and natural. While the floors of the surrounding valleys have long been intensively used, the upper mountain areas (much of them covered in glaciers, rock and scree, and with many types of high alpine creeks) show a relatively limited presence of highly specialized vegetation and animals, shaped by the prevailing low temperatures. There is a high number of endemic and endangered species, compared to other Austrian regions. Spiders and algae are noteworthy in this regard, but the region also holds significant populations, in terms of proportion of remaining populations and of genetic diversity, of several bird and mammal species, such as marmots. Local biodiversity is well understood in terms of life cycles and habitat requirements, compared to other world regions.

Human alteration of high alpine ecosystems was traditionally limited to local pressures on some natural resources (e.g. hunting and summer grazing of cattle); in recent decades roads, tourism and hydroelectric developments have been added; and in the longer term climate change is expected to have a significant impact on these ecosystems.

Much of the upper mountain region is protected under different categories of protection. It does not appear that any project surface infrastructure will directly impact on protected lands. The Ötztal creek was considered one of 74 high conservation value rivers in Austria ("Sacred Rivers"), identified by the Ministry of Environment and WWF in 1998. Its high ecological value has been confirmed through several national-level evaluations.

The habitat types in the area immediately affected by the Kaunertal Extension Project are, principally, creeks and their riparian vegetation and wetlands, alpine open grasslands, and forests. Understanding of impacts and possible mitigation and compensation measures has been expanded by past experiences of the developer TIWAG, affected communities, regulators and an active environmental community.

19.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment of terrestrial biodiversity; aquatic biodiversity including passage of aquatic species and loss of connectivity to significant habitat; and risks of invasive species has been undertaken with no significant gaps.*

The Report on the Evaluation of Completeness of the Environmental Impact Declaration as well as the analysis by the Tyrolean Environmental Ombudsman have identified a number of deficiencies in the 2012 biodiversity assessment, including: an insufficient extension of the analysed project-affected area (for example, the need to analyse aquatic and riparian impacts along the Ötztal creek all the way downstream to its confluence with Inn); a general lack and insufficient presentation of baseline information on plants, animals and their habitats (for example, regarding whether the Platzertal creek is currently impacted by summer grazing of cattle);

methodological problems regarding the estimation of sensitivity and the intensity of impacts, and the required mitigation or compensation measures; potential impacts on a Nature 2000-protected area through underground drainage, disturbance and use of peripheral areas; potential ecological impacts of compensation measures; insufficient depth of analysis of aquatic ecology impacts on those creeks with water intakes.

While the current version of the assessment would therefore not qualify as 'basic good practice', TIWAG has been asked by the authorities to complement and improve the current information, and there is some confidence that the Austrian regulatory system – in particular in a high-profile case like the Kaunertal, with critical interests parties - will eventually produce a higher-quality analysis of biodiversity impacts.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

The original assessment was limited in that it apparently did not emphasize cumulative impacts on biodiversity (between the existing and the additional Kaunertal project, between the Kaunertal project and other hydropower projects in the region, and between the Kaunertal project and other changes in the region) and did not take a broad view of relevant issues and the affected area.

It also did not focus on interrelationships amongst issues; for example, while the flushing of accumulated sediment in the Ötztal intakes was analysed from the point of view of technical feasibility, sediment transport and flood management implications, the impacts on downstream aquatic ecology were largely disregarded.

It is uncertain whether the Austrian regulatory system will eventually force a broader assessment and an analysis of risks and opportunities. Risks and opportunities for biodiversity could arise, for example, from long-term trends such as climate change, and from a broader discussion on how much of Tyrol's hydropower potential should be developed. It is assumed that these considerations will ultimately not be taken into account in the Kaunertal assessment, but that it will focus narrowly on the impacts of the project.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address identified biodiversity issues have been developed for project implementation and operation with no significant gaps.*

No matter which biodiversity plans and processes are developed for the Kaunertal Extension Project, it is important to keep in mind that there will be changes in biodiversity because of the significant landscape changes. The emphasis is on understanding what changes might occur, and how these can be best avoided, mitigated, managed and/or compensated. Preservation of the original biodiversity conditions is not a realistic expectation, particularly for the loss of 92 hectares of natural habitat in the Platzertal and for the aquatic biodiversity along the 82 km of creeks and rivers which will experience alterations in flow conditions. It is also important to keep in mind that the original Kaunertal project which was designed more than a half century ago does not necessarily conform to the current state of the art with respect to fish passage, environmental flow releases and other parameters of relevance to biodiversity.

TIWAG's 2012 Environmental Impact Declaration does address a range of biodiversity issues and presents proposals for management. Some biodiversity impacts are avoided and minimized by the design of the project (locating project infrastructure underground, using an existing lower reservoir and a relatively small upper reservoir, compared to other options that were being investigated). For other impacts, mitigation and

compensation measures are proposed. Current criticism of the management plans can be summarized as follows:

- the sensitivity of biodiversity assets (populations of plants and animals and their habitats) is underestimated and therefore, insufficient mitigation and compensation measures are proposed. In particular, the equivalence of compensation measures is not demonstrated (functional, time wise and spatial); one example is the Platzertal where for the total loss of 92 hectares, only 14 hectares in a different valley are proposed as compensation, and where the 11 hectares of high-value moors and wetlands are proposed to be compensated for by a series of small-scale measures which do not add up to providing the same habitat;
- continuing monitoring (to establish whether biodiversity management measures are successful) and adaptive management of biodiversity is not sufficiently foreseen.

It is likely that the Austrian regulatory system will force TIWAG to address these deficiencies and develop plans and processes for all biodiversity issues, with clearly allocated responsibilities, appropriate funding and resources, objectives and targets, and monitoring and evaluation provisions, before the project would be licensed.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and commitments in plans are public, formal and legally enforceable.*

There are no indications that TIWAG already has or intends to create an on-going environmental management system which would be capable of systematically identifying and addressing future biodiversity issues. The company does not have a sustainability reporting system, is not certified against ISO 14001 or comparable standards, and has not proposed a solid biodiversity monitoring system as part of the current Environmental Impact Declaration.

Any commitments made would likely become public, formal and legally enforceable as part of the licensing conditions.

Criteria met: No

Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimise, mitigate, and compensate negative biodiversity impacts arising from project activities with no significant gaps.*

Some unresolved issues from the original Kaunertal project, such as the reforestation of a spoil area below the Gepatsch reservoir and the construction of a fish passage at the Runserau weir, may be addressed in the extension project.

It is assumed here that the Austrian regulatory system will eventually force TIWAG to properly assess the biodiversity impacts and to address each identified impact with specific management measures. However, given the complex, large-scale biodiversity impacts of the Kaunertal project in a sensitive region, with pre-existing and additional future pressures, it is considered unlikely that an outcome for biodiversity without significant gaps and net losses of biodiversity could be achieved.

In particular, aquatic biodiversity is already strongly damaged in Tyrol, and the project will impact upon some of the last remaining free-flowing creeks in good ecological conditions. The only way this could be compensated is through a binding commitment to protect a representative set of aquatic waterbodies. However, previous plans and commitments have disappointed in this regard; the Kaunertal project has been

supported by the provincial and federal governments even as it would significantly alter identified high conservation value waterbodies, and no accompanying conservation plans are being discussed.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, plans avoid, minimise, mitigate and compensate negative biodiversity impacts due to project activities with no identified gaps; and plans provide for enhancements to pre-project biodiversity conditions or contribute to addressing biodiversity issues beyond those impacts caused by the project.*

Not assessed.

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

Given the complex, large-scale biodiversity impacts of the Kaunertal project in a sensitive region, with pre-existing and additional future pressures, it is considered unlikely that an outcome for biodiversity without significant gaps could be achieved.

In particular, aquatic biodiversity is already strongly damaged in Tyrol, and the project will impact upon some of the last remaining free-flowing creeks in good ecological conditions. The only way this could be compensated is through a binding commitment to protect a representative set of aquatic waterbodies. However, previous plans and commitments have disappointed in this regard; the Kaunertal project has been supported by the provincial and federal governments even as it would significantly alter identified high conservation value waterbodies, and no accompanying conservation plans are being discussed.

1 significant gap

Analysis of significant gaps against proven best practice

Not assessed.

19.3 Scoring Summary

The current, clearly insufficient Environmental Impact Declaration demonstrates the complexity of the biodiversity issues in the project, but also a certain lack of commitment and experience on the part of TIWAG. However, it is assumed here that the Austrian regulatory system can eventually force TIWAG to properly assess the biodiversity impacts and to address each identified impact with specific management measures.

More importantly, with about 1,000 hydropower projects already operating in Tyrol, protecting biodiversity one new project at a time is not likely to be effective. The unavoidable residual impacts of the Kaunertal Extension Project can only be addressed through a regional program to protect remaining wilderness areas, in particular the last few waterbodies that have not been directly impacted by hydropower development. Austria and Tyrol already have made a number of efforts to define high conservation-value rivers, but these efforts are not credible if they are perceived to be non-binding.

Topic Score: 2

20 Erosion & Sedimentation (P-20)

This topic addresses the management of erosion and sedimentation issues associated with the project. The intent is that erosion and sedimentation caused by the project is managed responsibly and does not present problems with respect to other social, environmental and economic objectives, and that external erosion or sedimentation occurrences which may have impacts on the project are recognised and managed.

20.1 Background Information

The high alpine areas are highly erosive and sediment transport through the narrow valleys is an important siting, design and operational issue for hydropower projects. Individual events like rock avalanches can contribute a large percentage of sediment in movement. The melting of permafrost soils and retreat of glaciers add to the erodible surface area. Sedimentation can also become a safety issue as rock avalanches can divert creeks or even create small natural dams, leading to flooding in valley communities. Rock avalanches and mass movement of slopes can threaten the safety of hydropower projects both during construction and during operation. Construction sites can add to the sediment load.

After 50 years of operation, sediment accumulation in the Gepatsch reservoir is very limited; an estimated 90,000 m³ of sediment remains in the reservoir per year (equivalent to 0.07% of active storage) and the total accumulation is only about 4 million m³. The fine sediment is distributed over the entire length of the reservoir but does reportedly not affect operations (bottom outlet, pressure tunnel intake and spillway).

In addition to the natural inflow into the Gepatsch reservoir, ten water intakes of the existing Kaunertal project have been in operation for 50 years and have been flushed periodically (automatically or manually) of accumulated coarse sediment. Similar designs and operational procedures are planned for the additional intakes in the Kaunertal extension project. This protects transfer tunnels, reduces sediment accumulation in the reservoir and maintains coarse sediment load in the affected creeks. However, since the flow in the affected creeks is reduced, often to zero, sediment is not transported downstream as effectively as before the flow alterations. It is possible, though not yet reported, that this may impede flows and create new safety issues, in which case sediment would have to be mechanically removed. Changed sediment transport will also change river morphology which in turn will impact on aquatic ecology and other river uses (compare P-19 Biodiversity and P-23 Downstream Flows). The flushing of the intakes allows long-term monitoring of sediment quantities, which naturally vary according to runoff conditions. Over the first ten years of operations, on average a surprisingly low sediment freight of annually 48m³/km² catchment area was observed.

20.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An erosion and sedimentation issues assessment has been undertaken with no significant gaps; the assessment identifies impacts that may be caused by the project, issues that may impact on the project, and establishes an understanding of the sediment load and dynamics for the affected river system.*

The Report on the Evaluation of Completeness of the Environmental Impact Declaration has identified a number of gaps with regards to erosion and sedimentation, and has expressed some doubts regarding the approvability of the project unless assessment and management approaches are improved. Specifically, the report indicates that the Environmental Impact Declaration may have used optimistic (low) estimates of sediment loads and that the modelling of the sediment transport through the water intakes in the Ötztal needs improvement (the results of physical and numerical modelling need to be made consistent and subjected to sensitivity analysis). These gaps are expected to be rectified.

Regarding the Gepatsch reservoir, it is expected that while more fine sediment will be contributed through the tunnels from the Ötztal, the pump storage operations will also keep more fine sediment in suspension, allowing it to be discharged through the power stations instead of remaining in the reservoir.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

The assessment does not currently appear to take broad considerations or risks and opportunities sufficiently into account. However, if the additional information requested by the independent experts is submitted, these criteria would be satisfied, possibly with some remaining gaps regarding very long-term effects and effects outside the Ötztal, which appears to be getting the most attention in this regard.

Criteria met: Yes

Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address identified erosion and sedimentation issues have been developed for project implementation and operation with no significant gaps.*

The Report on the Evaluation of Completeness requests a number of additional management approaches and possibly, design changes. Given that the sediment regime in the Ötztal is currently considered to be not stable and that multiple impacts on erosion and sediment are occurring simultaneously, a comprehensive sediment management plan for this valley is required, which would allow evaluating the planned transport of sediment through the water intakes in context. Given the reduced flows downstream, the report also advises that structural measures such as groins may be needed to support sediment transport downstream of the intakes.

The additional water discharged from the second power station at Prutz into the Inn will raise water levels there. In order to reduce flood and groundwater levels, it is planned to deepen the bed of the Inn, which is considered possibly not sustainable and costly (if the river will continue to fill up again the excavated areas) or alternatively, may lead to upstream bed incision.

Drainage and erosion control measures are also considered not sufficiently detailed for a number of construction sites and spoil areas.

It is assumed that these management issues will be resolved in the final version of the project documentation and design before approval.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

While a sediment management plan for the Ötztal would address some issues and create some processes to deal with longer-term risks and opportunities, this is only one of several valleys affected by the project. Also, the region might experience some rather dramatic changes with regards to erosion and sedimentation over the lifetime of the project, and it is unlikely that a current plan would be able to adequately identify all relevant issues and /or to assign responsibilities for some – potentially very costly - interventions. It is assumed that this criterion will not be met.

Criteria met: No

Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimise and mitigate erosion and sedimentation issues arising from project activities and erosion and sedimentation issues that may impact on the project with no significant gaps.*

It is considered likely that the final siting, design and operational plans will largely address erosion and sedimentation issues as currently understood.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans avoid, minimise, mitigate and compensate erosion and sedimentation issues due to project activities with no identified gaps; and plans provide for enhancements to pre-project erosion and sedimentation conditions or contribute to addressing erosion and sedimentation issues beyond those impacts caused by the project.*

Some gaps are considered likely to remain regarding the alteration of flows and sediment balances on a total of 82km of rivers and creeks. No positive impacts of the project against pre-project conditions, resolution of issues remaining from the original Kaunertal project, or contributions to external erosion or sedimentation issues are known.

Criteria met: No

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

While a sediment management plan for the Ötztal would address some issues and create some processes to deal with longer-term risks and opportunities, this is only one of several valleys affected by the project. Also, the region might experience some rather dramatic changes with regards to erosion and sedimentation over the lifetime of the project, and it is unlikely that a current plan would be able to adequately identify all relevant issues and /or to assign responsibilities for some – potentially very costly - interventions. It is assumed that this criterion will not be met.

Some gaps are considered likely to remain regarding the alteration of flows and sediment balances on a total of 82km of rivers and creeks. No positive impacts of the project against pre-project conditions, resolution of issues remaining from the original Kaunertal project, or contributions to external erosion or sedimentation issues are known.

2 or more significant gaps

20.3 Scoring Summary

While the sediment load registered in the existing Kaunertal project has been surprisingly low, the fact remains that fluvial geomorphology on a series of rivers and creeks is influenced in complex ways. The planners of the extension project could have done more to anticipate future erosion and sedimentation issues in a potentially strongly affected high alpine region.

Topic Score: 3

21 Water Quality (P-21)

This topic addresses the management of water quality issues associated with the project. The intent is that water quality in the vicinity of the project is not adversely impacted by project activities.

21.1 Background Information

The most relevant water quality issues in any hydropower project are the quality of reservoir water, any changes to downstream water quality, and construction-phase impacts. The water quality in the project area is generally very good because there are few anthropogenic impacts upstream. All natural inflows into, as well as intakes directing flows into the Platzertal and Gepatsch reservoirs are located upstream of settlements; minor impacts results from tourism and summer cattle grazing. Reservoir water is not used for drinking water, fishing or recreation.

It is known that generally, reservoirs may change a number of water quality parameters (temperature, gas content, etc). Because the project changes water flows along 82 kms of rivers and streams, dilution effects may also differ from the natural state, i.e. any existing pollution may become more or less diluted (and could potentially breach quality thresholds). Groundwater levels may be raised or lowered, which can also affect quality of drinking water supplies.

In the case of the Kaunertal, water quality has not been a major issue in the discussions about the existing project or the extension project. The main issues appear to be the construction phase impacts, including surface runoff from construction sites, seepage from tunnels, and the domestic wastewater from the Gepatsch work camp with up to 590 workers.

Water quality is indirectly also addressed separately in other specific topics, namely erosion and sedimentation, which is addressed in topic P-20, wastewater relevant to public health, which is addressed in topic P-18 and the impact of water quality on aquatic life, which is addressed in P-19.

21.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *A water quality issues assessment has been undertaken with no significant gaps.*

The Report on the Evaluation of Completeness of the Environmental Impact Declaration has identified a number of minor gaps with regards to the assessment of water quality and water quality impacts, which should be able to be rectified relatively easily in the final documentation.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

The Austrian water quality monitoring system is relatively comprehensive and interprets water quality broadly, including ecological health and biological indicators. However, no information is publicly available to demonstrate that more than the most obvious water quality impacts specific to the project have been taken or will be taken into account. It must be assumed here that given the low level of attention to water quality, broad considerations, risks and opportunities are not sufficiently considered.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address identified water quality issues have been developed for project implementation and operation with no significant gaps.*

As few water quality issues have been identified, the number of required water quality management actions is also limited. The independent reviewers have identified (in the Report on the Evaluation of Completeness) a number of actions that need to be described in more detail to ensure compliance with Austrian water quality requirements; it is likely that these can be met.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

There is a comprehensive national water quality monitoring system in Austria. However no specific monitoring stations and publicly available monitoring results could be identified that would ensure relevant future monitoring against known baseline conditions. It may be assumed that in the short term, water quality in the three valleys downstream of the main construction sites will be monitored and national standards will be enforced, however it is uncertain that any long-term emerging risks and opportunities could be identified.

One minor opportunity to improve domestic wastewater disposal at the Platzeralm downstream of the Platzertal reservoir (wastewater currently goes directly into creek) has been identified by the independent reviewers.

Criteria met: No

Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimise and mitigate negative water quality impacts arising from project activities with no significant gaps.*

No current gaps are apparent in the management of water quality, provided that standard Austrian practices will be followed.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans avoid, minimise, mitigate and compensate negative water quality impacts with no identified gaps; and plans provide for enhancements to pre-project water quality conditions or contribute to addressing water quality issues beyond those impacts caused by the project.*

Minor gaps in managing water quality impacts may result from the complex flow regime changes along 82 km of rivers and streams, which will change (i.e. generally reduce) the capacity of waterbodies to dilute pollutants. No positive impacts of the project against pre-project conditions, resolution of issues remaining from the original Kaunertal project, or contributions to external water quality issues are known.

Criteria met: No

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

No information is publicly available to demonstrate that more than the most obvious water quality impacts specific to the project have been taken or will be taken into account. It must be assumed here that given the low level of attention to water quality, broad considerations, risks and opportunities are not sufficiently considered.

No specific monitoring stations and publicly available monitoring results could be identified that would ensure relevant future monitoring against known baseline conditions. It may be assumed that in the short term, water quality in the three valleys downstream of the main construction sites will be monitored and national standards will be enforced, however it is uncertain that any long-term emerging risks and opportunities could be identified.

Minor gaps in managing water quality impacts may result from the complex flow regime changes along 82 km of rivers and streams, which will change (i.e. generally reduce) the capacity of waterbodies to dilute pollutants. No positive impacts of the project against pre-project conditions, resolution of issues remaining from the original Kaunertal project, or contributions to external water quality issues are known.

2 or more significant gaps

21.3 Scoring Summary

The project appears to follow a minimalist approach to water quality issues. This may be acceptable as water quality is overall good, project impacts not large, and the Austrian water quality monitoring and management system is quite comprehensive. However, opportunities to go beyond basic good practice have been missed so far.

Topic Score: 3

22 Reservoir Planning (P-22)

This topic addresses the planning for management of environmental, social and economic issues within the reservoir area during project implementation and operation. The intent is that the reservoir will be well managed taking into account power generation operations, environmental and social management requirements, and multi-purpose uses where relevant.

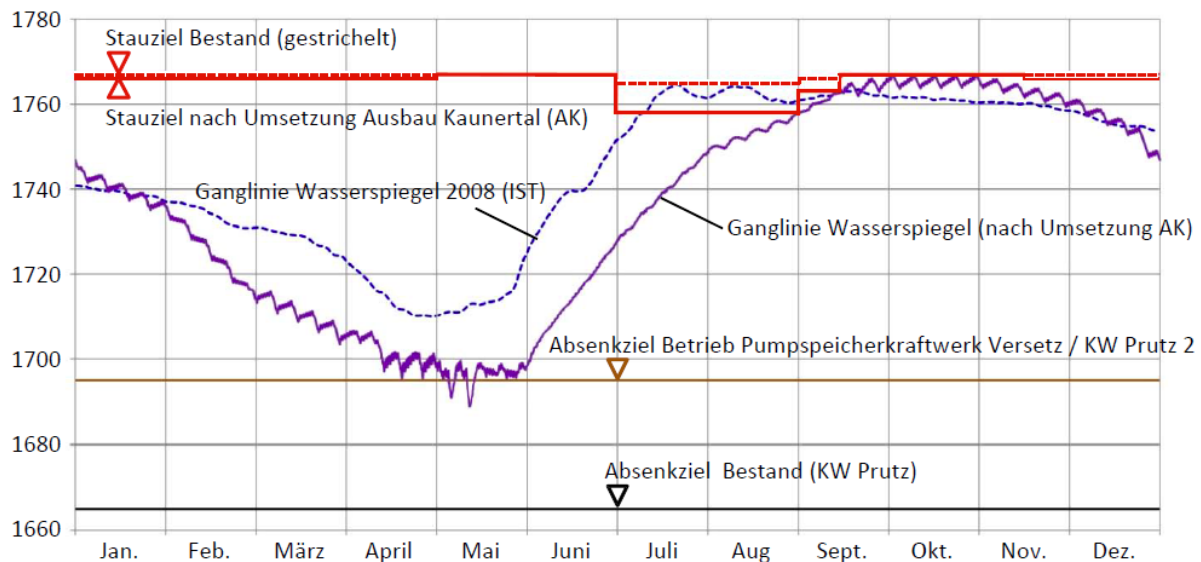
22.1 Background Information

The Kaunertal Extension Project will re-operate an existing reservoir (Gepatsch) to serve as the lower pump storage reservoir, and construct a new, smaller reservoir (Platzertal) as the upper pump storage reservoir. In addition, two minor reservoirs are built in the upper Ötztal to feed the water transfer tunnels.

The basic issue that needs to be balanced in reservoir operations is varying reservoir levels, which are generally required from a power generation point of view but not favourable in terms of environmental conditions, social and safety issues. A reservoir with a stable reservoir level generally has better ecological status, including riparian vegetation; releases flows equal to inflows and therefore, closer to natural flow variations; is aesthetically more favourable and allows for recreation (fishing, boating and other uses); and exposes the dam and the slopes of the reservoir to less stress. However, multi-purpose considerations may call for some variation. The two project reservoirs are essentially single-purpose reservoirs with a minor modification to allow for some flood control in the summer season.

The vertical distance between the upper and lower storage target levels for the Gepatsch reservoir will be reduced from 100m to a still considerable 65-70 m. Within that band, operating rules will change in two ways: one, a lowering of the target level in the summer to accommodate floods; two, short-term fluctuations from pump storage operations. In a typical winter week, levels will vary by +/- 4 m, in a typical summer week by +/- 2.5 m. Maximum level variations per day are limited to 4 m.

Figure 9: Changes in operating rules for the Gepatsch reservoir



(Stauziel Bestand (dashed red line): current upper storage target level; Stauziel nach Umsetzung Ausbau Kaunertal (AK) (solid red line): future upper storage target level; Ganglinie Wasserspiegel 2008 (IST): current seasonal storage variation in the year 2008; Ganglinie Wasserspiegel nach Umsetzung AK): future seasonal storage variation in typical year; Absenksziel Pumpspeicherkraftwerk Versetz / KW Prutz 2: future lower storage target level; Absenksziel Bestand (KW Prutz): current lower storage target level)

The future operating rules for the Platzertal reservoir are not publicly known. Because the upper reservoir has a surface area about one third that of the Gepatsch reservoir, the pump storage operations would cause levels to vary by about three times as much in it as in the Gepatsch reservoir (i.e., up to 12 m per day). The contribution of the Platzertal creek to the reservoir is minor, so that it is likely that there would be either fewer seasonal variations, or that the level would vary jointly with that of the Gepatsch reservoir to maintain roughly the same head throughout the seasons.

Analyses specifically dealing with related issues concerning heritage resources, public health, wildlife, erosion and sedimentation, water quality, and downstream flows are addressed under topics P-17, P-18, P-19, P-20, P-21 and P-23 respectively. Considerations relating to choice of site and design are assessed under topic P-4.

22.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment has been undertaken of the important considerations prior to and during reservoir filling and during reservoir operations, with no significant gaps.*

Given that TIWAG has already publicly announced operating rules for the Gepatsch reservoir and has surely included rules for the Platzertal reservoir in its Environmental Impact Declaration, assessments must have been undertaken to determine important issues. These would have included primarily technical and commercial considerations. Other assessments have addressed cultural and biological values, particularly in the new Platzertal inundation area. There are no trees in the Platzertal so that a potential removal of vegetation did not have to be assessed. The assessment of safety issues resulting from the first filling and future operations is included under P-8 Infrastructure Safety.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment is based on dialogue with local community representatives, and takes broad considerations, risks and opportunities into account.*

Some local communities have been, upon their request, partially informed about the intended operating rules, but there has apparently not been a dialogue during the underlying assessment. It is unknown to what extent broader considerations, risks and opportunities were taken into account.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Plans and processes to manage reservoir preparation, filling and operations have been developed.*

The operating rules for the Gepatsch reservoir were likely part of a broader set of documents addressing reservoir preparation, filling and operations, which have not yet been finalized and released. The Report on the Evaluation of the Completeness of the Environmental Impact Declaration asked that in particular, the procedure for active flood control through reservoir management be described in more detail. Also in order to effectively manage the reservoir, more hydrological monitoring was considered necessary, for example regarding the contribution of Platzertal creek to the Platzertal reservoir. It is likely that these requirements can easily be completed for the final version of the documents.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, reservoir plans are based on dialogue with local community and government representatives; and processes are in place to anticipate and respond to emerging risks and opportunities.*

Some local communities have been, upon their request, partially informed about the intended operating rules, but there has apparently not been a dialogue. Some processes are in place to monitor hydrological conditions, energy markets, safety and other issues of relevance for reservoir management. It is uncertain what provisions and conditions the operating licenses or concessions will contain to ensure that TIWAG can and will react to emerging information.

Criteria met: No

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

Some local communities have been, upon their request, partially informed about the intended operating rules, but there has apparently not been a dialogue during the underlying assessment or on the reservoir management strategy. To avoid double counting this is considered one significant gap.

1 significant gap

22.3 Scoring Summary

Not all reservoirs can and should be for multiple purposes. In some cases, reservoir management strategies will be exclusively based on technical-commercial considerations, maximizing the output from given plants so that fewer power stations are required overall. However, that decision should be taken after the options and their impacts have been comprehensively assessed in dialogue with affected communities. This is considered a significant gap against best practice. It is unusual to have a reservoir with such drastic water level variations as the Gepatsch reservoir in an area with heavy touristic use and high visibility as in the Kaunertal. The Platzertal reservoir however, due to its location will only be visited by a very small proportion of local citizens and tourists.

It is considered in TIWAGs own interest and therefore assumed to be a given that the company will maintain an appropriate system to monitor any issues that will influence reservoir operations. It is uncertain but of high public interest under what conditions – including stakeholder involvement - TIWAG can modify operations.

Topic Score: 4

23 Downstream Flow Regimes (P-23)

This topic addresses the flow regimes downstream of hydropower project infrastructure in relation to environmental, social and economic impacts and benefits. The intent is that flow regimes downstream of hydropower project infrastructure are planned and delivered with an awareness of and measures incorporated to address environmental, social and economic objectives affected by those flows.

23.1 Background Information

Between the existing Kaunertal project and the extension project, there will be significant cumulative impacts on the flow regime along ca. 82 km of rivers and streams (comprising peaking operations on Inn below Prutz, raising of Runserau weir, changed operations of Gepatsch reservoir and resulting flow and sediment changes in the Fagge, large scale water regime changes through existing intakes on the Taschachbach, Pitze, Fagge, Rostizbach, Wazebach, Madatschbach, Verpeilbach, Fissladbach, Radurschlbach and the Nauderer Tscheibach, as well as new intakes on the Königsbach, Ferwallbach, Gurgler Ache, Venter Ache and Platzerbach, resulting in flow changes at least down to the confluence with the Inn).

These affect four tributary valleys to the Inn with reduced flows (as water is diverted into tunnels and through reservoirs and power stations) as well as the Inn itself with increased flows (as water from the Ötztal and Pitztal is diverted to enter the Inn at Prutz, upstream of the confluence of the Inn with the Pitzbach and Ötztaler Ache).

Multiple environmental and social impacts are expected to be caused by these changes in flow regime. While it may be expected that current designs of intakes leave higher minimum flows than at the time of the design of the original Kaunertal project, below the intakes the Gurgler, Venter and Ötztaler Ache will still at times only have 20% of natural flows. There are concerns about effects on aquatic ecology; (potential future) drinking water and irrigation supplies as well as sufficient water availability for snow making; groundwater levels and riparian/valley floor vegetation; sediment transport; kayaking and rafting operations (which are currently world-class but may be reduced to beginners' levels in some sections); and general aesthetic deterioration of important landscape elements, in a valley intensely dependent on tourism.

More water will enter the Inn below the Prutz power stations during peaking operations. An increase in the re-regulating capacity is planned to compensate for those flows.

There are inter-relationships with topic P-19 where all aspects dealing with biodiversity impacts and conservation are dealt with, P-20, concerning the ability of the flows to transport sediment and cause erosion, as well as P-22, dealing with the reservoir itself.

23.2 Detailed topic evaluation

Assessment

Analysis against basic good practice

Scoring statement: *An assessment of flow regimes downstream of project infrastructure over all potentially affected river reaches, including identification of the flow ranges and variability to achieve different environmental, social and economic objectives, has been undertaken based on relevant scientific and other information with no significant gaps.*

The Report on the Evaluation of the Completeness of the Environmental Impact Declaration has identified several gaps in the assessment of downstream flow impacts. Peaking operations at the Prutz power stations, the operation of the Runserau re-regulation storage, any intended operational changes to the downstream Prutz-Imst diversion project (which uses the Prutz tailrace pond as its head pond), and the overall impact on

flows in the Inn will have to be described in more detail. The flow regimes of the Venter, Gurgler and Ötztaler Ache downstream to the Inn will have to be described in more detail. This will have to include the rivers' usability for kayaking and other whitewater sports. Finally, the implications of those flow changes for the economy of the Ötztal (image for tourism, impact on whitewater operators, hotels and restaurants, employment etc.) will have to be evaluated. This is considered quite feasible for TIWAG, as apparently some background studies have already been prepared but not released to the authorities.

In a number of specific technical topics (such as flood management and aquatic ecology) the currently insufficient assessment of changed flows in the Ötztal was also mentioned. It is expected that this complex will be a major focus in the revision of the Environmental Impact Declaration.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment is based on field studies, and takes broad considerations, risks and opportunities into account.*

According to publicly available information, the assessment of the effects of flow regime changes was partially based on field studies.

It is uncertain to what extent risks and opportunities were evaluated and integrated into the design and operating rules of the Kaunertal Extension Project. Almost all flow changes could have been avoided if only one component of the Extension Project (the pump storage component between the Gepatsch and the Platzertal reservoir) had been pursued, without the Ötztal diversion component. The long-term dependency of the Ötztal on water availability must be seen as a major risk, particularly if climate conditions change.

There is also no indication to what extent increased minimum flows of the creeks diverted in the 1960s for the original Kaunertal project, in line with today's practices, has been considered.

Criteria met: No

Management

Analysis against basic good practice

Scoring statement: *Plans and processes for delivery of downstream flow regimes have been developed that include the flow objectives; the magnitude, range and variability of the flow regimes; the locations at which flows will be verified; and on-going monitoring; and where formal commitments have been made, these are publicly disclosed.*

Some environmental management measures have been proposed which are meant to compensate for changed flows and related landscape changes, even if they are not directly about flows. For example, on the Gurgler Ache a broadening of the river on 120 m is proposed, although that would surely not fully compensate for a total of 8 identified conflicts on 5.3 km.

According to publicly available information, while certain minimum flows have been announced, these were not based on particular flow objectives which would go beyond generation objectives. However, it is to be expected that the compatibility of these flow objectives with relevant regulations – in particular, the European requirement that the ecological status of a waterbody be maintained – will be tested and possibly corrected during the approvals process. This would likely include appropriate monitoring and disclosure requirements.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and commitments in plans are public, formal and legally enforceable.*

Natural runoff as well as the environmental, economic and social demands will keep evolving and flow regimes may need to be adapted in the future. An appropriate monitoring and adaptive management regime would be able to identify such changes and rebalance the different objectives. While stakeholders will be able to request changes, it is unknown whether technical design parameters and regulatory conditions will accommodate changes.

It is assumed that flow release rules will be public, formal and legally enforceable.

Criteria met: No

Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The assessment and planning process for downstream flow regimes has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; on-going processes are in place for stakeholders to raise issues with downstream flow regimes and get feedback.*

Neither TIWAG which is largely motivated by generation objectives nor environmental regulators are effectively allowing local stakeholders an important input into the determination of flow regimes. TIWAG has put forth designs that it believes to be technically-commercially feasible, and which are now evaluated by environmental experts. The main determinant for downstream flow regimes under the European regulatory system is the achievement of 'good ecological status' in all waterbodies, which is assessed by reference to aquatic biology. It is accepted that ecologically appropriate flow regimes are necessary to meet this status. While the Water Framework Directive explicitly requires stakeholder involvement, this has been interpreted as largely a dissemination exercise by national government agencies. Stakeholders are not involved in negotiations over ecological objectives as these are already defined in the Water Framework Directive. Also, socio-economic objectives (such as kayaking and rafting objectives) do not enjoy the same status as ecological objectives. However, the achievement of ecological objectives, which often call for higher flows, may work towards achieving higher flows as well.

In practice, negotiations with socio-economic stakeholders over flow regimes are likely to happen not because of regulatory but because of political concerns. In the downstream TIWAG project Imst-Haiming, TIWAG is already discussing certain flow adaptations with the rafting industry. However, the lack of a structured process to engage with stakeholders over flow issues is seen as a significant gap.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Not assessed.

Outcomes

Analysis against basic good practice

Scoring statement: *Plans for downstream flows take into account environmental, social and economic objectives, and where relevant, agreed transboundary objectives.*

The plans for downstream flows, as far as they are known publicly, do take a variety of objectives into account, but very unevenly. It appears that the downstream flows in the Platzertal will be largely maintained and that the effects of additional peaking on the Inn will be mitigated by additional re-regulation capacity. However, it is

not apparent how the impacts on the Ötztal have been taken into account and balanced out, except for some positive contribution to flood control.

It is unknown whether a downstream flow regime in the Ötztal that left a larger proportion of water in the valley and might represent a better balance, would still be technically-commercially viable for TIWAG.

Criteria met: No

Analysis against proven best practice

Scoring statement: *In addition, plans for downstream flow regimes represent an optimal fit amongst environmental, social and economic objectives.*

Not assessed.

Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

Neither TIWAG which is largely motivated by generation objectives, nor environmental regulators are effectively allowing local stakeholders an important input into the determination of flow regimes. In practice, negotiations with socio-economic stakeholders over flow regimes are likely to happen not because of regulatory but because of political concerns. However, the lack of a structured process to engage with stakeholders over flow issues is seen as a significant gap.

It is not apparent how the impacts on the Ötztal have been taken into account and balanced out, except for some positive contribution to flood control.

2 or more significant gaps

Analysis of significant gaps against proven best practice

Not assessed.

23.3 Scoring Summary

Downstream flows is another topic where a low score has resulted from a lack of serious engagement with stakeholders, in particular in the Ötztal where the planned water diversions have multiple, mostly negative impacts on a series of interest groups. It may be possible to achieve a balanced flow regime and broad acceptance in the Ötztal, but this would require a very different approach than has been displayed so far.

Topic Score: 1

Appendix A: Visual Evidence

	
<p>Photo 1: Platzertal (high alpine summer meadows in the Platzertal, downstream of dam site)</p>	<p>Photo 2: Proposed dam site in Platzertal</p>
	
<p>Photo 3: Dairy cattle on the Platzertal</p>	<p>Photo 4: Historic mine site above planned Platzertal reservoir</p>
	
<p>Photo 5: Artefacts of mining activities with a view of the upper Platzertal (reservoir zone)</p>	<p>Photo 6: High-altitude wetlands and river meanders in planned inundation zone (Platzertal)</p>

	
<p>Photo 7: Gepatsch reservoir in the Kaunertal (view downstream)</p>	<p>Photo 8: Spillway of the Gepatsch reservoir (view upstream)</p>
	
<p>Photo 9: Aerial view of Ötztal Alps (photo WWF)</p>	<p>Photo 10: Ötztaler Ache (Ötztal creek) in the middle Ötztal valley; photo WWF)</p>
	
<p>Photo 11: Platzertal near proposed dam (late summer; photo WWF)</p>	<p>Photo 12: Verpeilbach in Kaunertal, one of the creeks diverted into the Gepatsch reservoir just downstream of the bridge</p>

Appendix B: Documentary Evidence

Websites

TIWAG (<http://www.tiwag.at>)

Verein Lebenswertes Kaunertal (<http://www.lebenswertes-kaunertal.org>)

Gemeinde Kaunertal (<http://www.kaunertal.eu>)

Flüsse voller Leben (<http://www.fluessevollerleben.at>)

dietiwag.org (<http://www.dietiwag.at>)

Documents

Amt der Tiroler Landesregierung (2006) REGIERUNGSANTRAG Ausbau der heimischen Wasserkraft; Fortschrittsbericht.

Amt der Tiroler Landesregierung, Abteilung Wasser- Forst- und Energierecht (2007) Tiroler Energiestrategie 2020. Grundlage für die Tiroler Energiepolitik.

Amt der Tiroler Landesregierung (2008) ANTWORTEN AUF HÄUFIGE, WICHTIGE FRAGEN ZUM UVP-VERFAHREN.

Amt der Tiroler Landesregierung, Abt. Wasser-, Forst- und Energierecht (2011) Tiroler Energiemonitoringbericht.

AMT DER TIROLER LANDESREGIERUNG, Abteilung Wirtschaft und Arbeit (2011) TIROLER WIRTSCHAFTS- UND ARBEITSMARKTBERICHT 2011.

Amt der Tiroler Landesregierung, Arbeitsgruppe TIWAG-Optionenbericht (IFF – Soziale Ökologie, Österreichisches Ökologie-Institut, Joanneum Research Graz) (2005) Fachliche Prüfung des TIWAG Optionenberichtes über mögliche Standorte künftiger Wasserkraftnutzung in Tirol. Synthesebericht.

Amt der Tiroler Landesregierung (2011) Kriterienkatalog für die weitere Nutzung der Wasserkraft in Tirol. März 2011, Version 3.0. Von der Tiroler Landesregierung mit Beschluss vom 15. März 2011 zur Kenntnis genommen.

Amt der Tiroler Landesregierung, Abteilung Finanzen (2013) Beteiligungsbericht 2012.

Anonymous (n.d.) Der Konflikt um die Tiroler Gebirgsbäche - eine Analyse (chapter available on <http://www.dietiwag.at>)

APA/OGM (2013) Vertrauensindex Energieunternehmen. Umfrage.

Beschluss des Ötztal Tourismus gegen die Ableitung der Gurgler und Ventner Achen ins Kraftwerk Kaunertal (2013).

Braun und Weber (2002) Droht im nächsten Sommer Hochwasser vom Gletscher? Bayerische Akademie der Wissenschaften, Kommission für Glaziologie.

Bundesministerium für Land- und Forstwirtschaft, Österreichische Staubeckenkommission (1996) Richtlinie zum Nachweis der Standsicherheit von Staudämmen.

Bundesministerium für Wirtschaft, Familie und Jugend (2011) Energiestatus Österreich 2011.

Der Standard: Tiroler Bauernaufstand gegen Kraftwerk (8.11.2012)

dietiwag.org: Kaunertalkraftwerk: Interview mit einem Experten (2.3.2006).

dietiwag.org: Trick 17 oder Jetzt kommt die Hochwasserkeule (4.8.2006)

dietiwag.org: Neuer unmöglicher Speicherstandort: TIWAG tritt völlig überstürzt die Flucht nach vorne an (15.5.2010)

Gemeinde Kaunertal (2009) INNOVATIONSPROJEKT KAUNERTAL: Zukunftsstrategie für unseren Lebensraum. Abschlussbericht der Arbeitskreise.

Gemeinde Kaunertal (2012) Positionserarbeitung der Gemeinde Kaunertal zum TIWAG-Projekt „Kraftwerkserweiterung Platzertal“. ENDBERICHT Projekt 1: Positionserarbeitung.

Gemeinde Kaunertal (2012) Positionserarbeitung Kraftwerkserweiterung. Vortrag Dr. Heitzmann zur Kollaudierung Altbestand. Protokoll Dienstag, 19. Juni 2012.

Gemeinde Kaunertal (2013) Entwicklungsprogramm 2013 bis 2017. lt. Beschluss des Gemeinderates vom 20. März 2013.

Gemeinde Kaunertal (2013) Positionserarbeitung Kraftwerkserweiterung. Der Themen- und Fragenkatalog und Antworten des Projektbetreibers.

Gemeinde Kaunertal (2013) Positionserarbeitung Kraftwerkserweiterung: Vertiefende Fragen an die Tiwag.

Gems (2012) Entwicklung eines integrativen Konzeptes zur Modellierung hochwasserrelevanter Prozesse und Bewertung der Wirkung von Hochwasserschutzmassnahmen in alpinen Talschaften. Modellanwendung auf Basis einer regionalen Betrachtungsebene am Beispiel des Ötztals in den Tiroler Alpen.

Glauser (2012) Ausbau Speicherkraftwerk Kaunertal und Erweiterung auf Pumpspeicherung. WWF-Factsheet.

Landesrechnungshof Tirol (2011) Bericht über die Sonderprüfung bei der TIWAG zum „Sonderprojekt Kaunertal“ sowie der Verwendung der für Werbung, Öffentlichkeitsarbeit, Beratung und Agenturen bilanzierten Mittel in den Jahren 2008, 2009 und 2010 bisher.

Landmann (2012) Wildnisareal Ötztaler Alpen: Naturräumliche und naturkundliche Bedeutung und Besonderheiten. Eine Übersicht und Grobanalyse. (summary in English: Wilderness Area Ötztaler Alps: The Significance and Diversity of its Landscape and Ecosystems. A general assessment and ecological analysis.)

Landmann (2012) Ausbau Kraftwerk Kaunertal. Eine Stellungnahme zu Teilbereichen der UVE der Tiroler Wasserkraftwerke AG.

Lebensministerium (2010) Nationaler Gewässerbewirtschaftungsplan 2009.

Lebensministerium (2012) Die österreichische Strategie zur Anpassung an den Klimawandel: Teil 2 – AKTIONSPLAN. Handlungsempfehlungen für die Umsetzung.

Pisticky (2013) Umweltverträglichkeitsprüfung Ausbau Kraftwerk Kaunertal. Zusammenfassender Bericht zur Vollständigkeit der Einreichunterlagen. Bericht für die Tiroler Landesregierung, Abteilung Umweltschutz.

Pöyry Energy GmbH (2008) Wasserkraftpotentialstudie Österreich. Endbericht. Studie erstellt im Auftrag des VEÖ.

Rundschau: "Da muss man anständig nachbessern" (2.7.2013)

Strobl (2006) Fachwissenschaftliche Bewertung der Projektvorschläge für den weiteren Ausbau der heimischen Wasserkraft in Tirol.

Technische Universität Bergakademie Freiberg, Fakultät für Geowissenschaften, Geotechnik und Bergbau, Institut für Geotechnik (2008) Geotechnik–Jahresexkursion 2008 vom 28.09. bis 03.10. in die „Ostalpen“. Talsperre Kaunertal/Gepatschspeicher.

Tiroler Tageszeitung (Energiebeilage): TIWAG: Motor für die Tiroler Energieautonomie. Interview-Seite mit Vorstandsvorsitzendem Dr. Bruno Wallnöfer und Vorstandsmitglied DI Alfred Fraidl (18.5.2011)

Tiroler Tageszeitung: Gemeinden sind bei Speicher Platzertal verhandlungsbereit (08.02.2011)

Tiroler Tageszeitung: Nein zu Kraftwerk im Kaunertal (01.09.2012)

Tiroler Tageszeitung: Tiwag bietet Kaunertal doppelte Entschädigung (07.03.2012)

Tiroler Tageszeitung: Weniger Vertrauen in Tiwag (13.06.2013)

Tiroler Tageszeitung: EU stellt Weichen für Kaunertal (25.07.2013)

Tiroler Umweltschutz (2012) TIWAG- Tiroler Wasserkraft AG, Innsbruck; Ausbau Kraftwerk Kaunertal – Stellungnahme der Landesumweltschutz gemäß § 5 Abs 4 UVP-G 2000.

TIWAG (2004) Optionenbericht über mögliche Standorte künftiger Wasserkraftnutzung in Tirol.

TIWAG (2010) Kaunertalkraftwerk. Störfall-Informationsblatt.

TIWAG (2011) Bericht über das 87. Geschäftsjahr der TIWAG-Tiroler Wasserkraft AG vom 1. Jänner bis 31. Dezember 2010.

TIWAG (2012) Vorwort des Vorstands zum Geschäftsbericht 2011.

TIWAG (8.3.2012) Ausbau der Wasserkraft in Tirol. Das Projekt Ausbau Kraftwerk Kaunertal. Projektinformation. Präsentation in Feichten.

TIWAG (n.d.) Neubau Druckschacht Kaunertal. Projektinformation.

Tschada (1975) Beobachtungen über die Geschiebefracht von Hochgebirgsbächen. 10 Jahre Geschiebemessungen bei den 10 Wasserfassungen des Kaunertalkraftwerks.

WWF (2010) Ökomasterplan Stufe II. Zustand und Schutzwürdigkeit der Österreichischen Fließgewässer mit einem Einzugsgebiet größer 10 km². Ergebnisse und Handlungsempfehlungen.
<http://www.oekomasterplan.at/home.html>.

WWF (n.d.) Gefahr für die Ötztaler Alpen: Mega-Projekt Ausbau Kraftwerk Kaunertal. WWF-Factsheet.

WWF (n.d.) Ökologische Besonderheiten Wildnisgebiet Ötztaler Alpen. WWF-Factsheet.

WWF (23. Juli 2013) Kraftwerk Kaunertal: Veto von Berlakovich gegen EU-Diktat notwendig; WWF: TIWAG missbraucht EU-Instrument für Flusszerstörung. Presseaussendung.