



# Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify)



Norway

Written by: Sunna Kokkonen, Jurga Tallat-Kelpšaitė, eclareon GmbH

8 March 2021, Berlin

*Disclaimer: "This document has been prepared for the European Commission however it reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein."*

Supported by the



eclareon



Öko-Institut e.V.  
Institut für angewandte Ökologie  
Institute for Applied Ecology

## Executive summary

As the largest hydropower producer in Europe and number six in the world, Norway has more than a century of experience of constructing and permitting hydropower (Norwegian Government, 2016b). Therefore, Norway has developed a highly standardised permitting framework, which has undergone numerous changes throughout its history, for example, the pressure put on it by the civil society: Norwegian hydropower permitting is addressing social, cultural and ecological issues to an increasing extent.

Numerous lessons can be drawn from the Norwegian hydropower permitting framework as it has already responded to challenges arising from interfering with river ecosystems and culture and livelihood of affected communities. There is still room for improvement for balancing between the interests of increasing electricity demand and emissions-free energy needed for Norway's ambitious climate, which are often in opposition with ensuring minority rights and preserving biodiversity and valuable landscapes.

In Norway, the Ministry of Petroleum and Energy (MPoE) and its sub-entity the Norwegian Water Resources and Energy Directorate (NVE) are responsible for licensing medium and large hydropower plants. Permits for smaller hydropower installations can be issued by municipalities, which lessens the bureaucratic load on MPoE and NVE. Nevertheless, both of the latter authorities still fulfil an advisory function in small-scale hydropower permitting.

NVE serves as a one-stop-shop for hydropower permitting in Norway, which has resulted in a number of benefits. Firstly, centralising permitting power and expertise within a single authority ensures rather efficient, knowledgeable and balanced licensing decisions. Secondly, due to the transparent and standardised licensing process, civil society actors are familiar with the process and their rights and possibilities to influence the ongoing projects. Thirdly, developers can receive assistance with all their doubts and questions from the NVE.

Some of the most successful features of the Norwegian hydropower licenses are their in-built benefit-sharing mechanisms, such as license fees paid to municipalities and the state, and their mechanisms of environmental and social protection in the area. The producers and the permitting authorities are also open to developing and deploying less invasive hydropower technologies.

In last two decades, Norway underwent a boom of small- and medium-scale hydropower construction, which was sparked by the state policies aiming at reaching its climate policy targets. This trend is now fading, and the next massive task for permitting authorities will be revising and updating the licenses for old, large hydropower plants, which were built in the time of less stringent environmental and social requirements for hydropower (Haugen and Jensen, 2021).

## Table of contents

Executive summary .....	2
1. National RES targets and relevant RES technologies .....	4
2. Administrative and grid connection procedure .....	4
2.1. Relevant process steps.....	4
2.1.1. Site selection .....	5
2.1.2. Administrative authorisation .....	6
2.1.3. Grid connection permit.....	12
3. Corporate legal fiscal .....	14
4. Other .....	14
5. Use of IT systems.....	15
6. Complaint procedure.....	15
References .....	17

## **1. National RES targets and relevant RES technologies**

Virtually all electricity produced in Norway is from renewable sources (RES). In December 2020, hydropower constituted 90,8% of Norwegian electricity production and wind power 8,4% (Statistics Norway, 2021). Traditionally, the share of hydropower has been even higher but since the early 2000s, wind power has also been introduced into the Norwegian electricity mix. However, the emerge of wind power does not imply at ceasing hydropower development. On the contrary, the amount of annual electricity production from hydropower has been increasing at an accelerating pace in the last few years, and the trend is likely to continue, still (Aanensen and Holstad, 2018).

With the practically emissions-free electricity sector, Norway or the EU have not set any future targets for the Norwegian renewable electricity (RES-E) for 2030. However, Norway has pledged to increase and improve renewable energy production in the country by e.g., enhancing licensing procedures, increasing electricity exports and attracting high-energy infrastructure, e.g., data centres, into Norway (MPoE, 2016).

This report covers the most important elements of the current hydropower permitting framework with the focus of best practices in Norway. The technology was chosen due to numerous factors, the most significant being the sheer production volume. Secondly, Norway has extensively mapped out its remaining hydropower potential and made the findings publicly available to developers, accelerating hydropower development further (IHA, 2017). Together with the financial support available from the joint electricity certificate framework with Sweden, numerous small-scale hydropower installations have been installed in the past decade (ibid.). Thirdly, several older hydropower installations are becoming outdated, and as their licenses and technology are being revised and updated, the environmental and social impacts of hydropower are being addressed more carefully than in the past and the revamped installations will increase in capacity (IHA, 2017). Finally, Norway aims at expanding its electricity exports, and hydropower will be crucial to realising this target (MPoE, 2016).

## **2. Administrative and grid connection procedure**

### **2.1. Relevant process steps**

According to the Norwegian legislation, only entirely or mainly publicly owned entities can produce large-scale hydropower. Smaller installations can have a private owner. Therefore, private developers are automatically excluded from operating a large hydropower plant.

When selecting a suitable site for a new hydropower installation in Norway, one has to bear in mind that hydropower is not permitted in protected watercourses. Furthermore, the relevant spatial plan (regional or local) serves as a guideline for the activities undertaken in the area.

In Norway, the administrative authorisation of a hydropower installation consists largely of applying for a single, multi-purpose permit: the hydropower license. Depending on the size of the installation, the license is granted either by the local municipality (most installations smaller than 1 MW), the NVE (1-10 MW installations) or by a Royal Decree (installations larger than 10 MW). The licensing process is long and thorough: for large-scale hydropower plants, it consists of several rounds of planning, public hearings, consultations, discussion, and approval. On the other hand, the Norwegian hydropower

license is multi-functional: it includes elements of a construction permit, spatial planning, environmental impact assessment (EIA), environmental permit, cultural heritage permit, and so on.

Parallel to the hydropower license procedure, the developer shall also apply for grid capacity, which is granted in cooperation with the competent authority for the hydropower license. Once capacity has been granted, the owner of the almost-finished installation will enter into a grid connection agreement with the local transmission system operator (DSO) or transmission system operator (TSO), Statnett.

The final permit to be acquired by a new hydropower producer is electricity sales license, which is also issued by the NVE.

As this report only focuses on the key permitting procedures and their advantages, some permitting processes are only mentioned briefly or not covered at all. For example, site selection and construction permits are only referred to. The report aims at highlighting the streamlined and integrated functioning of the unique NVE permitting framework, which can serve as an example for establishing one-shop-stops and centralising the expertise for renewables permitting to the hands of a single state agency.

## 2.1.1. Site selection

### Process flow

The project developer has to obtain rights to a waterfall (potential hydropower site) as a first step on the way to permitting a new hydropower installation, as stipulated by the Waterfall Rights Act. The core principle of the Act is that large-scale Norwegian hydropower resources are owned and managed by the public. According to the Act, only public bodies and companies with a maximum of one-third private ownership are eligible for a production license, and therefore, bodies with more private ownership than that are automatically excluded from developing (large) hydropower in the first place (art. 1-3 Waterfall Rights Act).

In general, it is not permitted to install hydropower in protected watercourses, with the exception of installations below 1 MW. A deviation from this principle has to be decided by the *Storting* (the Norwegian parliament) (art. 30 Water Resources Act).

In Norway, licenses for hydropower installations larger than 10 MW are always licensed by a national-level authority (see Section 2.1.2. for more information). Therefore, it is not necessary to change spatial plans to fit the purposes of hydropower in advance as spatial planning is included in the hydropower permitting process. Spatial planning has to be taken into account when selecting a site for a small-scale hydropower installation if the permitting authority is the municipality/municipalities, in which the installation would be located. See Section 2.1.2. for more information about the permitting process under the building permit procedure.

#### *Small-scale devices*

The Waterfall Rights Act does not apply to hydropower installations smaller than 4.000 horsepower (art. 2).

### Identified good practice

**Hydropower potential.** The Norwegian Government has published information on the available potential large hydropower sites in their Master Plans for Hydropower

Development until 2016, when the tool was discontinued as it has largely fulfilled its purpose. The remaining, realistic hydropower potential is about 34 TWh/year, excluding protected rivers and hydropower projects that have been rejected in the past. The Master Plans also included 'an order of priority for projects that can be considered for licensing' (MPoE, 2015).

## 2.1.2. Administrative authorisation

### Process flow

#### *Hydropower license*

Three pieces of legislation set the stage for hydropower licensing in Norway. The Energy Act, which covers all energy production, and two hydropower-specific laws: The Watercourse Regulations Act and the Water Resources Act. The Water Resources Act describes the licensing procedure, whereas the other two also include provisions on the revision of these licenses.

Such activities are usually subject to a license issued either by a Royal Decree (large installations) or by NVE. The licensing requirement applies to the construction of a new hydropower installation, as well as refurbishing or modifying ongoing hydropower installations in a way that would affect nature conservation values, or resuming previously suspended activities in protected watercourses (art. 35 Water Resources Act).

The licensing process flow depends on the size of the hydropower plant as the process is somewhat easier for installations with the capacity under 1 MW. Very small installations (under 1 MW) can be exempted from the license requirement unless they could interfere with community interests or have impacts on the local environment or landscape. Very small installations can be licensed by the municipality. When in doubt, the developer can submit a notification form to the NVE to assess the need for licensing (NVE, 2019a).

The permitting process goes as follows:

#### *For hydropower installations with up to 10 MW capacity*

The application process begins with the developer studying the permitting framework and the intended site, and identifying the potential conflicting interests and other possible issues related to the project (e.g., compatibility with the local plan or with nature conservation interests). Hydropower installations less than 1 MW capacity have a simplified permitting procedure, see below. After mapping out what should be paid special attention to in the application, the application materials are gathered and submitted to the NVE. The application should contain information on e.g., hydrology, environmental information, location (map), and the technology used. The NVE has made templates available for the aforementioned attachments (NVE, 2019a).

After the application has been received by the NVE, it will be examined and additional information is required, if necessary. Once the application materials are complete, they will be sent for a public hearing where affected parties can have their say. After studying the application materials, conducting a site visit and receiving the comments from a public hearing, the NVE will take the licensing decision (NVE, 2019a).

Once the license has been granted, the Environmental Inspectorate and the Dam Inspectorate will continue to supervise the permitted hydropower activities. They will follow up on e.g., the planning and execution of environmental and safety plans as well as the construction and operation of the hydropower plant (NVE, 2019a).

Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify)  
Norway

Plants with an annual production of less than 40 GWh are not subject to the licensing fee.

*For hydropower plants with annual production of over 40 GWh*

The application process is somewhat more detailed for larger hydropower plants. In addition to the steps described above for smaller installations, the developer has to take preparatory steps prior to application itself. Applicants who wish to have a hydropower plant with annual production over 40 GWh have to make a notification to the NVE about the project in order to evaluate the need of impact assessments. A public hearing is held on the NVE's assessment report and the developer's proposal for impact assessment. As a part of the consultation, the developer has to inform local residents about the project as well as host a public meeting (NVE, 2019b).

After the consultation phase, the NVE will decide on the final impact assessment programme. The developer is responsible for carrying out the assessment according to the programme (NVE, 2019b). When the impact assessments have been completed, the developer will submit the licensing application together with the impact assessments reports to the NVE. Next, the affected stakeholders are consulted and a public hearing meeting organised. The NVE will also conduct a site visit to the future installation, which will be open for the municipality and affected stakeholders (NVE, 2019b).

Large hydropower projects not requiring an impact assessment notification will conduct the necessary impact assessment during the application stage (NVE, 2019b). This applies to installations larger than the 10 MW capacity described above but not large enough to require a pre-notification.

After inspecting all application documents, including the assessments and comments from stakeholder consultations, the NVE will publish their recommendation whether the license should be granted or not to the Ministry of Petroleum and Energy (MPoE). In order to grant the license, the advantages of the project need to outweigh the disadvantages caused – the so-called 'trade-off principle', which is codified in the article 25 of the Water Resources Act.

The MPoE will consult affected ministries and municipalities, assess the application package and present the case to the government. The licensing decision is taken by a Royal Decree of the King-in-Council. The MPoE sends the decision to the applicant and the NVE, who will be responsible for the follow-up and inspection of the upcoming planning, construction and operation (NVE,2019b).

The hydropower licensing conditions contain provisions on benefit-sharing mechanisms. For example, when the plant is in operation, the NVE will calculate the licensing fee the plant has to pay to the affected municipalities (art 14. Watercourse Regulation Act). Owners of large hydropower plants are also obliged to feed in a share of the electricity produced to the municipalities affected by the plant (NVE, 2020a).

*Repowering*

If the hydropower installation has not become operational within the legal timeframe or has not been operational for two years, the hydropower license can be revoked. In both cases, the developer has to apply for a new license (art. 27 Water Resources Act).

*Decommissioning*

If the owner of a hydropower installation wishes to decommission the installation, they must notify all interested parties first. The facility must be deconstructed and the watercourse must be restored as close to its original (pre-hydropower) condition as

possible as well. If the decommissioning poses a threat to the ecosystem or to another public interest, a license may be necessary to acquire (art. 41 Water Resources Act).

#### *Small-scale devices*

Since 2018, most small hydropower plants up to 1 MW are not licensed by the NVE but municipalities (art. 64 Water Resources Act). In the exceptional cases, these very small installations are licensed by NVE instead of the municipality: for example, in protected rivers and national salmon watercourses, the NVE takes over the permitting process (NVE, 2019a). Municipalities grant licenses for these very small hydropower installations according to the regulations set in the Water Resources Act and the Planning and Building Act. Some articles of the Water Resources Act also apply to the small hydropower installations licensed by municipalities, such as the duty of care, maintenance and closure (art. 5, 10, 37, 41) (NVE, 2019a).

The permit can only be issued if the benefits of the project are proven greater than its disadvantages (art. 25 Water Resources Act). The application has to contain appropriate information on the impacts of the construction project in order for the municipality to make their decision. The MPoE has issued guidelines for municipalities licensing small-scale hydropower (NVE, 2018).

When processing the application, the municipality will ensure that all relevant stakeholders are sufficiently informed about the project and are being consulted according to the public participation legislation set out in Chapter 5 of the Planning and Building Act (art. 1-5, ch. 5). Some of the important bodies to consult are the County Governors, the Sámi parliament (if the project would affect Sámi livelihoods), and the central government, and relevant NGO's (NVE, 2018).

If the permit is granted, the municipality will be responsible for the follow-up of the installation during the construction period. The NVE will take over monitoring responsibility once the hydropower installation has become operational (NVE, 2019).

## **Deadlines**

### ***Hydropower license***

The licensing process itself does not entail strict deadlines and applications are processed on individual basis.

The construction of a hydropower installation shall commence within 5 years of granting the license and completed within the following 5 years. It is possible to apply for an extension to the deadline from the MPoE. (art. 15 Water Course Regulation Act)

## **Identified good practice**

**NVE as a one-stop-shop.** The hydropower license, processed and granted by the NVE or processed by NVE and granted by a Royal Decree, has a wide variety of built-in features that are often granted as separate licenses in other countries: operation permit, environmental permit, construction permit, and so on. The NVE serves as a national contact point and one-stop-shop for hydropower licensing, which has multiple benefits from the viewpoint of smooth permitting. The applicant can turn to NVE with all permitting-related questions and doubts, and the same rings true to other stakeholders taking interest in upcoming hydropower projects, such as NGOs willing to have their say about the ongoing processes.

The one-stop-shop role also has positive effect on the NVE's internal functioning as it is home to (almost) all the hydropower permitting expertise and experience in Norway. The

NVE can combine all possible aspects of permitting into the same decision-making 'table', which allows it to acquire a comprehensive picture of the potential hydropower projects, and to assess an assembled impact of the project at hand. Considering all possible impacts and features at the same time is time-consuming, but according to the interviewed NVE experts, it enables the institution to take 'balanced and sustainable decisions' (Haugen and Jensen, 2021).

NVE is in charge of most hydropower-related permits and procedures, but not all. For example, the authority for land use lies within municipalities. However, the permitting authorities, such as NVE, municipalities and grid operators, are engaged in long-standing cooperation when it comes to combining interests and evaluating the effects and plans of potential hydropower projects (Haugen and Jensen, 2021).

**Standardised permitting procedure.** The core principles of the Norwegian hydropower permitting system have remained the same since the adoption of the first legal instruments for the purpose. Up to this day, the same – albeit substantially updated – legal instruments still steer hydropower permitting.

Due to the well-established nature of the hydropower licensing procedure, also other stakeholders than the permitting authority and hydropower producers are very familiar with the procedure and know-how and when they can get engaged in order to have their views heard. Civil society actors, such as environmental NGOs, are familiar with the permitting process and their rights to participation in it.

According to the interviewed experts, the value of a pre-defined, standardised permitting procedure lies in the high degree of participation and transparency derived from it. In Norway, hydropower permitting is not perceived as a black box administrative machinery producing decisions separately from the civil society, unlike in countries where the permitting framework is more fragmented and public participation mechanisms less developed (Haugen and Jensen, 2021; Håpnes, 2021).

The standardised application procedure and NVE expertise also allow for flexible management of applications. In the last two decades, NVE was flooded with applications for small and medium-sized hydropower installation licenses. They were handled with a streamlined approach, and application templates made it easier to handle the piles of applications. The NVE also conducted public hearings for projects planned for the same region at the same time, which lessened the regional authorities' administrative load. The 'boom' of small and medium-sized installations resulted from the Norwegian government's attempts to stick to its renewable energy targets (Haugen and Jensen, 2021).

**Built-in benefit-sharing and compensation mechanisms.** As described above in the process flow part, Norwegian hydropower permits always have in-built benefit-sharing and compensation mechanisms. These mechanisms have a long tradition on Norwegian hydropower permitting, and they have substantial impacts on communities' willingness to allow hydropower in their lands. Firstly, municipalities have come to view hydropower as a stable source of income due to the annual license fees and the 'compulsory power' that they can either consume or sell on an open market for profit. Secondly, hydropower producers are often obliged to make reparations to the affected ecosystems and recreational activities, such as fishing. The reparations can take the form of an environmental develop fund, for example. It is important to note that some of these benefit-sharing mechanisms are only relevant to large hydropower plants; small-scale hydropower projects are usually initiated by the local community and therefore, they benefit the locals by default (Haugen and Jensen, 2021; NVE, n.d.).

**Licensing as a political, not legal, process.** In Norway, hydropower (as well as other energy production) licensing decisions are not issued by a judicial body like in, i.e., Sweden, but by a political entity. When a hydropower license is given by Royal Decree, it is approved by the Norwegian government as a whole, and not only the relevant ministry (MPoE). In a similar manner, the instance of appeals is not a court but the MPoE. This aspect has both negative and positive implications to the hydropower sector. Focusing on the advantages, the system has concentrated all hydropower-related decision-making power to the same political institution, which has led to a high level of expertise in the topic within NVE and MPoE. Furthermore, as political bodies are responsible for permitting and appeal processes, it is easier and quicker for the Norwegian Government to change their hydropower policy and implement the changes.

**Consultation of vulnerable groups.** Norway made crucial mistakes with hydropower permitting in the past by ignoring the massive social, cultural and ecological effects of hydropower projects. Perhaps the most notorious example is the construction of the Alta dam in the country's then-northernmost region Finnmark in 1970s and 1980s: a large dam was planned to be built in the region's well-known salmon fishing river, which held an irreplaceable importance to the local indigenous communities' livelihoods, such as reindeer herding and salmon fishing, as well as threatened the river ecosystem. The project was strongly opposed by Sámi and environmentalist groups, and the protests even lead to violence. The Alta hydropower project raised environmental and cultural awareness in Norway and abroad, and lead to large-scale empowerment and increase in popularity of Sámi and environmental organisations. In the end, the dam was built but the Norwegian state had learned a lesson: to involve civil society actors in large infrastructure projects more. These participation rights have now been codified in legislation, too (see e.g., ch. 5 Planning and Building Act) (Håpnes, 2021; Haugen and Jensen, 2021; Energy Portlet, 2021).

The interviewed NVE experts regard especially the site visits and public meetings as beneficial participation and consultation mechanisms as they enable all interested persons and groups to get first-hand experience of the project and ask questions from both authorities and the developers on-site (Haugen and Jensen, 2021).

**Improved environmental assessments and standards.** As Norway has been harnessing its rivers for hydropower production since the late 19<sup>th</sup> century, ecological and social considerations have not been very high on the agenda since the beginning (Norwegian Government, 2016b). Partly following the Alta incident and other controversial hydropower projects in the late 20<sup>th</sup> century, ecological, social and cultural considerations have gained increasing importance in the contemporary hydropower permitting and operation (Håpnes, 2021).

Hydropower has numerous negative effects on the local environment, and indirectly, on human livelihoods, such as reindeer husbandry or tourism. The effects to the local ecosystem include, e.g., 'reduction in water flow, impacts on the fish fauna, [...] loss of selected species dependent on water and humidity (biodiversity) and loss of specific types of nature' (Bakken et al., 2012).

As a result, today's hydropower permitting pays more attention to environmental standards: for example, natural dynamics such as seasonal flooding is preserved to some extent, and it is no longer allowed to dry out the river's stream all the way anymore. However, the interviewed expert from an environmental organisation stresses that even the current standards for EIAs are not high enough, and that the assessments, such as biological screenings, should not be conducted by experts chosen by the project developer but by experts appointed by a governmental authority. There is solid

documentation that consultant registration on biodiversity is insufficient in several hydropower projects, and that the ecological impact of a project is higher than the project developer indicates. The underregistration of biodiversity, redlisted species, nature types and ecological impact of hydropower projects has also been documented by Naturvernforbundet in some projects (Håpnes, 2021; NVE, 2015).

According to an older study from 2012, small-scale hydropower has in the past posed potentially larger threats to the local environment as their EIA processes have been less thorough than large-scale hydropower's – a conclusion that bunks the myth of the more devastating effects of large-scale hydropower (Bakken et al., 2012). However, the interviewed NVE experts also note that today's standards for EIAs are considerably higher than in the past, and that for the (mainly small-scale) hydropower licenses granted in years 2012-2017 already demonstrate an ambitious level of environmental standards and mitigation requirements for the hydropower producers. It is also important to note that licensing conditions of a hydropower installation include a wide authorisation for third party agencies, such as the Directorate of Nature Management, impose mitigation measures (Haugen and Jensen, 2021).

**Increased importance of social and environmental factors in waterway management.** Partly as a result of the increased inclusion of civil society actors in hydropower planning and permitting, the standards for social and environmental impacts of hydropower have become more stringent over the years. The green movement began to affect hydropower starting from the 1960s, but the development of less intrusive hydropower production still continues (Haugen and Jensen, 2021). The Alta incident, as described above, raised domestic and international interest in the downsides of hydropower, and therefore forced producers and authorities to decrease negative impacts caused to local communities and ecosystems. Interviewed experts from NVE as well as from an environmental NGO state that today, environmental and social issues such as fish migration and the preservation of Sámi (indigenous) livelihoods are high on the agenda in water infrastructure projects (Håpnes, 2021; Haugen and Jensen, 2021). Håpnes (2021) considers the implementation of the Water Framework Directive as an important factor for the enhanced environmental and social considerations in hydropower projects. Economic factors are no longer the only considerations that matter – albeit they still outweigh ecological considerations to an extent, according to Håpnes (2021).

Environmental and social considerations have also been included in Norwegian hydropower management legislation. For example, it is no longer allowed to drain the waterflow of river completely (art. 10 Water Resources Act).

**Revision of old hydropower licenses.** Currently, Norwegian hydropower licenses for large installations are obliged to undergo a revision process every 30 years (Håpnes, 2021; Haugen and Jensen, 2021). The obligation to review water management plans and procedures is also codified in the EU Water Framework Directive, which also applies to Norway (art. 13 Directive 2000/60/EC). The large hydropower entering into the revision process in the past few years and the near future have been built in an era of less stringent environmental standards and thus, in need of substantial correction measures (Haugen and Jensen, 2021).

As a part of the revision, the negative impacts of hydropower installations to the river ecosystem are also assessed, and possible ways to mitigate the damage are mapped out and suggested. The revision is also done on the large, important river ecosystems heavily impacted by the 20<sup>th</sup> century hydropower infrastructure, which may and has already led to partial restoration of the impacted river ecosystems (Håpnes, 2021). The restoration measures may include, inter alia, ramping restrictions and more stringent restrictions on

the use of reservoirs (Haugen and Jensen, 2021). According to Håpnes (2015), in many rivers, there is ample room to improve the level of restoration works as the existing damage has been far too high when examined with today's standards.

The interviewed NVE experts identify the revision of old hydropower licenses as one of the most important tasks of the NVE today and in the near future (Haugen and Jensen, 2021).

However, the current revision interval of 30-50 years falls short of the 6-year interval in Water Framework Directive, which remains a vital concern for nature conservation organisations and concerned citizens (ibid.).

**Increased importance of scientific research in waterway management.** In the past decade, there has been a significant increase of quality and amount of scientific information and know-how on how to restore rivers used for hydropower production. Scientists have successfully identified the damage caused to the local ecosystem, such as river salmon and brown trout populations, and identified the procedures that could mitigate it. Nowadays, the technology and knowledge for improving heavily damaged river ecosystems exists and is already being applied in practise; for example, river streams have been successfully rebuilt and terraces built. Authorities and hydropower plant operators have been increasingly interested in improving the damaged ecosystems, but large-scale implementation is still lacking. However, the interviewed expert highlights that river ecosystems should not be only understood as limited to the water body, but that altered waterflows have a drastic impact on biodiversity in nearby land areas, swamp forests, wetland and other water-dependent nature types along the rivers as well, e.g., on the wild reindeer migration (Håpnes, 2021).

### 2.1.3. Grid connection permit

#### Process flow

This process step is relevant for new hydropower installations as well as repowering existing installations.

The legal instrument for regulating grid connection is the Energy Act. The energy act license is also issued by the NVE, and the hydropower license and energy act license processes run parallel to each other.

In Norway, the competent authority regarding the connection of a medium-sized or large electricity-producing installation to the local or state grid is either directly or indirectly the national grid operator Statnett. Usually, larger electricity producers enter into communication about potential grid connection directly with Statnett, whereas smaller producers communicate with the local DSO, which, in turn, interact with Statnett.

For a hydropower project developer, the first step in the grid connection procedure is to contact the local grid owner (either a local DSO or Statnett) and inquire about possible capacity in the grid. The developer has the opportunity to ask for guidance regarding the existing network capacity and to share preliminary details about the hydropower project. It is possible to skip this guidance phase and instead, proceed straight to the capacity application process. The difference between the guidance request and application is that when responding to a guidance request, Statnett does not offer the developer the opportunity to order grid capacity yet. However, Statnett encourages potential electricity producers to enter into dialogue and ask for advice whenever needed (Statnett, 2020).

Once the developer has a tangible plan for constructing, licensing and financing their new hydropower installation, they can apply for grid capacity from Statnett (or a local DSO). Statnett can assist the applicant and inform them about the documents and plans necessary to enclose to their application. Once Statnett has received the application, it will assess the grid capacity in the area. The costs of the assessment are borne by Statnett, not the applicant (Statnett, 2020).

Statnett or the local DSO will inform the applicant about possible grid capacity. The applicant has to order the requested capacity within the given deadline, or otherwise the capacity is made available to other applicants again. It is possible for the developer to reapply if the deadline is missed. In a similar manner, Statnett can terminate the reservation if the developer cannot stick to the planned progress (Statnett, 2020).

Once the installation or power plant is almost ready to be commissioned, the developer and Statnett or DSO will enter into a network agreement, which defines the terms, costs and other details for the operation of the installation (Statnett, 2020).

If Statnett/DSO cannot offer the applicant a connection to the existing grid, the applicant will receive a reply communicating the need for network development measures. The applicant will be informed about the measures needed to improve the infrastructure in the way that it would allow for a connection, and an estimate of the costs and schedule. The grid enhancement studies and measures may take up to over 10 years if the necessary changes are substantial. Based on the estimate, the developer can decide whether they would like to proceed to the network construction work. The costs of the works are shared by the developer and the network operator (Statnett, 2020).

Statnett has the duty to provide grid connection to both consumers and producers, but only to operationally sound projects.

### *Small-scale devices*

Hydropower installations that can be connected directly to the local 22 kV distribution grid do not need to apply for a grid connection permit from the NVE, but instead, can enter into an agreement directly with the area licensee. The area licensee is a DSO operating within a geographically limited area (NVE, 2019c).

## **Deadlines**

Once all necessary documents and information have been received, the Statnett grid capacity assessment usually takes 1–3 months. The deadline is not binding and complex cases may take longer (Statnett, 2020).

Once the developer has received a grid capacity offer from Statnett or DSO, they need to communicate their reply to the grid operator regarding the offer in

- three months, if they are negotiating directly with Statnett
- six months, if they are negotiating with a local DSO since the DSO and Statnett need to enter into an agreement with each other, as well. (Statnett, 2020)

## **Identified good practice**

**Coordinated hydropower and grid connection licenses.** As energy act license and hydropower license are both often granted by the NVE (depending on the size and potential impacts of the installation, see Section 2.1.2), the processes run parallel to each other and the processes can be coordinated within the same authority (Haugen and Jensen, 2021). In addition, the NVE and Statnett are engaged in dialogue during the

licensing process and the assessment of grid capacity for hydropower projects (Haugen and Jensen, 2021). Collaboration and dialogue ensure the potential situation of granting grid capacity or a hydropower license for a project, and denying it of the other.

### 3. Corporate legal fiscal

#### Process flow

##### ***Electricity sales license***

This process step applies to new installations, or existing installations whose sales license has to be updated.

All companies that engage with electricity network operations, e.g., production and/or selling electricity, are required to possess an electricity sales license. The license is applied for using the Altinn online platform.

In order to obtain the sales license, the applicant has to be a company registered in the Brønnøysund registry and thus, have a Norwegian organisation number.

The sales license is usually the last license granted to a new hydropower installation or plant. Having obtained all other relevant licenses is a prerequisite for acquiring the sales license, and the sales license functions as a kind of a final 'green light' for the installation to become operational (NVE, 2021; NVE, 2020b).

##### ***Green Electricity Certificates***

Norway and Sweden have a joint Green Electricity Certificate system, through which they support renewable electricity financially, legally steered in Norway through the Electricity Certificate Act. According to Chapter 1 on the Act, production facilities that produce renewable energy, are approved by NVE and satisfy other technical and administrative requirements are eligible for electricity certificates.

As Norway is currently working its way out of the Electricity Certificate system, Norwegian renewable energy installations that have become operational in 2021 are no longer entitled to electricity certificates.

#### Identified good practice

**Smooth process for the sales license.** For simple installations that fulfil the criteria for the sales license, the license is approved automatically and rather quickly. Even if the license is manually processed by an NVE officer, the licensing time is usually limited to 2–4 weeks. The Altinn online application system is connected to the Brønnøysund company registry, and retrieves company information from there (NVE, 2020b).

### 4. Other

#### Process flow

There is a number of different permits that may be necessary for hydropower installations. They are not described in length in this report; below are some examples of potentially applicable permits:

- *Biodiversity permit*: activities, which could affect the local biodiversity, are subject to the biodiversity permit (art 8-12 Biodiversity Act; Hammer et al., 2020).

- *Cultural heritage permit*: the potential effects caused to cultural heritage artefacts or areas are subject to the cultural heritage permit. Hydropower projects could affect, e.g., Sámi cultural heritage sites or areas of archaeological interest (art. 9 Cultural Heritage Act; Hammer et al., 2020).

Some of these permits, such as the biodiversity permit, are included in the water resources permit procedure, if applicable to the hydropower project (Hammer, 2020).

## Identified good practice

**Integration of permits.** Several cultural and ecological aspects are already addressed during the water resources permit process, and no separate permitting procedures are often needed e.g., the biodiversity permit (Hammer, 2020). As the competent permitting authority, the NVE has centralised knowledge and experience with all hydropower-relevant permits and legislation.

## 5. Use of IT systems

### *Hydropower license*

It is possible to apply for the NVE permit using an online application system. The application with its attachments is uploaded to the online system<sup>1</sup>, and there are guidelines available concerning the file type and size. There are different forms available for different types of installations, e.g., a small-scale hydropower installation, a larger hydropower plant, or decommissioning a hydropower plant. Applications for micro-installations under 1 MW can be submitted through an electronic application form, whereas installations over 1 MW send their application documents to NVE by email (NVE, 2017; NVE, 2019a).

### *Electricity sales license*

The application process for the sales license can be completed online using an electronic form at Altinn<sup>2</sup>.

### *Grid capacity and connection*

Both the grid connection guidance inquiry and the application are sent electronically to Statnett by email (Statnett, 2020).

## 6. Complaint procedure

### *Water resources license*

Decisions taken by NVE: The decisions by NVE can be appealed by those who have the right to appeal under the Public Administration Act: mainly by persons 'having a legal interest in appealing the case' (Ch. VI, sec. 28 Public Administration Act). The complaint must be sent to the NVE within 3 weeks of the NVE publishing the decision. If the NVE does not overrule their earlier decision, the complaint will be forwarded to the MpoE, which will process the complaint and make a final decision, which cannot be appealed (NVE, 2019a; NVE, 2019b; art. 24 Water Resources Act; Ch. VI sec. 29-31 Public Administration Act).

---

<sup>1</sup> <https://www.altinn.no/skjemaoversikt/norges-vassdrags--og-energidirektorat-nve/melding-om-idriftsettelse-nye-vannkraftverk-eller-opprustings--og-utvidelsestiltak-i-eksisterende-kraftverk/>

<sup>2</sup> <https://www.altinn.no/skjemaoversikt/norges-vassdrags--og-energidirektorat-nve/soknad-om-konsesjon-for-omsetning-av-elektrisk-kraft/>

Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify)  
Norway

The NVE licensing procedure is in accordance with the Public Administration Act, which stipulates that the same bodies that are given the right to object a decision under the Planning and Building Act also have the right to appeal a licensing decision, in this case usually taken by the NVE (art. 24 Water Resources Act).

***Building permit***

Building permit decisions can be appealed by affected stakeholders listed in the Planning and Building Act (art. 4, ch. 5), and they are issued to the MPoE but are prepared by the municipality authorities first. The stakeholder submitting the objection has to provide their reason to do so (NVE, 2018).

***Grid capacity and connection***

The grid capacity and, in a later stage in the project, connection decision taken by Statnett (directly or indirectly through a DSO) can be challenged through a complaint, which is filed to the Norwegian Energy Regulatory Authority (*Reguleringsmyndigheten for energy*, RME). The legal basis of the right to complaint is codified in articles 3-4 of the Energy Act and articles 4-6 of the Regulations on Grid Regulation and Energy Market (Lie, 2021).

## References

- Aanensen, T. and Holstad, M., 2018. Tilgang og anvendelse av elektrisitet i perioden 1993–2017. Statistics Norway report. [online] Available at: <<https://www.ssb.no/energi-og-industri/artikler-og-publikasjoner/attachment/348783?ts=1632600d5b8>> [Accessed 17 February 2021].
- Bakken, T.H., Sundt, H., Ruud, A. and Harby, A., 2012. Development of small versus large hydropower in Norway – comparison of environmental impacts. *Energy Procedia* 20, pp. 185-199.
- Energy Portlet, 2021. Case study: Alta Hydropower Station. [online] Available at: <<https://portlets.arcticportal.org/casesexploitation/158-case-study-alta-hydropower-station>> [Accessed 25 February 2021].
- International Hydropower Association (IHA), 2017. Country profile: Norway. [online] Available at: <<https://www.hydropower.org/country-profiles/norway>> [Accessed 16 February 2021].
- Hammer, L. et al., 2020. NVE Veileder for utforming av søknader om konsesjon for nettanlegg. [online] Available at: <[http://publikasjoner.nve.no/veileder/2020/veileder2020\\_02.pdf](http://publikasjoner.nve.no/veileder/2020/veileder2020_02.pdf)> [Accessed 16 February 2021].
- Norwegian Government, 2016b. The history of Norwegian hydropower in 5 minutes. [online] Available at: <<https://www.regjeringen.no/en/topics/energy/renewable-energy/the-history-of-norwegian-hydropower-in-5-minutes/id2346106/>> [Accessed 25 February 25].
- Norwegian Ministry of Petroleum and Energy (MPoE), 2015. Facts 2015: Energy and Water Resources in Norway. [online] Available at: <[https://www.regjeringen.no/contentassets/fd89d9e2c39a4ac2b9c9a95bf156089a/facts\\_2015\\_energy\\_and\\_water\\_web.pdf](https://www.regjeringen.no/contentassets/fd89d9e2c39a4ac2b9c9a95bf156089a/facts_2015_energy_and_water_web.pdf)> [Accessed 8 March 2021].
- MPoE, 2016. Kraft til endring: Energipolitikken mot 2030. [online] Available at: <<https://www.regjeringen.no/contentassets/31249efa2ca6425cab08130b35eb997/no/pdfs/stm201520160025000dddpdfs.pdf>> [Accessed 8 March 2021].
- The Norwegian Water Resources and Energy Directorate/Noregs vassdrags- og energidirektorat (NVE), 2015. Etterundersøkelser av flora og naturtyper i elver med planlagt småkraftutbygging. [online] Available at: <[https://publikasjoner.nve.no/rapport/2015/rapport2015\\_102.pdf](https://publikasjoner.nve.no/rapport/2015/rapport2015_102.pdf)> [Accessed 7 April 2021].
- NVE, 2017. Søke om tiltak etter vassressurslova. [online] Available at: <<https://www.nve.no/vann-vassdrag-og-miljo/soke-om-tiltak-etter-vassressurslova/>> [Accessed 10 February 2021].
- NVE, 2018. Kommunens myndighet i mindre vannkraftsaker – informasjon til kommunen. [Online] Available at: <<https://www.nve.no/Media/6742/kommunens-myndighet-i-mindrevannkraftsaker.pdf>> [Accessed 15 February 2021].
- NVE, 2019a. Saksgang for små kraftverk. [Online] Available at: <<https://www.nve.no/konsesjonssaker/konsesjonsbehandling-av-vannkraft/sma-vannkraftverk/saksgang-for-sma-kraftverk>> [Accessed 10 February 2021].

Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES SIMPLIFY)  
Norway

- NVE, 2019b. Saksgang for større kraftutbygging. [Online] Available at: <<https://www.nve.no/konsesjonssaker/konsesjonsbehandling-av-vannkraft/storre-vannkraftsaker>> [Accessed 11 February 2021].
- NVE, 2019c. Områdekonsesjon. [online] Available at: <<https://www.nve.no/konsesjonssaker/konsesjonsbehandling-avnettanlegg/omradekonsesjon/>> [Accessed 16 February 2021].
- NVE, 2020a. Konsesjonskraft og konsesjonsavgifter. [Online] Available at: <<https://www.nve.no/konsesjonssaker/konsesjonsbehandling-av-vannkraft/konsesjonskraft-og-konsesjonsavgifter/>> [Accessed 11 February 2021].
- NVE, 2020b. Omsetningskonsesjon – Ofte stilte spørsmål. [online] Available at: <<https://www.nve.no/reguleringsmyndigheten/omsetningskonsesjon/ofte-stilte-sporsmal/>> [Accessed 16 February 2021].
- NVE, 2021. Omsetningskonsesjon. [online] Available at: <<https://www.nve.no/reguleringsmyndigheten/omsetningskonsesjon/>> [Accessed 16 February 2021].
- NVE, n.d. Proposed terms for licence under the Act relating to regulations of watercourses and the Water Resources Act for [...] to regulate and build a [...] plant. [confidential].
- Statistics Norway (Statistisk sentralbyrå), 2021. Elektrisitet. [online] Available at: <<https://www.ssb.no/energi-og-industri/statistikker/elektrisitet/aar>> [Accessed 17 February 2021].
- Statnett (Norwegian state TSO), 2020. Hvordan få nettilknytning? [online] Available at: <<https://www.statnett.no/for-aktorer-i-kraftbransjen/nettkapasitet-til-produksjon-og-forbruk/dette-er-tilknytningsprosessen/>> [Accessed 25 February 2021].

## Interviews

- Haugen, B.T. and Jensen, C.S., 2021. NVE hydropower permitting department. Interviewed on 3 March 2021.
- Håpnes, A., 2021. Naturvernforbund (Friends of the Earth Norway). Interviewed on 19 February 2021.
- Lie, H., 2021. Statnett. Email exchange 16.–23.2.2021.

## Legislation

- Water Resources Act: Lov om vassdrag og grunnvann (vannressursloven) LOV-2000-11-24-82.
- The Watercourse Regulation Act: Lov om regulering og kraftutbygging i vassdrag (vassdragsreguleringsloven) LOV-1917-12-14-17.
- The Energy Act: Lov om produksjon, omforming, overføring, omsetning, fordeling og bruk av energi m.m. (energiloven) LOV-1990-06-29-50.
- The Planning and Building Act: Lov om planlegging og byggesaksbehandling (plan- og bygningsloven) LOV-2008-06-27-71.
- Public Administration Act: Lov om behandlingsmåten i forvaltningssaker (forvaltningsloven) LOV-1967-02-10.
- Waterfall Rights Act: Lov om konsesjon for rettigheter til vannfall mv. (vannfallrettighetsloven) LOV-1917-12-14-16.