



NVE
– securing the future

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“We manage Norway’s water and energy resources,”

NVE – securing the future

Since the early beginning of water driven saws and millstones, Norwegians have made use of our waterways for industrial purposes. Through innovative research and entrepreneurship, we succeeded in developing the knowledge needed to use our natural resources to produce electricity. Today Norway is one of Europe’s leading producers of hydropower.

Ensuring a well-functioning interaction between nature and industry is exciting, but also challenging. Since the establishment in 1921, the Norwegian Water Resources and Energy Directorate’s (NVE) mandate has been to ensure that the development of Norwegian hydropower is both environmentally friendly, as well as beneficial to the Norwegian society at large.

NVE is a directorate under the Ministry of Petroleum and Energy and is responsible for the management of Norway’s water and energy resources. We also work to reduce the risk of damages associated with landslides and flooding. NVE believes in open dialogue with the local communities, and we make sure that all interested parties receive the required information.

The directorate aims to ensure an integrated and environmentally sound management of the country’s water systems, promote efficient energy markets and cost-effective energy systems, and contribute to efficient energy use. We also bear the overall responsibility for maintaining national power supplies.

NVE is involved in research and development (R&D) and international development assistance NVE is also the national centre for expertise in hydrology. In addition, with its expertise in systematic mapping and observation, NVE has become an important actor both in national and international climate research.

NVE’s social mission has many facets. This brochure gives an insight in to the scope of our obligations, and the exciting challenges we face every day.



The executive officer meets the people

From her office in the NVE building in Oslo, Tanja Midtsian is among those who help to decide how the Norwegian power system will develop. She processes the applications for power grid licensing.

Tanja's work has consequences for a lot of people. Every time a power grid of a certain size is to be built, NVE holds public meetings in the affected area. Tanja cannot count the number of municipalities she has visited or how many public meetings she has participated in. She has met people who with fervent commitment have disagreed in her assessment on where a new power grid is to be placed. Tanja admits that this can be challenging.

– The people I meet are often well prepared and have strong opinions. My task is to meet them with an open mind. We listen and register all input, she explains.

– You know, people are neither angry nor unfair. But they are eager to get information, and that's what I want to give them, she says.

New knowledge

Having to constantly update themselves on new developing fields, Tanja believes, is typical for employees in NVE. She explains that it is challenging and exciting to keep up to date on all the disciplines that are related to her own spheres of activity, such as nature and environment, landscape and tourism.

– We have to study new subjects we need to learn. In NVE we get to specialize in our fields of interest. Then we form groups of specialists, and we ask each other for advice. In this way we learn from each other, she concludes.



Our knowledge – your security

For the alarm clock to ring, for the milk to stay cold and the coffee to heat, for the incubators in the hospitals to keep the babies warm and for the industry to be able to produce its goods, we are dependent on a secure supply of electricity. By supervising, training and taking preventive measures NVE makes sure that the power suppliers are sufficiently prepared to handle breakdowns. An important task is to ensure that the role of electric power in civil emergency preparedness will be taken care of.

NVE and the Norwegian Directorate for Civil Protection and Emergency Planning have established a joint audit forum to coordinate supervision of power grid companies.

License – to resolve dilemmas

Norway's dramatic nature gives us the opportunity to make electricity from water, earth, wind, and biomass. However, construction of power grids, power plants and wind turbines can all have significant environmental impact. In such procedures, we must take into account the nature and the environmental value and public interests associated with the area. NVE contemplates growth and protection when processing applications for licences.

The processing of licence applications is carried out in accordance with energy and water legislation. This includes open consultations, public meetings and meetings with local and regional authorities. The purpose is to give all who are entitled to it, a chance to voice their opinion. In this way, all aspects of the case will be discussed, and NVE can make its decision with all the pros and cons considered.

NVE abroad

Since its establishment in 1921, NVE has acquired valuable knowledge on the exploitation of natural resources. This knowledge is in high demand in other countries, and NVE is happy to share.

Every year NVE uses significant resources on international development assistance projects supported by Norad, or through NVE's own projects. Altogether, NVE is involved in projects in more than 15 countries.

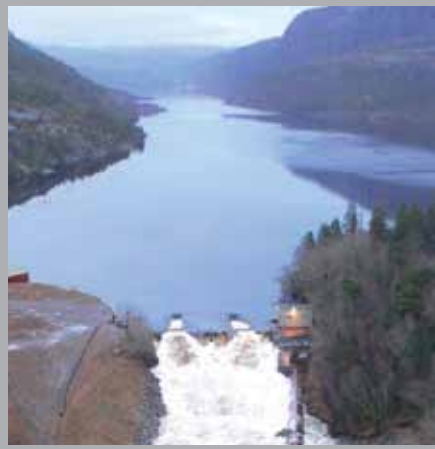
Since 1998, NVE has worked with Electricity of Vietnam on a national plan for development of hydropower in the country. During these years, an entirely new practice for the development of hydroelectric power has evolved. In addition to the technical and economical conditions, NVE has put great emphasis on the environmental and social consequences of development. Both local and national parties are invited to participate in the process. This was something quite new in Vietnam, but is now carried out in all projects.

NVE is also actively cooperating with the corresponding authorities both in Scandinavia and in Europe through NordREG and CEER/ERGEG. In these fora NVE work together with other countries on regulation of energy markets. The purpose is to facilitate more efficient energy markets in Nordic countries and Europe, for the benefit of the consumers.

Energy efficiency

Buildings account for about 40 percent of Norway's total energy consumption. To reduce this, the government now requires that buildings should be energy certified when sold or leased. This makes it easy for the seller, buyer, tenant and landlord to evaluate the energy standard of the residence. Reduced energy consumption also contributes to a better environment and lower expenses.

NVE supervises the system and issues energy certificates.



Power and energy to Europe

Norway engages in the future of Europe. Several times a month, head of the power market section of NVE, Thor Erik Grammeltvedt, travels to Brussels to assist in the development of a common set of regulations for trade of electrical power in Europe.

The efforts to integrate national markets into a common European energy market is pioneer work, Grammeltvedt says. He travels to Brussels once to twice a month to help make recommendations for the EU- Commission on how the regulations for an integrated European market for electrical power can be implemented. And Norway has a lot to contribute with.

– In many ways, Norway has come a long way in developing an efficient market design. The Norwegian end-user market works very well, he says.

In line with consumers

NVE is responsible for making sure that the customers receive the quality and security of the power supply that they pay for. Norwegians are concerned with the price of electricity and Thor Erik Grammeltvedt is more concerned than most people.

– A significant part of our job is to ensure that the price consumers pay for their electricity is the result of an efficient market. In addition, it is essential that consumers are guaranteed a high quality electricity supply, he says. Accurate consumer information about the power market is an important task for NVE.

– We are responsible for providing information on energy efficiency for houseware and we issue an annual report on the origin of all



electric power consumed in Norway. The report provides information that enables consumers to buy electrical power from renewable energy sources. This is also a result of the development of an integrated European power market, Grammeltvedt explains.

NVE constantly analyzes the short, mid and long term capacity situation for production of electrical power and develops contingency plans to be able to handle critical situations. These analyses are also important input in the processing of the many applications for licenses to build and operate both new production facilities and power grids that NVE receives.

Protecting against landslides



– My experience is that people are not too concerned about the risk of landslides in Norway. Critical situations are very rare. I could have lived in exposed Tafjord without feeling nervous, says head of section Hallvard Berg.

Berg leads the work NVE does on mapping the risk of landslides and floods and certainly knows what he is talking about. We live in a country exposed to landslides. Steep mountain slopes and deep valleys in the western parts of Norway, and clay soils in the south-east and in Trøndelag, make Norway a hotspot for many types of landslide hazards including quick clay landslides.

– Mapping landslide hazards adds knowledge and reduces uncertainty in areas at risk. We work preventively by revealing hazardous areas in order to reduce the risk of damage and loss of lives. The obtained knowledge and information is of great importance to municipalities in spatial planning, planning safety measures and in processing building applications. Our aim is to increase safety for people living in areas with a risk of landslides, he says. There is a lot of public attention on NVE and the landslide mapping and risk reduction projects. – It is important to communicate that we really do care. Many people are interested in what we do, and it is important that our work, projects and achievements are open to the public. It is rewarding to work with such a popular subject, he says.

A good workplace

Berg is educated as a land use planner from the Norwegian University of Life Sciences, and has worked in NVE since 1986. He has several years of experience working on flood inundation mapping and flood risk management, and now also landslide mapping. He is one of



Norway's most competent professionals within these areas. He is very satisfied with NVE as a workplace.

– NVE has given me a unique opportunity to develop my competence within exciting topics of high importance to society. I have seized the opportunities that have come my way, and maximized my learning. The working environment in NVE is great, and I am very satisfied working here, he says.

Challenging elements – when nature takes control

Nature is continuously changing. Glaciers are growing and shrinking. Snow is falling and melting. NVE is always present.

Flooding – when nature takes control

From ancient times, lakes and water systems have been the basis for industrial and commercial development in Norway.

We have engaged in agricultural activities and built our houses nearby water. The whole year round we live and work in close interaction with the wet element. However, from time to time, nature takes control. In years with heavy snow and rainfall during the melting period, rivers and lakes flood and threaten people and buildings. NVE carries out a comprehensive work developing flood inundation maps, spatial planning, monitoring, warning and preparing for emergencies, in order to prevent dramatic flooding situations. NVE has since 1998 developed flood inundation maps for flood prone areas, in order to provide the affected municipalities with a better basis for spatial planning and emergency preparations.

NVE has a special responsibility for the warning of flooding situations through the national flood warning service, and operates a 24 hours emergency line for flooding and avalanches. NVE assists through its regional offices, emergency departments, municipalities and the county administrator in flood related crisis management, in addition to preventive measures like supervision of local readiness.

Snow covered mountains and glistening glaciers

We live in a cold country, with 1600 glaciers covering an area of 2600 square kilometers. This not only gives fantastic opportunities for extreme nature experiences, the glaciers also play an important role in climate research. The UN Intergovernmental Panel on Climate Change (IPCC) recognizes the glaciers as key indicators for global and regional climate changes, and uses them to map and understand the global climatic development. NVE pays attention to the development of glaciers in Norway, and has a close dialogue with international scientific groups, in order to secure the most efficient use of this information.

NVE measures the glacier fronts of about 30 glaciers, in addition to the mass balance of 14 glaciers annually.

Since 50 percent of the annually precipitation in Norway is stored as snow, snow is important as energy storage for power production. The snow melting is an important factor for possible flooding crisis each spring. NVE is responsible for performing snow depth measuring, in addition to providing snow maps covering the whole country. This information is important for optimization of power production, and to prevent emergency flooding situations.

“ Every year NVE measures the glacier fronts of around 30 glaciers and the mass balance of 14 glaciers ”



NVE IN NORWAY

The NVE head office is located in Oslo, and the regional offices are located in Førde, Trondheim, Narvik, Tønsberg and Hamar.

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