DAVVI
VINDPARK

Davvi Wind Power Plant
Lebesby

Information Brochure
August 2022

INTRODUCTION

Grenselandet DA has applied to the Norwegian Water Resources and Energy Directorate (NVE) for a permit to construct and operate an 800 MW wind power plant in the mountainous area around Vuonjalrášša in the municipality of Lebesby in Finnmark.

This brochure provides a concise presentation of the project developer, the development plans, the project's schedule, potential consequences for the environment, natural resources, and the community, possible mitigation measures, and the further process. There is also a Sami version of this brochure available.

For further information about the project, we refer to the permit application along with its associated impact assessment, which is accessible at www.nve.no.
Comments on the application should be sent to NVE.

Kjøllefjord, August 15, 2022

Svein Skudal Aase
CEO, Grenselandet DA

DAVVI VINDPARK

PRESENTATION OF THE PROJECT OWNERS

Grenselandet DA is headquartered in Kjøllefjord, Lebesby. Behind the company are St1 and Ny Energi AS.

The main owner of Grenselandet AS is St1 Norge AS. The parent company, St1, is a Nordic energy company with a vision to be a leading producer and seller of CO2 aware energy. The company sells fuel, retail items, and car wash services at 1 450 St1 and Shell stations and provides fossil and renewable fuels and oil products to corporate customers in the industrial, marine, and transportation sectors. St1 supplies energy to Finnmark through depots along the coast in Kirkenes and Hammerfest, as well as through its station network throughout the county. St1's goal is to build and operate the Davvi wind power plant and establish the wind power plant as a core project in the Nordic renewable energy system.

Ny Energi is involved in the development and establishment of wind power projects both internationally and nationally, with a special focus on Finnmark.

BACKGROUND FOR THE APPLICATION

The objective of the Davvi wind power plant is to unlock some of the significant potential for increased energy production in Finnmark, one of Europe's most promising areas for wind power development. According to the report "Wind Power in Northern Norway" by the environmental foundation ZERO, the potential in Finnmark is approximately 150 TWh, which constitutes 70% of Norway's potential for onshore wind power.

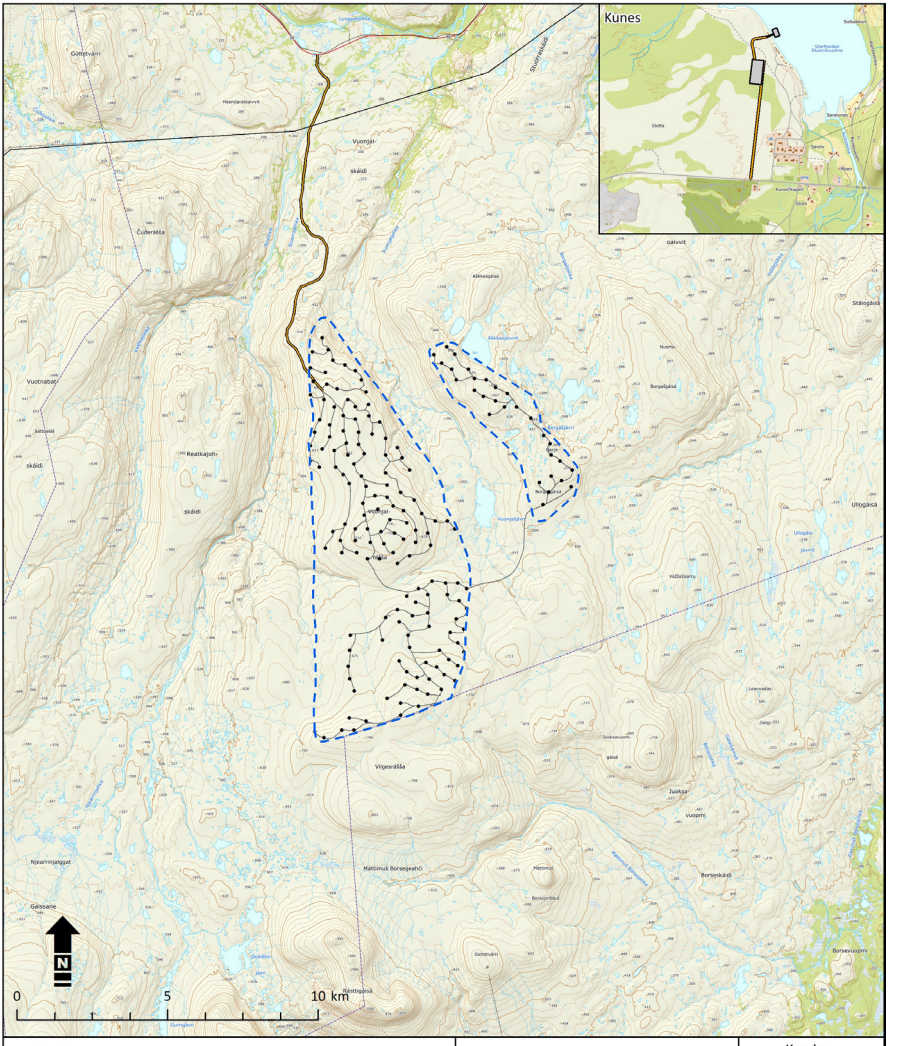
Furthermore, the Finnmark County Council has set a goal of commissioning 2,000 MW of wind power by 2030. The Davvi wind power plant (800 MW) will be an essential contribution to achieving this goal.

There is significant activity in Finnmark that requires more power, including the fishing industry, mining, and oil and gas extraction in the Barents Sea. Currently, virtually all the power in the county is consumed, which places a significant limitation on Finnmark's potential for further industrial development. Grenselandet DA believes that utilization of available wind power will be of great significance and will create jobs in the region where wind power potential is exploited. Wind power from Davvi can indeed provide a basis for new industrial development in Finnmark, thereby significantly increasing employment in the region.

DAVVI WIND POWER PLANT

The planning area for the Davvi wind power plant is located in the mountainous area around Vuonjalrášša in Lebesby municipality (see Figure 1) and covers an area of approximately 63 km². The wind power plant is planned with an installed capacity of up to 800 MW. Depending on the wind turbines chosen for construction, there will be between 66 and 160 wind turbines with a nominal capacity ranging from 5 MW to 12 MW.

The turbine components will be brought ashore at a new deep-water dock in Kunes, Lebesby municipality, and transported from there to the construction area using specialized vehicles. The access road (approximately 13 km long) from Fv 98 to the wind power plant will start just west of the bridge over Storelva and then continue straight south and up Vuonjalskaidi to the planning area on Vuonjalrášša. Inside the planning area, approximately 100 - 110 km of new internal roads will also be constructed. These roads will have gravel surfaces and a width of approximately 5 meters, plus any embankments as necessary. Furthermore, passing places for oncoming traffic will be established at regular intervals along these roads.

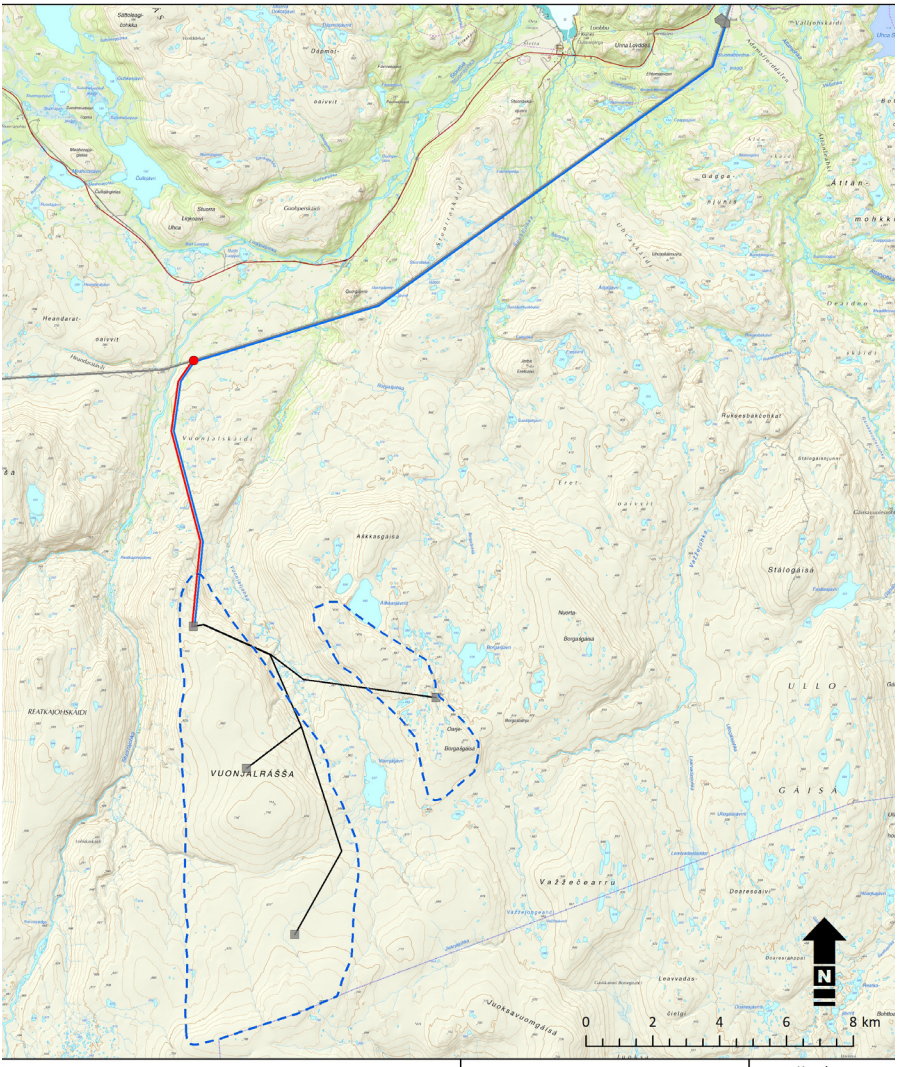


Tegnforklaring

- Planområdet
- Vindturbiner
- Adkomstveger
- Internveger
- Kai / mellomlagring

Davvi Vindpark	Kunde:
Utbyggingsplan	Grenselandet AS
Målestokk: 1:140 000	
Oppdrag: 130 087	Utarbeidet av:
Tegnet: KMO Dato: 11.04.2022	Multiconsult
Kartgrunnlag: Topografisk norgeskart	Multiconsult AS Postboks 265 Skøyen 0213 Oslo
Filnavn: Utbyggingsplan.mxd	

Figure 1. Development plan for the Davvi wind power plant.



Tegnforklaring

- Planområdet
- Transformatorstasjoner
- Koblingsstasjon (gjelder kun alt. 2)
- Ny 132 kV ledning
- Ny 420 kV ledning (alt. 1)
- Ny 420 kV ledning (alt. 2)
- Statnetts omsøkte 420 kV ledning

Davvi Vindpark Alternativer for nettilknytningen	Kunde: Grenselandet AS
Målestokk: 1:128 531	
Oppdrag: 130 087	Utarbeidet av:
Tegnet: KMO Dato: 11.04.2022	Multiconsult
Kartgrunnlag: Topografisk norgeskart	Multiconsult AS Postboks 265 Skøyen 0213 Oslo
Filnavn: Nettilknytningen.mxd	

Figure 2. Alternative solutions for the grid connection.

Figure 3. Foundation and tower after backfilling of material (Raggovidda wind power plant).

The type of foundation will, to some extent, depend on the ground conditions at the selected turbine locations. A common technology used extensively in Norway is direct anchoring in the bedrock. For rock foundations, several anchoring rods are drilled 10-20 meters into the bedrock. These rods are tensioned and fastened in the concrete top of the foundation. On top of the foundation, a ring of bolts is cast to secure the tower (see Figure 3).

At each wind turbine, there will also be an approximately 3-4 acre crane assembly area.

According to available wind resource data, the average wind speed in the planning area is approximately 9.3 m/s at a height of 116.5 meters. This indicates that, with 2018 technology, the wind power plant can produce about 3.1 TWh (net) of renewable energy. Technological advancements expected from 2018 to the planned construction period between 2025-2033 are anticipated to increase the capacity factor from approximately 49% to about 65%, similar to what is observed for the best offshore projects today.

This could lead to an increase in annual net production from approximately 3.1 TWh to about 4.1 TWh. The latter corresponds to the annual consumption of approximately 265 000 households or about 6.3 times the annual average production in the Alta power plant. The project's size and the area's excellent wind conditions make it possible to realize the Davvi wind power plant without any form of government support.

It is important to clarify that the developer is applying for a permit to build a wind power plant of up to 800 MW within the specified planning area, but the type, number, and location of the wind turbines will not be determined until after a potential positive permit decision. Detailed wind measurements and simulations will be conducted to inform the detailed design of the wind power plant, which is crucial to ensure optimal utilization of the wind resources in this area. In other words, the final development plan may include different turbine types and numbers, as well as different routes for internal roads, than what is shown in Figure 1.

Table 1. Key project data, based on the example layout in the concession application.

Component / Measure	Specifications
Total Installed Capacity	Up to 800 MW
Installed Capacity in Each Wind Turbine	5 - 12 MW
Number of Wind Turbines	66 - 160 units
Total Height (maximum)	200 meters
Access Road	12.8 km
Internal Roads	100 - 110 km
Average Production	3.1 (2019) – 4.1 TWh (2025-2033)*
Construction Cost (CAPEX)	Approximately 7 billion NOK
Operating Costs (OPEX)	Approximately 10 øre/kWh
Long-term Financial Levelized Cost of Electricity (LCOE)	21.5 øre/kWh after tax

Note: TWh = terawatt-hours, MW = megawatts, km = kilometres, NOK = Norwegian krone, øre = Norwegian cent.
*The first estimate is based on current turbine technology, while the latter is based on the expected capacity factor at the time of construction.

GRID CONNECTION

The permit application includes the following facilities for connecting the wind power plant to the grid (see also Figure 2):

- 420 kV power lines: The following development alternatives are applied for:
  - Alt. 1: A new 420 kV power line from the Davvi wind power plant to Statnett's new 420/132 kV substation in Adamsfjorddalen. This involves approximately 19 km of parallel routing with Statnett's 420 kV line Skaidi - Lebesby.
  - Alt. 2: A new 420 kV power line from the Davvi wind power plant to a 420 kV connection point along Statnett's new 420 kV line Skaidi - Lebesby. A 420 kV substation will be established with two switchgear fields towards Skaidi and Adamsfjorddalen, as well as one switchgear field towards the Davvi wind power plant.
- A main transformer station for 420/132 kV transformation in the northern part of the planning area. Size approximately 30 acres.
- Three substations for 132/33 kV transformation within the planning area. Size approximately 2 - 4 acres.
- 132 kV power lines from the substations to the main station, consisting of portal masts with wooden poles. Total length approximately 33 km.
- 33 kV ground cables between the wind turbines and the substations. Total length approximately 130 - 140 km.

PROJECT TIMELINE

The permit application and impact assessments were submitted to the NVE in late autumn 2019. There was then a pause in the permit processing for new projects, and the project was only resumed in the summer of 2022. The permit processing itself, along with any appeal process, is expected to take approximately 1.5 years. Therefore, a permit decision is expected to be reached by the end of 2023. Assuming a positive decision, construction is expected to commence in 2025. With an estimated construction time of 7-8 years, the entire wind power plant could be operational by 2033. With a phased approach, parts of the wind power plant could be operational somewhat earlier.

POTENTIAL CONSEQUENCES OF THE PROJECT

A wind power plant with its associated infrastructure will naturally have consequences for a range of interests, both positive and negative in nature. A summary of the main conclusions from the impact assessment is briefly presented below. The overall consequences of the project for a specific theme/field have been assessed on a scale ranging from very significant negative (----) through negligible (0) to very significant positive (++++).

Landscape

Large parts of Porsangerfjorden and the surrounding fjord landscape are shielded areas where the Davvi wind power plant will not be visible. From the fjord itself and parts of the fjord landscape, there will be visual contact with the wind power plant at distances over 25 km. However, visibility at such long distances only occurs under particularly clear visibility conditions. Overall, the wind power plant is considered to have little to negligible negative impact (-/0) on the landscape in this subarea.

Figure 4. Visualization of the Davvi wind power plant, as seen from the western part of the planning area.

In the vicinity of the Davvi wind power plant, the wind turbines will dominate the landscape. Roads and assembly areas at each turbine will result in interventions in the form of cuttings and fillings and will be highly visible in the barren wilderness landscape. From a moderate distance, the wind turbines will be perceived as distinct landscape elements and will leave their mark on the landscape experience.

The wind power plant will be highly visible from the mountain Rásttigáisá, which is one of the highest peaks in the area. Due to the distance, the wind power plant will not be perceived as dominant, but a significant number of turbines will be visible and will be substantial elements in the landscape. From Fv 98, the wind power plant will also be intermittently visible. At long

distances, the visibility of the turbines is entirely dependent on weather conditions. Under the right weather conditions, the wind power plant can be visible from the highlands west of Børselva and from Fv 98 at Stuorrarohtu. Overall, the development is assessed to have a significant to very significant negative impact (---/----) on the landscape in the higher mountain areas.

Figure 5. Visualization of the Davvi wind power plant, as seen from Rásttigáisá.

The wind power plant will be less visible from the Upper Tana Valley, but it may be somewhat more visible from higher areas on the Norwegian and Finnish sides, albeit at a great distance. Overall, the development is assessed to have a little to negligible negative impact (-/0) on the landscape in these areas.

In the overall assessment of the degree of consequences, the immediate vicinity of the wind power plant has been given greater weight than more distant areas. The large extent and number of turbines of the wind power plant will negatively impact the landscape. The large-scale landscape character of the high mountain area gives it some resilience, but the lack of vegetation makes the area vulnerable to interventions. The area will no longer appear untouched, and the wilderness character of the landscape will be lost. Overall, the Davvi wind power plant is therefore considered to have a significant negative impact (---) on the landscape in the influence area.

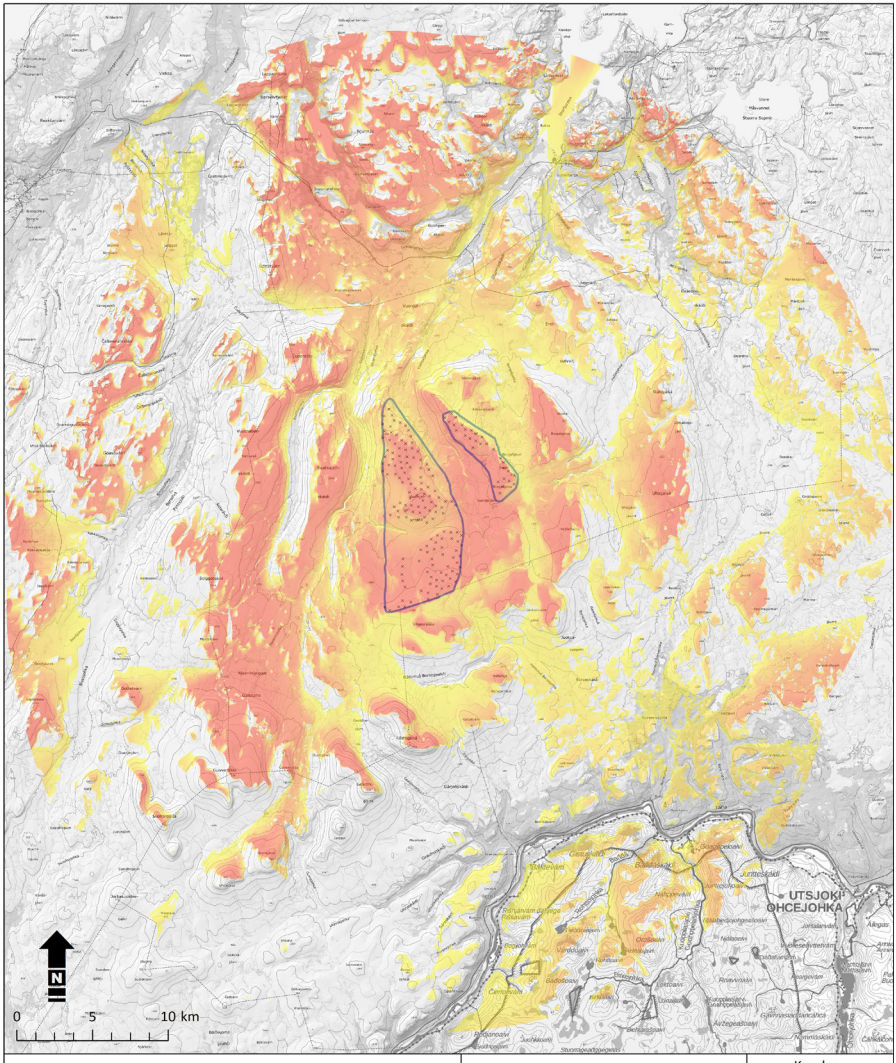


Figure 6. Theoretical visibility map for the Davvi wind power plant.

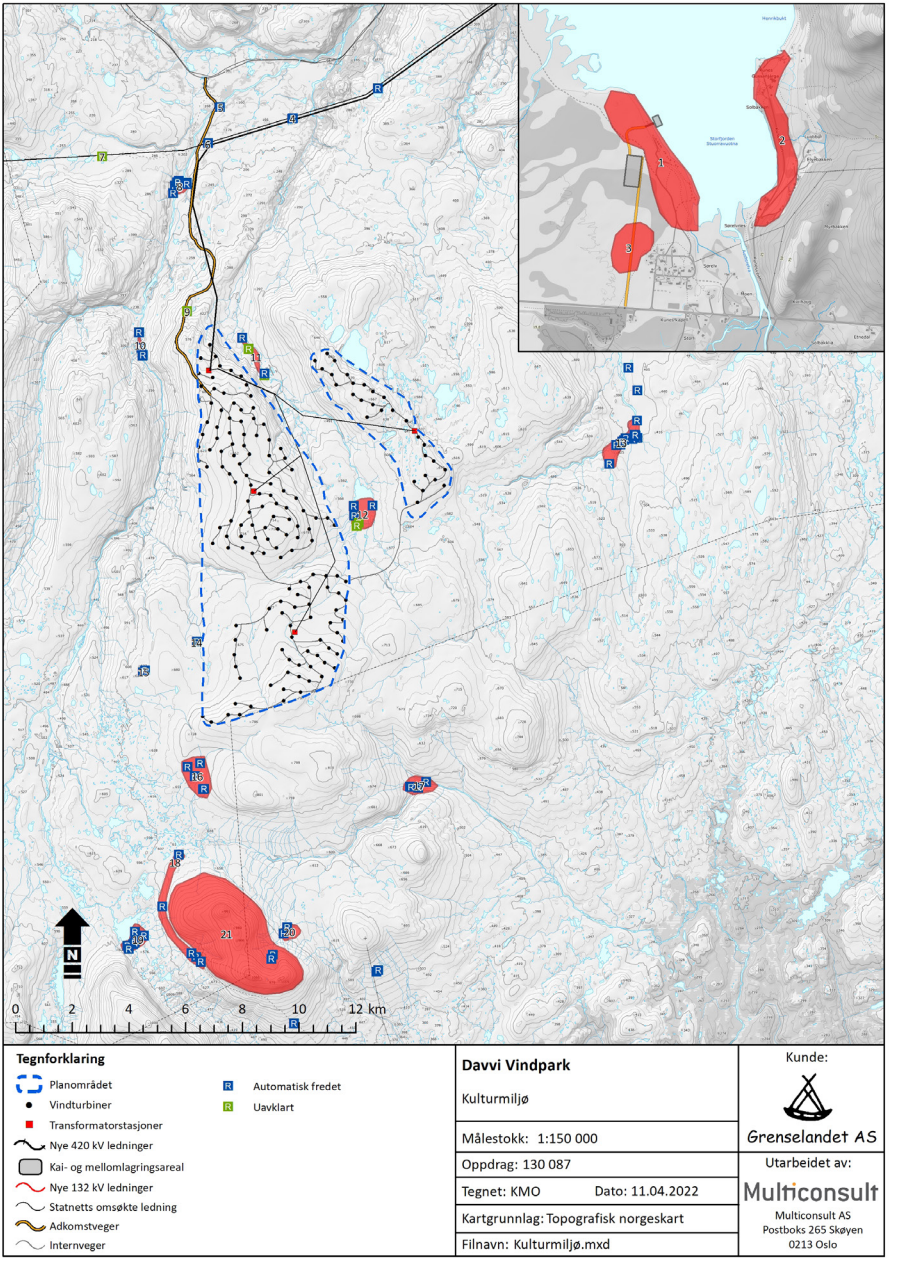


Figure 7. Overview of registered cultural environments.

Cultural Heritage and Cultural Environments

In the planning and influence area, a total of 21 cultural environments have been identified, which consist of varying numbers of cultural heritage sites from both prehistoric and more recent times, including settlement areas, old campsite foundations, markers, cairns, firesides, meat caches, and other traces of Sámi reindeer husbandry and other traditional land use.

The extensive extent and number of turbines of the wind power plant will negatively affect some cultural heritage sites and cultural environments. The area is largely untouched by recent interventions, and the cultural environments appear cohesive and in their original context. Two culturally valuable environments, KM 1 Båtneset and KM 21 Rásttigáisa, are assessed to have a significant negative impact (---) due to significant physical and/or visual influence. For the other 19 cultural environments, the impact varies from negligible / none (0) to moderately negative (--). Overall, it is assessed that the Davvi wind power plant with its associated infrastructure will have a moderately negative impact (--) on cultural heritage and cultural environments in the influence area.

Biodiversity

The applied-for wind power plant with its associated infrastructure does not impact protected areas, important natural types, or geologically valuable occurrences. Therefore, the consequences for these categories are considered negligible (0).

The potentially greatest negative consequences of the wind power plant with its associated infrastructure are related to habitat loss/destruction and increased mortality of birds due to collisions with rotor blades, towers, or power lines. Both in the construction and operational phases, the planning area and adjacent areas will lose much of their potential as habitats for space-demanding and shy species such as wolverines, Arctic foxes, and peregrine falcons, and the landscape ecological function of the area will be weakened. Significant avoidance around the intervention areas is to be expected, especially since individuals that inhabit this area have been little habituated to human disturbance. Furthermore, the wind turbines will cover a significant area and will be situated at higher elevations in the terrain, including places with updrafts on warmer days. It is expected that individuals of golden eagles, white-tailed eagles, gyrfalcons, and others may collide with rotor blades, but the extent is likely to be low due to the absence of nesting areas combined with limited food availability within the planning area. Based on experiences from Smøla, it is also assumed that a species like ptarmigan will be vulnerable to collisions with the turbine towers themselves (to a lesser extent with rotor blades).

Overall, the Davvi wind power plant is assessed to have a moderately negative impact (--) on biodiversity.

Shadow flicker

Shadow flicker occurs when the rotor of the wind turbine is positioned between the observer and the sun. In such cases, the rotor will sweep in front of the sun, resulting in a moving shadow projected towards the observation point.

Figure 8. Shadow flicker from a wind turbine.

No residences or vacation homes will be exposed to shadow flicker from the wind turbines. However, shadow flicker may be noticeable to those engaged in outdoor activities in the vicinity of the wind power plant.

Noise

The calculated noise levels from the wind power plant are shown in Figure 9. No residences, vacation homes, or other noise-sensitive structures will be exposed to noise levels exceeding the recommended limit of 45 dB. Noise from the Davvi wind power plant will otherwise affect an existing untouched and quiet natural and outdoor recreation area. Furthermore, noise from transformer stations and corona noise from the power lines may be noticeable to those in the vicinity of these installations, but no noise-sensitive structures will be affected by this.

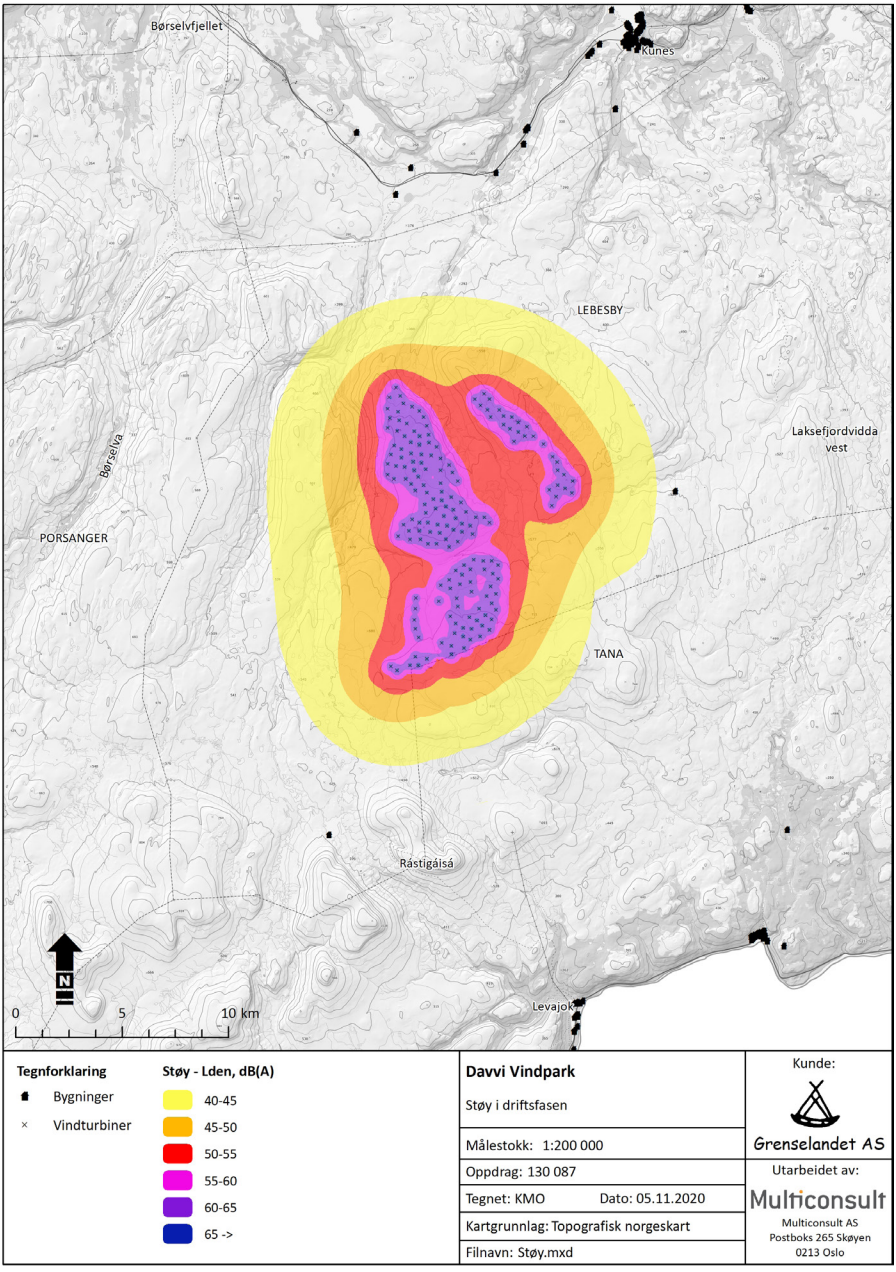


Figure 9. Calculated noise levels from the Davvi wind power plant.

Icing/Ice Throw

In many areas, the combination of low temperature, high humidity, and strong winds can lead to ice formation on the rotor blades. Such ice formation is undesirable because it results in reduced production and an increased risk for people in the area. Ice on the rotor blades typically forms when the rotor is stationary due to low wind (< 3 m/s) or during maintenance. When the wind turbines start, there is a risk that the ice may fall off, posing a safety hazard if people are in the vicinity of the wind turbines.

There are no structures in the vicinity of the Davvi wind power plant within the calculated risk distance from the turbines (350 m). Furthermore, there is very little activity within the planning area, so the likelihood of individuals being in the area during fog, freezing rain, or other conditions conducive to icing is assumed to be low. Based on this, the risk of personal injury is assessed as very low.

There are currently systems for both ice detection, anti-icing, and de-icing of wind turbines. For de-icing, it is possible, for example, to install heating elements in the blades that can be activated as needed to remove ice. The need for such systems and the choice of technical solutions will need to be clarified during the detailed design phase of the wind power plant.

Climate

The addition of new renewable energy to the Nordic electricity market will, in the same way as a reduction in electricity consumption, reduce the amount of fossil power produced in the Nordic region. The Norwegian Water Resources and Energy Directorate (NVE) estimated in a 2008 report that the climate intensity of the average power replaced in the Nordic region due to reduced consumption (marginal power) is approximately 600 g CO2/kWh from a life cycle perspective. In a more recent report from 2013, the Norwegian Energy Association (Norsk Energi) made a similar assessment for the year 2020, assuming that coal power is replaced with gas power, resulting in a marginal power with a climate intensity of 404 g CO2/kWh. If we subtract the maximum estimate of carbon emissions from wind power, i.e., 28 g CO2/kWh, from the expected emissions factor for marginal power in 2020, we can estimate that the global climate benefit of building the Davvi wind power plant is approximately 376 g CO2/kWh. With an expected annual power production of 4.1 TWh in the future, the reduction in carbon emissions would be approximately 1.5 million tons per year. This is equivalent to the total emissions from around 1.3 million passenger cars. The absence of peat and other carbon-rich natural types in the influence area suggests little emission of greenhouse gases during the construction of the wind power plant.

This implies that if wind power replaces power from non-renewable energy sources (coal, gas, and oil), the construction of the Davvi wind power plant will be a positive contribution to the fight against global greenhouse gas emissions.

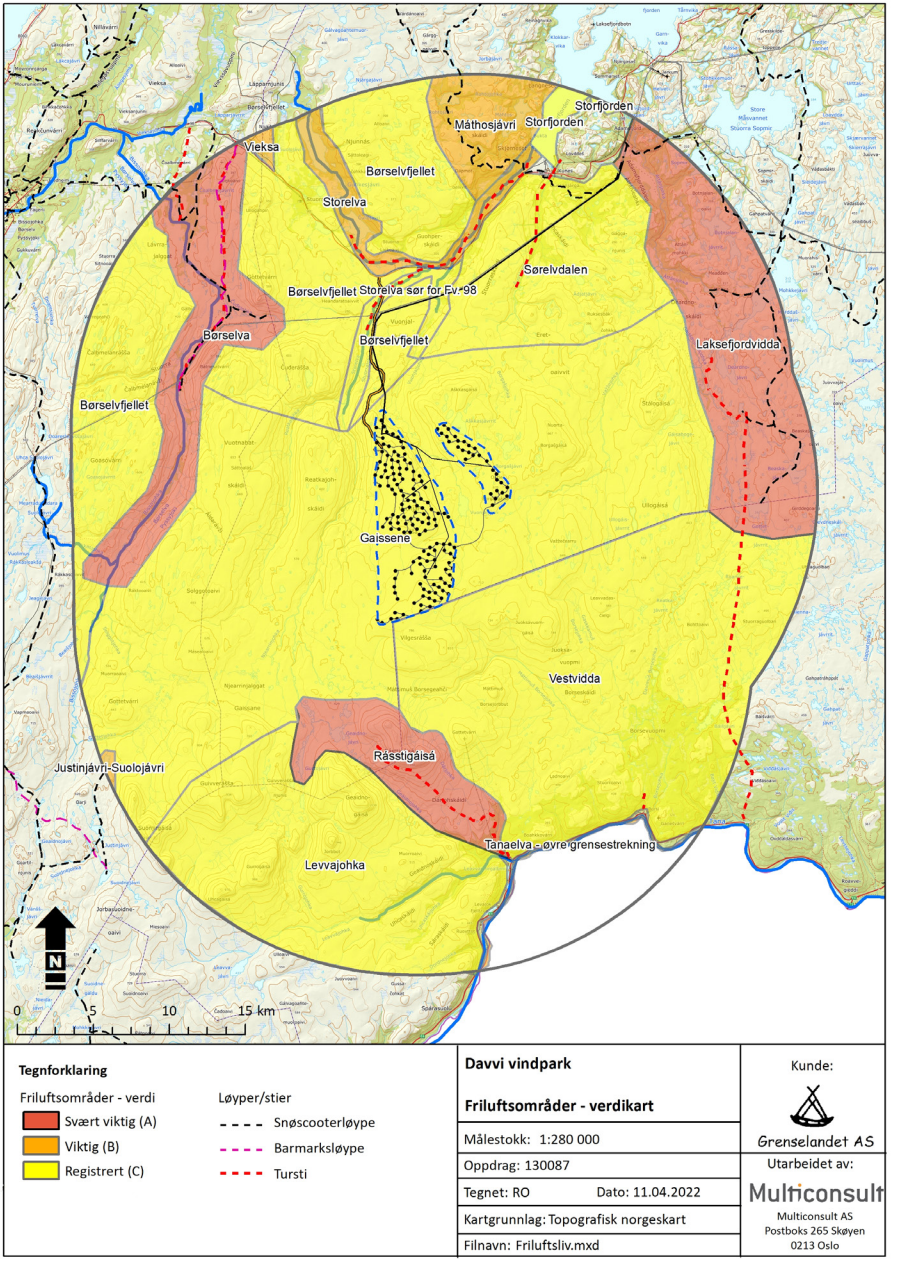
Outdoor Recreation

During the work on the impact assessment, 15 outdoor recreation areas located entirely or partially within the influence area of the wind power plant have been identified (see Figure 10). Three areas are considered to have high value (A). These are Rásttigáisá, Børselva, and Laksefjordvidda east. Five areas are considered to have medium value (B), including Tanaelva – upper boundary stretch, Justinjávri-Suolojávri, Storelva, Máthosjávri, and Vieksa. Seven areas are considered to have low value (C). This includes the least accessible parts of the influence area, referred to as Gaissene, as well as Vestvidda, Leavvajohka, Børselvfjellet, Storelva south of Route 98, and Sørelvdalen, as well as the easily accessible Storfjorden outside Kunes.

The consequences of the wind power plant for outdoor recreation are assessed based on the expected effects on the frequency of use of the areas, their attractiveness, and the possibility to engage in outdoor activities. These three criteria are related to land use, impact on accessibility, as well as elements contributing to the value of the experience, such as landscape, freedom from intrusion, silence, biodiversity, cultural heritage, etc.

The degree of consequence for the 15 outdoor recreation areas varies from negligible (0) for Tana – upper boundary stretch to medium to large negative (--/---) for Rásttigáisá. In the overall assessment, it is assumed that the power plant and associated infrastructure will negatively impact many outdoor recreation areas to varying degrees over a large area. The consequence is therefore assessed as medium to large negative (--/---) for outdoor recreation.

It should also be noted that experiences from existing wind power plants, including those at Smøla (Smøla municipality), Ytre Vikna (Vikna municipality), and Midtfjellet (Fitjar municipality), indicate that access and internal roads in wind power plants often lead to increased use of the development areas due to easier access for various user groups. The planning area for the Davvi wind power plant is far from the nearest road, and only a few experienced mountaineers use the area for outdoor recreation today. It is therefore considered highly likely that the new access roads will lead to more people entering this mountainous area, either on foot or by bike, and that the use of the area will increase compared to the current situation.



Tegnforklaring

Friluftsområder - verdi

- Svært viktig (A)
- Viktig (B)
- Registrert (C)

Løyper/stier

- Snøscooterløype
- Barmarksløype
- Tursti

Davvi vindpark

Friluftsområder - verdikart

Målestokk: 1:280 000

Oppdrag: 130087

Tegnet: RO Dato: 11.04.2022

Kartgrunnlag: Topografisk norgeskart

Filnavn: Friluftsliv.mxd

Kunde:

Grenselandet AS

Utarbeidet av:

Multiconsult

Multiconsult AS
Postboks 265 Skøyen
0213 Oslo

Figure 10. Overview of registered outdoor recreation areas and their value.

Tourism

Tourism in the influence area of the wind power plant is primarily experience-based, linked to hunting, fishing, and other outdoor experiences, as well as Sami culture/traditions. Untouched nature is an essential part of the tourism offering. Among the tourism businesses identified in the influence area, Kunes Opplevelse og Handel and Levajok Mountain Lodge with the Geino cabin west of Rásttigáisá are the most central, as they have buildings and significant parts of their operations within the influence area. These businesses offer accommodation in addition to nature and cultural experiences. Six other small tourism businesses have confirmed their use or plan to use the influence area for parts of their operations. This includes various types of tours and guiding within the influence area. Tourists also use the influence area without availing of tour or accommodation offers, often in connection with hunting and fishing. The overall value of the influence area in terms of tourism is assessed as medium, while the planning area in isolation is considered to have low value.

There are few studies on the impact of existing Norwegian wind power plants on tourism, which means there may be some uncertainty about the actual effect of a development. Research suggests that cumulative effects of the total wind power development in Norway could impact Norway's attractiveness as a tourist destination, while it is difficult to document significant negative effects on tourism from individual installations.

It is reasonable to assume that some tourism operators may be adversely affected if the Davvi wind power plant and associated infrastructure are built, while others can likely adapt their operations. The project could potentially result in local adverse effects for the industry, which initially suggests a small negative consequence (-). However, if the planned transfer of accommodation facilities (work camp) to local operators is successful, and parts of the planned business fund are used for tourism development in the influence area, this could offset the negative effects for tourism as a whole, resulting in a negligible (0) or even small positive (+) consequence. Whether the business fund is successful depends on factors such as the existence of local tourism operators with sufficient interest and expertise to achieve increased returns and whether funds are allocated based on realistic business plans and actual goal achievement.

Communication Systems, Aviation, and Defense Interests

Based on feedback from Norkring, NTV, the Norwegian Defense Estates Agency (Forsvarsbygg), and local helicopter companies, it is concluded that the construction of the Davvi wind power plant is highly likely to have no impact on civilian or military radar, navigation, or communication systems. Consequently, the consequences for these interests are considered negligible (0). The same applies to military aviation and local helicopter traffic, provided that the wind turbines are marked according to applicable regulations.

According to Avinor (the Norwegian state-owned company that operates most of the civil airports in Norway), three of the wind turbines in the example layout are problematic regarding the protection zone around sector 1 of Lakselv Airport. However, this challenge is not greater than can be solved during the detailed project planning of the facility.

Reindeer Husbandry

Reindeer herding districts (Rbd) 9, 13, 14, and 14A, which could be directly or indirectly affected by the construction of the Davvi wind power plant and associated infrastructure, had a total of over 25,000 reindeer as of 2017, spread over an area of just over 12,000 km2. Rbd 13, Rbd 14A, and Rbd 9 conduct seasonal migrations between autumn-winter and winter pastures in the inland regions of Karasjok and Tana, and spring/summer/early autumn pastures closer to the coast. Rbd 14 used to have a similar seasonal migration, but this has ceased.

Figure 11. The planning area consists mainly of block terrain with very little grazing value for domesticated reindeer.

The majority of the Davvi wind power plant and associated infrastructure is located within Rbd 13, so the description below focuses on this district. Rbd 13 has winter pastures in the areas between Iskoras and Anarjohka along the Finnish border, at the southernmost part of the communal grazing district Rbd 17 in Karasjok. From March to early May, the reindeer are moved northward toward their spring and summer pastures. The spring migration follows a route that goes eastward between Levajok and Rasttigaisa and then continues northeast to Gáissávuole and Skádjejávri near Adamselv. The nearest part of this migration route is approximately 5.5 to 6 km from the planned wind power plant area. The migration route marked on the land use maps on the west side of the project area, along Stuorrajohka, has essentially fallen out of use in the spring.

Once the reindeer are in their spring pastures, the animals are allowed to roam freely so that pregnant females can find suitable calving sites where forage conditions are good and disturbance is minimal. The majority of Rbd 13 is designated as spring pasture, except for the southernmost part (Gaissane). Some animals may stay in the border areas between Rbd 13 and Rbd 14 during this period, to the north of the planned wind power plant, but they usually continue their migration northeastward before calving. The most important calving areas within the district are primarily located north of Fv 98 across Ifjordfjellet, but there are also significant calving areas south of Ifjordfjellet. However, the latter areas are more than 8-10 km from the planned wind power plant area.

After the calving period, most of the reindeer that calved south of Fv 98 are driven north to the summer pastures on the north side of the road, typically in mid-July. From Ifjordfjellet and further east, a barrier fence runs along Fv 98 to ensure that the animals stay on the correct side of the road/mountain. The animals that remain on the south side of Fv 98 use most of the district's area in this southern part, including areas near the sea at Adamsfjord and Kunes. Higher-elevation areas may also be used to a limited extent by small groups, primarily as areas for cooling off on warm days. Some limited migration may also occur across these higher-elevation areas.

In August, the calves are marked in the fence system at Skjåvann on Ifjordfjellet. After marking, the animals are driven back to the south side of Fv 98 across Ifjordfjellet. In September, the animals are again driven into the gathering areas at Skjåvann for the selection of animals for slaughter. The gathering areas are located on both sides of Fv 98 across Ifjordfjellet. After slaughter, the reindeer continue to graze on the south side of Ifjordfjellet before they naturally begin their migration southward toward the winter pastures. The

early autumn pastures cover large parts of the area south and east of Ifjord, including Adamsfjord Valley and the areas around Lille Måsvatn. The rutting areas are partly located in more pristine parts of the autumn pasture area, just south of Adamsfjord, and along much of the border with Rbd 9, east on Laksefjordvidda. Much of the rutting also occurs within the area of Rbd 9 and has been the subject of a long-standing conflict between the two districts. During the rutting period in October and early November, some of the herd is already within the boundaries of Rbd 17.

The gathering typically takes place at the end of November, and the animals are driven to the fence facility at Sohpparvádda in the southern part of Rbd 17. Here, the animals are separated into their respective winter siidas (corrals), and animals from other districts that have mixed into Rbd 13's herd are also separated. Rbd 13 has one shared winter siida, but in December, after separation in Sohpparvádda, the winter siidas take their animals to their respective winter pastures within Rbd 17, south of Karasjok.

The area within the actual project area is dominated by blocky terrain and other non-vegetated substrates, with very low grazing value for reindeer (see figure 12). Within the rest of the influence area, i.e., from 1 to 3 km from the wind power plant, there is somewhat more reindeer pasture. However, area calculations show that this area constitutes only about 0.4% of the total pasture area in Rbd 13. Furthermore, the calculations indicate that approximately 1.8% of Rbd 13's pasture area is within 5 km of the project area, while a vast majority of 98.2% is located more than 5 km away.

The development of the wind power plant, road, power lines, and port facilities will affect relatively marginal spring, summer, and autumn pastures in Rbd 13 (directly and indirectly), Rbd 14A (mostly indirectly), and Rbd 14 (indirectly). Rbd 9 will not be directly affected, but a new barrier fence between Rbd 13 and Rbd 9 is part of the Davvi development, which will have a positive impact on Rbd 9. None of the major migration routes between seasonal pastures will be directly affected for any of the districts.

The effects of the construction phase are expected to be most significant during periods and in sub-areas with active construction work. Since the developer plans for a phased construction, the impacts during the construction phase may vary from significant negatives in some areas and periods to negligible in other periods and areas. In the operational phase, it is expected that there will be almost no negative effects of the power lines. For the wind power plant, the situation is somewhat more nuanced, and effects up to 3 km, and sometimes 5 km, have been observed around existing wind power

plants. However, the low value of the areas in the influence area of Davvi suggests minimal consequences. The consequences in the operational phase are likely to vary from negligible (0) for Rbd 14 to small to medium negative (-/--) for Rbd 13. For Rbd 9, the construction of the barrier fence against Rbd 13 is expected to have a small positive consequence (+).

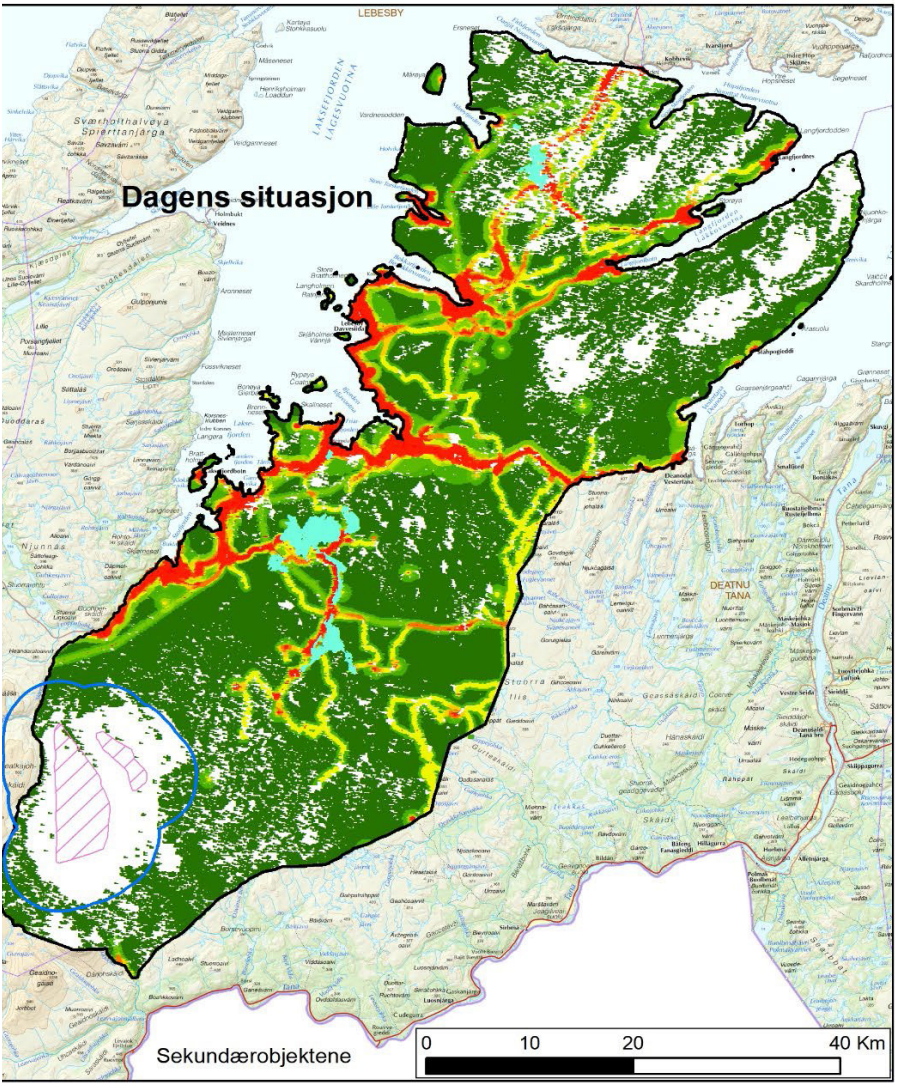
It should be noted that Davvi is a very large wind power project (800 MW), the areas to be developed largely consist of blocky terrain with little grazing value, and the project's location is in the border areas between two districts (peripheral areas). This suggests that the consequences per MW will be small compared to most other applied for or already developed wind power plants within reindeer grazing lands. In light of the Fosen judgment, the law firms Robertsen and Jonassen have assessed Davvi wind power plant in relation to SP Article 27, which states that: "In those States in which ethnic, religious, or linguistic minorities exist, persons belonging to such minorities shall not be denied the right, in community with the other members of their group, to enjoy their own culture, to profess and practice their own religion, or to use their own language."

Robertsen and Jonassen conclude the following in their assessment:
There are strict conditions that must be met before consent to expropriation can be characterized as a violation of SP Article 27. There must be a loss of reindeer pastures that has a significant impact on whether reindeer husbandry can continue to yield income or has a significant negative effect on reindeer herders' ability to practice their culture in the area.

Mitigating measures such as compensation for extra work, etc., are of significant importance when assessing whether there is a violation, and reindeer husbandry has an obligation to adapt its business to expropriation. However, there is a limit to how far the Sami reindeer herders are obligated to adapt their business from normal nomadic livelihoods toward enclosed feeding (farming).

When the relevant development area mainly consists of rocky terrain that is neither used for reindeer grazing nor as an area for reindeer migration, development is unlikely to have any effect on grazing access or reindeer migration between summer pastures in the north and winter pastures in the south. In such cases, the project falls well below the threshold for a violation of the United Nations International Covenant on Civil and Political Rights, Article 27.

In other words, there is nothing to suggest that the construction of the Davvi wind power plant would be in violation of SP Article 27.


Dagens situasjon
LEBESBY
DEATNU
TANA
Sekundærobjektene
0
10
20
40 Km

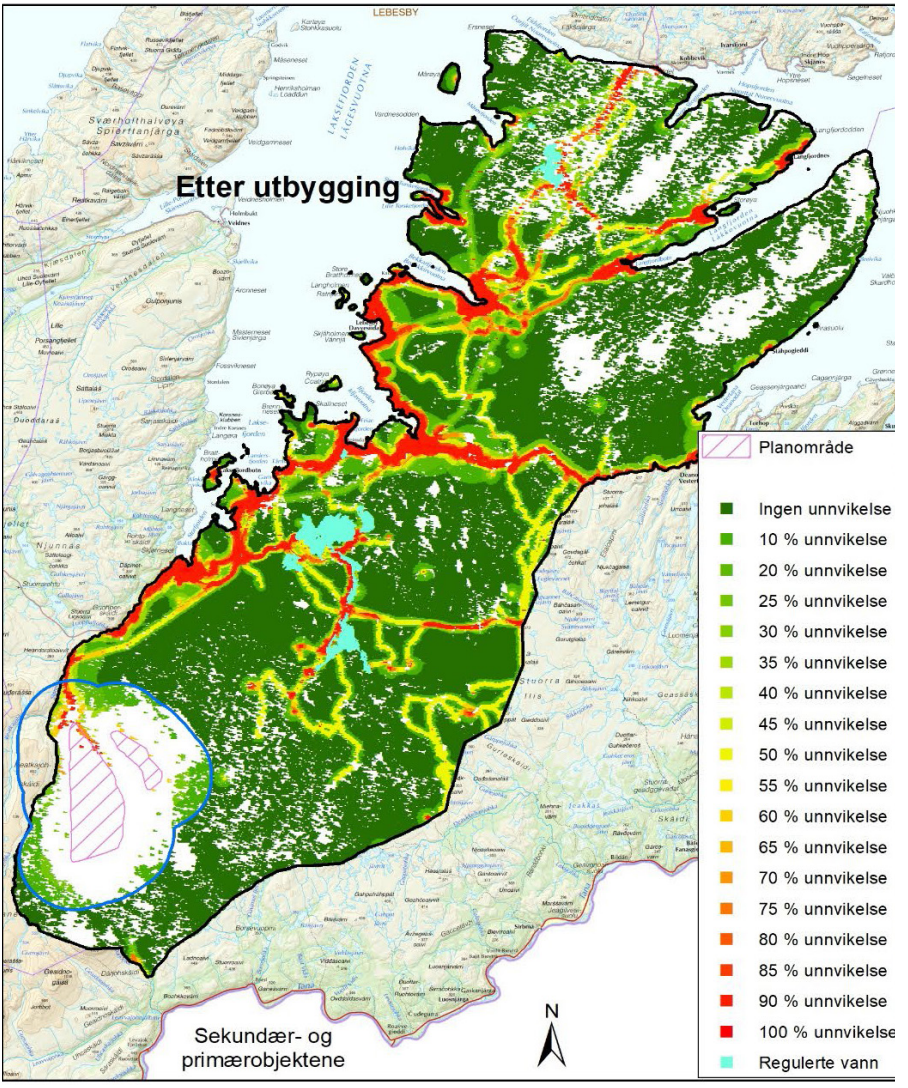


Figure 12: Illustration of human-induced avoidance. White areas are defined here as having little value for reindeer husbandry due to the absence of grazing and/or other important functions. Avoidance in these areas due to human disturbances is therefore not likely to occur significantly. The Davvi wind power plant is centrally located in such a larger area. From the map, it is evident that avoidance of natural reindeer habitat is expected primarily along the access road and not within the wind power plant itself.

Natural and Wilderness Resources, including Sámi Land Use

Through discussions with local experts, there is no information indicating that the planning area or immediately adjacent areas have had or currently have any significance regarding Sámi land use. This is likely due to a combination of the absence of certain resources (such as cloudberries, mushrooms, common reed, and forests/wood), very sparse occurrences of other resources (grouse, hare, fish, etc.) due to continuous rocky terrain and harsh climatic conditions, and the great distance from the nearest settlements. In other words, there is good access to more productive wilderness areas than what the planning area represents, and thus, it has had no significant impact on traditional Sámi wilderness use or livelihood, neither in the past nor today. The most important areas for harvesting wilderness resources are located in low-lying and partially forested areas along the Tana River and Storelva, primarily outside the influence area of the project. Therefore, the Davvi wind power plant is considered to have negligible consequences (0) for natural and wilderness resources in the region.

Value Creation

The development of the Davvi wind power plant will lead to increased local and regional value creation during the construction phase, especially in connection with foundation and ground work, establishment of access roads and assembly areas, excavation work for laying underground cables, stone crushing, transportation, fiber splicing, and cable connection, other construction work, as well as accommodation and service activities. Based on experiences from other Norwegian wind power plants, it is estimated that this will amount to approximately NOK 42 million for local suppliers and approximately NOK 350-360 million for regional suppliers. The latter corresponds to approximately 160 full-time equivalent jobs or an average of 23 full-time equivalent jobs per year over the seven-year construction period. Therefore, the development is assessed to have a moderately positive impact (++) on local and regional employment during the construction period.

It is estimated that around 30 full-time equivalent jobs will be required for the operation and maintenance of the wind power plant. In addition, there will be increased turnover in local accommodation and service businesses related to campaign maintenance, tours/visits, and similar activities. Based on experiences from existing wind power plants, reported figures for the resource account for reindeer husbandry, and subsequent investigations related to wind power and tourism, there is little to suggest that the development will result in job losses in the reindeer husbandry or tourism industries. Therefore, the impact on employment in the operational phase is considered to be significantly positive (+++).

Lebesby municipality has introduced property tax on properties and facilities and applies the maximum rate, which currently stands at 0.7 percent per year. Calculations show that the development will result in an annual property tax of approximately NOK 48.8 million. In addition, there is the proposed production fee of 1 øre/kWh, which would amount to NOK 41 million per year with an assumed annual production of 4.1 TWh. The total direct income for Lebesby municipality will thus be nearly NOK 90 million. In addition, the development will generate indirect tax revenue from local businesses. Based on this, the development is assessed to have a very significant positive impact (++++) on the finances of Lebesby municipality.

Eastern Finnmark currently lacks sufficient capacity in the grid to consider the development of power-intensive industries. However, this is changing with Statnett's decision to build a new 420 kV transmission line between Skaidi and Varangerbotn. The development of the Davvi wind power plant at 800 MW (for comparison, the current maximum power consumption in Finnmark is approximately 400 MW) that will also trigger a new 420 kV transmission line between Varangerbotn and the main grid in Finnmark will significantly increase supply capacity and the opportunities for establishing power-intensive industries in this area.

Based on the relationship between gross product and employment in power-intensive industries, it is possible to provide reasonable estimates of how changes in the power-intensive industry's activity level, including the establishment of new businesses, will affect direct employment and contributions to value creation. It can be estimated that an increase in the power consumption of the power-intensive industry by 4.1 TWh, equivalent to the annual production from Davvi from 2033, will, on average, increase direct value creation by approximately NOK 3 billion per year. Furthermore, direct employment will increase by approximately 2,100 full-time equivalent jobs. Increased grid capacity, combined with increased production of renewable energy in Finnmark, represents a significant opportunity for increased value creation and employment in Eastern Finnmark.

Summary

The table below summarizes the conclusions from the various expert reports.

Table 2. Overall assessment for the long-term operational phase.

Topic / Field	Overall Impact Assessment
Landscape	Significantly Negative (---)
Cultural Heritage and Cultural Environment	Moderately Negative (--)
Biodiversity	Moderately Negative (--)
Noise[1]	No residences or recreational properties are affected by noise above the applicable limit value
Shadow Casting and Glare[1]	No residences or recreational properties are affected by noise above the applicable limit value
Pollution, Waste, and Greenhouse Gas Emissions[1]	Slightly Positive (+)
Icing/Ice Throw[1]	Very low risk of harm to 3rd parties or infrastructure
Outdoor Activities and Recreation	Moderate to Significantly Negative (--/---)
Travel and Tourism	Negligible (0)
Communication Systems, Aviation, and Defense Interests[2]	Negligible (0)
Nature/Wilderness Resources	Negligible (0)
Reindrift Rbd 13 • Northwest Turbine Cluster • Northeast Turbine Cluster • Access Road with Network • Pier and Storage Kunes Rbd 14A • Northwest Turbine Cluster • Access Road with Network • Pier Hamnbukt	 Slightly Negative (-) Slightly Negative (-) Moderately Negative (--) Negligible (0) Negligible / Slightly Negative (0/-) Slightly Negative (-) Negligible (0)

Topic / Field	Overall Impact Assessment
Rbd 14 • Access Road with Network • Pier and Storage Kunes Rdb 9 • Overall Assessment	 Negligible (0) Negligible (0) Slightly Positive (+)[3]
Local Employment • Construction Phase • Operational Phase Regional Employment • Construction Phase • Operational Phase	 Moderately Positive (++) Very Positive (+++) Moderately Positive (++) Slightly Positive (+)
Municipal Economy	Extremely Positive (++++)

[1] Does not follow standard EIA methodology, and the degree of impact is therefore not specified.
[2] Assumes a minor plan adjustment in the next phase, as committed by Grenseland-et DA.
[3] Positive consequence is due to the construction of a new barrier between Rbd 13 and Rbd 9.

Cumulative Impact

Cumulative or combined impact is a very central concept when it comes to the environmental effects of wind power, hydropower, power lines, and other energy and infrastructure measures.

Figure 13 visually illustrates the influence area, defined here as up to 25 km from the wind turbines, for all permitted wind power projects in the northern part of Nordland, Troms, and Finnmark, as well as the corresponding area for the Davvi wind power plant. Calculations show that while the Davvi wind power plant (800 MW) will have a visual influence area of approximately 3100 km², the total for all other permitted projects (a total of approximately 760 MW) covers 17500 km² (564% of Davvi). Even though the degree of visual impact within each area will vary with the project's size (number and size of wind turbines), this calculation clearly illustrates that one large wind power plant, overall, results in a significantly smaller cumulative visual burden/impact than many small and medium-sized projects spread over a much larger geographical area.

Several studies have also shown that tourists and outdoor enthusiasts prefer a few large wind power plants in Norway over numerous small and medium-sized ones. The conclusion is the same for reindeer husbandry; a few

large wind power plants will, overall, impose less burden per MW than many small and medium-sized ones.

In terms of birds and other wildlife, there are many factors suggesting that one large wind power plant in a low-productivity area with low species diversity and low individual density, like Davvi, will impose less cumulative burden per MW than many small and medium-sized installations spread over larger areas and in more coastal areas. This is justified, among other reasons, by a lower collision risk and the fact that the indirect habitat loss, due to avoidance effects in some bird species, will be smaller when establishing one large wind power plant compared to many small and medium-sized ones.

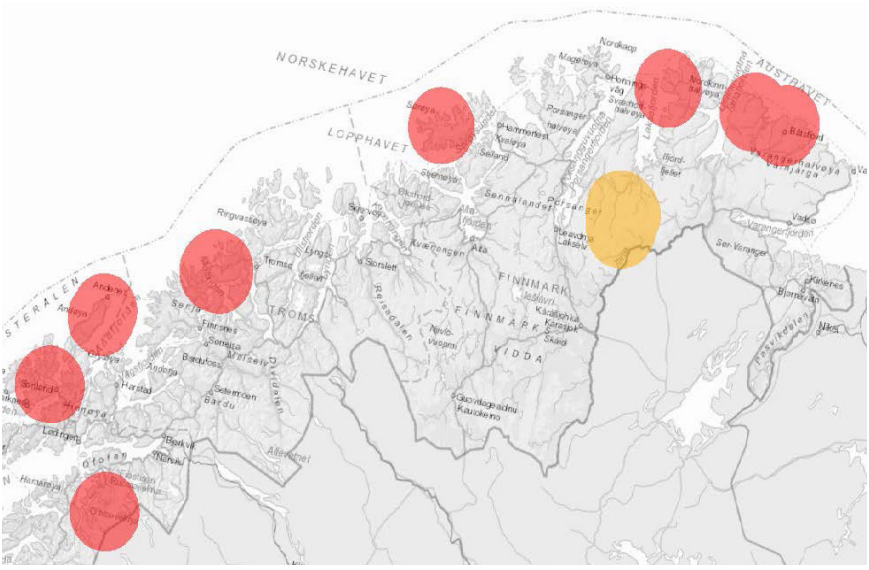


Figure 13. Visual influence area for all concessioned wind power plants (total of 760 MW) in the northern part of Nordland, as well as Troms and Finnmark (marked in red) compared to the visual influence area for the Davvi wind power plant (marked in orange).

In other words, there are many factors suggesting that the environmental consequences per MW of wind power become significantly smaller by establishing a few large wind power plants rather than many small or medium-sized ones. This is in line with the results of a 2012 study on the environmental effects of a few large versus many small hydropower plants. Grenselandet DA believes that this is a very important factor that must be taken into account in the licensing assessments for future wind power projects in Norway, including the Davvi wind power plant.

NEXT STEPS

The application with the accompanying impact assessment has been submitted to the Norwegian Water Resources and Energy Directorate (NVE).

The permit application will be processed according to current laws and regulations. The permit application with the accompanying impact assessment will be subject to consultation with local, regional, and national authorities and organizations, and it will be made available for public inspection in Lebesby municipality. An open public meeting will also be held in Lebesby where the plans and expected consequences will be presented.

After the public hearing, the NVE will make a decision on the matter. The decision can be appealed, and the Ministry of Petroleum and Energy (OED) will then make a final decision.

In the permit, the authorities may impose conditions on the operation of the wind power plant, and measures may be ordered to avoid or reduce damage and disadvantages.

CONTACT

For further information about the project, please contact:

Managing Director Svein Skudal Aase,
email: svein-skudal.aase@st1.com, phone: 913 54 788.

Project Manager Harald Dirdal,
email: harald@nyenergi.as, phone: 926 20 789.

NOTES

For comments and questions regarding the public hearing, please contact:
Norwegian Water Resources and Energy Directorate (NVE)
P.O. Box 5091, Majorstua
0301 Oslo
Phone: +47 22 95 95 95
Email: nve@nve.no

Contact:
Svein Skudal Aase
Phone: +47 913 54 788
Email: svein-skudal.aase@st1.com

Harald Dirdal
Phone: +47 926 20 789
Email: harald@nyenergi.as

The brochure was prepared by:
Multiconsult AS
P.O. Box 265 Skøyen
0213 Oslo