Non-Technical Summary

Sopi-Tootsi Wind Farm

Developed by Enefit Green AS

25 July 2024

Introduction

The Sopi-Tootsi Wind Farm project in Estonia is developed by Enefit Green AS.

Enefit Green is committed to providing environmentally friendly alternatives to conventional energy produced from fossil sources. Enefit Green has grown into one of the leading growth-oriented renewable energy producers in the Baltic Sea region.

The Sopi-Tootsi Wind Farm project is already approved by the Estonian authorities: the thematic plan for the Tootsi Suursoo area and wind farm and the strategic environmental assessment was done in 2016 and the project obtained the development consent and the associated permits for construction. The current stage of the project (July 2024) is erecting wind turbines.

This summary provides an overview of the project's key aspects, including its location, environmental and socio-economic impacts, technical details, and benefits to the community.

Project Description

Project location and technical details

The development area is located in Tootsi Suursoo, Pärnu county, Põhja-Pärnumaa parish, Metsaküla and Metsavere village approximately 100 km south of Tallinn and 20 km north of Pärnu.

The Sopi- Tootsi Wind Farm area can be accessed via the Tööstuse street in the village of Tootsi. The development is situated in a disused peat mining area consisting of 4150 ha of low-lying swampland of which only a portion shall be subject to construction activities. Approximately 15% of the Wind Farm is a reserved nature area.

The terrain of the area is flat, with absolute ground elevations ranging from 25 meters (in the southern part of the area) to 35 meters (in the northeastern part of the area). The Are River flows through the area, and there are also peat quarry lakes within the area. The southern part of the area is covered with a network of drainage ditches, which facilitated peat extraction; however, the area remains excessively wet. As a naturally difficult-to-access wetland, Tootsi Suursoo has historically had a poorly developed road network.

The area has previously been used for peat mining to support the local peat briquette industry. The land surrounding the Wind Farm area is predominantly agricultural land and is sparsely populated. The general location of the Wind Farm area shown in the figure below.

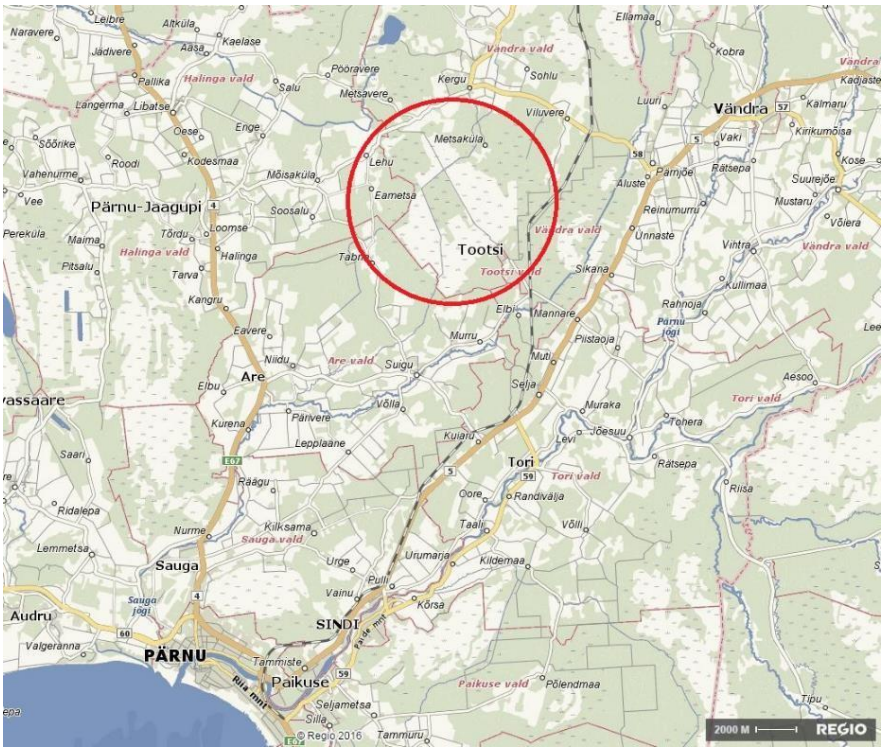

Figure 1. Location of the Sopi-Tootsi Wind Farm.

The Sopi- Tootsi Wind Farm project will include 38 WTG, a substation, underground MV line and internal access roads. 38 Nordex N163/6.X wind turbines, each with a total height of 241 meters and a nacelle height of 159 meters, rotor diameter 163 meters. The generated electricity will be connected to the national grid via a new substation and transmission lines, ensuring stable and reliable energy distribution. The total installed capacity of the Wind Farm will be 255 MW, producing approximately 680 GWh annually.

Wind Farm complex consists of the following parts:

- Sopi I Wind Farm – 13 WTG-s;
- Sopi II Wind Farm – 13 WTG-s;
- Tootsi Wind Farm – 12 WTG-s.

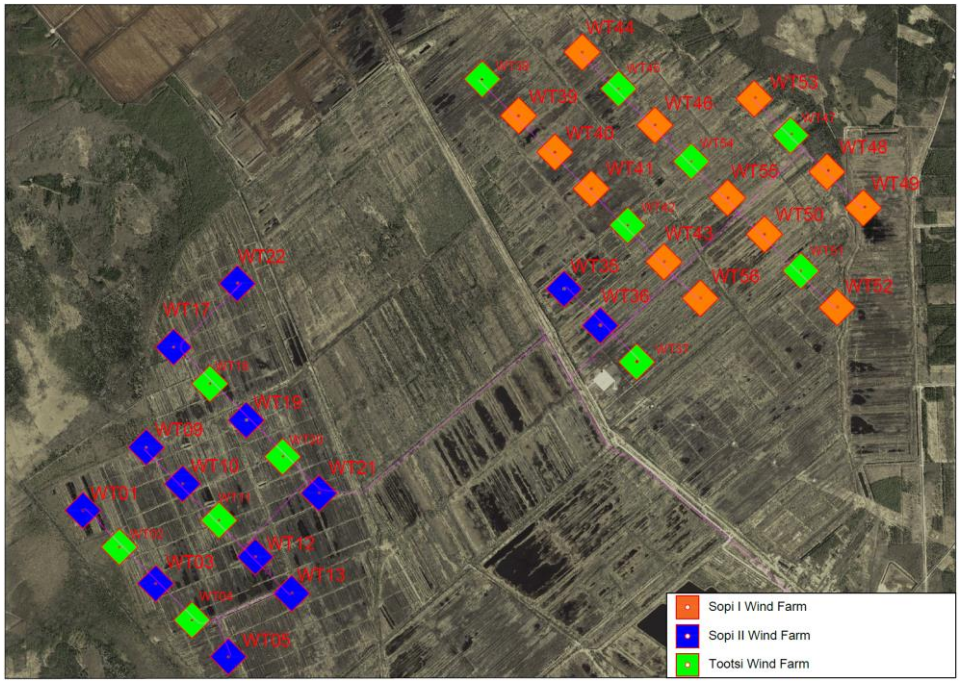

Figure 2. Sopi-Tootsi wind turbine locations.

Schedule

All major site preparation activities have been completed, including land clearing, access road construction, and levelling for turbine foundations. All foundation work has been completed in February 2024. 22 turbines have been successfully installed.

Ongoing environmental monitoring is being conducted to ensure minimal impact on local wildlife and habitats. All regulatory requirements and permits have been obtained and are being adhered to throughout the construction process.

The project remains on schedule for completion by Q2 2025.

Protected natural objects and habitats of protected species

The project area includes one protected area and habitats of one species classified as category III on the edges of the planning area in two locations. However, several protected areas, nature reserves, and habitats of protected species are located in the vicinity of the planning area.

The Ämmamäe protected area is located within the planning area, while the Mõdrama and Kaisma protected areas are nearby. Since these protected areas overlap (wholly or partially) with similarly named and similarly purposed Natura 2000 network areas, the following description addresses both the protected areas and the Natura 2000 areas together.

Protected areas and Natura 2000 areas:

- Ämmamäe protected area (Ämmamäe natural area) KLO2000292 - located in the central part of the project area;

- Mõrdama protected area (Mõrdama natural area)- approximately 650 meters from the project area;
- Kaisma protected area (Kaisma natural area (EE0040306), Taarikõnnu-Kaisma bird area (RAH0000085))- located approximately 370 meters northwest from the northwest corner of the project area;
- Kergu Nature Reserve- approximately 700 meters to the northeast of the project area.

There are no known (or registered in records) habitats of protected bird and animal species on the project site itself; however, such habitats can be found in forested and wetland areas within a 4 km radius around the protected area.

Protected bird species:

- Black Stork (Ciconia nigra)- approximately 660 meters from the project area;
- Lesser Spotted Eagle (Aquila pomarina)- in the vicinity of the project area approximately within a 4 km radius, there are 9 nesting sites;
- Western Capercaillie (Tetrao urogallus)- approximately 1,5 km from the project area;
- Three-toed Woodpecker (Picoides tridactylus)- two habitats are located approximately 0,7 and 1,2 km from the project area;
- White-backed Woodpecker (Dendrocopus leucotos)- the habitat is located approximately 0,8 km from the southeastern boundary of the project area;
- Black Woodpecker (Dryocopus martius)- located approximately 0,8 and 1,5 km northeast of the project area;
- Ural Owl (Strix uralensis)- approximately 0,9 km from the project area;
- Hazel Grouse (Bonasia bonasia)- approximately 0,7 km from the planning area in the Kergu Nature Reserve;
- Common Buzzard (Buteo buteo)- approximately 3 km east of the project area;
- Red-backed Shrike (Lanius collurio)- approximately 2,2 km northwest of the planning area.

The nearest protected plant species is the common bog-myrtle (Myrica gale), a category III protected species. The closest habitat for this species is located on the eastern border of the area, approximately 300 meters from the nearest wind turbines.

Summary of impacts and mitigation measures

Soil and groundwater

During the construction and operation phases of the Wind Farm, negative impacts on the water regime and water quality must be avoided. With the implementation of mitigation measures, no significant negative impacts on the water regime and water quality are anticipated during the construction of the wind farm.

During excavation work, soil and peat particles may be generated and carried by drainage water, potentially reaching the main drainage channels. During the construction period, the entry of suspended and larger particles into the main drainage channels will be prevented and reduced using specially constructed sedimentation basins or directly in the drainage ditches through the use of dams or expansions. The drainage water does not significantly affect the

amount of dissolved organic matter in the water quality of the Are River, as a large part of the Are River catchment area already consists of peat extraction areas.

Mitigation measures:

1. Special construction of sedimentation basins or directly in drainage ditches, dams, or expansions.
2. Landscaping of ditch banks.
3. Development of a monitoring plan that defines the locations of surface and groundwater monitoring points required during construction and post-construction phases, the indicators to be analyzed, sampling frequencies, and other monitoring criteria.

The Waste Management Plan for the Wind Farm has been established to ensure that all types of waste produced during the project activities are managed in compliance with national regulations and international best practices. This comprehensive plan addresses the temporary storage, handling, and disposal of various waste materials generated throughout the construction and operational phases of the Wind Farm.

Birds and bats

Addressing the disturbance and noise during construction and operation, habitat changes, and collision risks are crucial for minimizing the negative impacts of the wind farm on local wildlife. Effective mitigation measures, continuous monitoring, and adaptive management strategies are essential to support both energy development and biodiversity conservation.

The pre-monitoring studies for the Wind Farm were conducted in 2015, 2016. These studies were carried out by expert ornithologists and environmental scientists to assess the impact of the proposed Wind Farm on local bird and bat populations. The survey of breeding birds and the dynamics of crane swarm formation were key components of these studies. The breeding bird survey aimed to establish a baseline for future monitoring and to plan necessary mitigation measures. The crane swarm study, conducted weekly from September 4 to October 8, focused on mapping migration routes and modeling collision risks. These studies were crucial in informing the planning and construction phases of the Wind Farm, ensuring that significant negative impacts on local wildlife were minimized.

Post-construction monitoring includes surveys of protected breeding bird species conducted twice within five years, repetition of crane swarm dynamics surveys during 2-3 autumns following turbine operations, and searches for dead birds twice a month during snow-free periods for two years. These studies will help monitor changes, assess collision risks, and implement mitigation measures as needed.

As the Sopi-Tootsi Wind Farm nears completion with all turbines erected, the focus shifts to follow-up monitoring and implementing mitigation measures to ensure minimal impact on local bird and bat populations.

Noise

Throughout both the construction and operation phases of the Sopi-Tootsi Wind Farm, noise levels will be strictly controlled to ensure that they do not exceed established limits.

During construction, measures are taken to minimize noise from heavy machinery and other activities. This includes scheduling noisy operations to avoid critical periods for wildlife and using modern, quieter equipment where possible.

The maximum noise level allowed for a single turbine is 110 dB(A). At residential buildings, the noise level must not exceed 40 dB(A), though this limit can be increased to 45 dB(A) with the homeowner's consent.

The Sopi-Tootsi Wind Farm will operate within the prescribed noise limits throughout both the construction and operational phases, based on conducted noise modeling, ensuring minimal impact on the surrounding environment and local communities.

Shadow Flicker

The shadow flicker effect, caused by the rotating blades of wind turbines casting moving shadows, has been addressed by the project with a limit of no more than 30 hours per year at any residential building. This restriction ensures that visual disturbances remain within acceptable levels.

Ice and Blade Throw Risk

The risk of technical failures in wind turbines, potentially leading to accidents, is minimal. Such failures, including parts falling or the turbine collapsing, are extremely rare globally. According to accident statistics, the farthest debris can travel is up to 500 meters for blade fragments and 150 meters for whole blades. The maximum risk zone for a collapsing turbine is equal to the tower and blade length. Ice shedding from blades can occur up to 5-6 days a year, with ice pieces typically flying up to 100 meters away.

The wind turbines planned for the Sopi- Tootsi Wind Farm do not pose a danger to residential areas in case of icing or technical failures, which are highly unlikely. The technical integrity of the wind turbines, which is crucial for minimizing any risks, will be diligently maintained by the wind farm owner throughout the entire operational period.

Socio-Economic Impact

In the case of Tootsi Suursoo, it essentially involves human activity based on the extraction of non-renewable resources for half a century, which, due to the depletion of peat, is no longer a viable solution in the long term. An alternative to developing the area as a Wind Farm allows for the restoration of vegetation and has a positive impact on land use.

The Sopi-Tootsi Wind Farm is expected to bring significant benefits to the local community, including:

- **Job Creation:** The construction and eventual operation of the wind park will create numerous jobs for local residents.
- **Economic Growth:** The project is attracting investment to the region, boosting the local economy.
- **Energy Independence:** The wind park will contribute to Estonia's energy security by providing a local source of renewable energy.

- **Community Benefits:** Direct financial benefits to the Põhja-Pärnumaa municipality, with payments to the local government and residents within a 2 km radius. Additionally, a new road will shorten travel to Tallinn by tens of kilometers, and electricity consumption within a 6 km radius of the substation will be enabled without a network fee.

Potential adverse effects, such as changes in the landscape and noise, are being carefully managed to ensure minimal disruption to the local community.

Health and Safety

Health and safety are top priorities for the Sopi-Tootsi Wind Farm. Comprehensive measures are in place to protect workers and the public during construction and will continue to be enforced during operation. Emergency response plans have been developed to address any potential incidents swiftly and effectively, with special attention given to fire safety.

Regulatory and Compliance

The project complies with all relevant local, regional, and national regulations. Necessary permits and approvals have been obtained from the Estonian government and environmental agencies, ensuring that the wind park meets all legal and environmental standards.

Public Consultation and Stakeholder Engagement

Extensive consultations have been conducted with local residents, community leaders, and other stakeholders. Feedback received has been incorporated into the project planning to address concerns and ensure community support. Ongoing engagement will continue throughout the project's lifecycle.