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Offshore Wind Finland

Opportunities 2023/24



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Wind power as a major driver for Finland's green transition

Finland is a leader in promoting renewable energy and the energy transition. The national goal is to achieve carbon neutrality as early as 2035 and to establish the first welfare society in the world to completely renounce fossil fuels. Finland's innovative and dynamic corporate environment, state-of-the-art technology, and exceptional know-how provide excellent conditions for achieving this goal.

The rise of the wind energy industry is a striking illustration of Finland's potential. In under a decade, commercial wind power surpassed all other electricity generation modes in terms of cost

efficiency. Projects are moving along at a tremendous pace, and last year saw yet another record-breaking number of projects coming online. Finland added around 2.4 GW of new capacity in 2022, bringing the country's total installed capacity to over 5.6 GW, the bulk of which is currently onshore. Since then, the capacity has grown up to 6.4 GW, consisting of more than 1,500 WTGs.

Huge growth potential for offshore wind

While onshore developments continue to grow rapidly, offshore projects are gaining attention. With Finland's ambitious climate goals and its geopolitical incentive to be self-sufficient, offshore developments are becoming increasingly important. Not surprisingly, offshore wind is an integral part of Finland's strategy for electrifying and decarbonizing industry and transportation.

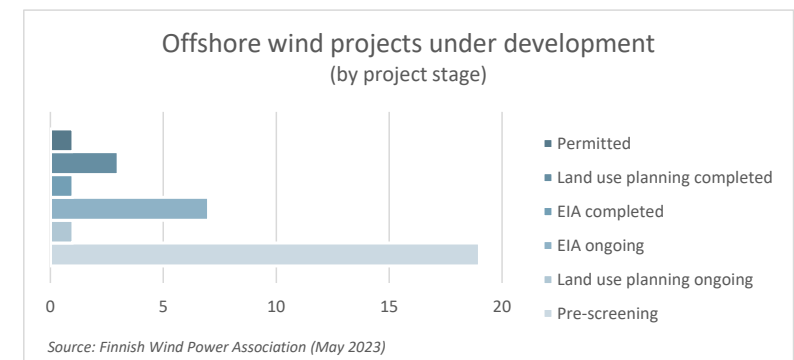
The importance of offshore wind has recently been recognised by Finland's new government: Finland plans to establish an ambitious target for offshore wind and create a competitive advantage for Finland over other countries of the Baltic Sea. The government programme includes plans to improve the business and legal environment, aiming to encourage and streamline the development and construction of offshore wind.

So far, there is only one operational offshore wind farm in Finland. The Tahkoluoto wind farm comprises 11 WTGs with sub-sea foundations and has a total capacity of 44.3 MW. This project demonstrated that offshore wind power is perfectly feasible in frozen sea conditions in the Nordic region. An expansion to 40 WTGs, each with a capacity of over 15 MW is under development. The expansion project obtained a land

use plan in 2022, secured area use rights in early 2023, and is estimated to be completed by 2028.

Shallow depth and lower salinity of waters combined with good wind conditions create an ideal offshore environment. A remarkable pipeline of over 30 projects in total of 57.6 GW has been created as a result of market interest and long-term efforts. A number of projects under development are between 1,200 and 1,800 MW. The biggest projects in the pipeline are between 7,500 and 10,000 MW.

As can be seen from the rapidly growing pipeline, Finnish offshore wind power has remarkable growth potential. The Finnish TSO, Fingrid Oyj, has also outlined future developments in their electricity system vision of 2023. According to the most optimistic scenario, the Finnish offshore wind production could increase up to 71 TWh by 2035 and 150 TWh by 2045. In all four Fingrid's scenarios, the electricity consumption is expected to rise from current 86 TWh to 115–185 TWh by 2035. Offshore wind could play a key role in helping to meet the growing electricity demand.

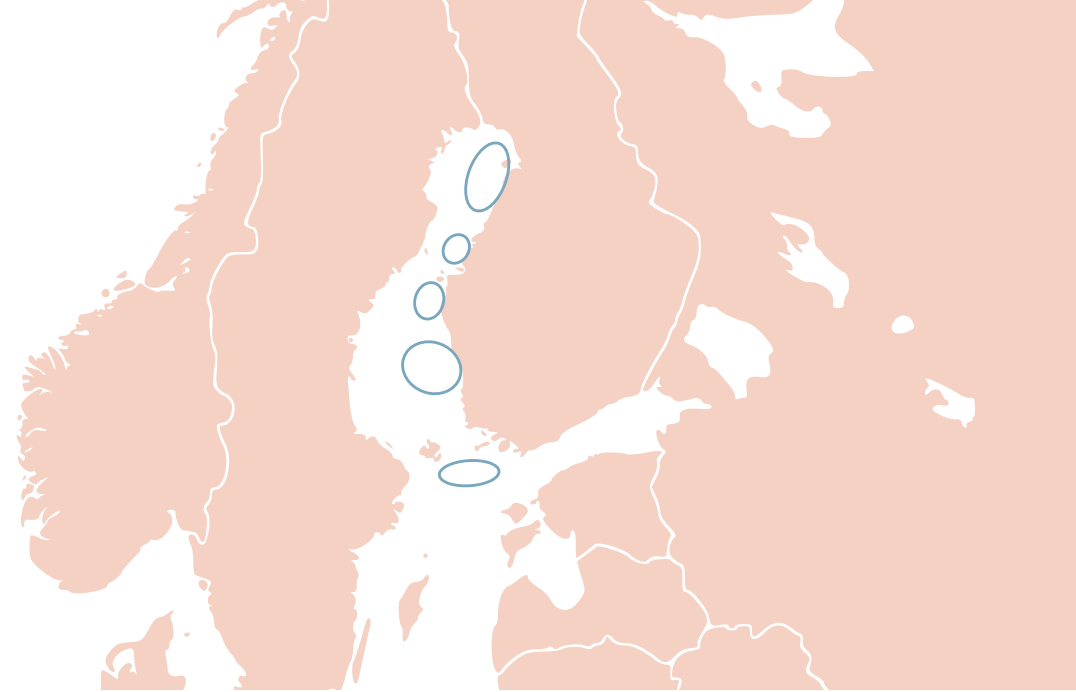




Siting of offshore projects

Significant efforts have been made on a strategic level to make offshore wind compatible with other activities and protected values in the Baltic Sea. One major step was the creation of the “Maritime Spatial Plan 2030” which identified several potential areas for offshore development. The document was drawn up by Finnish regional councils and approved in 2020. Criteria considered include nature conservation, the impact on landscape, national defence interests, and the needs of maritime traffic and other commercial activities.

The Maritime Spatial Plan considers the Gulf of Bothnia as the most suitable location for large offshore wind power projects. Additionally, several potential sites have been identified in the Southern Bothnian Sea and the Archipelago Sea. The plan is also by no means exhaustive. Åland and its surrounding sea areas, for example, are not covered, but there are substantial projects under development there.



Project development

General

Finland has no “one-stop-shop” permitting for wind farms. Rather, several permits and statements are needed from various state and municipal authorities, and coordination is limited. The permitting process typically takes from five to seven years.

Wind energy development, however, enjoys the procedural privileges and supportive measures for renewable energy plants. This includes time-limits for construction and operation permitting and a recent legislative amendment to temporarily grant procedural priority to green transition projects in authorities and administrative courts.

In addition, targeted measures are being considered for improving market conditions for offshore projects in particular.

This includes changes to real estate taxation. Currently, the tax basis for both onshore and offshore wind farms are linked to the construction and turbine procurement costs, resulting in a significantly higher tax burden for offshore farms. Another pressure point is the clarification and streamlining of permitting procedures.






The details of land procurement and permitting depend on whether the project is located within Finland's territorial waters or in the exclusive economic zone:

Finnish territorial waters

The state-owned sea areas closer to the coast are administered and leased out by the state-owned company Metsähallitus. As an example, Metsähallitus leased additional part of territorial waters for the Tahkoluoto wind farm expansion in January 2023. In the future, offshore sites will be allocated to developers via an auction model. Prior to initiating the auctions, Metsähallitus will pre-screen and identify the suitable areas and procure approval from the Government. So far, Metsähallitus has identified seven potential areas. A use right agreement will be granted to a winning developer in the auction after which the developer can proceed to permitting of the project. Ultimately, the developer can construct and operate the project.

The first auction of two offshore sites is expected to begin in 2023 and the next auction with two more sites in 2024. The first auction concerns project Ebba, located in Pyhäjoki and Raahe and project Edith in Närpiö. Both projects consist of 80–100 WTGs with total capacities 1,400 MW for Ebba and 1,600 MW for Edith. In the project areas, the water depth mainly varied between 15 and 40 meters and wind conditions are great. The projects

Metsähallitus' auctions in 2023

	Ebba	Edith
	Pyhäjoki and Raahe	Närpiö
	80–100 WTGs	80–100 WTGs
	1,400 MW capacity	1,600 MW capacity
	5,900 GWh production	6,900 GWh production
	2035 in operation	2035 in operation

are in land use planning stage and estimated to be in operation by 2035. In addition to third-party projects, Metsähallitus is also developing the first large-scale offshore wind farm with a capacity of at least 1,300 MW near Korsnäs. Metsähallitus has selected Vattenfall as a co-developer in December 2022. The environmental impact assessment has been completed and zoning is currently in progress.

The permitting process includes land use planning with the local municipality, environmental impact assessment with the competent ELY centre and statements and permits from several authorities. The main permits include a permit for seabed survey and mapping, a statement from the Defence Forces, a water

Permitting in territorial waters

- ✓ **Right of use agreement**, *Metsähallitus, the Government*
- ✓ **Permit for seabed survey and mapping**, *Defence Forces*
- ✓ **Statement on acceptability**, *Defence Forces*
- ✓ **Environmental impact assessment**, *ELY Centre*
- ✓ **Local master plan**, *Municipality*
- ✓ **Building permits**, *Municipality*
- ✓ **Water permit**, *Regional State Administrative Agency*
- ✓ **Flight obstacle permits**, *Traficom, Border Guard*
- ✓ **Permits for cabling and grid connection**

permit, building permits and flight obstacle permits. Securing a grid connection is also subject to environmental impact assessment and permitting.

Exclusive economic zone

The Finnish exclusive economic zone (EEZ) covers areas outside territorial waters, for which Finland nevertheless has exclusive rights to conduct commercial activities. In the EEZ, offshore wind farms operate under government-granted construction permits, preceded by research permits for conducting the necessary studies. The permit processes are separate, and a developer holding a research permit does not have priority with regard to

Permitting in EEZ

- ✓ **Research permit**, *Ministry of Economic Affairs and Employment, the Government*
- ✓ **Environmental impact assessment**, *ELY Centre*
- ✓ **Construction permit**, *Ministry of Economic Affairs and Employment, the Government*
- ✓ **Statement on area surveillance effects**, *Defence Forces*
- ✓ **Water permit**, *Regional State Administrative Agency*
- ✓ **Permits for cabling and grid connection (partly outside EEZ)**

the construction permit. No construction permits are in place yet, but research permits for a dozen offshore projects have been granted in 2022–2023.

Projects in the EEZ are not subject to a land use planning process and do not require a municipal building permit nor separate agreements on land use rights. Environmental impact assessments are typically conducted for projects in the EEZ. The projects also require various other permits, such as a water permit, statements from the Defence Forces regarding a permit for seabed investigations and impact on territorial surveillance, and permit for high voltage line construction. Even if the wind farm site itself is located in the EEZ, the cabling and other infrastructure are partly located in territorial waters. Therefore, similar procedures as in territorial areas apply.

As a part of the new government programme, national legislation for offshore wind in the EEZ will be clarified. The purpose is to develop applicable legal framework, permit processes as well as compensation and tax structures. The legislative project of the Ministry of Economic Affairs and Employment of Finland is scheduled to be published in the autumn of 2023 and the legislative proposal for decision-making in late 2024.

Wind to hydrogen

Cost-competitive wind power is key in unlocking Finland's potential for green hydrogen production. In early 2023, the Finnish Government adopted a resolution confirming Finland's goal to become a European leader throughout the hydrogen value chain. Finland intends to produce at least 10% of the EU's emissions-free hydrogen by 2030. In addition to supplying the domestic industry, transport and energy sector, the aim is for Finland to become a major exporter of hydrogen, electric fuels and green steel.

To exploit the potential, Finland is making significant efforts to create a hydrogen infrastructure. This includes the construction of a national hydrogen network and a joint pipeline with Sweden (the "Nordic Hydrogen Route"), through which green hydrogen will be transported on a large scale from areas with high wind power production to industrial customers. The pipeline is planned to be operational by 2030. Over the longer term, an expansion via the Baltic countries and Poland all the way to Germany is planned (the "Nordic-Baltic Hydrogen Corridor"). Further prospects of an infrastructural backbone for offshore wind-to-hydrogen arise from the project launch for the "Baltic Sea Hydrogen Collector", a pipeline system envisaged to connect wind power areas in the Baltic Sea to Central European markets.

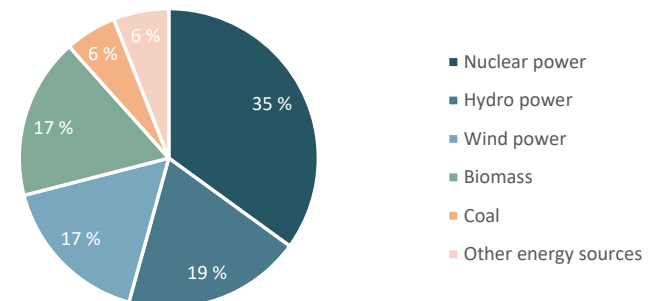
In the Finnish offshore wind industry, concrete business cases around offshore wind as electrolyser feedstock are already entering the stage on a project level. Hydrogen potential is present particularly in the ongoing planning of large-scale wind farms in the Finnish EEZ, where scenarios involving decentralised hydrogen production at source or centralised offshore facilities are being assessed.

The Finnish energy sector in brief

Finland is one of the leading nations in renewable energy. The share of renewables in both energy consumption and electricity supply is more than 40% and is one of the highest in the EU. Hydro and bioenergy account for a major part of renewables, but the share of wind power in total electricity generation has grown from almost zero to 16.7% over the last decade.

Finland is part of the Europe's leading electricity market Nord Pool. The Nordic and Baltic TSOs own a third of Nord Pool and are closely involved in its operations. The electricity market is divided into multiple bidding areas with individual prices. Unlike other Nordic countries, Finland has only one price zone. The monthly average prices have fluctuated within the range of 26 and 80 EUR/MWh in 2023, but there are considerable variations in weekly, daily and monthly averages.

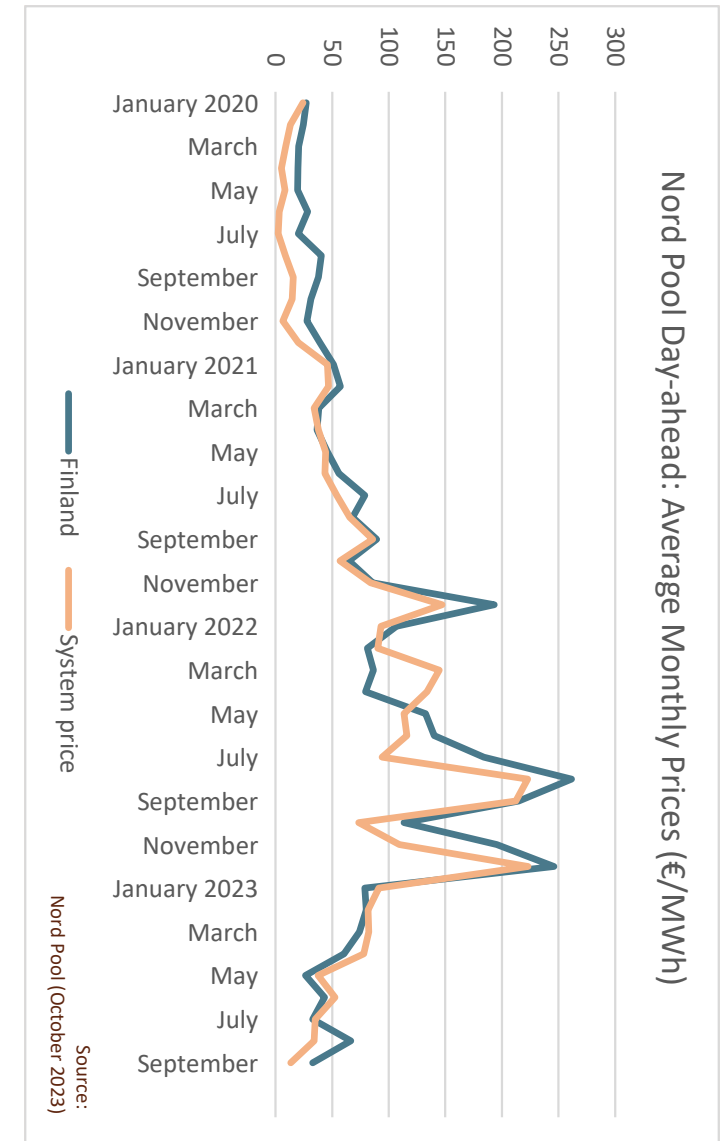
Electricity generation by energy source, 2022



Source: Finnish Energy (January 2023)

The transmission grid covers nearly 15,000 kilometres of high-voltage lines and is operated nation-wide by the TSO *Fingrid Oyj*. The national grid is linked with high-voltage connections to Estonia, Sweden and Norway. Regional high-voltage networks and local distribution networks are operated by 9 regional and 77 distribution network companies.

To accommodate increasing electrification and geographically segregated production and consumption hot-spots, significant new investments of around EUR 2.1 billion being are planned over the next ten years to expand and upgrade the network. In its grid development plan for 2022–2031, Fingrid envisages the construction of 3,700 kilometres of new transmission lines and more than 100 new or upgraded substations. The development focuses on enhancing cross-border connections, with Sweden in particular, and improving the domestic transmission capacity from areas with high production in the north and at the west coast to areas with high consumption in the south.



Events

EnergyWeek WIND FINLAND

Vaasa Energy Week 2024

11–14 March 2024

Annual energy event arranged in Vaasa, Finland.

www.energyweek.fi



Energia 2024

22–24 October 2024

International energy event arranged in Tampere, Finland.

www.energiamesut.expomark.fi

Wind Finland Offshore 2024

14 May 2024

International seminar focused on offshore wind organized by the Finnish Wind Power Association in Helsinki.

www.windfinland.fi

Wind Finland 2024

1 October 2024

Annual wind power event organized by the Finnish Wind Power Association in Helsinki.

www.windfinland.fi

Finland Facts

Finland has been a European Union member state since 1995 and is the only Nordic state to have joined the euro. Key industries are electronics, metal, forestry and chemical industries. The main import partners are Germany, Sweden, the US, the Netherlands and China.

Population: 5.5 million

Total area: 338,472 km²

Largest cities by population:

Helsinki (658,457), Espoo (297,132), Tampere (244,223), Vantaa (239,206), Oulu (209,551) and Turku (195,137) (2021)

Currency: Euro (€, EUR)

GDP: EUR 252 bn (2021 estimate)

GDP per capita: EUR 45,000 (2021 estimate)

Official languages: Finnish and Swedish

Corporate tax rate: 20 %

Trade organizations: EU (1995), WTO (1995), OECD (1969)

Source: Statistics Finland and Population Register Center

Useful contacts

Networks and advisors

Bergmann Attorneys at Law

Helsinki-based law firm with a strong specialization in industrial projects in construction and engineering, energy, and infrastructure.

Pohjoisesplanadi 21 A
00100 Helsinki
office@bergmann.fi
www.bergmann.fi

The Finnish Wind Power Association

(Suomen Tuulivoimayhdistys ry.)

Association founded in 1988 for promotion of wind energy in Finland with over 160 private individual members and 140 member companies and associations.

Yliopistonkatu 34 B 17
40100 Jyväskylä
tuuli@tuulivoimayhdistys.fi
www.tuulivoimayhdistys.fi

Business Finland

Business Finland is the Finnish innovation funding, trade, investment, and travel promotion organization, fully owned by the Finnish Government..

Porkkalankatu 1
00180 Helsinki
www.businessfinland.com

Finnish Energy Industries

(Energiateollisuus ry)

Sector organisation for the industrial and labour market policy of the energy sector, with about 270 member companies.

Eteläranta 10
00130 Helsinki
info@energia.fi
www.energia.fi

Deutsch-Finnische Handelskammer

(German-Finnish Chamber of Commerce)

Being part of the network of German chambers of commerce, the Helsinki-based chamber offers various services in order to promote business relations between Germany and Finland.

Unioninkatu 32 B
00101 Helsinki
info@dfhk.fi
www.ahkfinnland.de

State administration and state-owned companies

Finnish Energy Authority

(Energiavirasto)

The Energy Authority is responsible for supervision of the energy market.

Lintulahdenkuja 2 A
00530 Helsinki
Tel: +358 29 5050 000
kirjaamo@energiavirasto.fi
www.energiavirasto.fi

Fingrid Oyj

Enterprise in majority state ownership responsible for the Finnish transmission grid. At present, the grid comprises lines at a total length of 14,400 km and 120 substations.

P. O. Box 530 (Läkkisepäntie 21)
00101 Helsinki
Tel. +358 30 395 5000
kirjaamo@fingrid.fi
www.fingrid.fi

Defence Command of the Finnish Defence Forces

The Defence Command leading the Finnish Defence Forces issues statements on requirement of radar impact assessment of a planned wind park and approves wind park projects in terms of their impact on military readiness.

P.O. BOX 919 (Kasarmikatu 17)
00131 Helsinki
Tel. +358 2 99 800
kirjaamo.pe@mil.fi
www.puolustusvoimat.fi

Finavia Oyj

Wholly state-owned company maintaining and operating the 20 traffic airports as well as Finland's air navigation system.

P. O. Box 50 (Lentäjäntie 3)
01531 Vantaa
Tel. +358 20 708 000
tietopalvelu@finavia.fi
www.finavia.fi

Fintraffic Air Navigation Services

(Fintraffic Lennonvarmistus Oy)

Fintraffic ANS is responsible for managing the use of Finnish airspace as well as providing flight route and air navigation services. Grants flight obstacle statements required for wind turbines.

P. O. Box 157
01531 Vantaa
Tel. +358 20 4284 000
info@fintraffic.fi
www.fintraffic.fi/ans

Finnish Transport and Communications Agency

(Liikenne- ja viestintävirasto Traficom)

Traficom is an authority in licence, registration, and approval matters. Grants flight obstacle permits

required for wind turbines in some cases.

P. O. Box 320
00059 Traficom
Tel. +358 29 534 5000
kirjaamo@traficom.fi
www.traficom.fi

The Centres for Economic Development, Transport and the Environment (ELY Centres)

Elinkeino-, liikenne- ja ympäristökeskus (ELY-keskus)

There are 15 ELY Centres responsible for the regional implementation and development tasks of the central government. The ELY Centres are involved in the assessment of environmental impacts of the wind parks.

www.ely-keskus.fi
Tel. +358 295 020 000

Metsähallitus

A state-owned enterprise responsible for administration of the state-owned land and water areas. Metsähallitus also develops state-owned land also for the purposes of wind energy production and leases out state-owned sea areas for offshore wind projects.

P.O. Box 94 (Ratatie 11)
01301 Vantaa
Tel. +358 206 39 4000
kirjaamo@metsa.fi
www.metsa.fi

Energy and environment policies

Ministry of Employment and the Economy

(Työ- ja elinkeinoministeriö, TEM)

The ministry responsible for, inter alia, energy policy and integration of the national preparation and implementation of climate policy.

P.O. Box 32
00023 Government
Tel. +358 2951 6001
kirjaamo.tem@gov.fi
www.tem.fi

Ministry of the Environment

(Ympäristöministeriö, YM)

The ministry responsible for the built environment, housing, biodiversity, sustainable use of natural resources and environmental protection.

P. O. Box 35 (Aleksanterinkatu 7)
00023 Government
Tel. +358 2951 6001
kirjaamo.ym@gov.fi
www.ym.fi

Services for the wind power sector

Project acquisition and divestment

- Due diligence scrutiny
- Financing and structuring
- Contract drafting and negotiation
- Process and document management

Project development and management

- Regulatory framework
- Project agreements
- Financing arrangements
- Taxation

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