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Wind Energy Finland

Opportunities 2018/19



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Your contact person for this booklet:

Claudia Greiner

claudia.greiner@bergmann.fi

Finland invests in wind energy

An overview

Thanks to a lucrative feed-in-tariff, Finland has seen a significant boost in the wind energy sector in the recent decade. While the current feed-in-tariff is being phased out, the Finnish Government remains committed to carbon-free, clean and renewable energy.

During its term, the Government intends to invest a total of 300 million euro in bio-economy and clean energy. The objective is to increase the share of renewable energy to 50% by 2030. Wind energy will play an essential role in implementing this target. While Finland is currently producing 4.8 TWh of wind energy, the national Energy and Environment Strategy has set a target of 9 TWh annual production for wind energy by 2025. The Finnish Wind Power Association believes that there is potential to increase this up to 30 TWh by 2030.

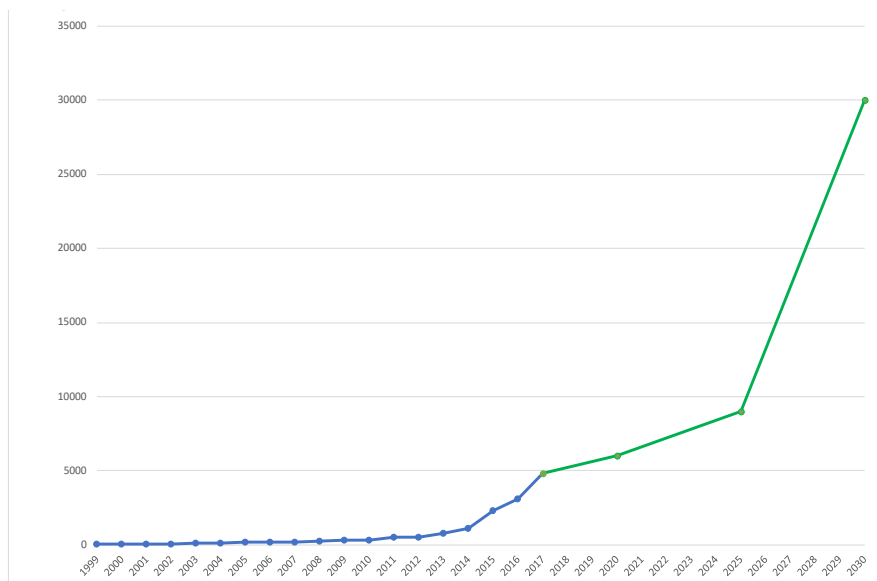
A new support scheme, based on technology neutral competitive bidding, was introduced in 2018 and the tendering process is expected to take place at the end of this year. At the same time, Finland has recently seen the announcement of the first projects envisaged to operate without subsidies – a trend that is likely going to continue.

Opportunities for international businesses

Currently, international investors own approximately a third of the Finnish wind capacity and foreign businesses will continue to play a major role in the Finnish wind energy sector.

Despite the boost triggered by the feed-in tariff, the total installed capacity (2044 MW at the end of 2017) is still comparatively small and there is still a large potential for new wind power. With more than 200 projects currently in the pipeline, there are opportunities for international businesses to get involved in a variety of ways:

Wind energy in Finland: current and predicted



Source: Data compiled by the Finnish Wind Power Association (2017).

- *Feasibility, construction, service, and maintenance:* Collaboration opportunities exist at all stages of wind park projects for foreign companies who are experienced in the sector. This includes feasibility studies, technical planning, various consulting services as well as service and maintenance.
- *Turbine and component suppliers:* While some developers are already committed to specific turbine manufacturers, there are many projects in the pipeline where turbines still have to be agreed and contracted.
- *Private investment funds and institutional investors:* Given the Government's commitment to clean energy and the recent emergence of the first merchant projects, one can expect that the Finnish wind energy sector will remain attractive for investors also in the future.
- *Banks and financing Institutions:* While project financing has been used successfully in the international wind power sector for many years, it is still somewhat new in Finland. Until project financing has become more established, there is a significant market for foreign banks to provide project financing either alone or in collaboration with Finnish banks.
- *Offshore:* Commercial offshore wind is still at the very beginning but there is a large potential for the future. Finland is expected to be an interesting market for experienced service providers and suppliers in the years to come.

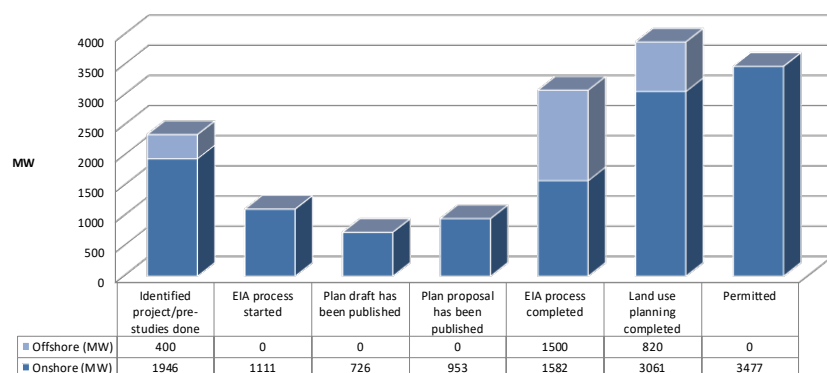
The Finnish wind energy sector

Onshore wind

The most immediate developments in the wind energy sector are onshore. The west coast of Finland and Lapland are perceived as the most advantageous areas for wind power production, which is also highlighted by the total share of wind energy projects under construction and in planning in these regions.

Some of the projects under development are significantly larger than those currently in operation or under construction. Among the projects that have successfully completed the Environmental Impact Assessment, there are more than 20%, altogether 32 projects, of an expected capacity of 100 MW or more with the largest one reaching 650 MW.

Wind power projects under development in Finland



Source: Data compiled by the Finnish Wind Power Association (April 2018) and the electronic production subsidy system (SATU, April 2018).

In addition to large-scale projects, there are a great number of smaller projects in different stages of development. Opportunities exist especially for companies who are prepared to invest at an earlier stage of development and carry part of the development risk.

Offshore wind

Finland offers one of the largest capacities for offshore wind parks in the Baltic Sea Region. While shallow waters, low waves, and close distances to the coastline offer considerable logistical advantages compared to the North Sea, arctic weather conditions and icing bring about their own challenges.

To evaluate and investigate the risks involved in offshore wind power and to develop offshore wind power best practices and technology, the Finnish Government granted an investment subsidy of EUR 20 million for a demonstration project in 2014. The Tahkoluoto wind farm developed and operated by Suomen Hyötytuuli Oy was commissioned in 2017. The park is located 1.2 km offshore and comprises of 10 turbines with combined output of 40 MW. The knowledge acquired during the construction, operation and maintenance of the park will be shared with other developers.

Especially with new technologies making offshore wind more cost-efficient, offshore wind power is expected to pick up in Finland in future years. For experienced offshore suppliers and consultants, Finland should therefore be an interesting market to watch.

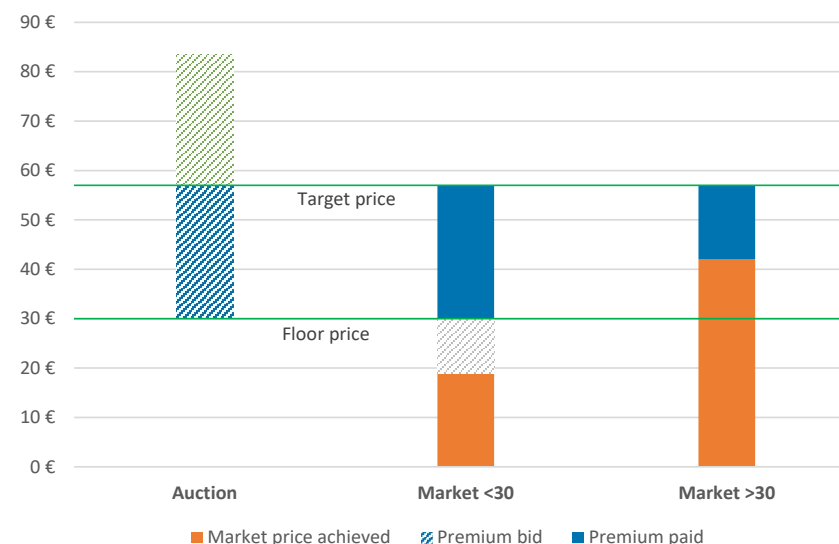
The Finnish support scheme for wind energy

Since 2011, Finland has had an attractive subsidy scheme (the feed-in tariff scheme) targeted at the promotion of wind power and other renewable energy sources. The feed-in-tariff was granted to projects that managed to reserve their share of the available quota and were constructed in time to apply for a final approval into the scheme by November 2017.

A new support scheme in the form of a technology neutral tendering process was introduced just recently. Support will be made available for a total annual production of 1.4 TWh, corresponding to approximately 1.6% of Finland's electricity consumption. Under the new scheme, the subsidy amount will be determined for each project in a competitive auction, which is anticipated for November and December of 2018.

Based on a *floor price* of EUR 30/MWh, each bidder calculates the additional *premium* required to make the project feasible. Floor price plus premium make up the *target price*. The amount of premium to be paid under the scheme will depend on the average market price for the relevant calendar quarter. If the market price is below or equal to the floor price (EUR 30/MWh), the total premium amount awarded in the auction will be paid. If the market price exceeds the floor price, only the difference between market price and target price will be paid.

- Projects are approved into the scheme on a pay-as-bid basis, meaning that the support granted to winning projects is based on their actual bid, rather than the



highest bid eligible for support. Support will be granted for a maximum of 12 years.

In order to be eligible for support, projects need to fulfil certain preconditions similar to the existing support scheme. Furthermore, only fully permitted projects with a secured grid connection can participate in the bidding process. Participation is subject to a non-refundable fee and provision of a bidding security. The security will be released if the bid is unsuccessful. In case of the winning bid, the bidder has to replace the bidding security by a construction security within one month of the approval into the scheme.

Finally, the new scheme includes significant underperformance penalties in case the actual annual production stays below the annual production stated in the relevant bid.



Merchant projects and PPAs

Wind power is in general expected to fare well in the auction due to comparatively low production costs. On the other hand, the available support can only cover a small share of the projects currently under development. This makes the recent news about the first merchant projects all the more exciting.

In May 2018, Finnish developer TuuliWatti Oy announced their decision to build a 21 MW project in the municipality of Ii in western Finland without any government support. This was followed by news from CPC Finland Oy regarding the construction of a 50 MW project in Isojoki and wpd Finland Oy concerning a 60 MW unsubsidized project in Kannus.

The latter two projects will be implemented based on a corporate PPAs, i.e. long-term power purchase agreements with a corporate or industrial off-taker. For the off-taker, this type of agreement is a means of the corporate green agenda and sustainability goals as well as mitigating volatility in power prices. For the power producer, corporate PPA have the obvious advantage of securing long-term reliable revenues, thus making the project bankable without government support.

Given the emergence of business models such as corporate PPAs combined with advances in technology and beneficial wind conditions, it can be expected that the trend of merchant projects will continue on the Finnish market.

The regulatory framework

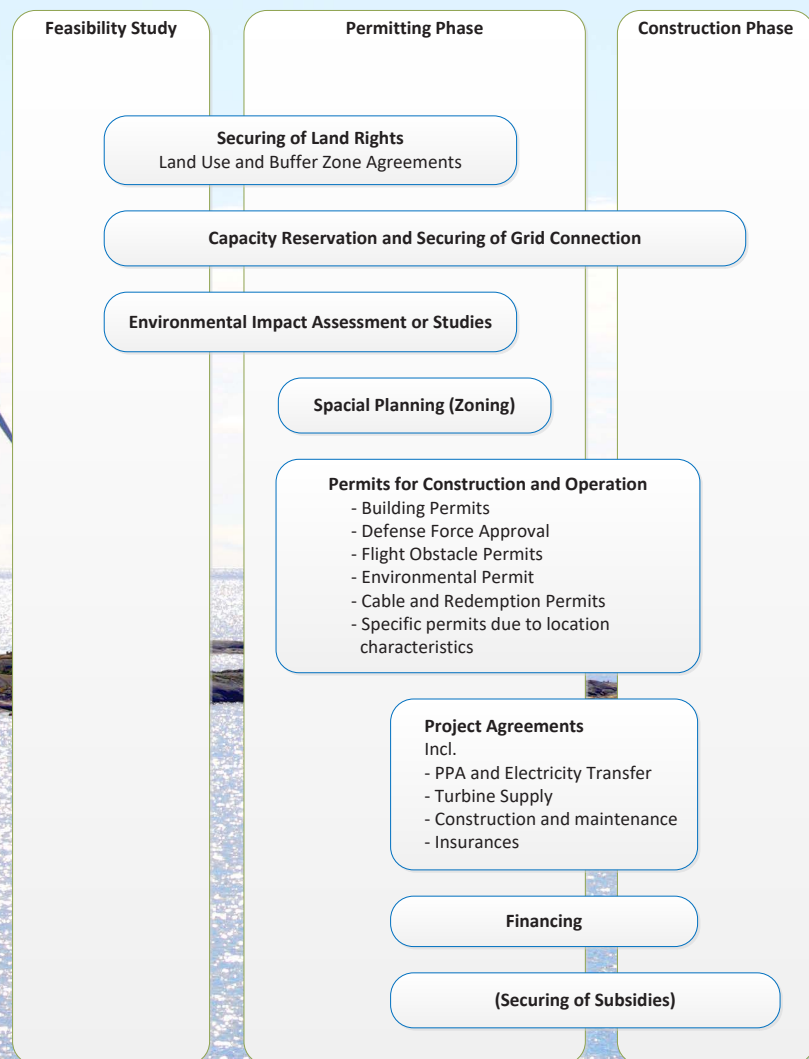
Over the recent years, the Finnish Government has taken active measures to promote the development of wind parks by simplifying the administrative permit system for wind power projects.

Permitting prerequisites were amended so that building permits for wind parks may be granted even if the relevant master plan has not gained legal force due to pending appeals. Municipalities can promote wind power by adopting a wind power directing local master plan, in which most of the required assessments have already been carried out.

Environmental permit conditions were clarified by a Governmental Decree that sets down noise limits specifically for wind parks. In 2014, a new Environmental Protection Act was enacted including several measures targeted at expedited and smoother environmental permit processing. The general reform of the Finnish environmental protection legislation is still ongoing with further measures on the way.

One of the biggest practical challenges in wind park development is the fact that there is no centralized permitting procedure. Instead, developers must procure a whole number of different permits that are not only subject to different procedures, preconditions, and deadlines, but may also result in several distinct appeal proceedings. The matter can be expected to be mitigated to some extent, when the new one-stop shop model proposed by the government enters into force (expected in 2020). This procedure will make it possible for a permit applicant to apply for different permits through one single channel.

Main development phases of an onshore wind park project



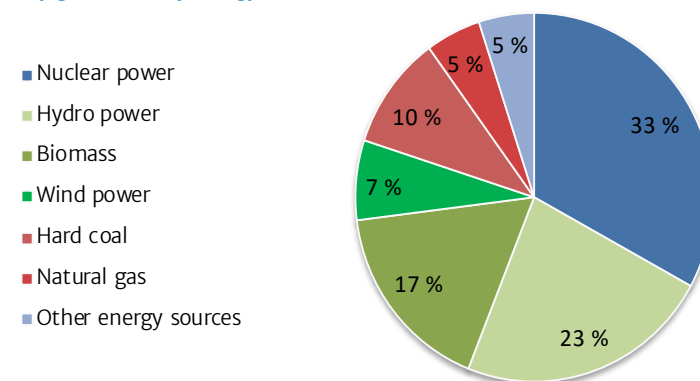
The Finnish energy sector in brief

Finland is one of the leading nations in renewable energy. The national target for 2020 (38 % total share of renewable energy in final consumption) has already been reached well ahead of time. The wind power's share of the renewable energy is still very modest, with hydro and bioenergy (especially wood and wood-based fuels) being the most common renewable sources.

The Finnish energy strategy also includes the construction of new nuclear power plants. The fifth Finnish reactor (Olkiluoto 3) is currently under construction, and political decisions have been made to authorise a sixth reactor.

Finland has one of the most stable electricity grids in the world, and the steady stream of investments strengthens the grid capacity. The Finnish transmission grid is connected to Sweden, Estonia, Norway and Russia. The Finnish Transmission System Operator responsible for the nation-wide high-voltage transmission grid is *Fingrid Oyj*. The regional electricity and distribu-

Electricity generation by energy source 2017



tion networks are operated by 13 regional electricity network companies and 77 distribution network companies.

The transmission grid, which currently covers around 15,000 km, is going to be significantly extended over the next few years. In its investment plan, Fingrid envisages constructing almost 800 km of 400 kV lines and almost 1000 km of 110 kV lines until 2025. Cross-border connections will also be enhanced. In total, around EUR 1.2 billion is invested in the transmission network between 2015–2025.

Upcoming events

WIND FINLAND 2018

Wind Finland 2018
10 October 2018

Seminar organized by the Finnish Wind Power Association.
<http://www.windfinland.fi/>



Energia 2018 – Energy Fair Finland 2018
23–25 October 2018

International energy event arranged in the city of Tampere.
www.energiamessut.fi/energia/en/

EnergyWeek

Vaasa Wind Exchange & Solar
19–20 March 2019

International wind power event arranged in the city of Vaasa in Finland as part of the annual Vaasa EnergyWeek.
www.energyvaasa.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 Russia.

Population:	5.5 million (2018 estimate)
Total area:	338,434 km ²
Largest cities by population:	Helsinki (644,788), Espoo (279,284), Tampere (231,967), Vantaa (223,108), Oulu (202,238) and Turku (189,794) (December 2017)
Currency:	Euro (€, EUR)
GDB:	EUR 215 bn (2016 estimate)
GDB per capita:	EUR 39,236 (2016 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.

Eteläranta 4 B 9
00130 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 approximately 220 private individual members and 170 member companies and associations.

Kauppakatu 19 A 9
40100 Jyväskylä
tuuli@tuulivoimayhdistys.fi
www.tuulivoimayhdistys.fi

Invest in Finland

Government agency aiming at the promotion of foreign investments in Finland.

Porkkalankatu 1
00180 Helsinki
info@investinfinland.fi
www.investinfinland.fi

Finnish Energy Industries (Energiateollisuus ry)

Sector organisation for the industrial and labour market policy of the energy sector, with about 260 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.

P. O. Box 83 (Mikonkatu 25)
00101 Helsinki
info@dfhk.fi
www.dfhk.fi

State administration and state-owned companies

Finnish Energy Authority (Energiavirasto)

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

Lintulahdenkuja 4
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 14,600 km.

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

Supreme headquarters of the Chief of Defence. 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 (Fabianinkatu 2)
00131 Helsinki
Tel. +358 2 99 800
www.puolustusvoimat.fi/

Finavia Oyj

Wholly state-owned company maintaining and operating the 24 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

Finnish Transport Safety Agency (Liikenteen turvallisuusvirasto, Trafi)

Trafi is responsible for transport system regulatory duties. Grants flight obstacle permits required for wind turbines.

P. O. Box 320 (Kumpulantie 9)
00101 Helsinki
Tel. +358 29 534 5000
kirjaamo@trafi.fi
www.trafi.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/

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.

P.O. Box 94 (Vernissakatu 4)
01301 Vantaa
Tel. +358 206 39 4000
kirjaamo@metsa.fi
www.metsa.fi

Energy and environment policies

Ministry of Employment and the Economy (MEE)

(Työ- ja elinkeinoministeriö, TEM)

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

P.O. Box 32 (Aleksanterinkatu 4)
00023 Government
Tel. +358 2950 60660
kirjaamo@tem.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 2952 50300
kirjaamo@ym.fi
www.ym.fi

Renewable Energy

- Acquisition, development, and operation
- Project agreements
- Project financing

Environment and Permitting

- Regulatory aspects of energy, construction, and infrastructure projects
- Planning law and permitting
- Environmental compliance

Construction, Engineering, Infrastructure

- Civil engineering projects
- Industrial plant construction
- Partners of the project management from procurement to completion

Bidding and Contracting

- Contract drafting and negotiating for projects and supply chains
- Bidder advisory in public procurement
- Post-award appeal procedures

Real Estate and M&A

- Transaction advisory with industrial focus
- Commercial feasibility, bankability, and risk control
- Financial arrangements

Dispute Resolution

- Change management and dispute avoidance
- Litigation and arbitration
- Special focus on disputes relating to complex projects and transactions

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INDUSTRY-FOCUSED LAWYERS
DEDICATED TO YOUR SUCCESS

Bergmann Attorneys at Law

Eteläranta 4 B 9
00130 Helsinki, Finland
Phone: +358 9 6962 070
office@bergmann.fi
www.bergmann.fi

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