

Windlife Green Organic BV

A Dutch wind energy development company
having its Russian SPV:

LLC “Windlife Kola Vetro LL1”

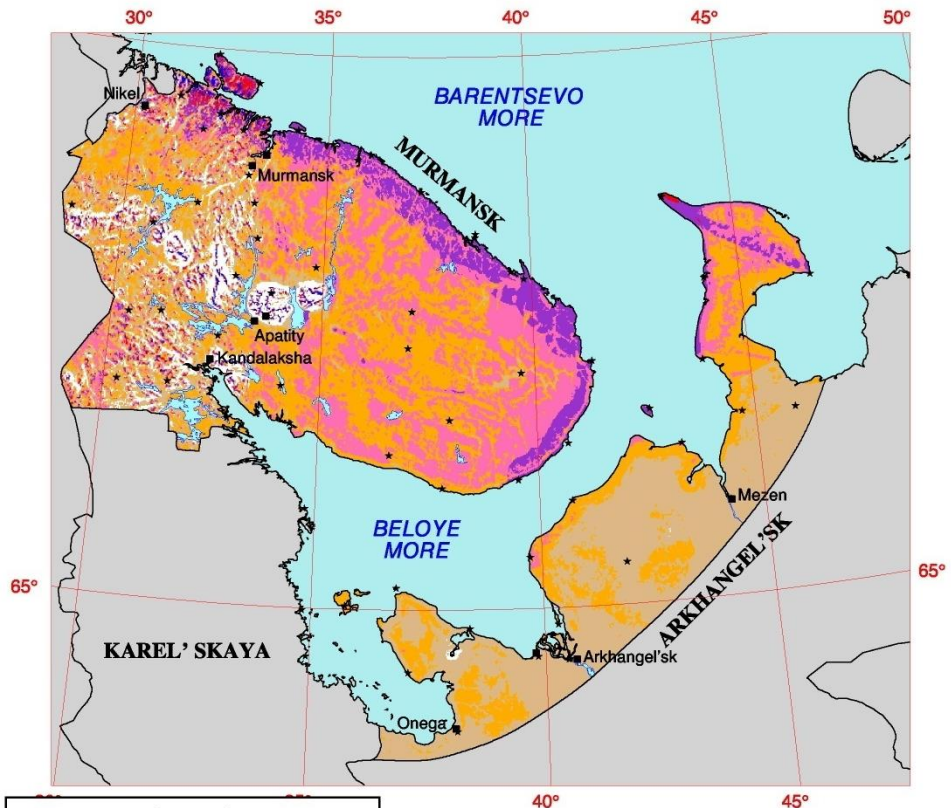
The SPV is the developer of a 200 MW large-scale
wind park on the Kola Peninsula, Murmansk, Russia

Project highlights

- Full year certified and bankable wind report
 - Average wind speed on site = **8,5 m/s**
- Long-term land lease signed and registered at Cadastre
- Official grid study, technical conditions for connection to the grid
- Environmental impact analysis, geological survey done, Rosaviation approval
- Anticipated IRR of **> 22 %**
- CAPEX of ~ 330 mln.EUR
- Refinancing after construction (bank loans)
- Investments in the project's realisation are discussed with interested generation companies, RDIF and other groups

Wind map of Murmansk

Murmansk and Arkhangel'sk - Wind Resource Map



Legend
 * GTS Meteorological Station Surface Data
 ■ City or Town

Wind Power Classification			
Resource Potential	Utility	Wind Power Density at 30 m W/m ²	Wind Speed ^a at 30 m m/s
Marginal	Moderate	100 - 200	4.4 - 5.6
Moderate	Good	200 - 300	5.6 - 6.4
Good	Excellent	300 - 400	6.4 - 7.0
Excellent		400 - 600	7.0 - 8.0
		600 - 800	8.0 - 8.8
		800 - 1500	8.8 - 10.9

^a Wind speeds are based on a Weibull k value of 2.0 at sea level.

The wind resource classification is specific for both utility-scale and rural applications and applies to areas with low surface roughness, e.g. grassland.

U.S. Department of Energy
 National Renewable Energy Laboratory



- ✓ Capacity factor ≈ 41%
 (Average in Germany ≈ 18%)
- ✓ Registered mean wind speed of 8.5 m/s at 70-80 m height with a very low turbulence, IEC IIC class

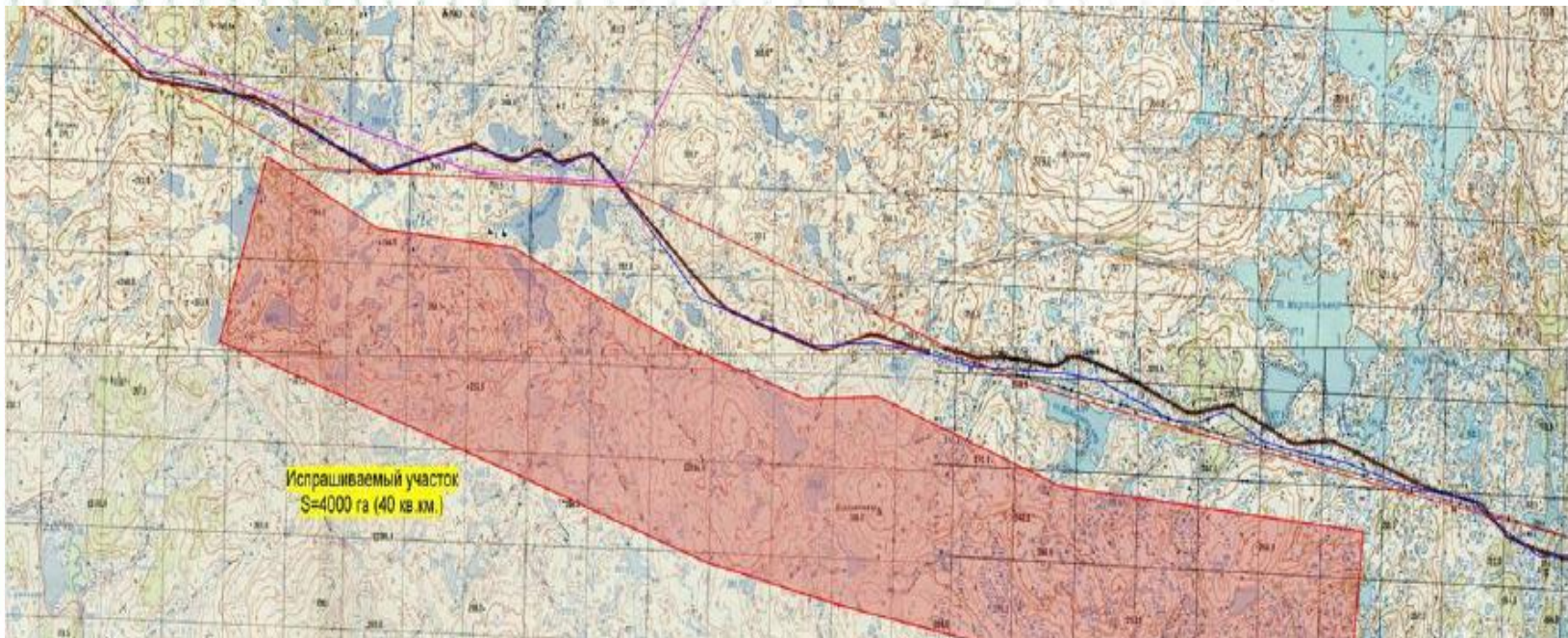
Wind met mast on site



- 80m wind met mast with calibrated equipment on 3 levels + top
- Powered by wind, solar & batteries + local maintenance
- Certified wind measurement >2 years & validation campaign & report by a German accredited company
- Bankable report available and measurements are ongoing

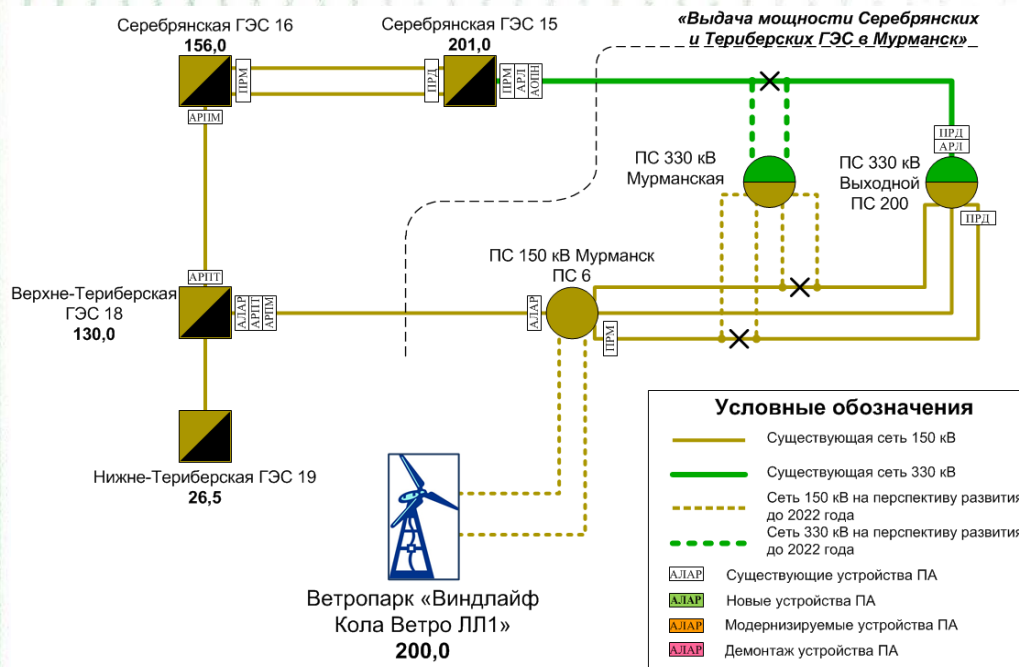
Land

- Protocol was signed with the Murmansk region Governor regarding land options October 11th, 2008
- Subsequent Land Act and Resolution N108 was confirmed for option period until end of 2015
- November 2015 official land lease agreement signed for 3-years construction period with exclusive rights for further prolongation; registered at Federal Cadastre



Grid Connection

- Grid connection report approved by the System Operator and local grid company Kolenergo (MRSK North West)
- Technical conditions signed and connection agreement offered by MRSK North West
- Connection CAPEX of 860 mln.RUB (for 150 kV line construction) is set by the Murmansk Tariff Committee



Green electricity support scheme

Type of document	Government Decree №449
Date of adoption:	May 28, 2013
Scope of regulation:	RES plants on wholesale electricity market (>5 MW)
Technology:	Wind – Solar – Small Hydro (<25 MW)
Who will benefit:	Winner of the yearly competitive tender of investment projects. Only new projects (not commissioned)
Basis of payment:	Capacity (MW); not electricity production
Terms of payment:	15 years / monthly basis (RUB / kW)
Limits on final payment:	CapEx within limits (~2000EUR/kW) OpEx is capped and must be the same for all
Adjustment coefficients for the final payment:	<ul style="list-style-type: none">- <u>Local content requirements</u>- Capacity factor requirement

Financial model



- ✓ Driver of Russian Renewably Energy Program (RREP) of World Bank.
- ✓ Acts as financial advisor for Windlife since 2008
- ✓ Does all financial and market modelling, due to complex Russian Renewable Energy Law; Resolution №449

Timing of the Project

- ✓ Binding offer wind turbine – Q2, 2017
- ✓ Participation in the Market Council tender – May – June 2017
- ✓ Proekt works and Building permit – 2017-2018
- ✓ Installation anticipated: 2018 and 2019



Some Reflections...

- There is no *made in Russia” wind turbine
- Windlife made the introduction so now Rosatom is together with Lagerweij (a Dutch wind turbine producer)
- Many people today talk about “a wind industry in Russia” Less than 2 MW today is installed

Things to do

- Less talk please less talk !!
- Put your money where your mouth is !!
- Start building wind turbines in the Russian Federation that was the whole idea behind Res. 449 to begin with !!
- Energy storage is the future of renewables

Untill we meet



THANK YOU !!

Paul Logchies
Windlife Energy BV
April 16, 2017