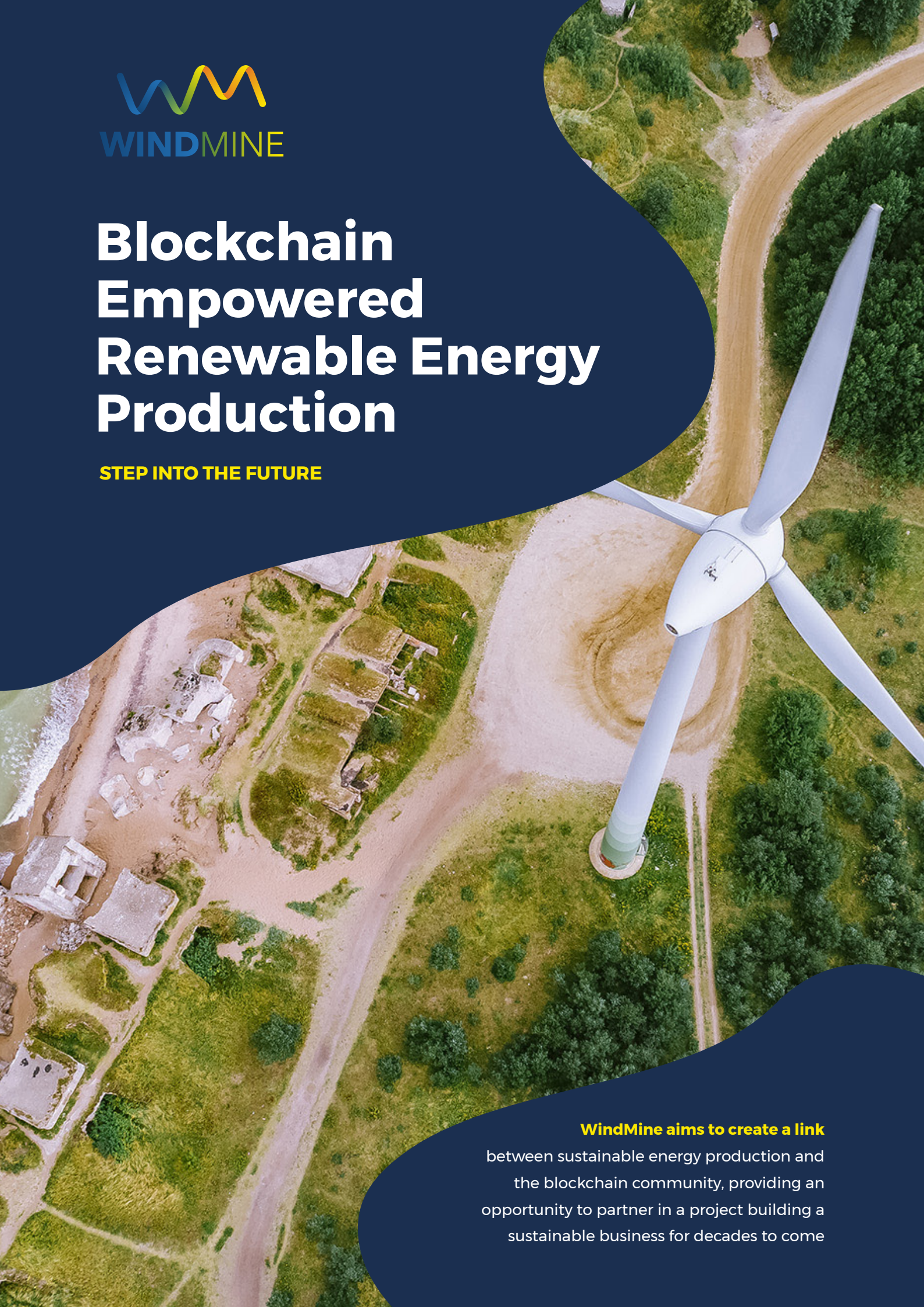
WINDMINE

# Blockchain Empowered Renewable Energy Production

**STEP INTO THE FUTURE**



**WindMine aims to create a link** between sustainable energy production and the blockchain community, providing an opportunity to partner in a project building a sustainable business for decades to come

# Table of Contents

# Table of Contents

# Summary

## WindMine Goals and Purposes

WindMine is built on a number of professionals from within the energy sector and has identified several strategic locations across Northern Europe from which to launch the wind farms (both existing and newly built), that will be scope of this project. At the same time WindMine team does not limit itself to wind energy only, work towards solar and hydropower projects are also in the progress.

Latvia is a perspective country located within the European Union. Its geographical location makes it an ideal place to house wind farms due to the exchanging wind currents that pass over the country.

The European Union splits its power regions into different zones, effectively managing the distribution of electricity from within the European Union itself, ensuring that it is not importing electricity from any other source. Member states (countries) are free to sell energy to other countries within the European Union, meaning that if it is more profitable to sell electricity to other countries rather than use it domestically, most of that electricity will leave the country.

Latvia is in a fortunate position where it is surrounded by other countries that also have access to renewable energy sources; as such, there is the ability to sell their generated energy directly to the country, which in turn may choose to sell it to the citizens of said country (at a lower rate, thanks to the large amount of energy available to citizens) or sell it to another member state to make a profit.

Either way, its entry into the market will benefit not only the citizens of Latvia, but also citizens of other countries within the European Union.

Current location that has been selected will house wind farm of total output capacity of 60MW. The wind farm project that is presented in this document is only the first stage of the project, which in the event of successful crowdfunding proves the project to be effective, will have additional power plants. This is an important fact that you should remember when looking at the rest of this document; the company has access to acquire different sites; this is huge as it impacts the raise amounts being sought by the company.

The primary objective of the project is to produce 100% renewable, independently-produced energy and sell the most part of it to the NordPool (https://www.nordpoolgroup.com) open market; in parallel, we want to develop

alternative services and sales channels to diversify revenue streams and increase ROI of the company, utilizing the revenue from conventional energy sales. Understanding that energy demands will continue to rise over the coming decades, we commit to produce 100% renewable energy, being absolutely convinced of stability of demand in the foreseeable future.

By selling electricity directly to the international grid, it can be used by the grid to outweigh the amount of electricity that has been produced from non-renewable and potentially polluting sources; also, it will increase Latvia's energetic independence from external sources. Currently, Latvia purchases around 2TWh of energy from external sources every year. Needless to say, the economics of the country will only benefit from an increase in local energy production, positively affecting wellbeing of all inhabitants of Latvia being supplied with energy from a local and fully renewable source.

# Company and Business structure

Token holders hold rights to dividends and buy back option from WindMine AG

STO

WindMine AG issues security token under **ERC-20 token standard**

NORD POOL

Main energy trade partner **NordPool**

**LIECHTENSTEIN**

**Liechtenstein-based** holding company **WindMine AG**

**LATVIA**

**Latvia-based** subsidiary company - wind park operator

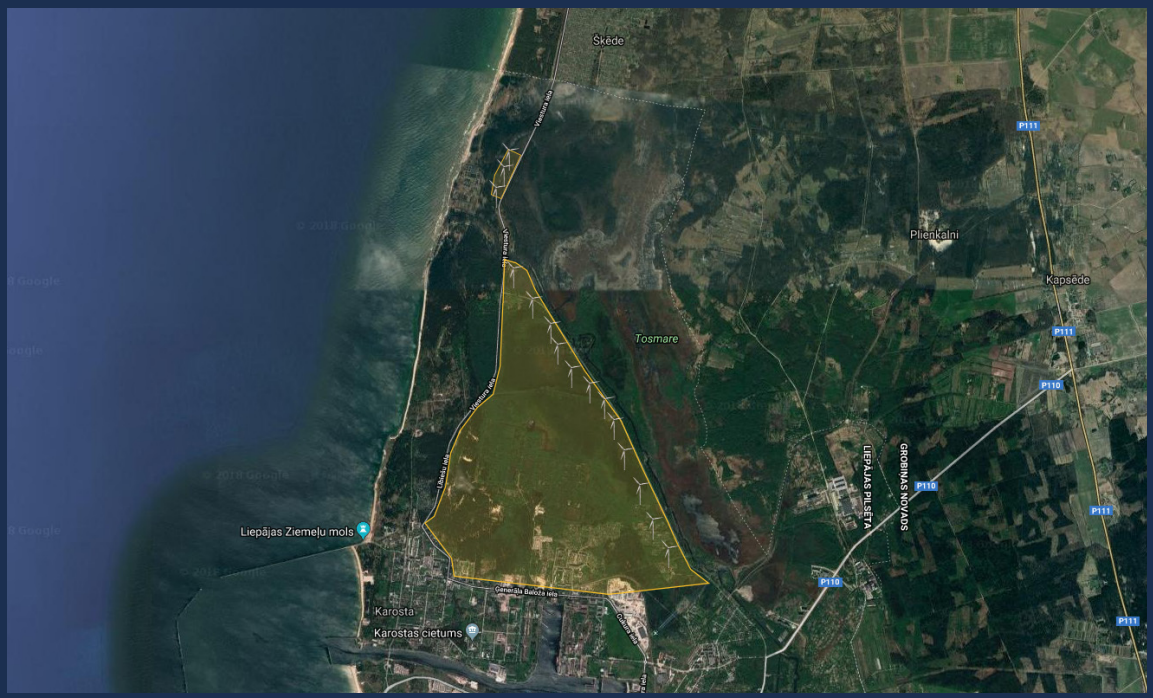
Alternative revenue streams from direct sales to industrial customers

Find a more detailed overview of the company structure and its holdings on our website.

# Overall project description

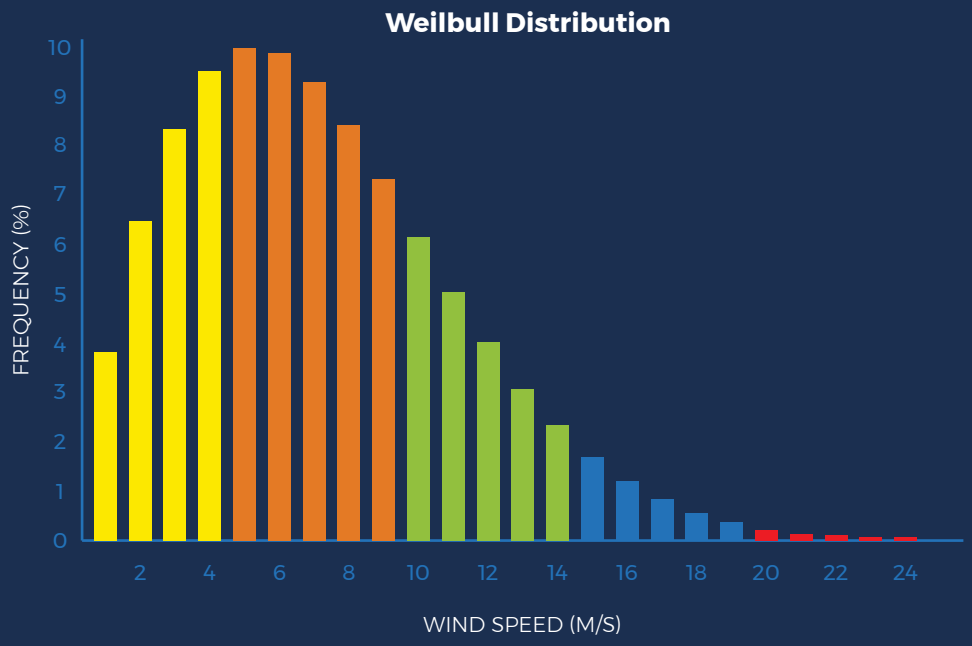
The project consists of 15 wind turbines that will be located on the northern part of city Liepaja at the very coastline of Baltic Sea.

The location is considered to be the windiest location in Baltics as main wind currents are passing area from South-Southwest and there are no obstacles from the seaside that could decrease the park's efficiency.

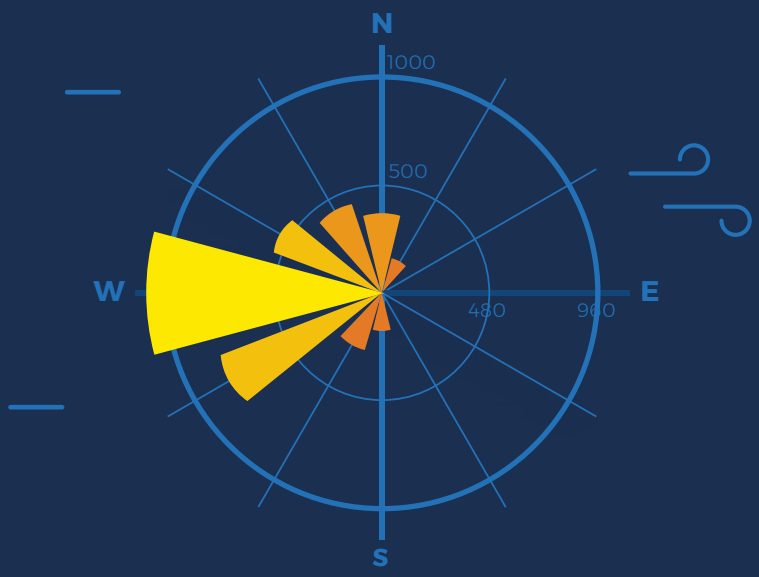




Several turbines will be located as close as 700 m from the sea and are considered to be as productive as an offshore wind park but with considerably lower investment.

The Windpark on Google Maps




According to technical conditions issued by the Latvian Transmission System Operator (TSO), the maximum connection to the grid capacity is available up to 70 MW.




**Wind Directions**
ENERGY ROSE (KWH/M²/YEAR)

## Selected turbine type and technology.

The project will be equipped with 15 wind turbines E-126 EP3 manufactured by German manufacturer Enercon GmbH with 4MW capacity each. These turbines have well-understood operating characteristics, and the type has been in service since 19XX.

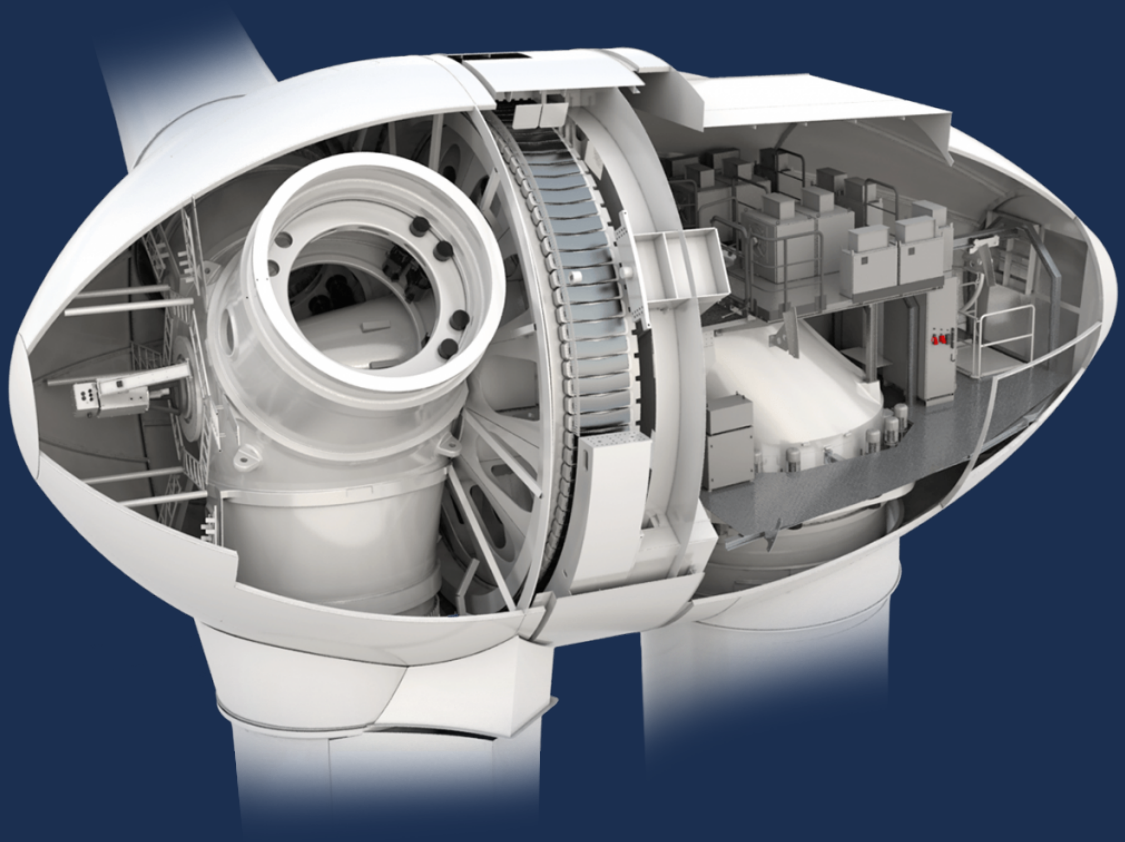
Based on the wind speed calculation for the particular wind park, the average annual wind speed at hub height is 7,2 m/s. The average annual electricity production calculated for the whole wind park is circa 145 000 MWh – 185 000 MWh, or more then 11 000 MWh per turbine (averaging P50).

All wind data is based on long-term wind statistics starting back since the year 2002. from an existing wind turbine located near the site.

All estimates are based on Enercon's turn-key economic proposal for all wind turbines including foundation, transportation to the site, aviation lighting, transformers, SCADA management system, cranes for turbine assembly, construction and commissioning.

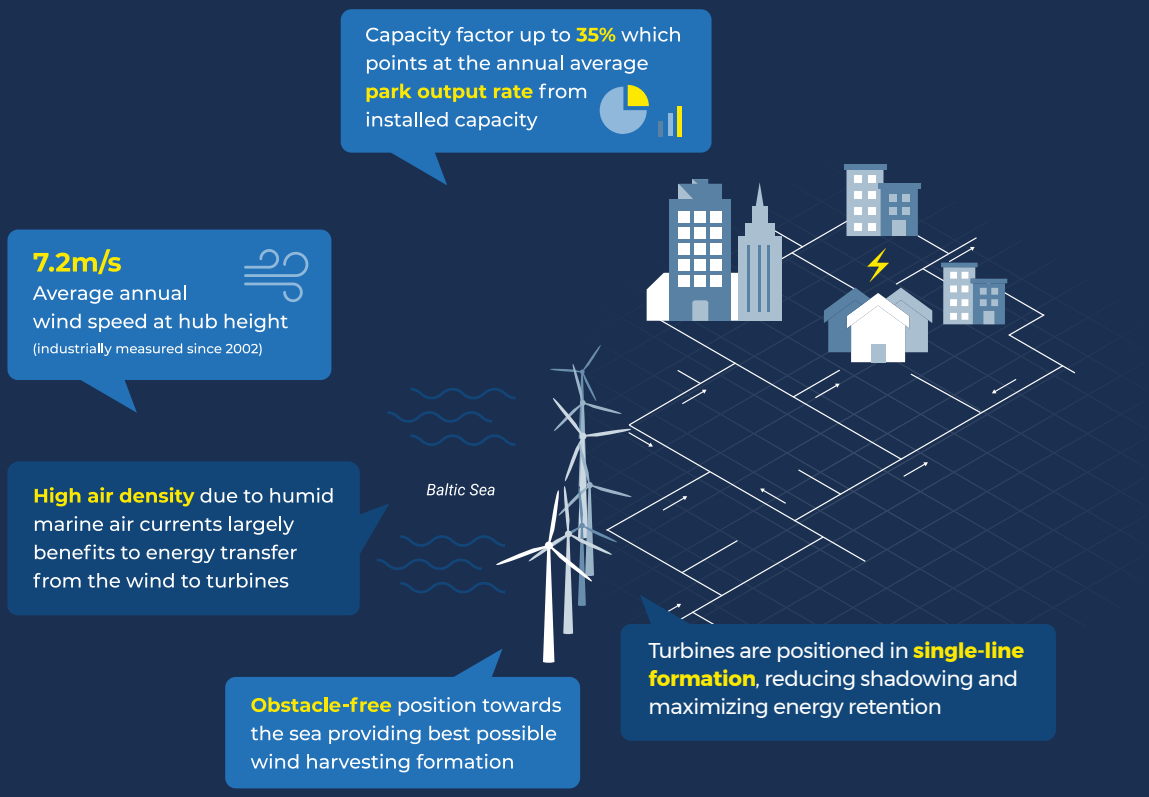
The project plans to construct a new self-owned 110 kV substation on the territory of the wind park with a 2 km 110kV cable line connecting the park to the existing substation of the national grid.

## Turbine Type



| | |
|---|---|
| Quantity | 15 |
| Turbine type | E-126 EP3 |
| Rated power | 4 MW |
| Hub Height | 86 m |
| Rotor diameter | 127 m |
| Design guideline | IEC 61400-1 {ed. 3} |
| Wind class | IIA |
| Design lifetime | 25 years |

## WindPro data and characteristics of wind park




The expected NET AEP[1]—also named the P50 value—is the expected production outcome of the project. There is a probability of 50% that the outcome will be more than P50, and a probability of 50% that the outcome will be less. This can also be named the "central estimate". To find out how accurate the estimate is, and thereby the risk of getting a lower outcome than expected, the uncertainty must be calculated.

Including the uncertainty, the AEP estimate is assumed to follow a normal distribution. All uncertainty components are assumed independent and, thus, combined as standard deviations, i.e. the square root of the summed squares of individual contributions. The individual uncertainty components, judged or calculated, shall be given as 1 std dev (Standard Deviation or simply $\sigma$).

The production with a given exceedance level (PXX) can be estimated using the inverse normal distribution as: P84 = P50 – 1 x Uncertainty

$$P75 = P50 - 0{,}67 \times Uncertainty$$

$$P90 = P50 - 1{,}28 \times Uncertainty,$$

where the multiplying factors are provided by the theory of the normal distribution. If σ is for example 10%, then P84 = P50 – 10%



[1] The NET AEP is defined in the glossary

$$P75 = P50 - 6{,}7\%$$

$$P90 = P50 - 12{,}8\%.$$

The normal distribution is defined so that about 68% of all events will fall within ±1σ, and around 32% will fall outside that range. In the one tail (e.g. below -1σ), there is around 16% so there is 16% probability that the estimate will be below 1σ subtracted from P50, and 84% probability that it will be above (exceed). In other words, the P84 is the value where 84 out of 100 realizations will result in an outcome better than P84.

# Evaluation & Revenue Projections

## The following parameters are subject to change

Valuation of the token is performed in two parts:

- A Loan portion, providing a flat return (interest) of 5% annually.
- An Equity portion, where by the token is evaluated under a discounted cash flow model (DCF), over a period of 5 years* after the conversion from loan to equity.

*A 5-year term was selected in evaluation of the DCF due to:

- 5 years is the standard period under which most DCF models are developed.
- This is a long-term project. It already has a loan phase of 10 years and anything more than an additional 5-year prediction for the equity phase would lead to larger inaccuracies in predictions and estimations.

Assumptions for the DCF model are as stated in the assumptions section:

- Projected long-term annual growth rate of free cash flows: -0.21%
- Discount rate used in calculations: 6.06%

| | |
|---|---|
| Weighted average cost of capital (discount rate) | 6.06% |
| Long-term growth rate | -0.21% |
| Terminal value | €71,672,516 |
| Sum of discounted free cash flows | €25,540,065 |
| Equity value | €97,212,581 |
| Total shares outstanding | 100,000,000 |
| Fair share value | €0.97 |

Taking into account the invested amount, the total number of tokens, and the net present value of the future cash flows, with a discount rate of 6.06%, we can estimate the fair token value over time to be:

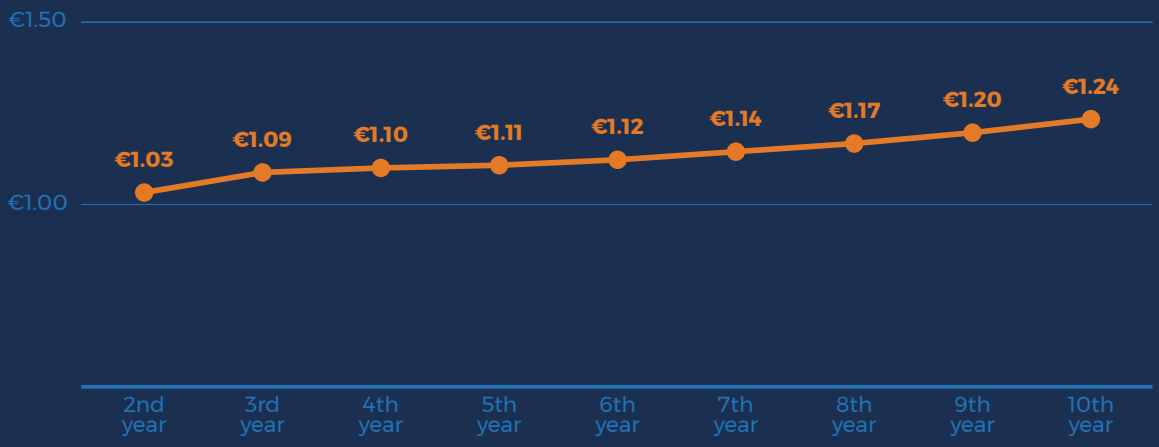



Figure 1: fair token value, based on a NPV (net present value) calculation of cash flows for the whole 14 years, with a discount rate of 6.06%.

By extension, the returns form the project (without discounting) are projected to be:

| | IRR | ROI |
|---|---|---|
| Loan phase (10-year period) | 6.00% | 45.02% |
| Equity phase (5-year period)** | 8.62% | 30.17% |
| Total (15-year period) | 6.49% | 68.87% |

# Renewable Energy Market Description

## Overview of Energy Market in Baltics

### Electricity generation in the Baltic countries

**Latvia**

Latvia is the second largest electricity producer in the Baltics where electricity generation is expected to grow from 6,4 TWh in FY16A to 7,0 TWh in FY27F.

Latvia is the leader in renewables among the three Baltic States, utilizing its hydro and forest resources.

Historically, Latvia's power production was divided almost equally between hydropower and natural gas-fuelled thermal power. The hydropower is situated on the Daugava River, but with poor regulating capacity and a significant spring peak. However, in FY17 a large amount of electricity (4,5 TWh) was generated in hydro power plants, mainly explained by the unusually high precipitation amounts and high water inflow in the Daugava River. Thermal power production is mainly based on two natural gas fuelled Combined Heat & Power (CHP) plants: Riga 1 and Riga 2 (144MW ad 881 MW respectively)

Hydro

Hydropower and natural gas or biomass-fired CHP plants produce almost all of the domestic electricity in Latvia. Normally, Hydro power and CHP units produce about equal amount of electricity during a year, but the yearly variation is large because practically all of the country's hydropower capacity (1600 MW) is situated on the Daugava River with poor regulating capacity. The yearly production profile of Latvian hydropower is characterized by a significant peak in March/April, when hydro production can be three times higher than the average production of other months. For example, in 2017 Latvian hydropower produced almost 4.4 TWh of electricity, up 73% from 2016, which was the highest figure since 1990. Average annual hydro production for the period 1990-2017 has been 3 TWh and the total hydro capacity has not substantially changed during that period.

This information clearly shows that natural variations cause large differences between years in a country so dependent on a single river's hydropower production. The differences between months can be much larger, as the springtime peak month production varies from 300 GWh up to 900 GWh and dry summer months may see hydro power production at 50 GWh. This means that during the spring, hydro plants may provide more than enough electricity for the whole country, but during drier

periods, their output might be below 10% of national consumption. Total annual hydropower production is 2-3 TWh. Naturally, the large annual variation in hydro power production also causes large variation in yearly and monthly thermal power production.

### Thermal

Latvian thermal power production is mainly based on two natural gas-fuelled CHP plants as mentioned earlier: Riga 1 and Riga 2, both owned by the national energy company Latvenergo. Riga 1 was originally commissioned in the 1950's and was thoroughly reconstructed in 2005. Two new units were recently constructed on the site of Riga 2 to replace the old production capacity. The first new Riga 2 unit, Riga TEC 2-1, was commissioned in 2009. The second, Riga TEC2-2, was commissioned late 2013. The Riga CHP plants have a total capacity of about 1 000 MW; their production has been 2-2.5 TWh electricity annually, but in 2017 it fell to 1.4 TWh. It remains to be seen if this change is permanent, but unfavourable developments in gas and electricity prices and high hydropower production have definitely been partly to blame. In addition, at the end of 2017, Latvia reduced its guaranteed support payments to Riga CHPs by paying a significant one-off compensation to Latvenergo which might further pressure the profitability of electricity production. Elsewhere in Latvia, there is approximately 250 MW of electricity production capacity in small CHP (<20 MW) plants. The small plants' production has been growing slightly in recent years. In 2017, this production was about 1.4 TWh.

Latvia's publicly-stated renewable energy target share (RES) for 2020 is 40%, the second highest target in EU after Sweden which has had quite a high renewable energy share due to its large hydropower production. In 2016, Latvia's figure was 37.2%, so the country is well on track to reach its target. The main method of growing its RES has been state subsidies to RES-fuelled CHP plants. Last year, 930 GWh of electricity was produced in such plants, up 13% from 2016 and 15 times the level in 2010. In the future, we expect that the growth in biomass-based CHP will continue, as it is clearly the government's preferred method to reach the EU targets. While total electricity production will not increase as there is no significant unused heat load, RES growth must come by replacing natural gas-based CHP with biomass CHP.

### Investment

There have not been any large investments to Latvian renewable electricity production in recent years as the state has not considered additional subsidies necessary. In 2014, the government even introduced a tax on all subsidized electricity production, which was effectively a retroactive cut to subsidies. IThis move produced a significant reduction of investments volume in wind power: at the end of 2017, Latvia had 77 MW of installed wind power capacity, only 10 MW more than in 2013. Their annual production was 150 GWh. No significant investments are expected to be realized in this decade, so the wind power development of 400 MW installed capacity and 900 GWh annual production forecasted in Latvia's NREAP will not be reached. However, in the 2020s, we expect wind power to grow moderately in Latvia with favourable weather conditions on its Baltic coast and as the competitiveness of the technology increases.

**Estonia**

Estonia has around 70% of the world's proven oil shale reserves, resulting in an electricity sector where c. 80% of the country's power generation originates from oil shale, making Estonia the leading electricity producer in the Baltics.

The largest electricity and heat producers are the Narva power plants of Eesti Energia with a combined annual production capacity of 12 TWh providing over 90% of the electricity in Estonia.

Planned generation capacity reductions are expected to turn Estonia into a net electricity importer in the long-term due to cheaper imports from Nordic countries. This is also the reason behind the fall of electricity generation between 2013-2015.

**Lithuania**

After the closure of the Ignalina Nuclear Power Plant (2009), Lithuania changed from one of the most energy-independent EU member states into one of the most energy-dependent member states. Lithuanian domestic power production is a mix between thermal power, wind and hydropower.

To reduce its dependence on imported fuels, Lithuania is focusing on the energy production from renewable sources. Notable progress has been in wind power where the net generated capacity in FY17 was 521 MW. According to WindEurope, in FY16, Lithuania was ranked first for the level of installed wind capacity relative to its power consumption (achieving a 16% ratio).

## The Development of Baltic Region Energy Prices

The Baltic power production system has experienced major changes from a surplus system to a system dependent on imports. Since mid-2013, the power flow remained constant from Finland to Estonia and from Estonia to Latvia, the latter due to higher Latvian spot prices. (Latvia and Lithuania have almost equal spot prices.) However, the situation changed mainly due to NordBalt connection between SE4[2] and Lithuania, which has created some pressure on the Lithuanian and Latvian prices. After the commissioning of the NordBalt connection, the price difference between Lithuania and Estonia has been 2-3 EUR/MWh. The Latvian price has been between the Estonian and Lithuanian prices. In addition to Sweden, Lithuania was also integrated with a 500 MW link to Poland in 2016. Power flow has mainly been from Lithuania to Poland.

This is the price pattern and the consequence of the dominance of natural gas fired power generation and imports. However, all the planned changes—both in production and transmission capacity in the Nordic power system in the coming years—will have a major impact on the future price pattern. The major capacity changes come from the commissioning and decommissioning of nuclear capacity and more interconnectors with the Nordic area and towards the rest of Europe.

[2] https://en.wikipedia.org/wiki/NordBalt

The Baltic price level is predicted to increase toward the end of this decade with a higher rate than the Nordic system price. This is caused mainly by the increasing carbon price — Baltic thermal production capacity is vulnerable to increasing emissions costs. On the other hand, Polish price levels are predicted to rise due to increasing carbon costs. This will also support the Baltic price level during the next couple of years.

Until the mid-2020s, the Baltic price level is predicted to stay 2-3 EUR/MWh above the Nordic system price. This is mainly due to the increasing carbon cost and the decommissioning of some oil shale production at the end of the transition period of the IE Directive. As discussed in Section 2.11, about 1/3 of the oil shale-fired capacity is likely to be closed down by the early 2020s as a result of high modernization costs. By the mid 2020s, the Estonia price level is expected to remain 1.5 EUR/MWh higher than the Finnish price and the Latvian and Lithuanian prices 1-2 EUR/MWh above the Estonian price level.

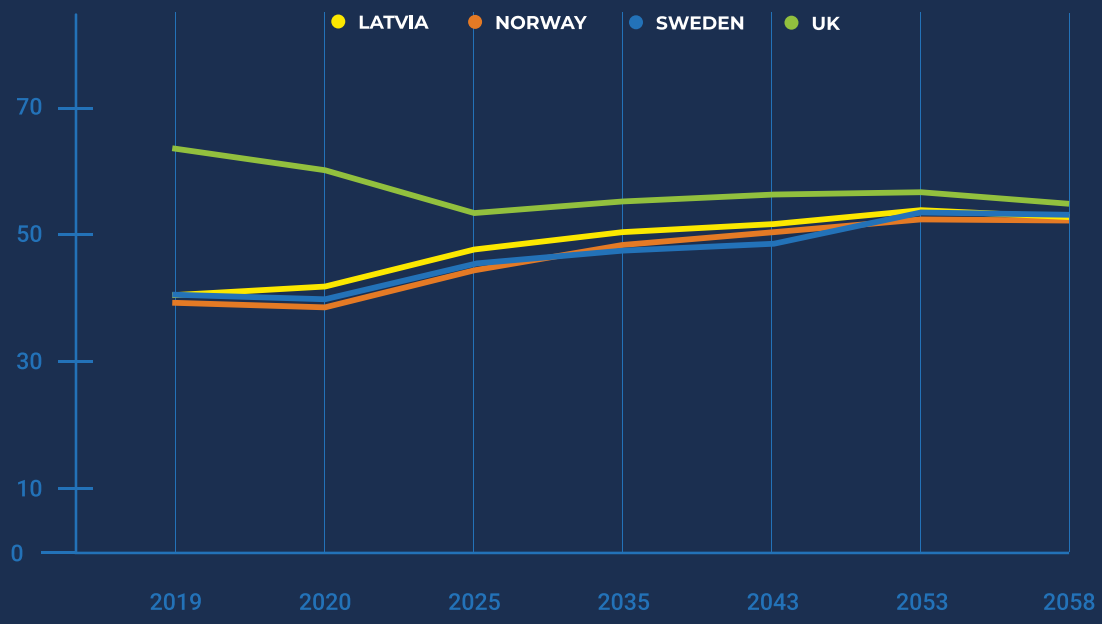
However, by mid-2020s, the Baltic countries aim to desynchronize the Baltic grid from the Russian grid. Together with the decommissions of the Estonian oil shale capacity, this will have a significant effect on the Estonian price level. After mid-2020s the price differential between Estonia and Finland is expected to double for some years, whereas the change in the spread between the Nordic system price and Lithuanian and Latvian prices is expected to remain more moderate.

The Nordic price level is expected to start increasing afterwards, but due to the new connection between Finland and SE2, the Finnish price level will remain well below the Nordic system. The high price differential compared to the Estonian price is forecast to remain until the mid-2030s. However, increasing renewable capacity lowers the rate of increase in the Baltic price and by early 2030s the Baltic price level may start to approach the Nordic system price. Thereafter, the Baltic price level is forecast to follow the Nordic price path.

Although we have assumed that the Baltic countries will desynchronize their power grid from the Russian grid, we have expected that power imports from Kaliningrad and Belarus are to certain extent allowed. This is because we believe that total desynchronization, including these areas, could cause energy supply security shocks too great to be politically feasible.

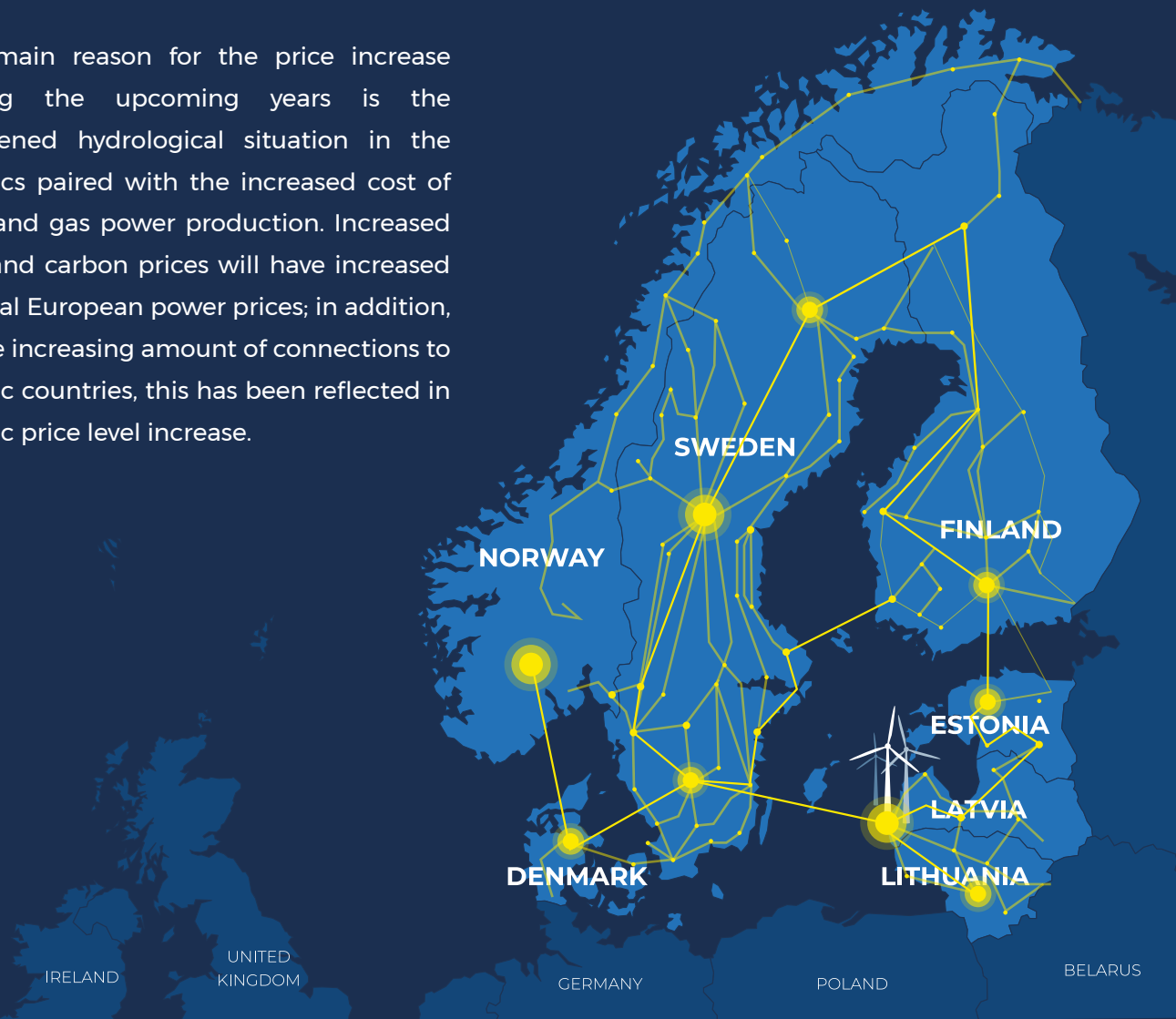
Baltic countries are expected to remain net importers from Finland, Sweden, Kaliningrad and Belarus for the whole modeling period. Respectively, towards Poland, Lithuania remains a net exporter during the whole period.

## North European Energy Sector Forecast up to Year 2058



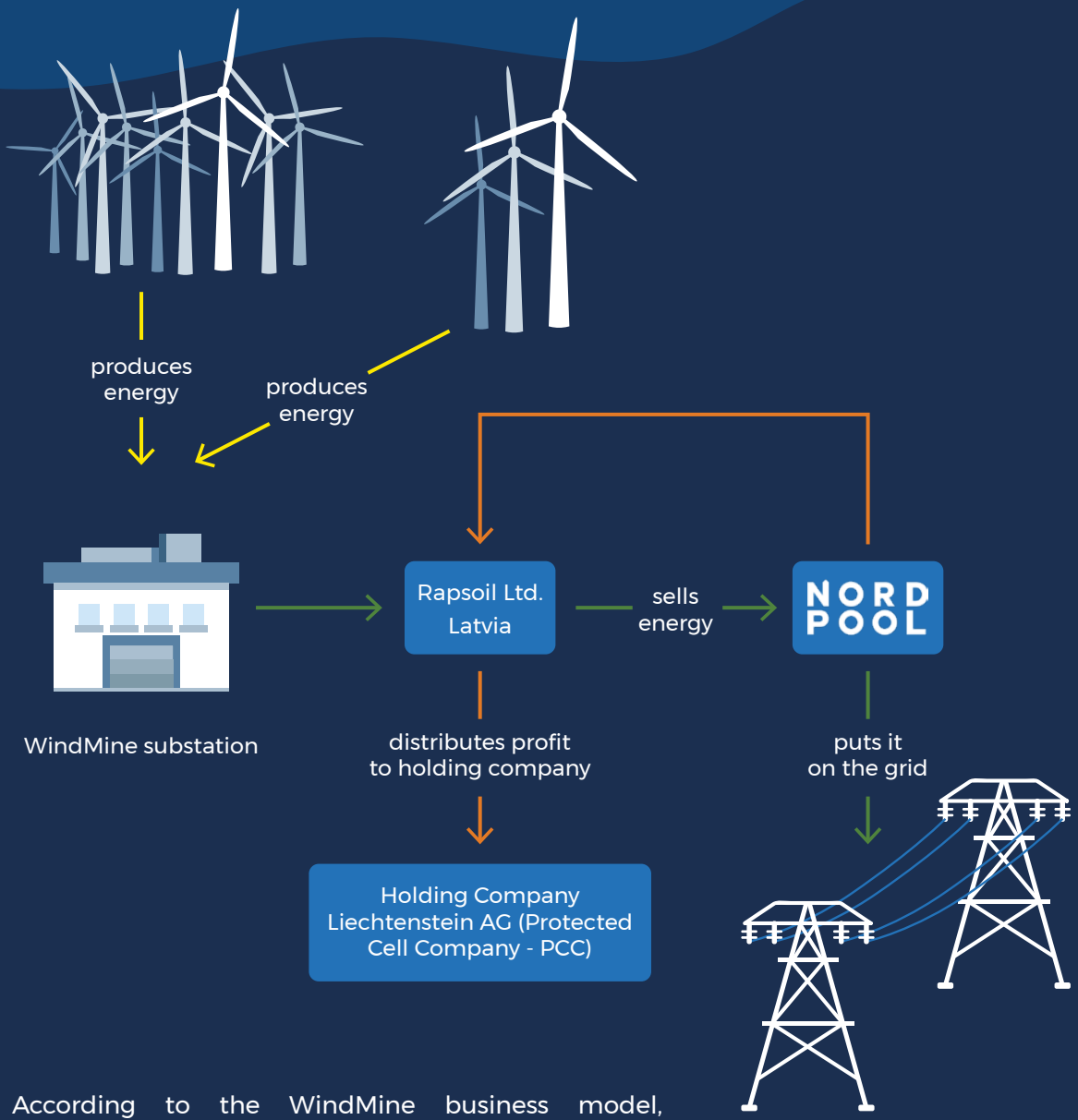

**Area market prices**
REAL TERM PRICES (EUR/MWh)

The main reason for the price increase during the upcoming years is the weakened hydrological situation in the Nordics paired with the increased cost of coal and gas power production. Increased fuel and carbon prices will have increased Central European power prices; in addition, to the increasing amount of connections to Nordic countries, this has been reflected in Nordic price level increase.



- Predicted production output: **145.000+ MWh per year**
- NE energy market price dynamic forecast up to 2058 indicates stable market price increase
- Location next to industrial area provides with alternative revenue opportunities, both with industrial consumers and WindMine internal projects

# WindMine Business Model




According to the WindMine business model, development of the company will be executed in following stages:

- **STO - Security Token Offering**
- Launching the Security Token Offering with the main goal to raise an appropriate amount of funds for the development of the wind energy facilities.
- Selling produced energy to Nordpool Group.[3]
- Acquisition of other projects (producing projects or only in developmental phase).
- Alternative projects within the renewable industry increase ROI.

[3] https://www.nordpoolgroup.com/

## How WindMine STO Works

It is the very first time an investment into a windpark in Latvia is possible for non-accredited investors. This is a necessary step towards making this kind of projects more accessible for a broader audience, so that innovation can receive the needed funds in an easy and transparent way. This is the part where the projects utilise blockchain technology to make spending transparent and convenient for the large amount the project is looking for in the open market.

The investor is able to invest in this project in three different ways:

**Investment Option #1: via Ether**

Please, make sure to read the instructions carefully and if you have any questions at any time, feel free to get in touch with us. Before you send any funds into the smart contracts of WindMine, make sure that you send those funds from a NON-EXCHANGE and from an ERC-20 compatible wallet e.g. Metamask, MyEtherWallet.com or any other similar service provider.

You purchase the digital currency Ether, one of the top 5 digital currencies. To purchase Ether you can use one of the major exchanges like Coinbase, Kraken or any other which is suitable within your jurisdiction. Please note that if you are newly signing up to these exchanges, you are subject to KYC (Know Your Customer) procedure, which might take a few business days until those exchanges verify all your uploaded documents and make you able to purchase a larger amount of digital currency. Once you're verified and you have received digital currency inside your wallet, you need to make sure to send those digital currencies into a ERC-20 compatible wallet as that is the ONLY way you are able to invest in the smart contracts of WindMine. This is due to the fact that the wallet which is hosted at your exchange e.g. Coinbase, is not compatible to any other ERC-20 tokens. If we send WindMine tokens to this wallet where the money came from, the exchange won't be able to properly store them and this would result in a immediate LOSS for your investment.

**Investment Option #2: via Bitcoin**

Please make sure to read the instructions carefully and feel free to get in touch with us if you have any questions. So before you send any funds into the WindMine smart contracts, make sure that you have an approved KYC status on kyc.WindMine.com with an approved ETH Wallet for which you have securely stored the private keys so that you can receive the ERC-20 compatible tokens after the STO ends.

Purchase the digital currency called Bitcoin, which is one of the top 5 digital currencies out there. To purchase Bitcoin, you can use one of the major exchanges like Coinbase, Kraken or any other which is suitable to your jurisdiction. Please note that if you are newly signing up to these exchanges, you'll be subject to KYC (Know your Customer) procedure, which might take a few business days for the system of those exchanges to verify all your uploaded documents and make you able to purchase a higher amount of

digital currencies. Once you're verified and have received the digital currencies inside your wallet, you need to make sure to submit during KYC a compatible ERC-20 Wallet address, other than your BTC wallet from which you want to make the investment. This is due to the fact that WindMine token will be an ERC-20 token, therefore if the WindMine tokens are sent to a Bitcoin wallet where the money came from, it will not be possible to store them. So this is why we need to match your BTC investment with your approved ERC-20 compatible Ethereum Wallet; WindMine will send the WindMine token to your ERC-20 compatible wallet and NOT YOUR BITCOIN wallet. If you are adding a ETH Wallet which you cant access during the KYC, it could result in an immediate LOSS for your investment.

**Investment Option #3: via Fiat**

Following approval of your KYC at kyc.WindMine.com you will receive information on how to invest in the project with EUR/CHF payments via bank transfer. Please note, to fully complete this step, we still suggest you to set up an ERC-20 compatible wallet where further financial paybacks are done (interest payment, principal amount and e.g. dividends, if you wish to convert the outstanding bond amount into equity). Interest payments and principal payments can either be received in digital currencies such as Ether (ETH) or FIAT (EUR/CHF). You can use any service provider like Metamask or MyEtherWallet to create the ERC-20 compatible wallet; this needs to be added to your transaction into the payment reference. For each transaction you do via SWIFT or SEPA, you need to make sure to add your ERC-20 compatible Ethereum wallet. If you are not adding an ETH wallet address to your payment reference, we will need to refund the investment amount minus the associated bank fees.

## What Happens Next?

Once you've successfully invested in the WindMine project with one of the three options above, you will be able to participate in the project in the following ways.

You are able to receive interest payments for the amount you have invested over a period of 10 years. After 10 years, you will also receive the principal amount you invested back. WindMine reserves them the right to repay the principal amount of the bond prior to the maturity date with flexible pro rata rates.

During this 10 year time period, the WindMine project will keep you updated with project progress an investor-related dashboard accessible via dashboard.WindMine.com. This platform is also used to communicate a planned convertible period, which is explained below:

1. Each investor receives interest payments for approximately 10 consecutive years

2. Each investor will have the unique opportunity to convert the remaining principal amount & interest payments into real equity of the WindMine AG PCC company. WindMine will give each investor enough time to make their final assessment.

In the event you decide that the WindMine project is something you would like to add to your pool of assets, this could be an opportunity to receive all the rights as a fully-subscribed shareholder of WindMine AG PCC in Liechtenstein. Your Token then carries all the legal rights typically associated with being a shareholder in a company.

Please refer to our prospectus to have a more in-depth explanation of all the risks involved within the aforementioned 10-year period.

# Token Economics

**Following parameters are subject to change.**

## STO Setup

**Basics:**

| | |
|---|---|
| Ticker: | WMD |
| STO start date: | TBD |
| STO end date: | TBD |
| Accepted currencies: | EUR, CHF, ETH, BTC |
| Jurisdiction: | Liechtenstein |
| Eligibility: | Subject to KYC and AML |
| Compliance: | TBD |
| Token purchase contract: | Prospectus / Subscription form via KYC |

**Offering:**

| | |
|---|---|
| Token price: | 1.00 EUR |
| Disago: | no discount |
| Cumulative number of tokens available: | 65 MM |
| Minimum investment: | 1000 EUR (9 ETH) |
| Maximum investment: | 100K EUR (920 ETH) |
| Phase start: | TBD |
| Phase end: | TBD |

**Token Generation Event Summary:**

| | |
|---|---|
| Soft Cap: | 20 MM EUR |
| Hard Cap: | 65 MM EUR |
| STO Tokens: | 65 MM WMD |
| Remaining tokens post STO: | burned |
| STO allocation: | 100% of all tokens |
| Initial Total Tokens: | 65 MM WMD |
| Token type: | Fixed supply |

# KYC / AML

This service will be provided by BDO Liechtenstein and Bank Frick. Please note that the collected funds will be locked and inaccessible until complete clearance by BDO Liechtenstein and Bank Frick with the authorization that all of the funds are clear to use.

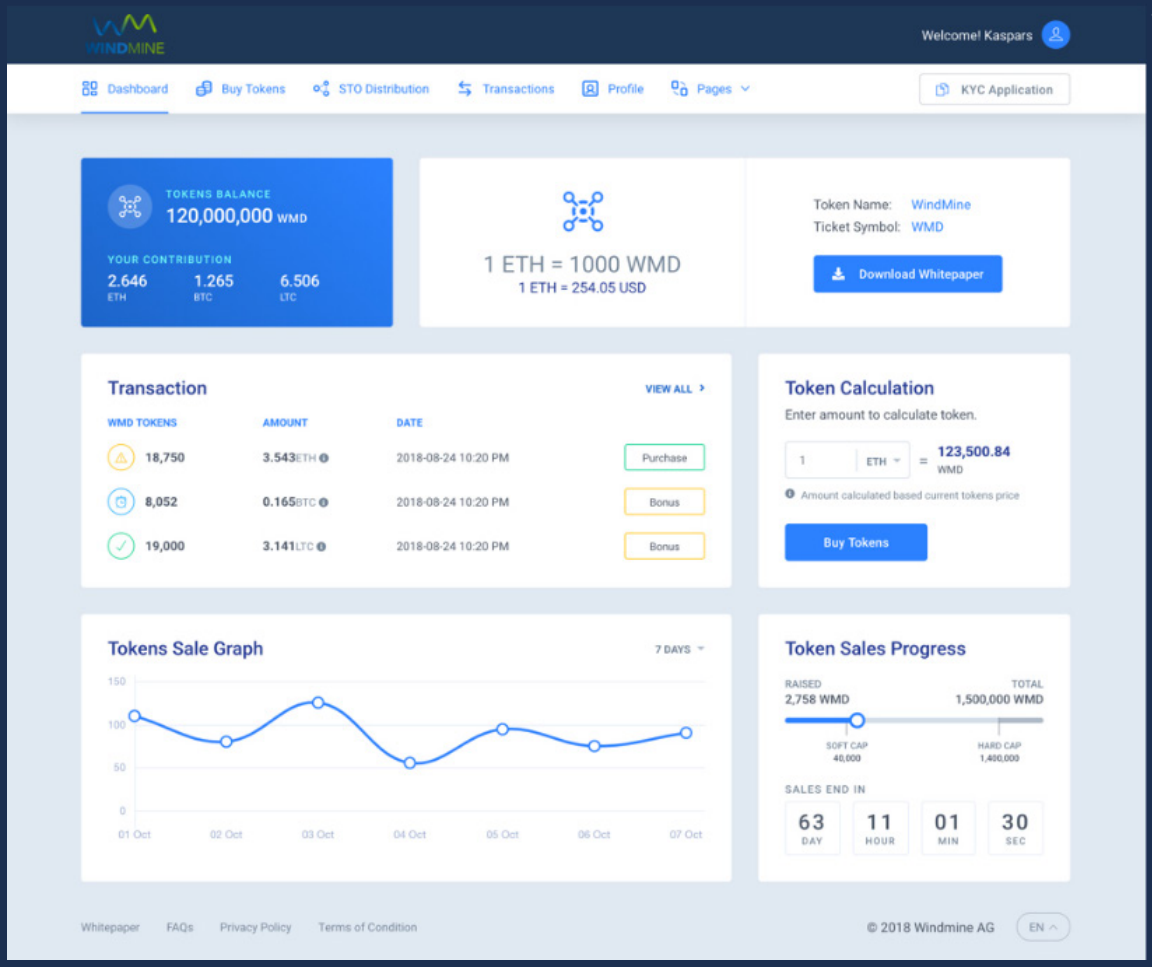
We will have several levels of KYC which were provided by the compliance department of Bank Frick.

To apply to invest, use the following link.

**Levels KYC/AML in CHF**

| | | |
|---|---|---|
| Without compliance provider | 0 – 999.99<br>*KYC Ultra Light* | Name, Address incl. Country, Nationality, Birthday, Place of birth, Wallet Address (random entries will be checked by Bank Frick) |
| With compliance provider | 1'000.00 – 14'999.99<br>*KYC Light* | Name, Address incl. Country, Selfie with passport front and back, Birthday, Place of birth, Wallet Address, Source of Funds light, sanction list and PEP check. (random entries will be checked by Bank Frick) |
| | 15'000.00 – 99'999.99<br>*KYC* | Name, Address incl. Country, Video ID (with agent), ID/Passport scan with front and back, Birthday, Place of birth, Wallet Address, Source of Funds light, sanction list and PEP check. (random entries will be checked by Bank Frick) |
| | Ab 100'000.00<br>*KYC extended* | Name, Address incl. Country, Video ID (with agent), ID/Passport scan with front and back, Birthday, Place of birth, Wallet Address, Source of Funds extended, sanction list and PEP check. (random entries will be checked by Bank Frick) |

# Investor Dashboard




[4]

[4] https://dashboard.WindMine.com/

# Platform Architecture Design

## Security Token Offering (STO) Process Description

The crypto industry is becoming increasingly popular because it provides a variety of instruments to conduct various fundraising campaigns. There are currently lots of platforms that can support ICOs, like Ethereum, Nem, EOS, Phases, etc. We have chosen Ethereum as it is a proven platform with numerous obvious advantages over its competitors:

- **Market acceptance** - Ethereum is the most popular platform for ICOs.
- **Easy to invest** - Most crypto wallets are located on the Ethereum platform. This makes it much easier for users to get involved in the token sale event.

During the STO, we will create WMD which is an ERC-20 token that will be as a right for future dividend payment from cashflow generated by WindMine's core and non-core business lines. From the perspective of the token economy, this type of token will have the following advantages:

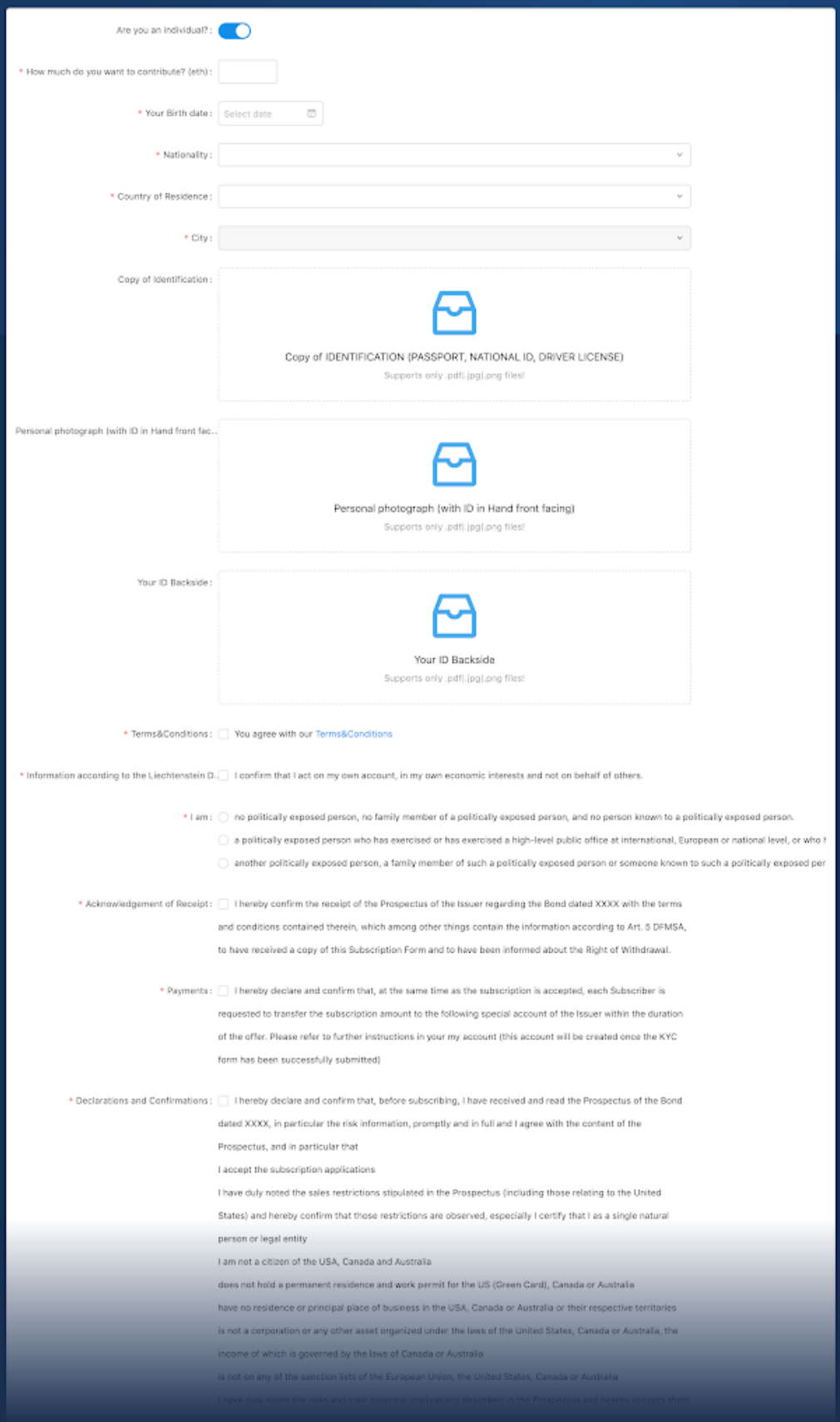
- Liechtenstein FMA registered prospectus: https: //www.f ma-li.li/en/
- Token holders included in interest payments can receive the bond principal amount prior to the maturity date, this is subject to the performance of WindMine within the first 2-5 years. Tokenholders can also decide within a timeframe properly communicated from WindMine in advance if they wish to convert remaining bond amount into equity of the WindMine AG PCC in Liechtenstein.
- Predictable business performance and revenue—no guesswork.
- Blockchain-powered voting/query system for investor engagement in large scale decision making.

Token Generation Event is presented by its two main sections:

- **User Interface**

  Token sale website with user-friendly interface that includes KYC/AML procedures for investor verification and allows investments in the WindMine security tokens in a simple and secure way by using both fiat and crypto currencies.

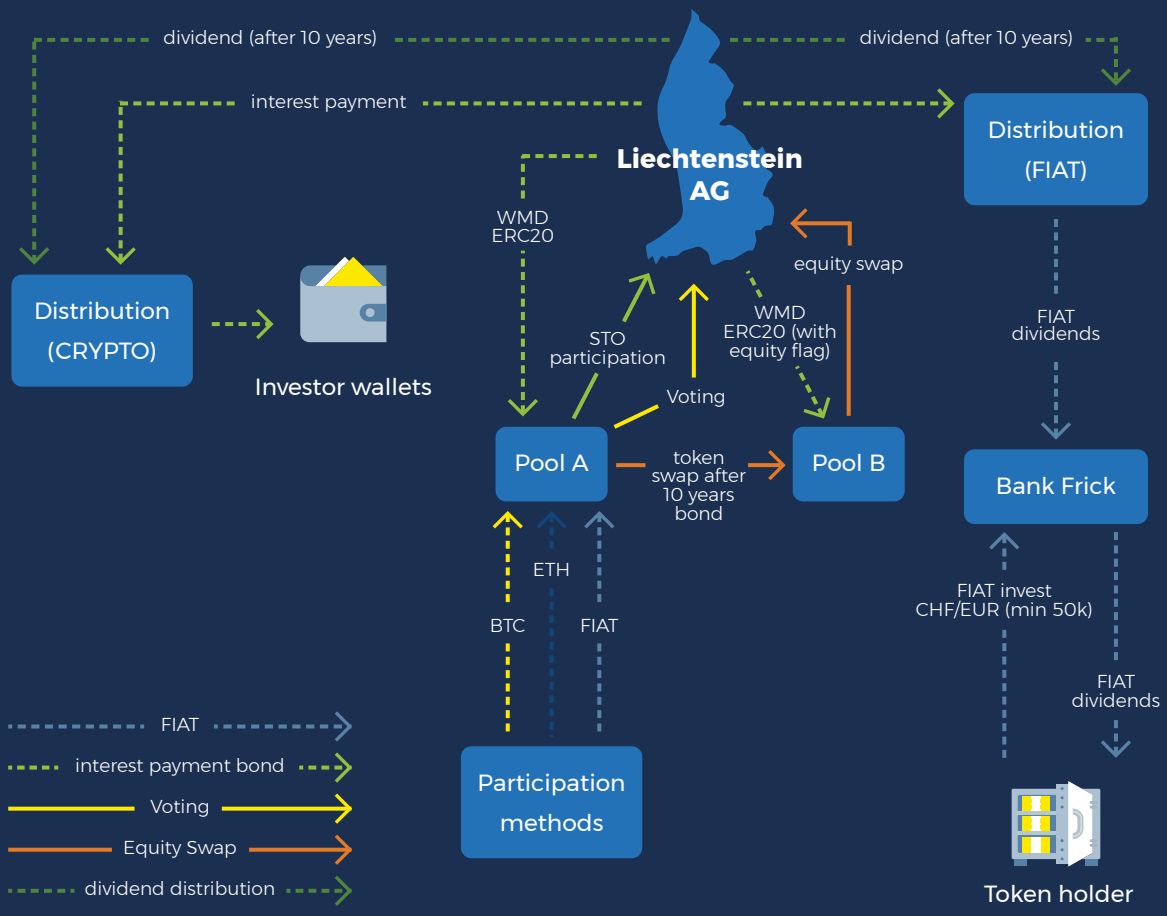
WINDMINE


Are you an individual? :
* How much do you want to contribute? (eth) :
* Your Birth date :
Select date
* Nationality :
* Country of Residence :
* City :
Copy of Identification :
Copy of IDENTIFICATION (PASSPORT, NATIONAL ID, DRIVER LICENSE)
Supports only .pdf|.jpg|.png files!
Personal photograph (with ID in Hand front fac...
Personal photograph (with ID in Hand front facing)
Supports only .pdf|.jpg|.png files!
Your ID Backside :
Your ID Backside
Supports only .pdf|.jpg|.png files!
* Terms&Conditions :
You agree with our Terms&Conditions
* Information according to the Liechtenstein D...
I confirm that I act on my own account, in my own economic interests and not on behalf of others.
* I am :
no politically exposed person, no family member of a politically exposed person, and no person known to a politically exposed person.
a politically exposed person who has exercised or has exercised a high-level public office at international, European or national level, or who h
another politically exposed person, a family member of such a politically exposed person or someone known to such a politically exposed per
* Acknowledgement of Receipt :
I hereby confirm the receipt of the Prospectus of the Issuer regarding the Bond dated XXXX with the terms and conditions contained therein, which among other things contain the information according to Art. 5 DFMSA, to have received a copy of this Subscription Form and to have been informed about the Right of Withdrawal.
* Payments :
I hereby declare and confirm that, at the same time as the subscription is accepted, each Subscriber is requested to transfer the subscription amount to the following special account of the Issuer within the duration of the offer. Please refer to further instructions in your my account (this account will be created once the KYC form has been successfully submitted)
* Declarations and Confirmations :
I hereby declare and confirm that, before subscribing, I have received and read the Prospectus of the Bond dated XXXX, in particular the risk information, promptly and in full and I agree with the content of the Prospectus, and in particular that
I accept the subscription applications
I have duly noted the sales restrictions stipulated in the Prospectus (including those relating to the United States) and hereby confirm that those restrictions are observed, especially I certify that I as a single natural person or legal entity
I am not a citizen of the USA, Canada and Australia
does not hold a permanent residence and work permit for the US (Green Card), Canada or Australia
have no residence or principal place of business in the USA, Canada or Australia or their respective territories
is not a corporation or any other asset organized under the laws of the United States, Canada or Australia, the income of which is governed by the laws of Canada or Australia
is not on any of the sanction lists of the European Union, the United States, Canada or Australia
I have duly noted the risks and their potential implications described in the Prospectus and hereby accepts them

## STO Smart Contract

WindMine STO will be based on the Ethereum blockchain with the ERC-20 standard.

The overall STO process is presented below.




**Architecture Description:**

1. Investor enters the WindMine STO Cabinet.
2. Proceeds through KYC/AML.
3. After verification, investor is able to contribute to the WindMine project by using both fiat and CRYPTO.

**CRYPTO:**

If user chooses crypto, investor pings his wallet to send tokens to the WindMine STO smart contract.

1. Send ETH/BTC to the WindMine STO mentioned contribution wallet address
2. Don't send directly from exchanges
3. Please note: only KYC-approved investments will go through; non-KYC-approved investments will be rejected from the smart contract.

4. After the STO, our bank will do their final compliance check.

5. Maximum 2 days after the STO has been completed, the final compliance check is done and tokens will be distributed.

**FIAT:**

If user choose to invest with fiat, they will use their bank account to send FIAT (bank wire or/and bank card) to the WindMine bank account.

WindMine Bank Account pings the WindMine Smart contract regarding funds.

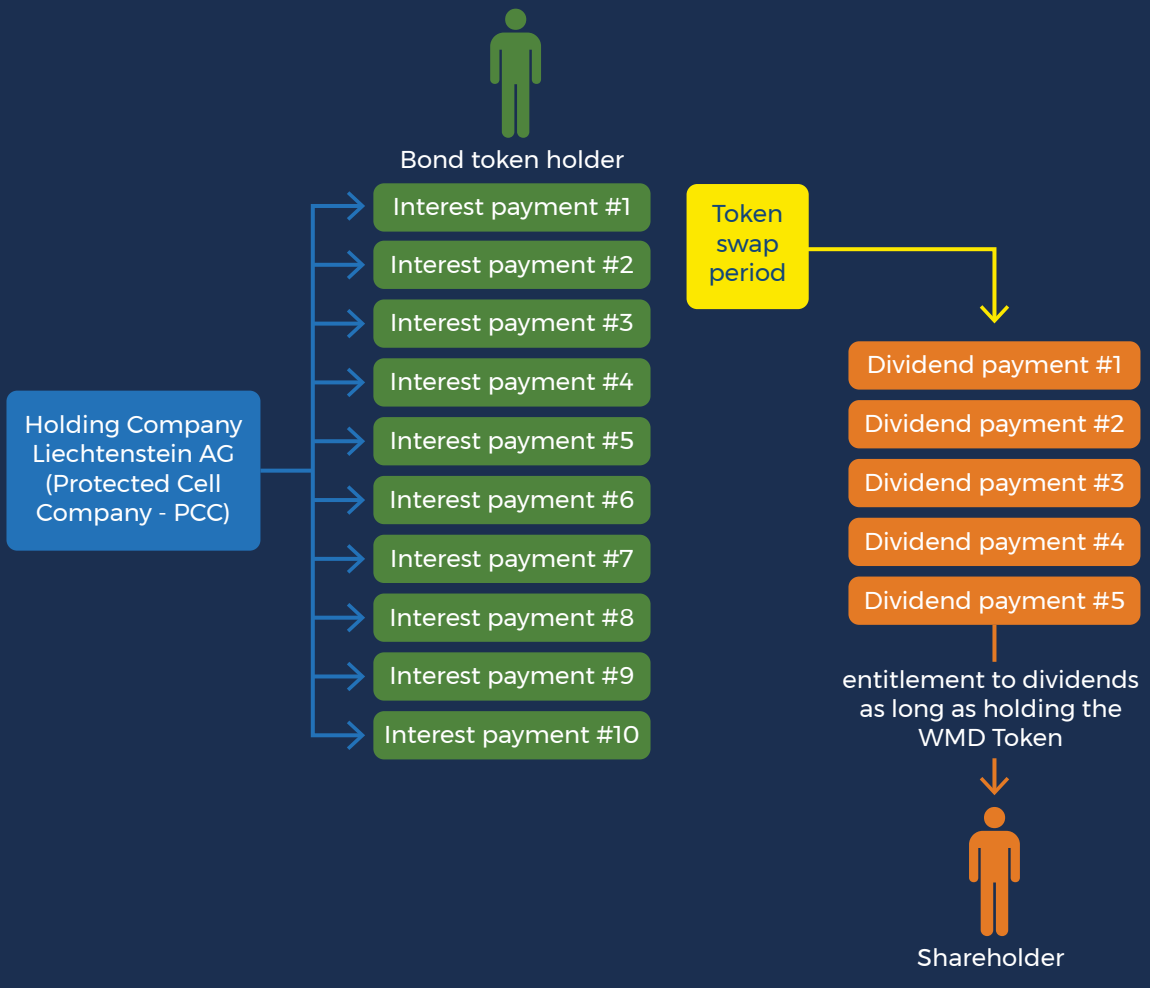
1. WindMine Tokensale Smart Contract reserves WindMine security tokens in the amount equal to the amount of investors contribution, based on exchange rate in FIAT.

2. WindMine receives FIAT in its bank account.

3. After the STO, our bank will do their final compliance check.

4. Maximum 2 days after the STO has been completed, the final compliance check is done and tokens will be distributed

## WindMine Participation Rights



The main idea behind having STO is to raise funds that will be solely invested into energy production facilities for future renewable energy production that, in turn, will be sold to different parties, such as the open market via NordPool, private companies, internal production facilities, etc.

Tokens created during the STO are distributed between the investors and by its security nature; they are backed-up with WindMine equity. This means that security token holders will have a right for further interest payments (up to 10 years) and dividend distribution that will be generated in the future (if the token holder decides to convert it into equity after 10 years). This process is ensured by WindMine smart contract deployed on the Ethereum Public blockchain.

WindMine has a developed cash flow model describing the revenue forecast generated by the wind park; however, due to the decentralised nature of blockchain technology and numerous international investors, the dividend distribution process may become expensive in terms of servicing and administration costs. As a result, the company may have to deal with unpredictable costs by paying dividends in FIAT as each procedure may turn out to be time- and resource-consuming. Once the first token distribution is completed, investors will be instructed on their rights to make the final decision about how the distribution of dividends will be: either in FIAT or crypto, depending on a qualified pro and con list from WindMine Management, so that every investor can make a proper assessment.

WindMine smart contracts listen to the investors' wallets and checks the amount of tokens and verify the period of time investors hold tokens.

## WindMine Token Holder Rights

Bond token holder

**Investor A**

Invest 50'000 EUR and receives tokens for an equal amount. Over the next 10 years, they will receive a 6% interest payment. After 10 years, they will also receive their original principal amount (50"000 EUR).

Bond and Equity token holder

**Investor B**

Invest 50'000 EUR and receives the tokens for an equal amount. Over the next 10 years, they will receive a 6% interest payment. After the 10th year, they are entitled to convert the remaining interest and principal amount of 50"000 EUR into WindMine AG PCC equity.

| Rights | Bond token holder | Bond and equity token holder |
|---|---|---|
| Receive dividends | — | ✓ |
| Interest payments | ✓ up to 10 years | — Minimum of 10 years & up to XX years (as long as the token is maintained) |
| Voting | ✓ | ✓ |
| Participation after exiting | — | ✓ |

As per our best estimates and under conservative assumptions, the expected returns of the project are as follows:

| | IRR | ROI |
|---|---|---|
| Loan phase (10-year period) | 6.00% | 45.02% |
| Equity phase (5-year period)** | 8.62% | 30.17% |
| Total (15 - period) | 6.49% | 68.87% |

**The equity phase return is calculated for a 5-year period, based on the outstanding amount at time of conversion—not on the total amount at time of investment.

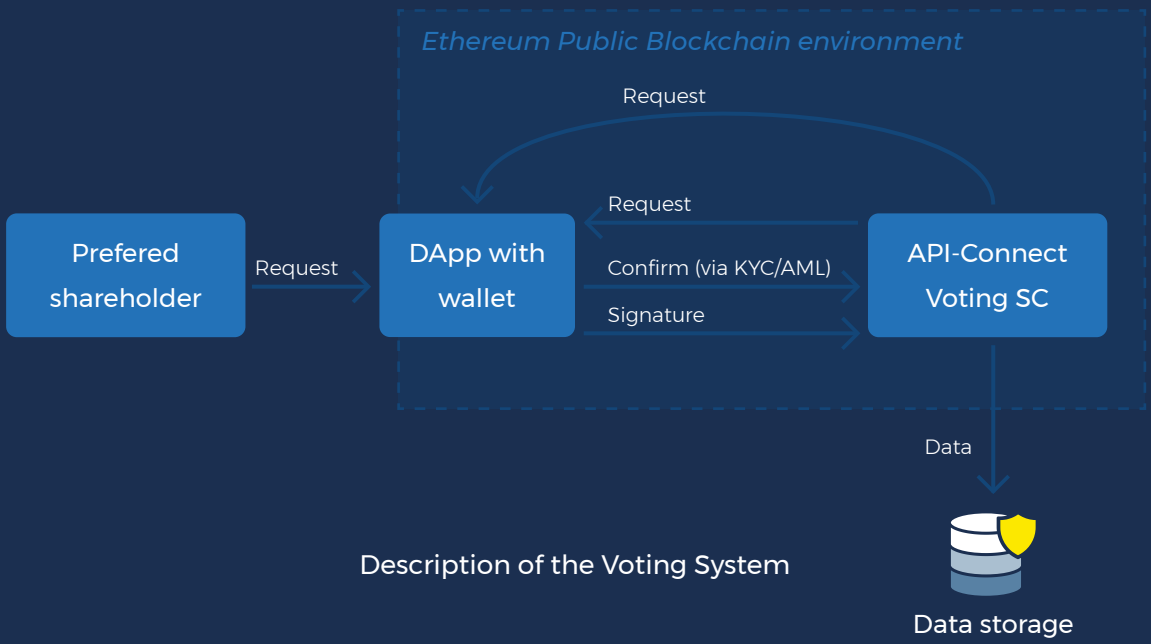
Those who choose to convert their remaining principal and interest, become an official shareholder of the company, with all the rights that go along with it. These include the right of co-determination as a shareholder, as well as dividend rights. Participation is different from pure debt capital participation (i.e. theoretically 100% of the business development, therefore of course, also to the value of the share). Both participation and co-determination are therefore fundamentally different in nature.

Every token holder who decides to convert their tokens from non-equity token to equity token will be lodged as an official shareholder inside the company in Liechtenstein.

## Voting System on-top of Blockchain Technology

One of central features provided to preferred shareholders will be a query system developed on top of blockchain. It will serve as an invaluable tool at times when WindMine top-management is facing important decisions to be taken along with shareholders.

To put decisions to a vote, the investor should take a KYC/AML procedure once again to prove their identity. After that, the WindMine Voting Smart contract will send the transaction to the preferred shareholder. If the shareholder agrees with the conditions of the agreement. They only need to sign the transaction by the private key. All information from the voting system is also stored on WindMine's Data storage and based on this data, WindMine will take the corporate decision together with its community of shareholders.




Description of the Voting System

**Architecture Description:**

1. WindMine smart contract will send a request to the user for approval.
2. User takes KYC/AML procedure to verify its identity to the system.
3. If the user approves the request, they put their signature to it (if not, user just ignores the request).
4. The WindMine smart contract receives the signature from the user, stores its hash on the smart contract and at the same time, sends the information to data storage.

## Exit Scenario

WindMine applies strategic management best-practices to predict any potential issue that we may face in the future.

One of the potential options could be possible selling whole or part our company to a suitable investors. Also in this case, it would involved a voting system.

In the event that our community is ready to move in this direction, all users will take another KYC/AML procedure to access to the WindMine platform.

# Token Specifications

## Ethereum-based tokens

### ERC-20 token on Ethereum Mainnet

**ERC-20 token on public Ethereum Mainnet will be used for the following purposes:**

1. Public STO for fundraising
2. Listing on public exchanges
3. Direct transactions between users outside WindMine platform
4. Access to the platform

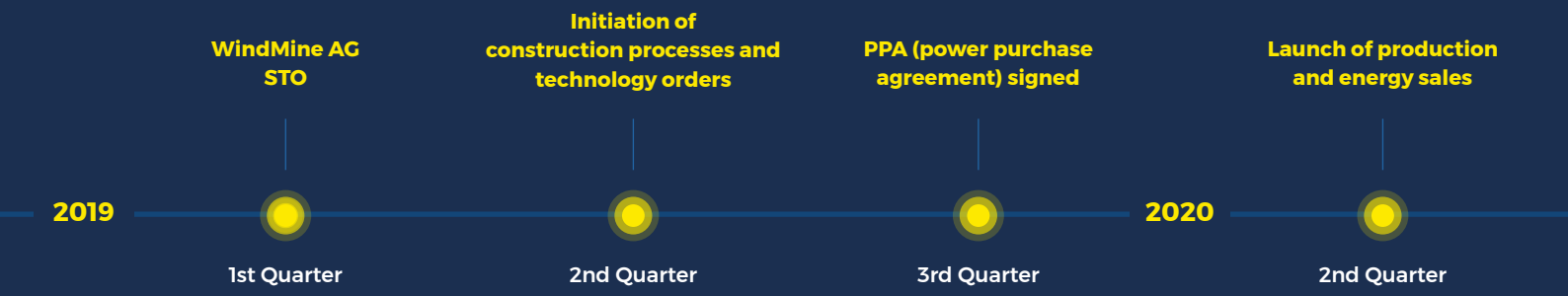
This token will require gas fees to be paid. It is recommended to pay those fees from an ERC-20 token that slightly boosts volatility with token inflation.

**Key features of token economics:**

1. The initial distribution of token with STO
2. Distribution of interest payments (up to 10 years)
3. Distribution of dividends (if user converts after 10 years)
4. Voting through WindMine's Investor Dashboard

# Timeline of WindMine

## PROJECT TIMELINE




| | |
|---|---|
| Q1 2019 | WindMine AG PCC STO |
| Q2 2019 | Initiation of construction processes and technology orders |
| Q3 2019 | PPA (power purchase agreement) signed |
| Q2 2020 | Launch of production and energy sales |

# STO Specifications Summary and Funds Distribution

The WindMine project works in a slightly different way with respect to its hard and soft caps. The hard cap is the maximum amount of money the project would like to raise and the soft cap is the minimum amount that must be raised to make the project both a success and feasible. Management understands that if the hard cap is not fully reached, the financial model for distribution of the dividends will change, but with an increasing STO success there could also be alternative funding sources to leverage the remaining amount to achieve the hard cap.

# Exchanges

With the increasing awareness of STOs, there are more and more initiatives to create exchanges for tradeable security tokens. Here is a list of exchanges we are currently evaluating and keeping a very close eye on.

1. LCX (Liechtenstein)[5]
2. NEX (Liechtenstein)[6]
3. Malta Stock Exchange (Malta)[7]

The STO will contain only ERC-20 WindMine tokens on Ethereum Mainnet.

Buyers will be required to provide proof of identity and residence in accordance with KYC/AML procedure requirements.

[5] https://lcx.com/

[6] https://neonexchange.org/

[7] https://blog.neufund.org/neufund-partners-with-malta-stock-exchange-and-binance-d01033e60402

# Prospectus

Please refer to our website WindMine.com to view the latest approved prospectus of the FMA.

# Revision report

Once the WindMine AG PCC revision report is fully completed, we will update this section of the whitepaper.

# Team

## Kaspars Zvaigzne

**Founder and CEO**

Entrepreneur and business development leader. Entrepreneurial and management experience in international telecommunications.

kz@WindMine.com

## Kristaps Stepanovs

Co-Founder and leading professional of renewable enegry project development. Legal advisor and opinion leader in renewable energy sector.

ks@WindMine.com

## Māris Brieze

Financial analyst and risk management officer. More than 10 years of extensive banking and asset management experience.

mb@WindMine.com

## Guntars Vempers

Highest demanded engineer in the Baltic region. Holds Dr.sc.ing degree in electrical engineering and has extensive experience in development of economical models for energy production.

gv@WindMine.com

## Māris Linde

Experienced business process developer with extensive knowledge in electronics and leading position experience in top 50 EU trade companies.

ml@WindMine.com

## Viesturs Brakovskis

Practicing commercial lawyer and litigator for over 10 years. Expertise in commercial transactions, international business and energy markets.

vb@WindMine.com

## Cal Evans

Cal Evans is perhaps one of the very few international technology lawyers with expertise in ICO compliance and strategy.

ce@WindMine.com

## Kristaps Mikasenoks

Holds BCompSc degree and has 6 years of web development experience. For the past 2 years been working in the blockchain technology field, with the emphasis on security token industry.

km@WindMine.com

# Disclaimers

The information contained in this document has been prepared to the best of our knowledge and is provided for informational purposes only. None of the information in this document is an offer, invitation, solicitation or recommendation for an investment of any kind.

# Risks

## Currency Exposure

With the recent fluctuating market with the dominant digital currencies Bitcoin and Ethereum, we wanted to address how we plan to deal with this scenario during the duration of the STO, but also how we would manage the treasury post-STO.

First , during the STO, we are allowing the following investment methods: EUR, CHF, BTC, and ETH. If you plan to invest with BTC and ETH, you need to understand that during the duration of the STO your investment is locked. It is also locked for WindMine AG PCC as the banking partner will release the funds only after the final KYC and AML approval. So for this period, hereinafter referred to as "STO fluctuation phase 1" of the project, but also the investor is subject to digital currency fluctuations. This could result in two possible paths, for example:

**Possibility #1**

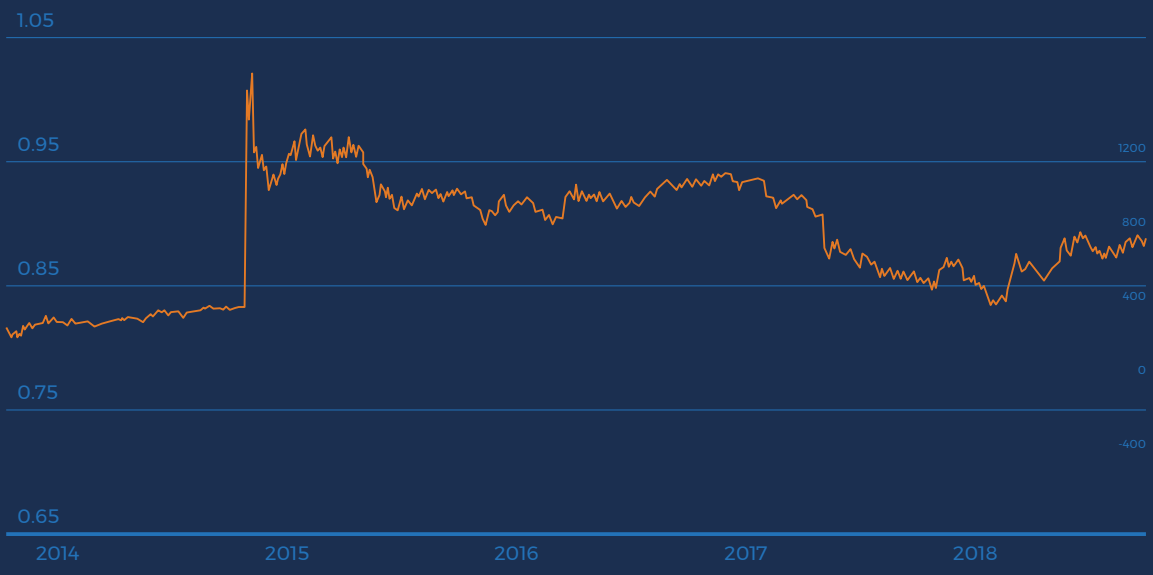

You will invest 357 ETH which would result in approx. 50'000 EUR, but what would happen if the ETH or BTC increases during the STO? This would only be beneficial in this case for the project and its future acquisition of assets as it relates to wind turbines and substation appliances. So the final CHF/EUR value will be higher at the end of the STO. This is always helpful as the hard cap will be measured in ETH. So if, for example, the desired hard cap of 356,147 ETH is reached and the ETH value increased over the STO duration, then this would result in a larger purchasing power for WindMine, which would indirectly be beneficial for the project.

In the event that the ETH price decreases during the STO period, this is out of our control, at least for the period of the STO. After the STO has ended we will be able to manage the funds in a proper manner. For instance, this could result in hedging our

position with an arbitrage trading algorithm based on our roadmap and our financial forecast; the acquisition of the wind turbines would only be subject to milestone payments. So, for a potential decrease of the ETH during the post-STO phase, we would also have a few other triggers to make sure our treasury management is best able to manage potential risk with state of the art accounting practices. This will be achieved with the help of our banking partner, one of the most sophisticated financial institutions towards cryptocurrency and blockchain.

**Possibility #2**

The other possibility would be if you decide to invest into the WindMine project with FIAT (CHF, EUR), for which the market has been rather stable the last year (due to the European Central Bank and the Swiss National Bank trying to stabilise the CHF-EUR relationship on the currency markets). So, in the event that you decide to invest via fiat, it is recommended to choose the currency the most convenient for you.



# Glossary of Terms, References & Service Providers

| | |
|---|---|
| NordPool AS | NordPool AS runs the largest market for electrical energy in Europe, measured in volume traded (TWh) and in market share. It operates in Norway, Denmark, Sweden, Finland, Estonia, Latvia, Lithuania, Germany and the UK and is a Nominated Electricity Market Operator (NEMO) in 15 European countries, while also servicing power markets in Croatia and Bulgaria. More than 80% of the total consumption of electrical energy in the Nordic market is traded through NordPool. It was the world's first multinational exchange for trading electric power. |
| NordBalt | NordBalt is a submarine power cable between Klaipėda in Lithuania and Nybro in Sweden. The purpose of the cable is to facilitate the trading of power between the Baltic and Nordic electricity markets, and to increase the supply and energy security in both markets. |
| NET AEP / p50 | The expected NET AEP is also named the P50 value, which is the expected outcome of the project. There is a probability of 50% that the outcome will be more than P50, and a probability of 50% that the outcome will be less. This can also be named the “central estimate”. To find out how accurate the estimate is, and thereby the risk of getting a lower outcome than expected, the uncertainty must be judged/calculated.<br><br>Including the uncertainty, the AEP estimate is assumed to follow a normal distribution. All uncertainty components are assumed independent and, thus, combined as standard deviations, i.e. the square root of summed squares of individual contributions. The individual uncertainty components, judged or calculated, shall be given as 1 std dev (Standard Deviation or simply σ).<br><br>The production with a given exceedance level (PXX) can be estimated using the inverse normal distribution as: P84 = P50 – 1 x Uncertainty<br><br>P75 = P50 – 0,67 x Uncertainty<br>P90 = P50 – 1,28 x Uncertainty, |

where the multiplying factors are provided by the theory of the normal distribution. If σ is for example 10%, then P84 = P50 – 10%

P75 = P50 – 6,7%
P90 = P50 – 12,8%.

The normal distribution is defined so that about 68% of all events will fall within ±1σ, and around 32% will fall outside that range. In the one tail (e.g. below -1σ), there is around 16%, so there is 16% probability that the estimate will be below 1σ subtracted from P50, and 84% probability that it will be above (exceed). In other words, the P84 is the value where 84 out of 100 realizations will result in an outcome better than P84.

---

Valuation of Holding company

In this section, you can find valuation of the IRR (internal rate of return), ROI (return on investment) and fair token value, based on estimations and projections for the project's performance. Please note that this valuation should only be used as a best guess estimate and will likely change as the company is approaching the equity swap portion of the security. The valuation is performed in two parts:

- A Loan portion, providing a flat return (interest) of 6% annually
- An Equity portion, where the token is evaluated under a discounted cash flow model (DCF) , over a period of 5 years* after the conversion from loan to equity.

*The five years in the discounted cash flow model, are chosen due to:

- 5 years is the standard period under which most DCF models are developed
- This is a long term project. It already has a loan phase of 10 years and anything more than an additional 5 years prediction for the equity phase, would lead to larger inaccuracies in the predictions and estimations.

Assumptions for the discounted cash flow model, are as stated in the assumptions section:

| | |
|---|---|
| Weighted average cost of capital (discount rate) | 6.06% |
| Long term growth rate | -0.21% |
| Terminal value | €71,672,516.25 |

| | |
|---|---|
| Sum of discounted free cash flows | €25,540,065.64 |
| Equity value | €97,212,581.89 |
| Total shares outstanding | 100,000,000 |
| Fair share value | €0.97 |
| Discount at conversion | 10% |
| Expected original shareholders equity* | 60.30% |
| Expected new shareholders equity** | 39.70% |

*Original shareholders represents the team behind the project

**New shareholders represents the newly added shareholders based on the equity swap. In both cases for the new and original shareholders, the numbers presented are projections and the final numbers are very likely to vary.

Taking into account the invested amount, the total number of tokens, and the net present value of the future cash flows, with a discount rate of 6.06%, we can estimate the fair token value over time to be:

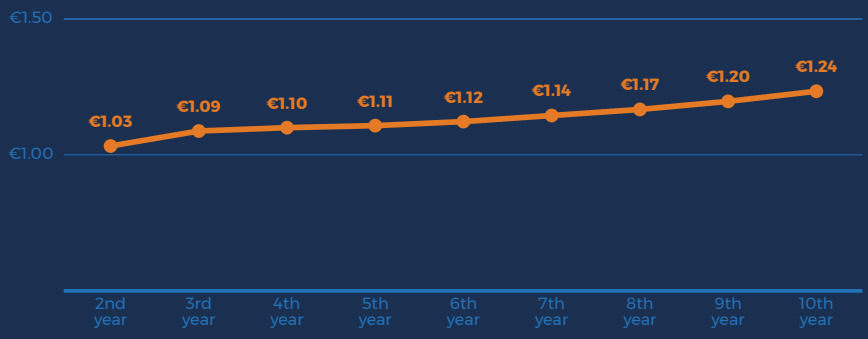



Figure 1: fair token value, based on a NPV (net present value) calculation of cash flows for the whole 14 years, with a discount rate of 6.06%.

By extension, the returns form the project (without discounting) are projected to be:

| | IRR | ROI |
|---|---|---|
| Loan phase (10-year period) | 6.00% | 45.02% |
| Equity phase (5-year period)** | 8.62% | 30.17% |
| Total (15 - period) | 6.49% | 68.87% |

Capacity factor

The net capacity factor is the unitless ratio of an actual electrical energy output over a given period of time to the maximum

| | |
|---|---|
| | possible electrical energy output over that period. The maximum possible energy output of a given installation assumes its continuous operation at full nameplate capacity over the relevant period. |
| General Electric Audit | Example report from GE, this is subject to change. |
| Enercon Yield Estimate Report | Refer to the Enercon yield estimate report, this is subject to change. |
| How to Verify Price Per MWh | You can directly check the price per Mega Watt Hour here http://www.statnett.no/en/market-and-operations/data-from-the-power-system/nordic-power-flow/ |
| Enercon quote | Non-binding quote from Enercon |
| Commercial Register | Refer to the website for the Commercial Register PDF. |
| Approved FMA Prospectus (Liechtenstein and Europe) | Please refer to our website to get the latest Prospectus URL. |
| Pitchdeck | Please refer to our website to get the latest Pitchdeck URL. |
| Factsheet | Please refer to our website to get the latest Factsheet URL. |
| Promotional Video | Please refer to our website to get the latest for the latest promotional video URL. |
| Holding Company Audit Report | Please refer to the audit of the Holding Company here |
| Building Permits Rapsoil Ltd. | Please refer to our website to see the building permits. |
| Lease Agreements Rapsoil Ltd. | Please refer to our website to see the lease agreements. |
| Bank Frick | The corporate banking partner for accepting fiat deposits, custodian for digital assets raised including the conversion of digital assets into EUR for the purchase of windpark assets. |

| | |
|---|---|
| BDO Liechtenstein | The consulting firm overseeing the Security Token Offering (STO). |
| Scheiber Law | Florian Scheiber in coordination with BDO and our internal team will review the prospectus and take over the final FMA coordination including other financial market authorities in Europe and overseas |
| Silvani Revision | Mr. Reto Silvani will be the revision company for the WindMine AG PCC holding. |
| Protected Cell Company | There is a great report from PWC Liechtenstein explaining the benefits of using a protected cell company for private equity or debt financing. |
| KYC Source of Funds Description | Please make sure to use a proper answer for for the description source of funds. You can check it out here. |