



INFRASTRUCTURE INVESTMENTS IN WIND POWER

ARTEMIS INVESTOR BRIEFING

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Guest Contribution by Max-Robert Hug (1/2)



Max-Robert Hug

Founder and CEO of Leonidas Associates, a company specialising in creating and managing long-term investments in the fields of wind and solar

Wind Power – A Modern Investment in Infrastructure

Investing in the construction and operation of wind power systems offers long-term, stable yields, additionally benefiting from the current, comparatively-cheap borrowed capital expenditure. This is due to the fact that wind is a source of energy that always blows and the minimum price for selling the electricity produced is guaranteed by the government for many years.

Furthermore, there is the reliability of modern systems: Practically-speaking, it is above 98 percent and can be virtually covered in full by a maintenance contract with the turbine manufacturer. Flat fees for up to 15 years of operation can be stipulated for scheduled maintenance and unscheduled maintenance, including replacement parts (e.g. a gear box as well).

Irrespective of all funding, wind power today is one of the most economic forms of power generation; a trend that will continue due to the fact that procuring fossil fuels will become increasingly more expensive in the long run. The Fraunhofer Institute expects that power from a wind power system on land can be produced more economically than from a nuclear or coal-fired power plant as early as in 2017.

On-Shore Wind Energy in France – An Attractive Yield-Risk Profile

In recent times, the framework conditions, particularly political ones, for wind power system investments in France have continually improved. This is due to the fact that, whereas one EEG reform comes after the other in Germany, the French parliament has adopted the current energy transition law at first reading. According to this, the percentage of renewable energy will increase from its current level of approx. 16 percent to 23 percent by 2020 and 32 percent by 2030.

In addition, it wasn't until July of 2015 when a feed-in tariff for wind power systems in France was ratified by law. A minimum price, which is subject to inflation adjustment once per year, is paid for 15 years for the sale of the electricity produced. Initially, the price is at least 8.2 cents/kWh – making it close to the exchange price. Its distinctive feature: Unlike in Germany, the tariff level is not fixed on the date on which it is connected to the mains; it is already fixed before construction begins.

Guest Contribution by Max-Robert Hug (2/2)

An Overview of France's Location Advantages

- Europe's second-largest wind levels and Europe's largest on-shore wind power potential
- 75% of electricity demands met by nuclear power (Ger.: 17%) and 3% by on-shore wind power (Ger.: 8.2%)
- 54% greater national territory than Germany with a 600% longer coast and a 20% smaller population.
- Good availability of excellent locations with consistently-high wind levels due to low population density.
- Sustained yield from government funding with a guaranteed feed-in tariff of at least 8.2 Cent/kWh over 15 years
- Yield security thanks to legally-guaranteed minimum price model with a requirement on grid operators to purchase electricity produced from renewable energies
- Implied inflation protection due to yearly adjustment of the legally-guaranteed feed-in remuneration.
- Social acceptance due to a pure pay-as-you-go system and low burden on the French national budget

About Leonidas Associates GmbH

Leonidas Associates GmbH, with offices in Kalchreuth bei Nürnberg and Reins (FR), was founded in 2009 by Antje Grieseler and Max-Robert Hug. The company's total investment volume currently consists of more than €525 million.

Since then, more than €460 million have been invested in 27 PV projects (30 MW) in Germany, France, and Italy as well as in seven wind projects (147.5 MW) exclusively in France. Wind power systems with a total output of 1,042 MW were connected to the power grid in France in 2014. During the same time period, Leonidas has manufactured four wind farms in France with a total of 40 turbines and 84 MW, which is equal to 8 percent of the overall market.

With these investments, Leonidas, which currently has around 50 employees, ranks among the largest and most active investors in the French wind market. A specialisation that will ensure sustainable, positive yields in the future as well.



Dr. Ulf Rieg

Independent advisor, former department manager of "M&A Erneuerbare Energien" belonging to Mainova AG and General Manager of WPE - Hessische Windpark Entwicklungs GmbH

Project Development – Profiteers with Great Challenges

For several years, a very high demand for wind energy projects in the light of limited offerings could be observed in Germany. Both institutional investors and, increasingly, public utilities contribute to the high demand. Consequently, expected yields from wind energy projects have decreased. However, this mainly affects projects that already have a permit according to the BImSchG*. Currently, investors have mostly favoured ready-to-build projects or wind farms which have already been put into operation.

Project developers and wind farm project suppliers mainly benefit from these framework conditions. Nevertheless, financing projects until obtaining a permit constitutes an enormous challenge for numerous project developers. Lastly, 3-5 years may pass until a project is sold. During this time, expert advice for the approval process as well as employees need to be financed.

Interim Financing, An Opportunity for Investors

In this environment, characterised by high demand for projects that already have a permit, there are nevertheless interesting investment opportunities for investors who are willing to invest even before receiving permits for projects. At the moment, there are even a few institutional investors who are acquiring project portfolios in the development stage, in order to secure projects in the first place and second, to acquire projects at more attractive terms than it would have been possible after receiving the permit. A current example here is the takeover of Volkswind GmbH by Swiss energy provider Axpo.

Furthermore, you can already find examples of interim financing on the market, whereas investors provide capital for continued development and participate in sales proceeds upon receiving approval. Such interim financing can be very attractive, since the evaluation of a project before receiving approval is mainly based on the costs incurred. On the other hand, it focuses on future income after receiving approval.

*Federal Emissions Control Act

Risk Minimization Through Regulatory Due Diligence

The significant risk in investing in projects in the development stage is the approval risk, that is to say, that risk that a project will not receive approval. This is why it requires comprehensive verification with respect to the planning framework and site suitability. Furthermore, due to the risk, only investments in portfolios are advisable, unless a project that does not receive approval can be offset through alternative projects.

The regulatory risk for projects which do not receive approval until 2017 is often viewed in a critical light. Compensation for this project is determined through tenders. Projects with approval until 31/12/2016 will still benefit from the EEG 2014's known regulatory framework. The risk for projects in 2017, however, seems manageable due to the adequately-planned, annual net increase of 2,500 MW. The probability of over-subscription similar to the first PV tender is low due to the volume. Furthermore, the Federal Ministry of Economics' key points paper pledges 3-4 tenders per year. Projects which were not included in an earlier tender round may then participate once more in subsequent rounds.

Additional risks, such as the interest-changing risk, can be modelled and managed through careful project evaluations, where it is also recommended to always consult the appropriate experts for advice.

Summary: Opportunities for Investments in Development Projects

Expected yields for investments in ready-to-build or operational projects is under pressure due to high demand and simultaneously-limited offerings. As a result, it would surely be of great interest for investors to pay attention to the upstream value-chain step of project development. Investments in development projects bear a significantly-higher risk than classic investments in ready-to-build or operational projects indeed, but in return, investors can benefit from above-average, high value-creation until receiving approval. This can produce very attractive yields, provided that the corresponding projects in this early stage have already been subject to a comprehensive test and careful project evaluation as well.



Christoph Lanninger (M.A. HSG)

Investment Advisor in the renewable energy sector of the ARTEMIS Group, an internationally-active investment manager of real assets in the wind sector, active on the market since 2001

Incentives for Wind Investments from Investors' Perspective

The planned exit from nuclear energy, accompanied by attractive, government subsidy incentives, has made investment opportunities in wind farms an attractive investment class.

Due to predictable and stable yields, the ecological-ethnic responsibility, low default risks and low correlations to other investment classes, institutional investors have increasingly opted to invest in the wind asset class over the past decade as well. The European debt crisis and the consistently-low capital market interest rate environment have made investors look for alternative investment options – beyond low-yielding and supposedly-secure government bonds and bank papers.

A few good examples include German primary and reinsurers, which are among the largest institutional investors in Germany with approx.. €1,400 billion and must re-invest hundreds of millions every day. German life insurers, which serve a majority of the insurance industry's investment portfolios with approx.. €800 billion, must distribute on average a minimum interest rate of at least 3.4 percent on the invested funds to their existing clients. Of course, this does not include possible profit participation, which is always welcome by investors.

Although the average allocation in the infrastructure asset class is still less than one percent in many institutions, many surveys (e.g. the BAI Investor Survey*) consistently conclude that virtually all players will significantly expand this quota over the short to medium-term.

The current, immense capital inflow, investment pressure, the additional, stable, low-interest environment, and the associated high demand for investments in renewable energy infrastructure – including wind power – have nevertheless caused a noticeable price increase in assets for this field over the past several years. A matter which ultimately has a corresponding effect on income and margins.

*Source: <http://www.vc-magazin.de/investing/item/3316-aus-der-sicht-institutioneller-investoren>

Yield Expectations and Trends

The continually-increasing commitment by institutional investors in wind power particularly results in, in relation to alternative investments, attractive yields**, which are expected from an investment in this sector.

For instance, Generali Versicherungen's infrastructure investments achieve a 6 to 7 percent yield according to their own statements. Munich Re calculates "yields comparable to corporate bonds" for this sector and the alliance, with a total investment volume of approx.. €2.5 billion in the renewable energy sector and a portfolio exceeding 50 wind farms, reckons real yields of 5 to 7 percent.

On the one hand, all of these IRR calculations heavily depend on which assumptions are made regarding the post-funding period calculated investment sales proceeds as a percentage of the original construction price. On the other hand, the extent to which one monetises, mostly significantly longer-lasting, electricity production rights oneself on-site also plays a large, arithmetical role.

"Investments in renewable energies fit perfectly with an insurer's long-term business model", says Dr. Manfred Knof, Chief Executive Officer of Allianz Deutschland. "Capital investments in wind and solar arms produce advantages in several respects. We diversify the invested funds for our customers. With such investments, we can at least somewhat even out the extremely-low interest rate and moreover further contribute to the energy transition"*** The last aspect, which also contributes to the attractiveness of the infrastructure asset class, is listing the implicit inflation protection for the sake of completeness.

A noticeable trend which has been increasingly observed over the past years is that many investors (e.g. Allianz) completely forego borrowing when purchasing such assets and purchase them all-equity, even when this has negative effects on the yield to be achieved. Foregoing leverage forces down the potential IRR on average by approx.. 200 to 400 basis points indeed; on the other hand, however, it has a risk-reducing and stabilising effect on financing. This is an aspect that enjoys high priority, particularly among insurance companies.

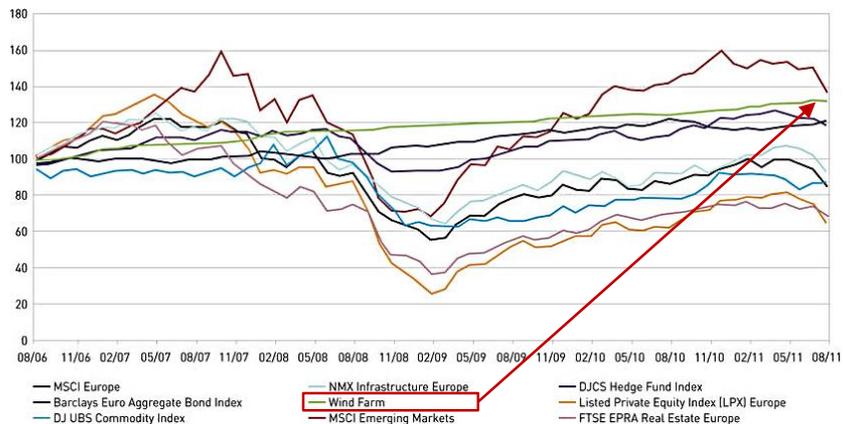
**generally depicted as Internal Rate of Return (IRR)

***Source: https://www.allianzdeutschland.de/allianz-forciert-investment-in-windkraft/id_74390978/index

GENERAL INFORMATION ON INVESTMENTS IN WIND POWER

Performance Comparison: Wind Farm vs. Select Asset Classes

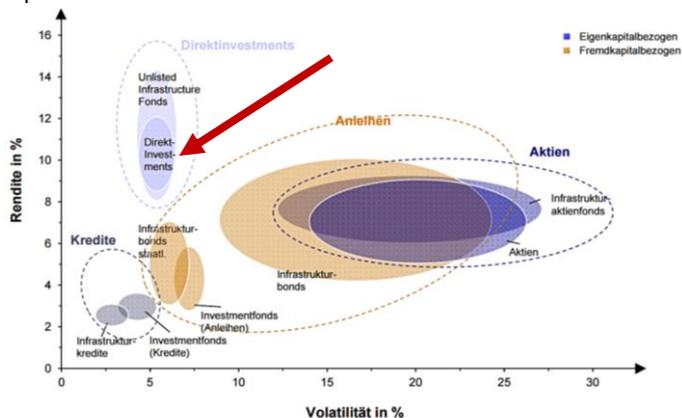
Apart from the "MSCI Emerging Markets" index, a wind farm outperformed all alternative asset classes and clearly shows its crisis resilience, since no performance reduction was noticeable at all during the 2008 financial crisis period. A positive result of a wind farm's independence from global financial markets.



Source: portfolio institutionell, Allianz Capital Partners

Yield-Risk Profile of Infrastructure Assets

Generally speaking, direct investments in infrastructure exhibit relatively-high yields with low volatility and manageable risk, and are subject to significantly-lower volatility than classic capital market products such as stocks or bonds.



Source: Study by Steinbeis-Hochschule Berlin and DEKA Bank

Average Yield Expectations of Wind Power Investments

Yield expectations may vary by region and risk due to historical transactions and professional estimates. It should also be noted here that France, relatively speaking, offers the most attractive anticipated yields against the backdrop of manageable risk.

Region	IRR (%)	Risk
Germany	6 - 8	low
France	8 - 9	low
Italy	11 - 12	medium
Poland	7 - 9	high
Scandinavia	6 - 7	medium

Source: Capital Stage, our own depiction

Contact Information

The ARTEMIS Group is an international investment manager of real assets. Its focus is on the agricultural and renewable energy sectors. As an investment company registered with the Federal Financial Supervisory Authority, we initialise, realise, and manage our own funds.

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