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CORPORATE PPAs

Husum Warm Up, 12. September 2017

Dr. Malte Jordan

What is a „Corporate PPA“?

- Power Purchase Agreement
- Between independent generator and corporate offtaker
- Distinguish from “utility PPA”
- Typically long-term supply agreement

What are drivers for Corporate PPAs in the renewables sector?

- From the offtaker's perspective
  - Corporate offtaker wishes to eliminate/reduce exposure to power price fluctuations by agreeing on fixed price
  - Corporate offtaker can use renewable PPA to satisfy sustainability commitments (be they self-imposed or external)
  - Corporate offtaker possibly interested in referring to itself as "initiator" of the renewable energy project
- From the generator's perspective
  - Independent generator needs long-term stable cash flows to attract financing (both equity and debt)
  - Decline of subsidy levels in Europe results in increased need for solution for "merchant risk"
  - Corporate offtakers possibly inclined to pay premium in return for being able to eliminate merchant risk

What types of Corporate PPAs exist?

- Standard vs. Synthetic
- Standard
  - Physical delivery of power generated by renewable power plant to corporate offtaker
  - Typically technically only possible in case generator and offtaker are located close to each other with ability to use "internal grid connection" (no use of public grid)

- Synthetic
  - Independent generator sells its power generation into a pool for supply to and from the public grid (e.g. wholesale power market) at spot market rates
  - Corporate offtaker buys electricity from wholesale market at spot market rates
  - PPA defines true-up periods after which compensation payments will be paid from one party to the other in case the wholesale market price was above/below the fixed price agreed in the PPA
  - While corporate offtaker does not physically receive "green power", it may still claim that it was the "key initiator" of the renewable energies project (by agreeing to a PPA) and that, hence, all power generated by such project may be attributed to the offtaker for the purposes of meeting sustainability commitments

Corporate PPAs in German regulatory framework (1)

3 systems of marketing power from renewable sources

- <u>Direct marketing:</u>

  Power generated is fed into public grid and sold to third party (typically on wholesale market/exchange)

- <u>Direct delivery:</u>

  Direct delivery of power generated to third party offtaker via direct line (no use of public grid)

- <u>Own consumption:</u>

  Own consumption of power generated by same entity that is producing power with no use of public grid

Corporate PPAs in German regulatory framework (2)

Physical PPA

- Direct Delivery
- Full EEG surcharge ("EEG-Umlage")
- No grid charges
- Power producer becomes "supplier to end-consumer" with additional regulatory requirements

Synthetic PPA

Sponsored Direct Marketing

- Requires tender award
- "Grey" power (no green certificates)
- Contract for difference between PPA-price and tender strike price or wholesale price, whichever is higher

Other Direct Marketing

- No tender award required
- Green certificates available
- Contract for difference between wholesale price and PPA price

Financial derivative?

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Key requirements for bankability (project finance)

- Dispatch Risk/Offtake Risk
  - "Take or Pay": offtaker pays a fixed tariff comprising a capacity charge (a fixed amount that is paid for available capacity – no dispatch required) and an output charge in respect of energy actually delivered; this permits the power producer to cover its fixed costs with the capacity charge, including debt service and fixed operating costs
  - "Take and Pay": offtaker must take, and pay a fixed tariff for, all power delivered; if power cannot physically be taken by offtaker and output is curtailed, power will be calculated and paid for an a "deemed delivered" basis

- Fixed Price
  - It is important that revenue of any PPA, whether "take or pay" or "take and pay", is a certain amount per kwh generated to adequately cover the cost of operating the facility, repay the debt and provide a reasonable return on equity
  - Indexation linked to development (increase) of fixed operating costs beneficial, in particular in long-term PPAs

Key requirements for bankability (project finance) (1)

- Force Majeure/Frustration of Contract
  - Due to long-term nature of PPA, increased exposure of parties to unforeseen circumstances having a material adverse effect on commercial balance of PPA
  - Typical force majeure risks (forces of nature, political risks) are often regarded of lesser significance in central European jurisdictions
  - However, doctrine of frustration of contract ("Wegfall/Änderung der Geschäftsgrundlage") may apply in case detailed risk matrix/allocation is missing in contract

- Termination Rights and Termination Payments
  - Term of PPA should exceed or at least match tenor of debt (no "tail risk")
  - Given PPA's nature as long-term power price hedge, PPA parties may be inclined to terminate PPA prematurely in case of significant spread between PPA price and wholesale price over substantial period of time; hence, PPA needs to have a legally robust fixed term
    - Under German law, parties are in principle free to agree contract term they see fit; exemptions only apply in extraordinary circumstances (but need to be considered for each PPA on a case-by-case basis):
      - Competition law
      - Rules on general contract terms ("Allgemeine Geschäftsbedingungen")
      - § 138 German Civil Code ("Sittenwidrigkeit")

Key requirements for bankability (project finance) (2)

  - Termination for convenience should be excluded (or linked to termination fee covering debt service)
  - Termination for cause should be clearly defined and subject to adequate cure periods (including periods for banks making use of their rights under direct agreement)

- Counterparty Risk
  - Creditworthiness of offtaker is key to banks
  - Possibly additional protection of banks under facility agreement in case creditworthiness deteriorates

- Transmission/Interconnection Risk
  - In particular relevant for physical PPAs: allocation of risk that power generated can be delivered to agreed interconnection point

- Assignability/Direct Agreement
  - Banks expect standard collateral for project-financed projects, in particular assignment of PPA rights, right to cure termination rights under PPA, step-in rights

DR. MALTE JORDAN, LL.M
Partner Corporate
Hamburg

+49 40 800 084 461
mjordan@wfw.com

Thank you!

WFW Offices

ATHENS

6th Floor, Building B
348 Syngrou Avenue
Kallithea 176-74, Athens
T: +30 210 455 7300

BANGKOK

Unit 902, 9th Floor
GPF Witthayu Tower B
93/1 Wireless Road
Patumwan, Bangkok 10330
T: +66 2665 7800

DUBAI

Office 1503, Level 15, Tower 2
Al Fattan Currency House
PO Box 506896 Dubai
T: +971 4 278 2300

FRANKFURT

Ulmenstraße 37-39
60325 Frankfurt am Main
T: +49 69 297 291 0

HAMBURG

Neuer Wall 88
20354 Hamburg
T: +49 40 800 084 0

HONG KONG

Units 1703-1707, One Pacific Place
88 Queensway, Hong Kong
T: +852 2168 6700

LONDON

15 Appold Street
London EC2A 2HB
T: +44 20 7814 8000

MADRID

C/ María de Molina, 4
28006 Madrid
T: +34 91 515 6300

MILAN

Piazza del Carmine 4
20121 Milan
T: +39 02 721 7071

MUNICH

Gewürzmühlstraße 11 – Courtyard
80538 Munich
T: +49 89 237 086 0

NEW YORK

250 West 55th Street
New York, New York 10019
T: +1 212 922 2200

PARIS

28 avenue Victor Hugo
75116 Paris
T: +33 1 56 88 21 21

ROME

Piazza Navona 49
00186 Rome
T: +39 06 684 0581

SINGAPORE

6 Battery Road #28-00
Singapore 049909
T: +65 6532 5335

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(Corporate) PPA from an investor's angle

Experience from recent transactions

Watson Farley Williams LLP, Husum Wind Warm-up, Hamburg, September 12th, 2017

Aquila Group overview

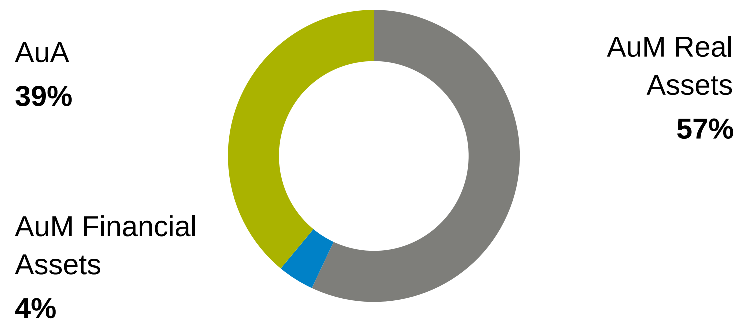
Aquila Capital

Focused on alternative investments

- Founded in 2001
- 6.1bn Euro AuM/AuA
- Independently owned and operated
- Fully regulated by BaFin (Germany) and CSSF (Luxembourg)
- 10 offices in Europe, Asia and Asia-Pacific
- Institutional client focus

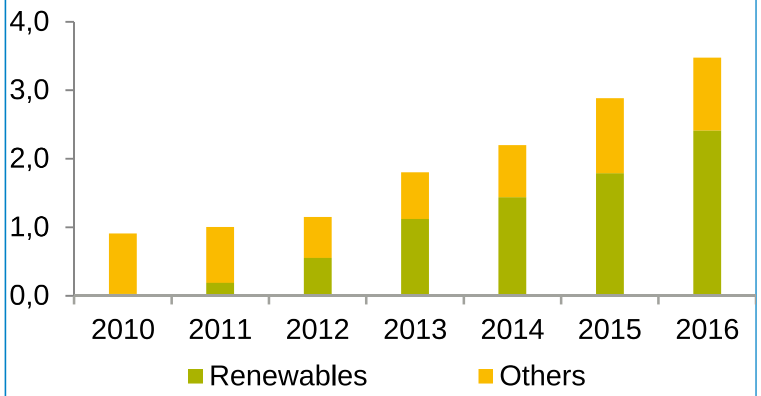
As at 31.12.2016; Locations shown in the map also include investment affiliates;

Overview Aquila Group[1, 2]



respectively; 2 Assets under Administration (AuA) of the AIFM Alceda includes funds managed by Aquila Capital

AuM Real Assets in EUR bn



A leading renewables operator in Europe

Aquila Capital

Active in renewables since 2009

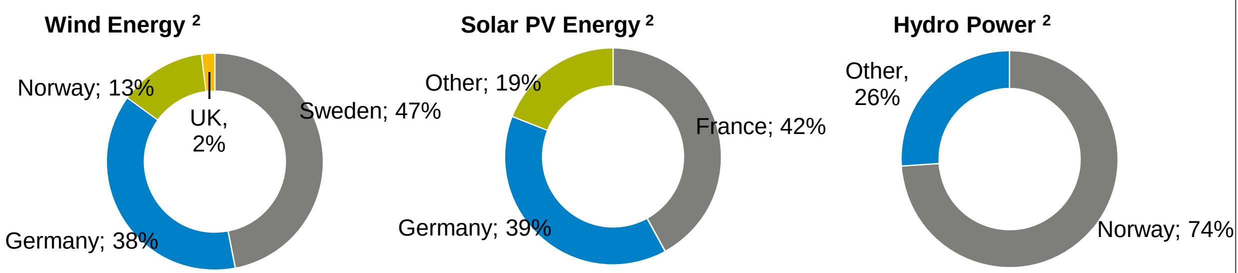
EUR 2.3 bn total investment volume[1]

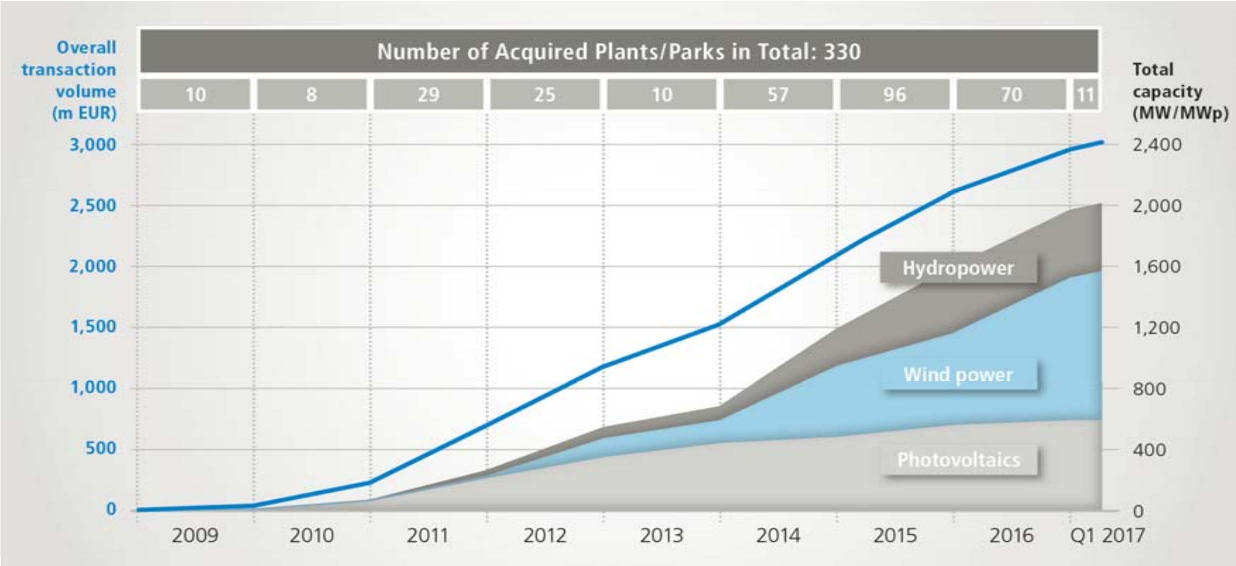
976 MW based on transactions in wind energy[1]

625 MW based on transactions in Solar PV energy[1]

430 MW based on transactions in hydropower[1]

Total invested capital in renewable energy assets





Macro-driven strategic approach

Dedicated investment team with in-depth asset know-how

Differentiated Investment Opportunities

Disciplined underwriting

Fiduciary responsibility

Notes:
1 With approx. EUR 2.3 bn of Total Investment Volume (asset based) in renewables (developed or under construction), Aquila has become a leading asset manager in the growing renewables market in Europe. MW figures based on past and current transactions. As of 31.12.2016. 2 Based on total investet capital of Aquila Capital in the respective asset class. As of 31.12.2016. 3 Source: The „Top 70 overview of European solar PV portfolios“ is provided by Solarplaza International BV („Solarplaza“). Solarplaza assumes no responsibility for any errors or omissions in these materials. Solarplaza makes no commitment to update the information contained herein. The data used for this overview are as at 31.05.2016. www.solarassetmanagementeu.com

Strong footprint in PPA markets

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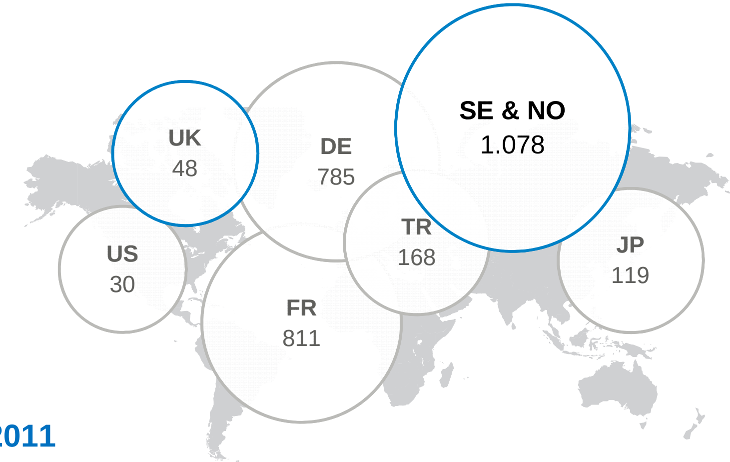
Country-Specific Track Record (in m EUR):



Investment experience in the Nordics since 2011

2011
- **Hydro Jopeland** – 40 MW | Norway – Acquisition: 2011

2012

2013

2014
- **Wind Atlantic Portf.** – 61.2 MW | Sweden – Acquisition: 2014
- **Hydro NGK** – 119.4 MW | Norway – Acquisition: 2014
- **Hydro Tinfos** – 90 MW | Acquisition: 2014

2015
- **Wind Midtfjellet I+II³** – 110 MW | Norway – Acquisition: 2015
- **Hydro Smakraft** – 160.9 MW | Norway – Acquisition: 2015

2016
- **Wind Hökölen** – 64.8 MW | Sweden – Acquisition: 2016
- **Wind Lehtirova** – 147.6 MW | Sweden – Acquisition: 2016

2017
- **Wind Midtfjellet III** – 40 MW | Norway FID: 2017
- **Wind Kokkola** – 14.4 MW | Finland – Signing: 2017
- **Wind Kappeln** – 24.2 MW | Denmark – Signing: 2017

Nordic wind portfolio overview

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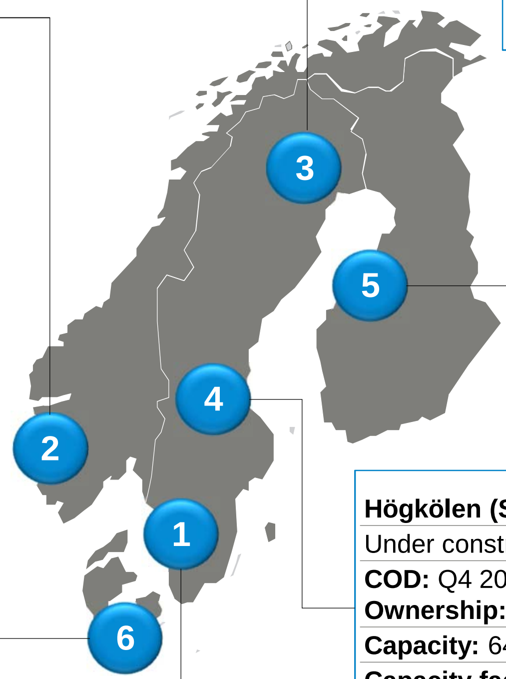
c. 462 MW
since 2014

c. 1.5 TWh
of annual production

32% – 47%
High capacity factors[1]

Midtfjellet Phase I – III (NO)
Operational (110 MW) / Extension (39.6 MW)
COD: Q4-2013
40 MW extension (Q4-2018)
Ownership: Majority, co-investment
Expected capacity:
150 MW (incl. 40 MW extension)
Capacity factor: 32%
Turbines:
Nordex N90 – 2.5 MW
Nordex N100 – 2.5 MW
Nordex N117 – 3.6 MW

Lehtirova (SE)
Under construction
COD: Q4 2018
Ownership: 100%
Capacity: 147.6 MW
Capacity factor: 37%
Turbines: Vestas V126-3.6 MW



Kokkola (FI)
Under construction
COD: Q4 2018
Ownership: 100% (as of closing)
Capacity: 14.4 MW
Capacity factor: 43%
Turbines: Nordex N131 – 3.6 MW

Kappel (DK)
Operational
COD: Q2 2017
Ownership: 100%
Capacity: 24.2 MW
Capacity factor: 47%
Turbines:
Vestas V117 – 3.45 MW
Vestas V126 – 3.45 MW

Högkölen (SE)
Under construction
COD: Q4 2018
Ownership: 100%
Capacity: 64.8 MW
Capacity factor: 43%
Turbines: Vestas V126 – 3.6 MW

Atlantic Portfolio (SE)
Operational
COD: Q1 2015
Ownership: Minority, co-investment
Capacity: 61.2 MW
Capacity factor: 36%
Turbines:
Vestas V90 – 2.0 MW
Vestas V100 – 2.0 MW
Vestas V112 – 3.3 MW

Note:
1 Based on P-50 estimates

Why investors like long-term PPA

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- Substitute for state support programs in particular FiT and CfD
- De-risking (but also limitation of merchant chances)
- Increase in debt capacity (in a low interest environment)

Different rationales for PPA offtakers

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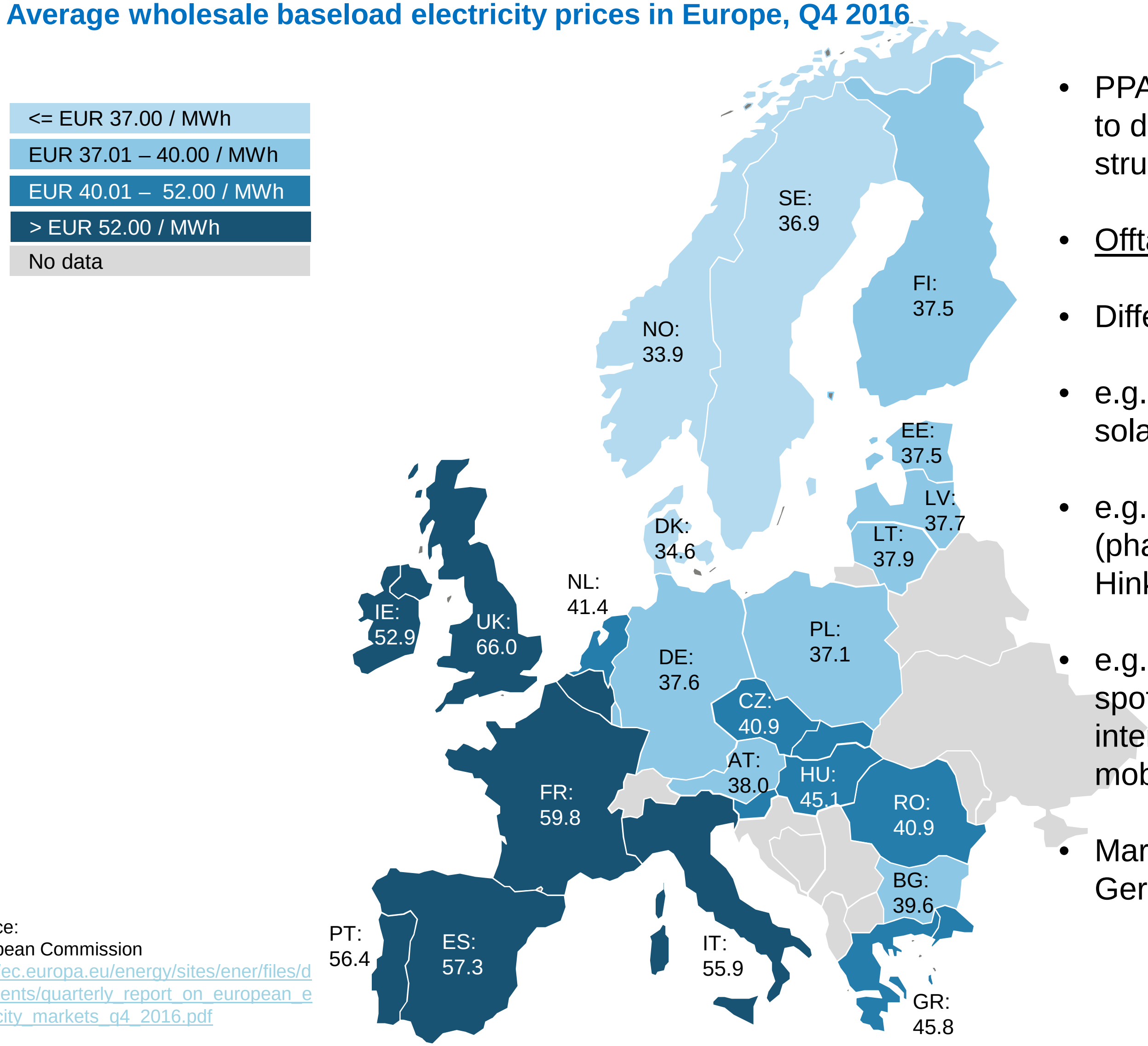
Average wholesale baseload electricity prices in Europe, Q4 2016



Source:
European Commission
ttps://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_electricity_markets_q4_2016.pdf

- PPA markets need merchant exposure to power market to develop; many renewables support schemes structurally obstructive
- <u>Offtakers act rationally</u>
- Different rationales for offtakers in different markets
- e.g. Spain with high power prices, high irradiation for solar pv and little trust in public support scheme
- e.g. UK with high and probably increasing spot prices (phase out of coal, high degree of power to gas, delay of Hinkley Point C) and merchant support scheme
- e.g. Nordics with historically low and probably increasing spot prices (phase out of nuclear, build-out of interconnectors, growing population, early adaptor of e-mobility and growth of datacenter industry)
- Markets with rapidly decreasing support schemes e.g. Germany?

Competitive renewables

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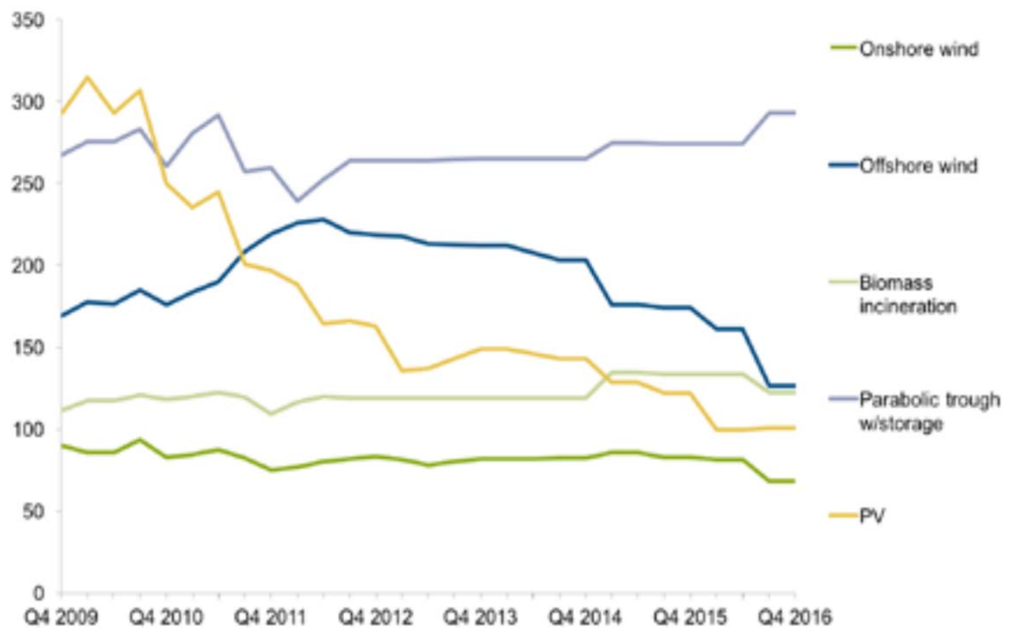
LCOE from selected renewable energy sources



Source: Bloomberg New Energy Finance

- Rapid progress made in reducing the 'levelised', or all-in, costs of generation from wind and solar PV
- LCOE for wind 31% down since 2009 and PV 80%
- The cost of onshore wind is expected to drop 41% by 2040, driven primarily by improving capacity factors – which reach 33% on average in 2030 and 41% in 2040
- **Distributed and polypolistic character of renewables markets fit well to request profile of offtakers**

Utility offtaker versus corporate offtaker

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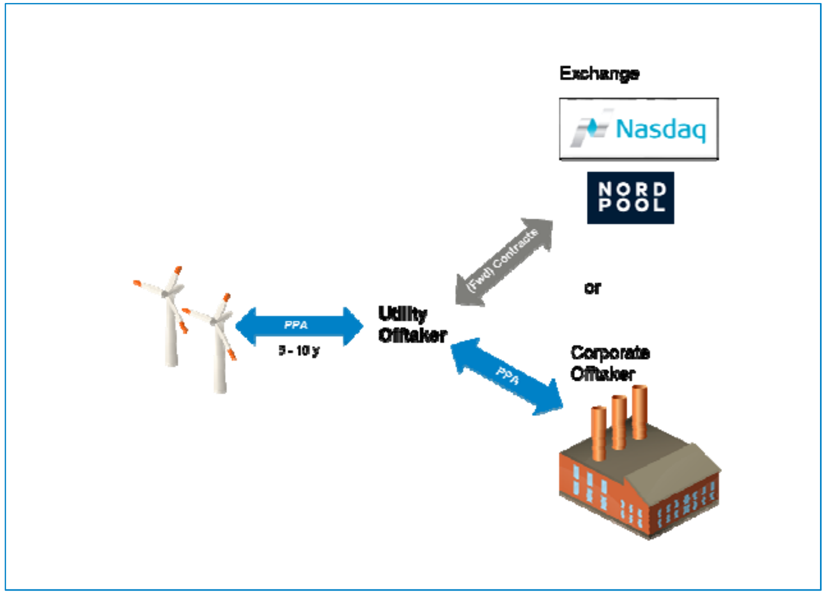
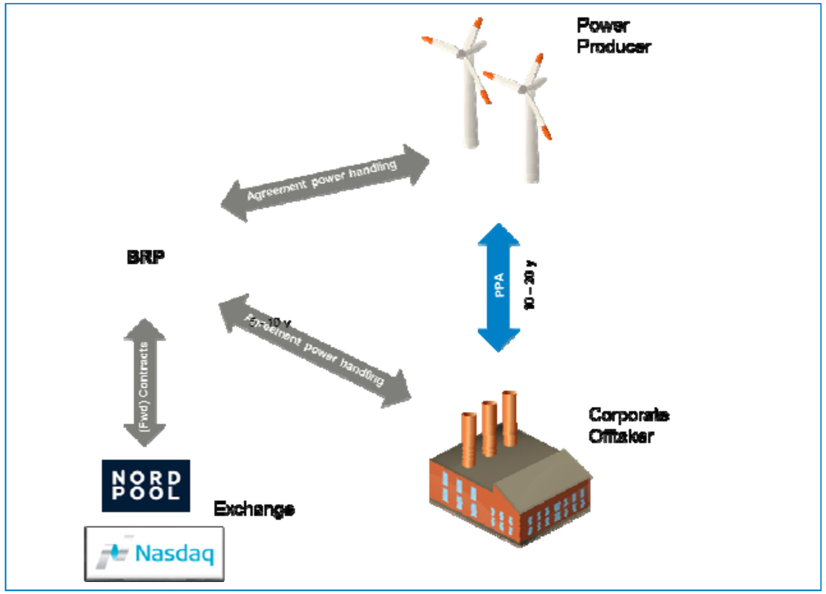
Utility offtaker



- Purchases power from generator via PPA (provides physical and financial management)
- Sells to customers via PPA or sells day-ahead/intraday to spot market (power exchange) or via forward at derivative exchange
- **Aims for margin on purchase price at sale**
- **Aims for handling fees (e.g. balancing)**
- Term usually 5 – 10 y (= liquid forward market)
- Good availability, standardized contracts

Corporate offtaker



- Purchases power from generator via PPA (usually handled by balancing responsible party)
- Secures supply and hedges against price risks
- **Avoids utility sales margins**
- **Avoids alternative hedging costs**
- **Seldom has non-commercial targets**
- Term usually 10 - 20 y (or 10 y + prolongation option(s))
- Still rare, usually high arrangement efforts required

Price risk

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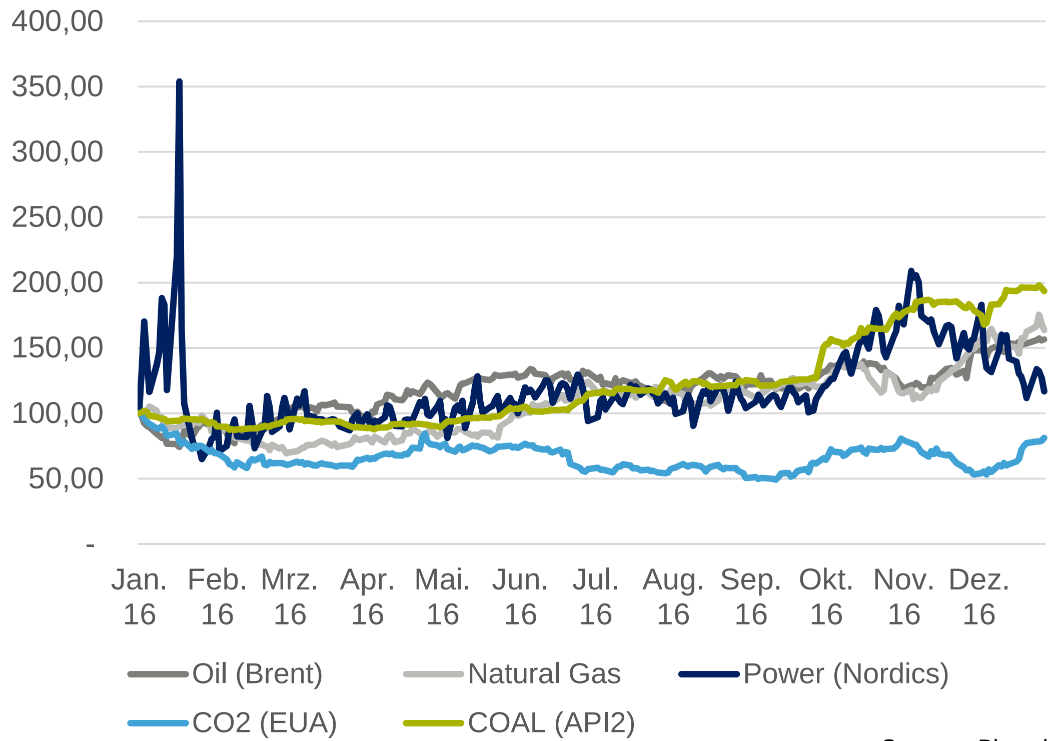
Relative development until June 2017, indexed to 100 as of January 2016



Source: Bloomberg

Nasdaq

	BID	ASK	LAST	+/-	%
ENOYR-18	25.31	25.49	25.24	0.02	0.08
ENOYR-19	22.75	22.99	22.91	0.11	0.48
ENOYR-20	22.81	23.04	22.99	0.14	0.61
ENOYR-21	24.36	24.45			0.00
ENOYR-22	25.66	26.24			0.00
ENOYR-23	25.95	29.05			0.00
ENOYR-24	26.70	29.80			0.00
ENOYR-25	27.15	30.25			0.00
ENOYR-26	27.55	30.65			0.00

Source: Neas Energy

Different facets of price risk

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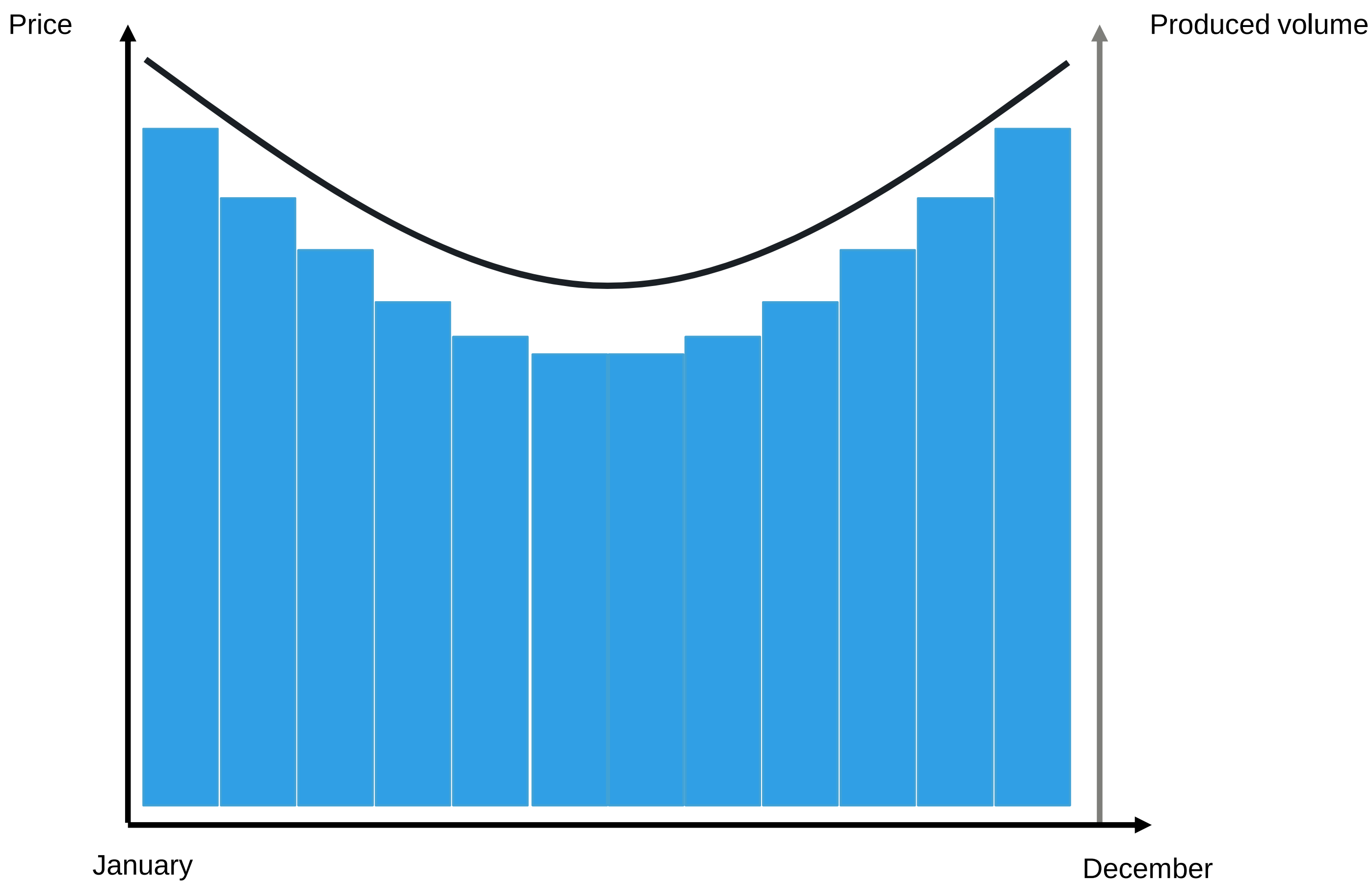
Profile compensation



Source: Neas Energy

Different facets of price risk

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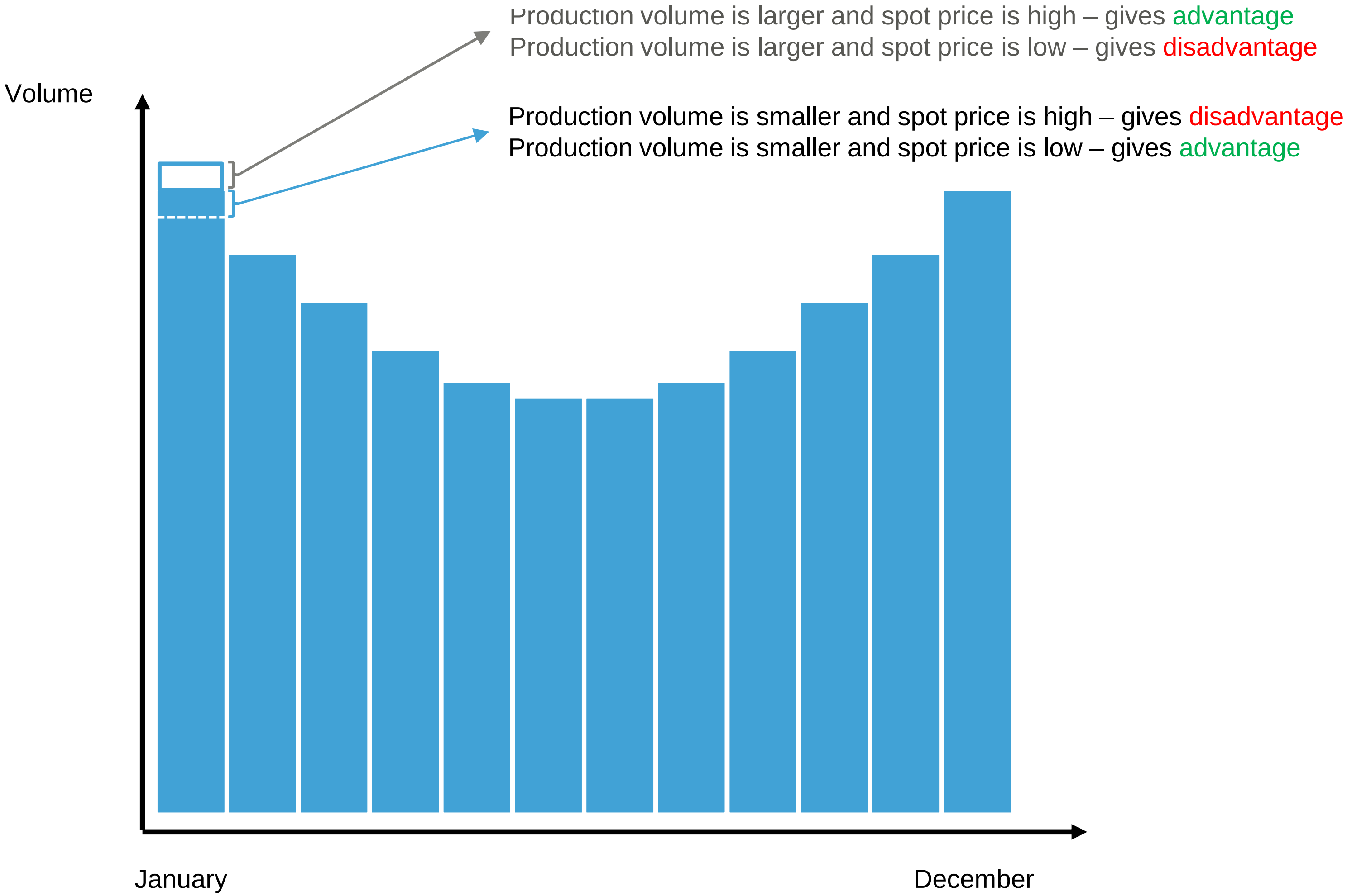
Volume risk



Source: Neas Energy

Different facets of price risk

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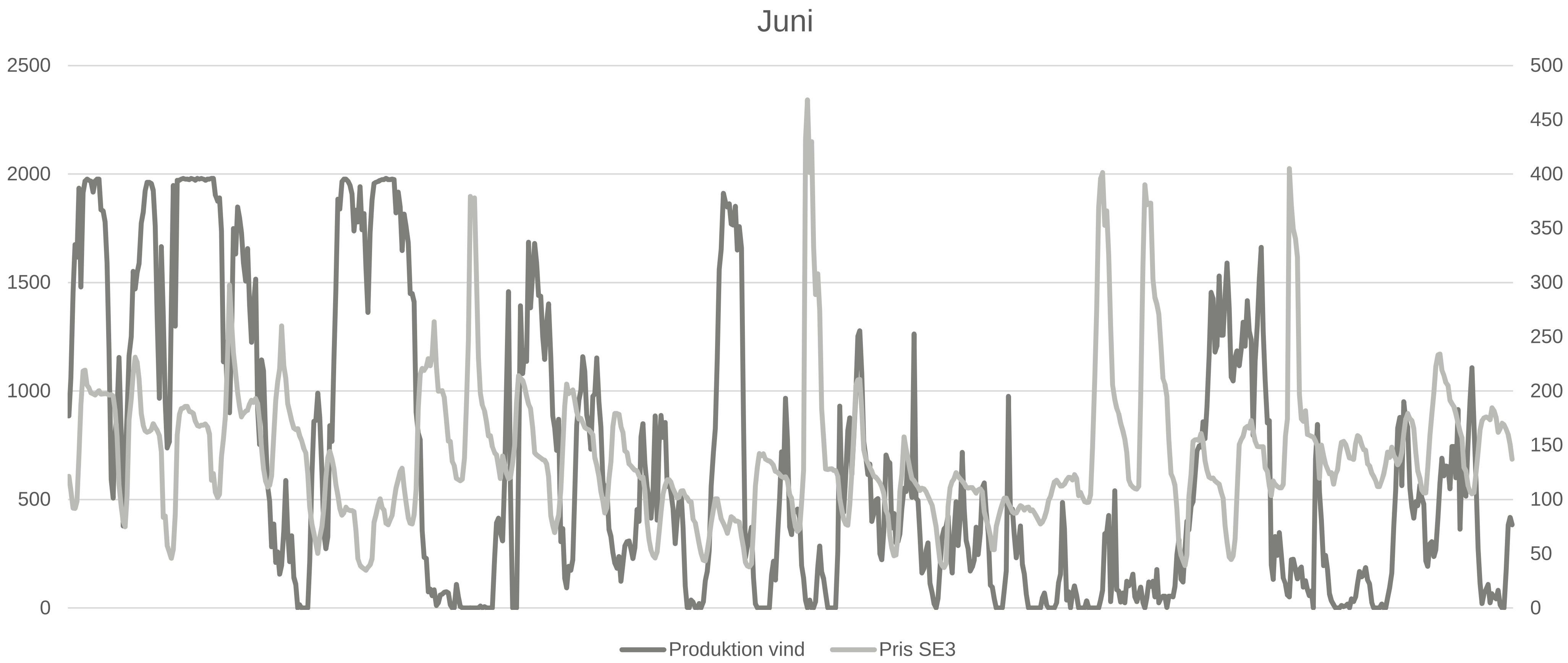
Profile risk (annually, semi-annually, quarterly, monthly, hourly)



Source: Neas Energy

Conclusions

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- Raise of corporate PPA is no coincidence but goes hand-in-hand with the competitiveness of the levelized costs of energy of renewables
- Development of a PPA “culture” requires merchant power price risk; many state support schemes are obstructive in this regard
- PPA offtaker act rationally – investors should be aware of the (possibly different) rationales in order to archive best results when negotiating a PPA
- The devil is in the details when it comes to commercial risk allocation (price risk)

Today's presenter

Ingmar Helmke

Investment Manager | Director
Energy & Infrastructure EMEA

Tel: +49 875050 - 235
Email: ingmar.helmke@aquila-capital.com

Offices

Aquila Capital

Germany

Hamburg (Headquarters)
Valentinskamp 70
20355 Hamburg
Tel.: +49 (0)40 87 50 50-100

info@aquila-capital.de
www.aquila-capital.de

Frankfurt
Neue Mainzer Straße 75
60311 Frankfurt/Main

Munich
Josephspitalstraße 15
80331 Munich

United Kingdom

London
17 Grosvenor Street
London W1K 4QG

Norway

Oslo
Sandakerveien 138
0484 Oslo

Czech Republic

Prague
Palladium
Náměstí Republiky 1
110 00 Prague 1

Singapore

Singapore
No 8 Eu Tong Sen Street
#19-89 The Central
Singapore 059818

Luxembourg

Senningerberg
Airport Center Luxembourg
5, Heienhaff
1736 Senningerberg

Spain

Madrid
Plaza de Colón, 2
Torre II - planta 7
28046 Madrid

Switzerland

Zurich
AQ Investment AG
Poststrasse 3
8001 Zurich