

# Dedicated focus on Renewables

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# Today's Focus

- **Delivering Vattenfall's Vision**
- **A major and expanding Wind player**
- **Developing the business**

# Delivering Vattenfall's Vision

- **Reducing Vattenfall's CO<sub>2</sub> exposure**
  - Biomass co-firing in hard coal plants is the most efficient way to reduce CO<sub>2</sub> emissions (assuming that subsidies are in place)
- **Focus on cost reduction**
  - Wind power remains on the early part of learning curve.
- **Maintain our competitive advantage**
  - Past experience from building and operating offshore wind farms

# Vattenfall wind power assets: 900 MW in seven countries and growing



## In Operation

<b>Onshore</b>	<b>530 MW</b>
<b>Offshore</b>	<b>370 MW</b>
<b>Production</b>	<b>2.2 TWh</b>

## In construction

7 wind farms in 6 countries will double our production to > 4 TWh by the end of 2011, e.g. Thanet and Ormonde in the UK.

## Under development

- UK Round 3. Developing East Anglia zone through JV cooperation with Iberdrola Renovables / ScottishPower Renewables
- Offshore project in Germany

# Organisation

## Renewables



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graph TD; Renewables[Renewables] --- Onshore[Onshore Wind Power Project]; Renewables --- Offshore[Offshore Wind Power Project]; Renewables --- WindGen[Wind Generation]; Renewables --- Biomass[Biomass];
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### Key Figures

- CAPEX 2011-15: SEK ~30 bn
- FTE: ~300

Onshore Wind  
Power Project

Offshore Wind  
Power Project

Wind Generation

Biomass

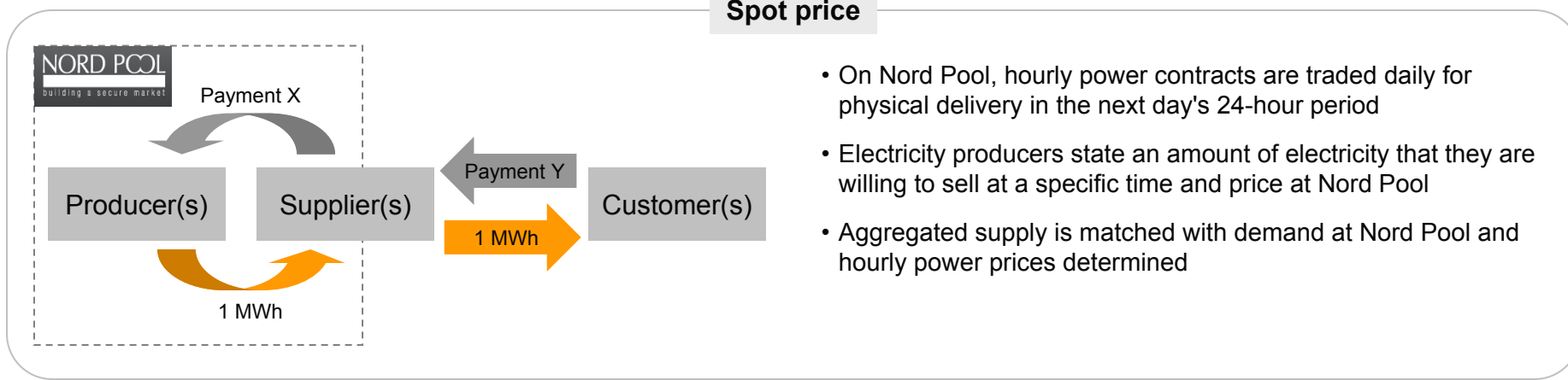
## Developing the new business

- **Upstream investments and sourcing projects**
  - Secure new volumes (not yet commodities) of bio-fuel through upstream investments and other sourcing projects
  
- **Developing low CO<sub>2</sub> high growth, emerging, renewable technologies**
  - Prioritised in the portfolio and effectively commercialised

# Appendix

# Overview of Swedish revenue structure

## Spot price



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## Certificate price

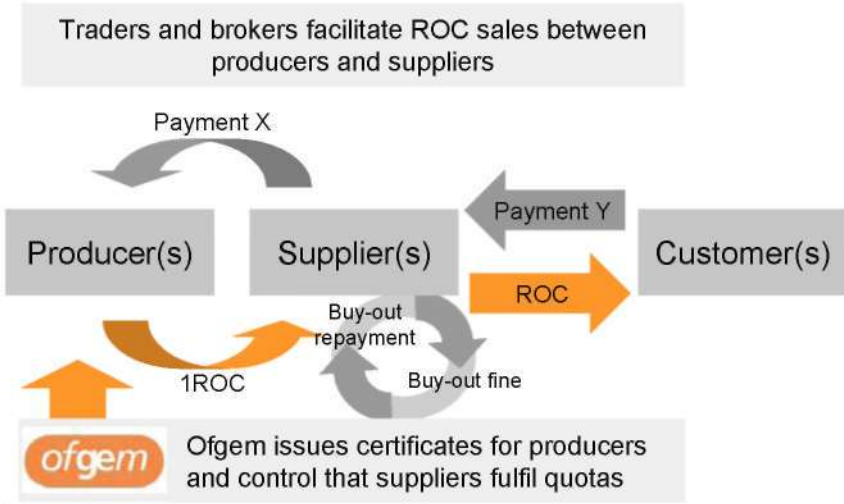
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# Overview of the UK support system on top of spot price

## Renewable Obligation Certificate (ROC)

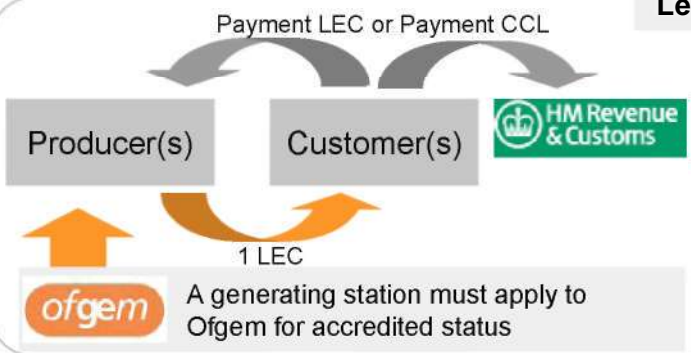


- The Renewables Obligation came into force in April 2002 and is intended to stay in place until 31 March 2027
- Suppliers selling electricity to final customers are obliged to source a proportion of their sales from renewable electricity
  - Current quota is 9.1% and will gradually rise to 15.4% by 2015
  - Supplier's obliged quota of ROC are presented to the regulatory authority Ofgem annually at March 31
- Suppliers must pay a "buy-out" fine for every MWh below the quota for which it does not have a ROC
  - This buy-out pot is distributed pro rata to all suppliers fulfilling their quota
- Offshore wind receives a grandfathered 2 ROC/MWh for projects starting up until 2014

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## Levy exemption certificates (LEC)

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- Non domestic end users<sup>1</sup> of energy are required to pay a Climate Change Levy (CCL) of energy purchased
- Electricity generated from renewable energy sources receive LECs that end users can purchase instead of paying the CCL
  - LECs are accredited monthly to generating stations for each MWh of renewable electricity generated

<sup>1</sup>All parts of the non-domestic sector (including business, agriculture, and the public sector)

# Overview of current Danish support system

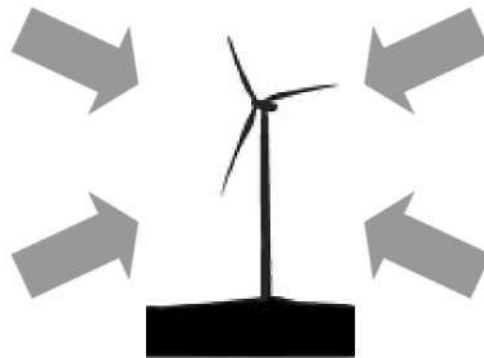
## Danish wind subsidies post January 1, 2005

### Spot price

- Electricity sold at Nordpool

### Scrap certificates

- Revenue awarded by Energistyrelsen to new wind farms replacing older wind farms
  - Replaced wind farm must have been decommissioned post Dec 14, 2005 with generation less than 450kWh p.a.
  - Scrap certificates awarded to wind farms becoming operational post Jan 1, 2005



Total revenues for Danish onshore wind

### VE-bevis

- Revenue awarded by Energistyrelsen

### Balanseringsydelse

- Revenue awarded by Energistyrelsen

## General comments Danish support system

- Danish subsidies to wind farms have varied significantly over time. Since 1999 the scheme has changed four times
- Previous support schemes offered same kind of subsidies at different rates and over different time periods
- Danish offshore rights awarded in tender auction processes where bidders state their revenue requirement
- Grid connection is free in Denmark (paid by TSO), which reduces the investment cost and can be seen as an implicit subsidy
- Minor additional revenues to onshore wind of 4 DKK/MWh stem from green fund

# Overview of German support system post 2009

## Onshore support scheme

- Wind support system based on a feed in system with fixed tariffs for 20 years
- Post 2009 initial remuneration of 9.2 cent/kWh (formerly 8.02 cent/kWh) for at least five years
  - Basic remuneration of 5.02 ct/kWh
- Annual reduction of initial remuneration by one percent (formerly two percent) from 2010
- For repowering projects, the initial remuneration will be increased by 0.5 cent/kWh
  - Turbines that are replaced need to be located in same administrative district and be at least ten years old
  - The new turbine needs to have at least twice, but no more than 5 times the original capacity



Total revenues for German wind

## Offshore support scheme

- Wind support system based on a feed in system with fixed tariffs for 20 years
- Post 2009 initial remuneration for offshore wind turbines is set at 15 cent/kWh until 2015
  - Basic remuneration of 3.5 ct/kWh
  - Early bird bonus of 2 cent/kWh if operational before December 31, 2015
- After 2015 remuneration of 13 cent/kWh for new turbines, decreasing by five percent per year
- Initial remuneration for 12 years plus additional prolongation of initial tariff for deeper waters and longer distance from coast, i.e. feed in tariff for offshore wind depending on location of wind farm

## General comments German support system

- The feed-in tariffs aims at increasing the share of renewable energy electricity from currently 13% to 30% in the year 2020
- Tariffs are adjusted at regular intervals to market developments
- The tariff paid is basically dependent on the technology used, the year the installation was put into operation and the size of the plant
- Each grid system operator is obliged to pay the statutory tariff to the plant operator
- The EEG guarantees the plant operators fixed tariffs for electricity fed into the grid for a period of 20 years – plus the year it was taken into operation