Asset Optimisation and Trading

Stefan Dohler
Head of Asset Optimisation and Trading

Solna/Stockholm, 2 December 2013

Central AOT allows for clear and significant value creation

Benefits of integrated AOT organisation

- Allow for value creation synergies (e.g. hedging)
- Competitive advantage in trading and portfolio management through knowledge sharing in integrated commodity markets
- Effective risk control
  - Risk Management will also remain a central function in the new organisation

Trading volume 2012 (external)

Electricity (TWh)	1,930
CO2 (EUA and CER), mt	720
Gas (TWh)	1,450
Coal (Swaps and FFA), mt	65
Number of counterparts	~600
Transactions per day	>1,200

Asset Optimisation and Trading

Asset Optimisation

- Maximise the value of Vattenfall assets in the day-to-day operations up to ~1 month

Portfolio Management

- Manage assets to maximise value and develop and execute hedge strategy
- Support Group on investments / divestments decisions

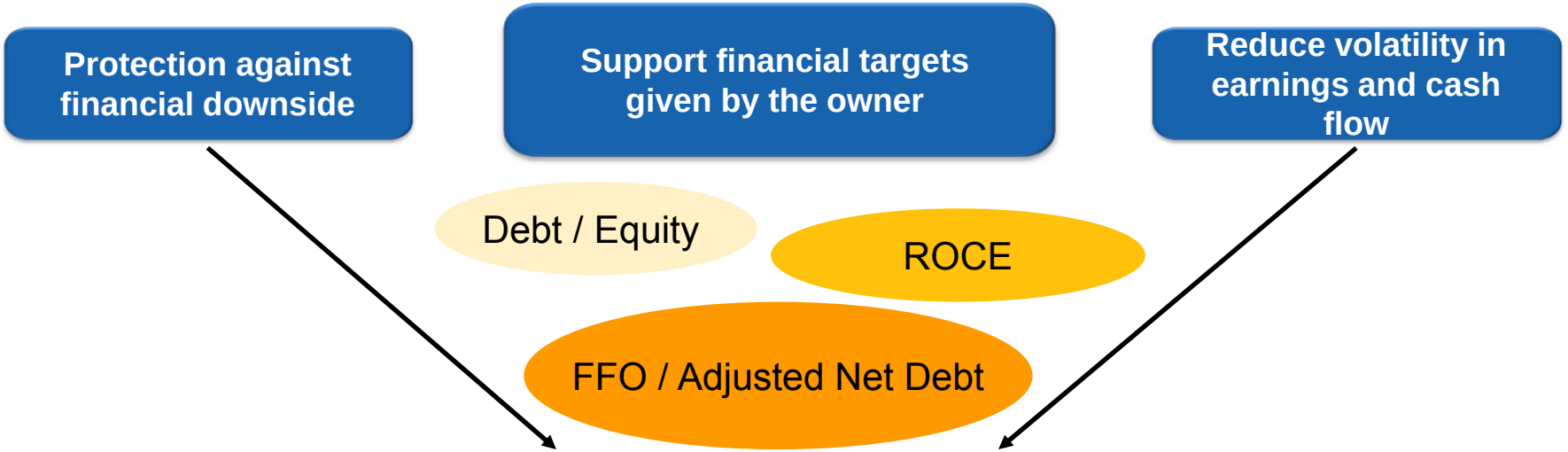
Trading

- Market access for Vattenfall Group
- Execution of Vattenfall flows and proprietary trading
- Sourcing for hard & liquid fuel

Operations

- Develop IT systems, models for optimisation, pricing, risk management and price forecasting
- Projects for implementation of new products and processes

The hedge strategy supports Vattenfall's financial targets



- Relevant key indicators are monitored and deliver the basis for the hedge strategy
- Hedging focuses on Funds from Operations (FFO)
- The hedge strategy is optimised on Group level, safeguarding an adequate allocation to business regions

Minimum profit / cash flow required

Assess risks of potential various hedge strategies

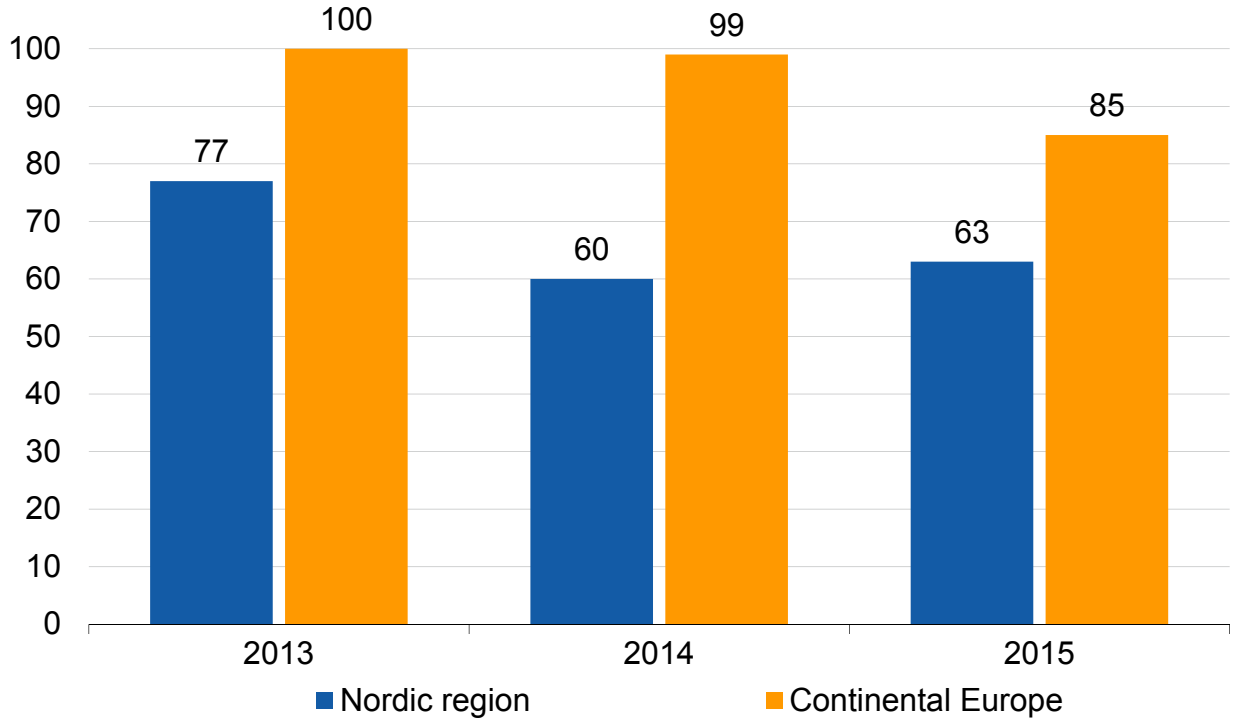
Define risk preference and derive a fitting hedge strategy

Feedback loop

VATTENFALL

Vattenfall´s hedging position*

Percentage hedged of planned electricity generation (2013: remaining part of the year)*



EUR/MWh	2013	2014	2015
Nordic region	45	42	40
Continental Europe	55	50	45

* as of 30 Sep, 2013

VATTENFALL

Financial regulation could lead to less possibilities to hedge our portfolio efficiently

1 Drivers of change

- In response to the financial crises in 2008, regulators have pushed for tighter regulatory control over financial markets
- Regulators increasingly call for financial market rules to be extended to the energy sector as well

2 Policy objectives

- Increased transparency
- Improved market integrity and oversight
- Reduced systemic and operational risks

G20 Leaders' statement, the Pittsburgh Summit – 2009

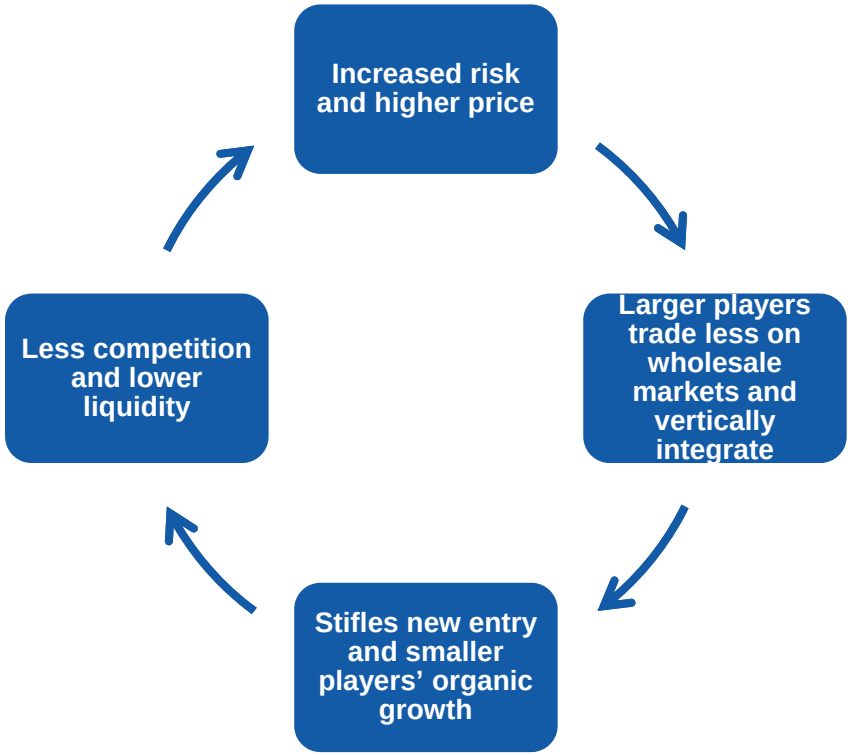
"All standardized OTC derivatives contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest."

3 Regulatory outcome

- EMIR: Over-the counter derivatives regulation (implementation from 2013 until 2019)
- MiFID II: Revision of financial markets regulatory regime (expected soon)
- REMIT: Market integrity in EU gas & power markets
- Other: (Capital Requirements Directive IV, Market Abuse Directive, Financial Transaction Tax)

What is the impact of increased regulation on the market?

Higher risks lead to higher costs triggering a liquidity spiral that could lead to higher prices for market players and end-consumers



VATTENFALL

Vattenfall supports transparency and proportionate regulation

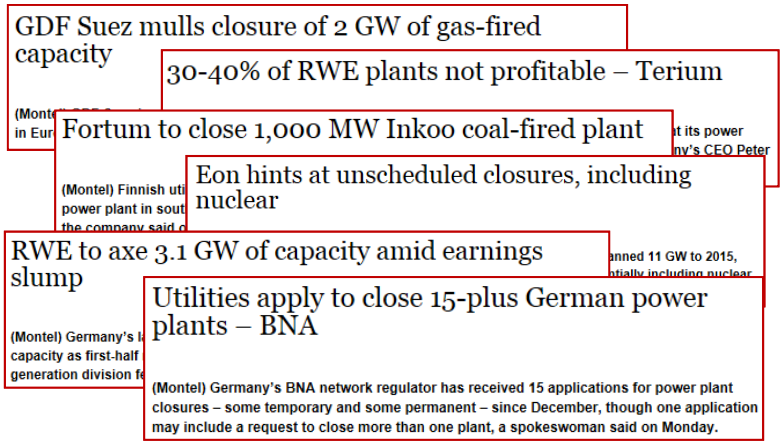
- Vattenfall supports transparency in commodity markets and recognises the need to implement a strong regulatory framework for banks and other financial institutions.

- Vattenfall primarily trades in physical products (gas, power, CO2) to hedge the commercial risk of its portfolio. In terms of risk, Vattenfall's trading activities are very limited compared to its main business.

- Mandatory clearing, arising from financial regulations such as EMIR and MiFID II, can be costly and would lead to less room for investments (e.g. in renewables and infrastructure), less possibilities to hedge our portfolio efficiently and less market liquidity.

- Physical traded products which are indented to be settled physically do not have the same features as financial instruments and should not be treated in the same way.

Headlines about plant closures dominated the news lately



15-20 GW are under pressure in Germany, 10-15 GW in France & Benelux as well as 10-15 GW in UK

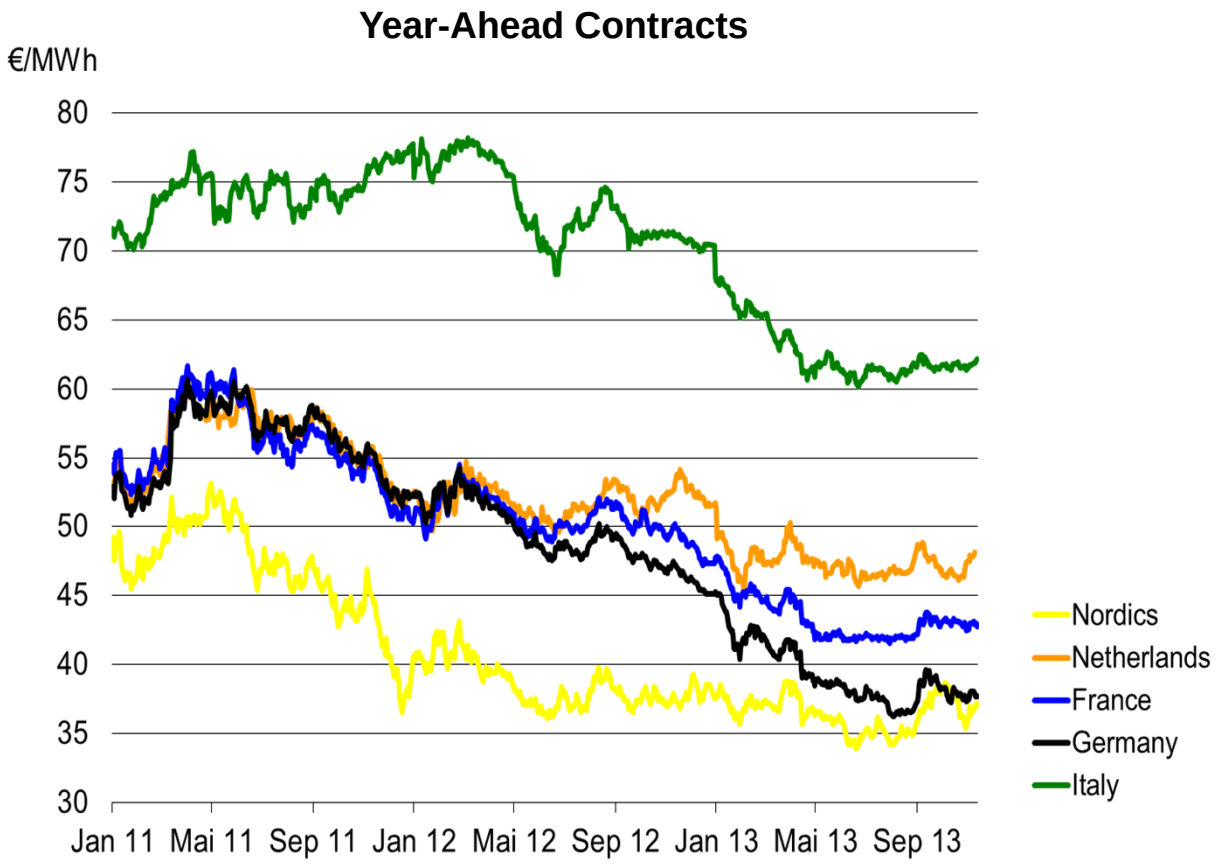
Source: Montel, Vattenfall

Owner	Typ	Plant	MW	Fuel		Date
RWE	Decom.	Amer 8	610	Coal	NL	Q1 2016
	Long-Term Moth-balling	Moerdijk	430	Gas	NL	Q4 2013
		Gersteinwerk F+G	710	Gas	DE	Summer 13
		Weisweiler H+G	540	Gas	DE	Q2 2014
		2 small plants	85	Gas	NL	Q1 2013
	Moth-balling	Emsland B+C	720	Gas	DE	Q2 2014
	special	Confidential	1.170	Coal	DE	Q4 2013-14
	Under review	Westfalen C, Frimmersdorf P+Q, Goldenbergwerk	900	Coal / Lignite	DE	
EnBW	Decom.	Marbach GT	77	Oil	DE	asap
		Marbach Combi	347	Oil	DE	
		Walheim 1+2	270	Coal	DE	
E.ON	Decom.	Kiel	161	Coal	DE	Q4 2015
	Reserve	Irschingen 3 / Staudinger 4	1037	Gas/ Coal	DE	2012 - 2016
Hannover SW	Decom.	Herrenhausen			DE	2016

Examples

VATTENFALL

Power markets lost quite some ground across Europe



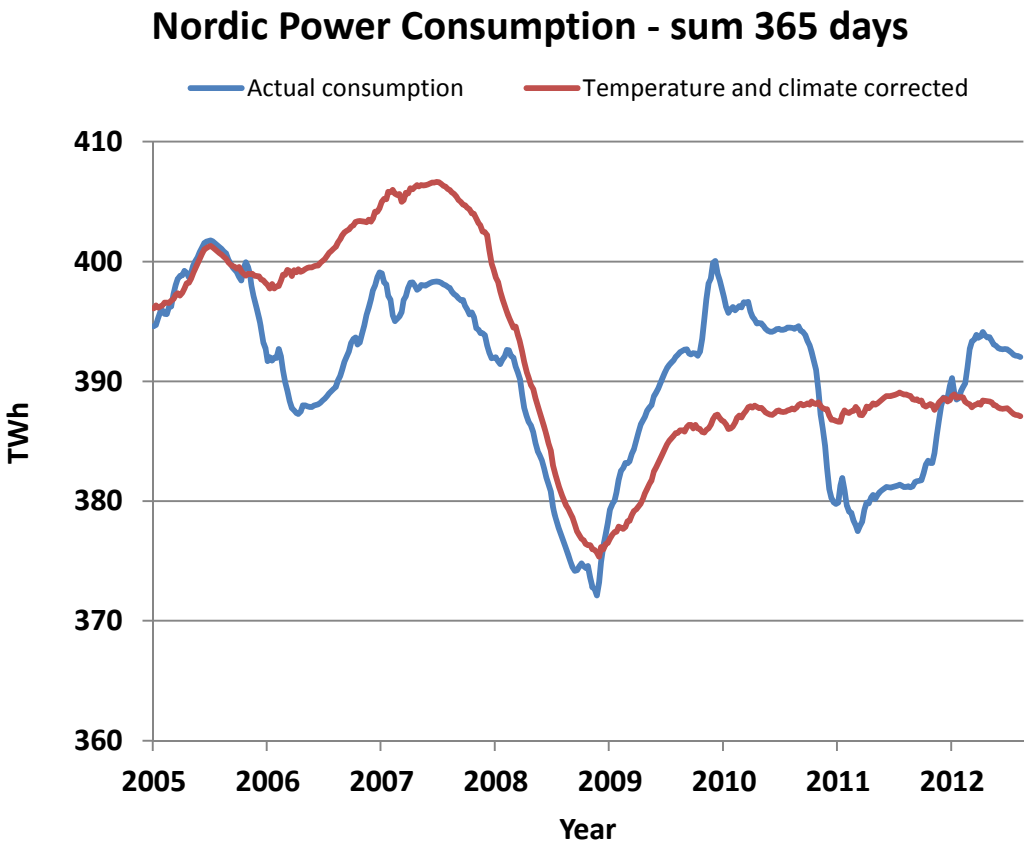
Base power prices

- All prices pulled down by falling coal & CO2 prices, while in Germany the dash for renewables supported the trend
- Due to the different fuel price developments, the spread between the gas-dominated Dutch market and Germany increased significantly despite an increasing market integration in Europe
- The hydro balance is important for the spread between Central Western Europe & Nordics

Source: Endex, EEX, PNX, GME

VATTENFALL

Nordic demand – weaker as it looks on first sight

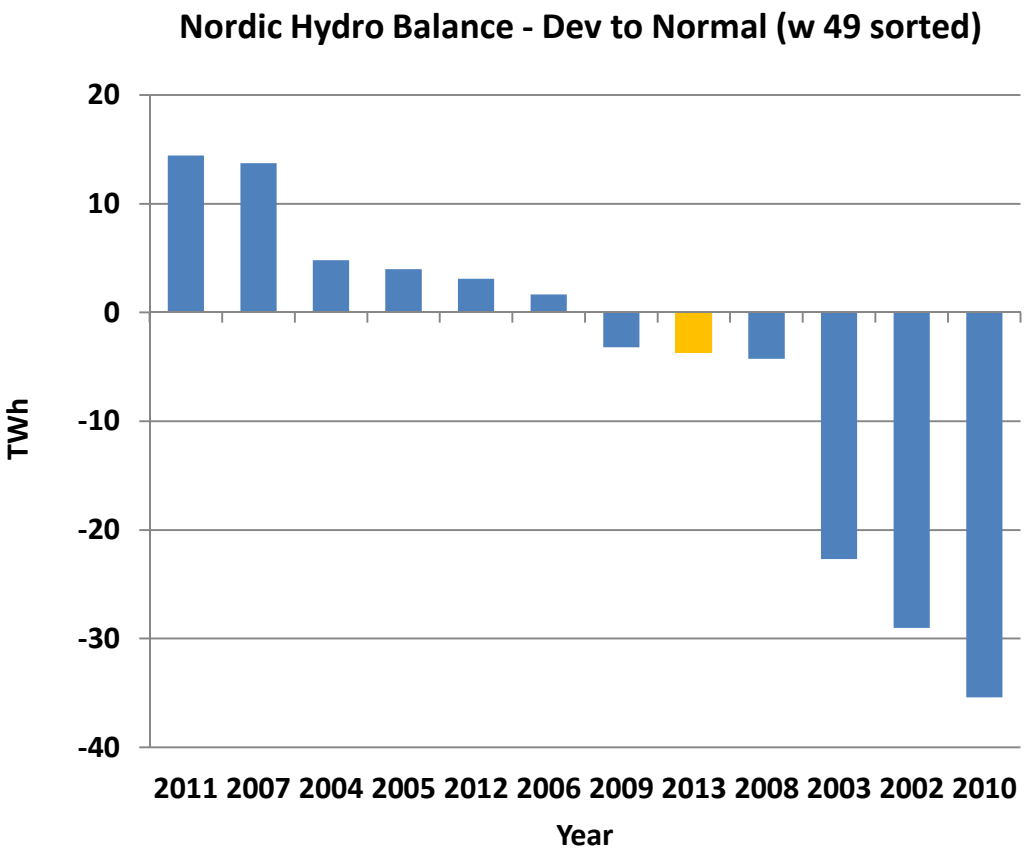


- The annual Nordic consumption reached 400 TWh years ago
- Consumption dropped in 2009, but seems to have recovered
- However, a more dramatic drop is seen on temperature and climate corrected consumption

Source: ENTSO-E, Vattenfall

VATTENFALL

Hydro balance – quick improvement towards normal



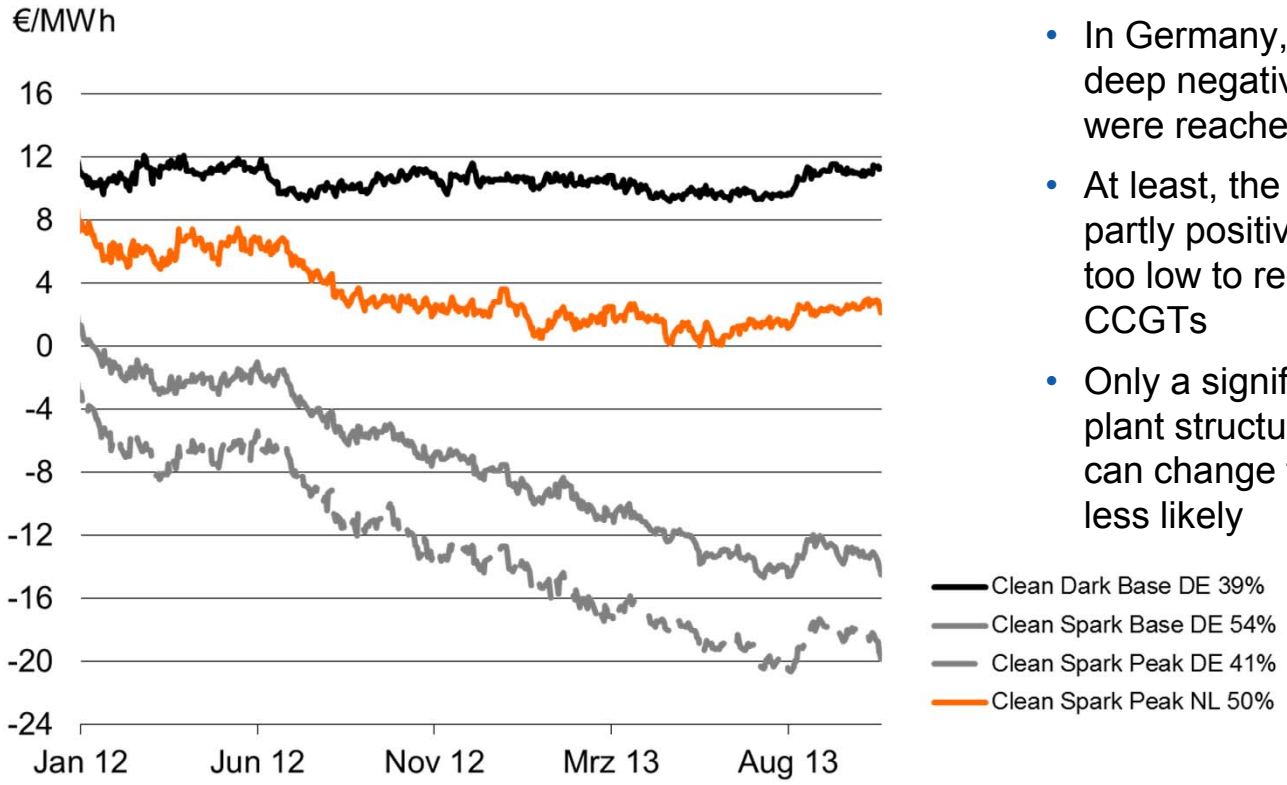
- The hydro balance deteriorated during last winter due to cold and dry weather
- Rainy weather since mid-October has improved the hydrological balance significantly
- All in all, the hydro balance is now close to normal with a slight deficit in hydro reservoirs and a surplus in snow stack

Source: Vattenfall

VATTENFALL

Coal in Germany and gas plants in the Netherlands in a relatively good position

Cal14 DE & NL Spreads



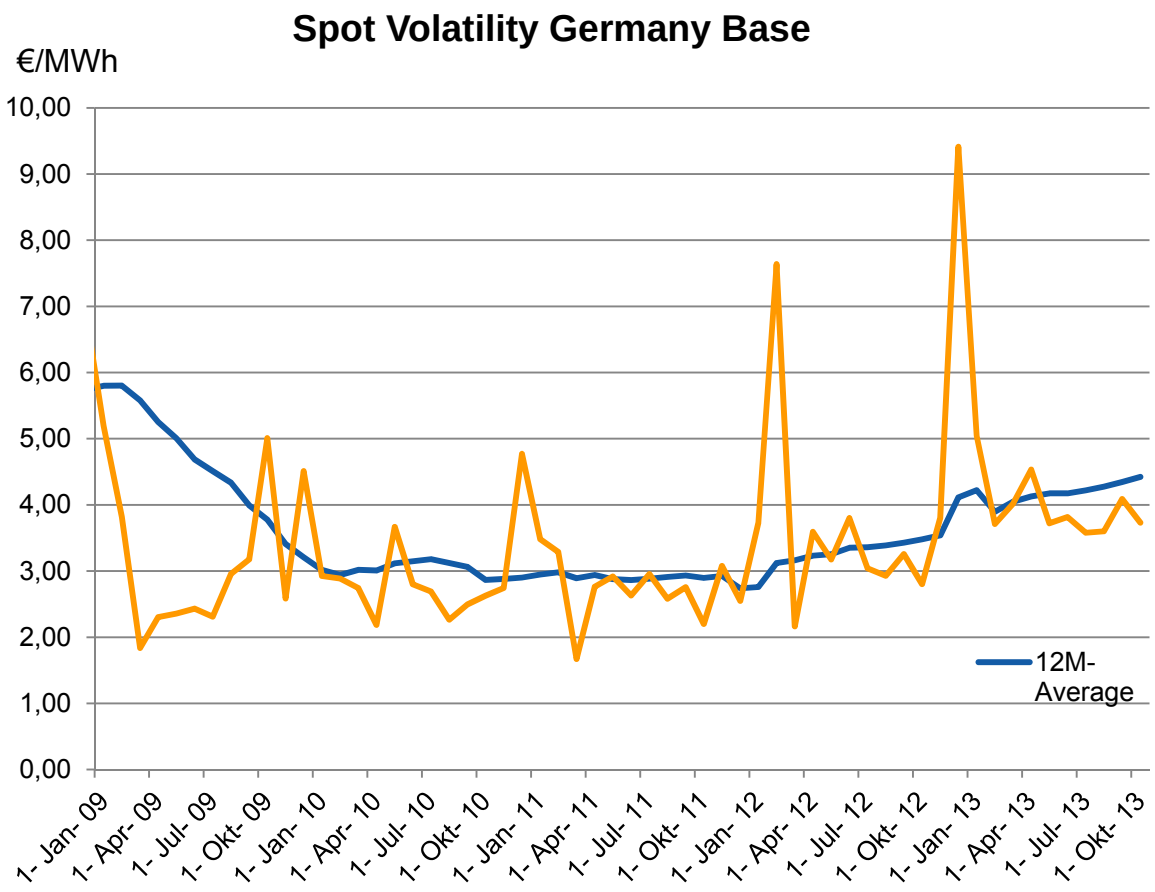
Clean Dark/Spark Spreads (CDS/CSS)

- In Germany, nearly all the CSS are in deep negative territory – record lows were reached end of August 2013
- At least, the CSS in the Netherlands are partly positive but the level is clearly far too low to recover investments into CCGTs
- Only a significant change in the power plant structure or in commodity prices can change the picture, whereas latter is less likely

Source: ENTSO-E, Vattenfall

VATTENFALL

Increasing share of renewables brings short-term volatility



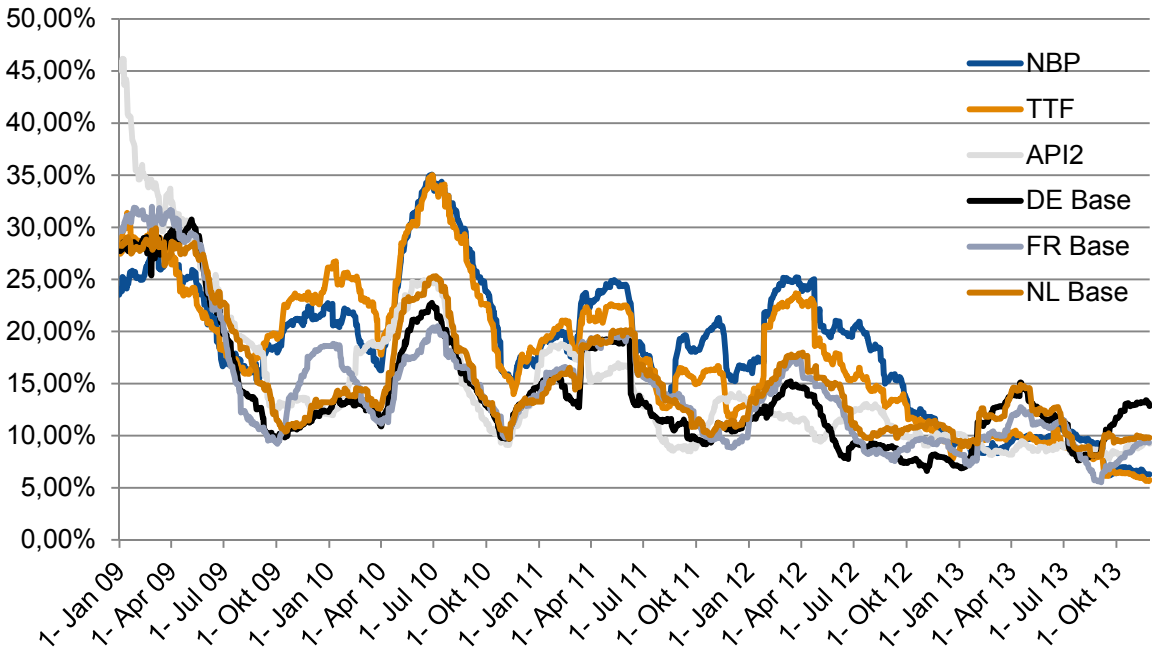
- Until late 2011, the system was stabilised
- From the beginning of 2012, rocketing installed capacity of renewables has led to a steeper merit order curve
  - In times of high renewable production, spot prices are very low while in times of low renewable production, prices can be quite high
  - Those price changes that occur overnight trigger high volatility.

Source: Vattenfall

VATTENFALL

Low volatility trend across all products and markets (long-term)

60-day volatility rolling front season (NBP & TTF) / calendar year (API2, DE, FR, NL)



- Volatility in long-term markets has stabilised on a low level
- Steep decrease in coal and gas below 10%
- Volatility is higher during winter times when the energy system is tight
- “Political shocks” can occur anytime and lead to increased volatility

Source: Vattenfall

VATTENFALL

Conclusions

- Uncertainties from many perspectives – i.e. political, regulatory and prices on the energy wholesale markets – are here to stay. Thus, power markets will continue to be volatile especially on the near horizon.

- Looking years and decades ahead, it is unlikely that we will only see one trend or direction in the different markets. In this context, history will repeat and an active and professional position management of the financial exposure will be key for the sustainable success of Vattenfall.

- With a very balanced and robust asset portfolio – with respect to all kind of market moves – Vattenfall is in a pretty good starting position to tackle the future challenges of the energy market in Europe given by the three main pillars of European Energy Policy: Sustainability, Security of Supply and Competitiveness.