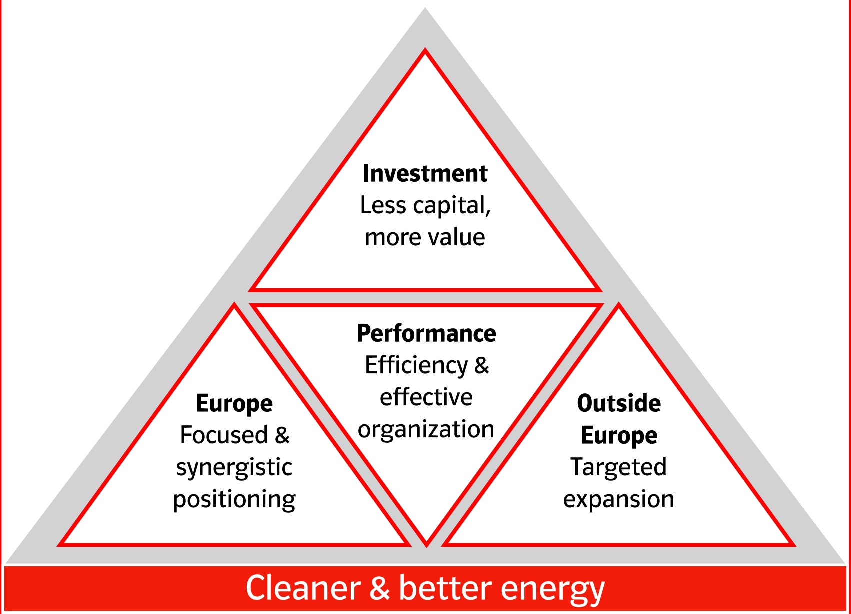
E.ON – Cleaner & better energy

Energy Trading

E.ON strategy



From	To
Integrated across value chain	Focus on competitive businesses
Eurocentric	Targeted expansion outside Europe
Selective efficiency programs	Sustainable performance culture
Capital intensive	Competence-based

Transform European utility into global, specialized energy solutions provider

E.ON Group strategic priorities

Challenging markets

Political interventions

Performance

- → Intensify cost & quality management
- → Simplify structures
- → Execute portfolio measures
- → Create balance sheet flexibility

Europe:
System transformation

Outside Europe:
Growth & new technologies

Growth

- → Capture growth in renewables & decentralized energies
- → Exploit opportunities in new markets

Markets require intensified self-help measures

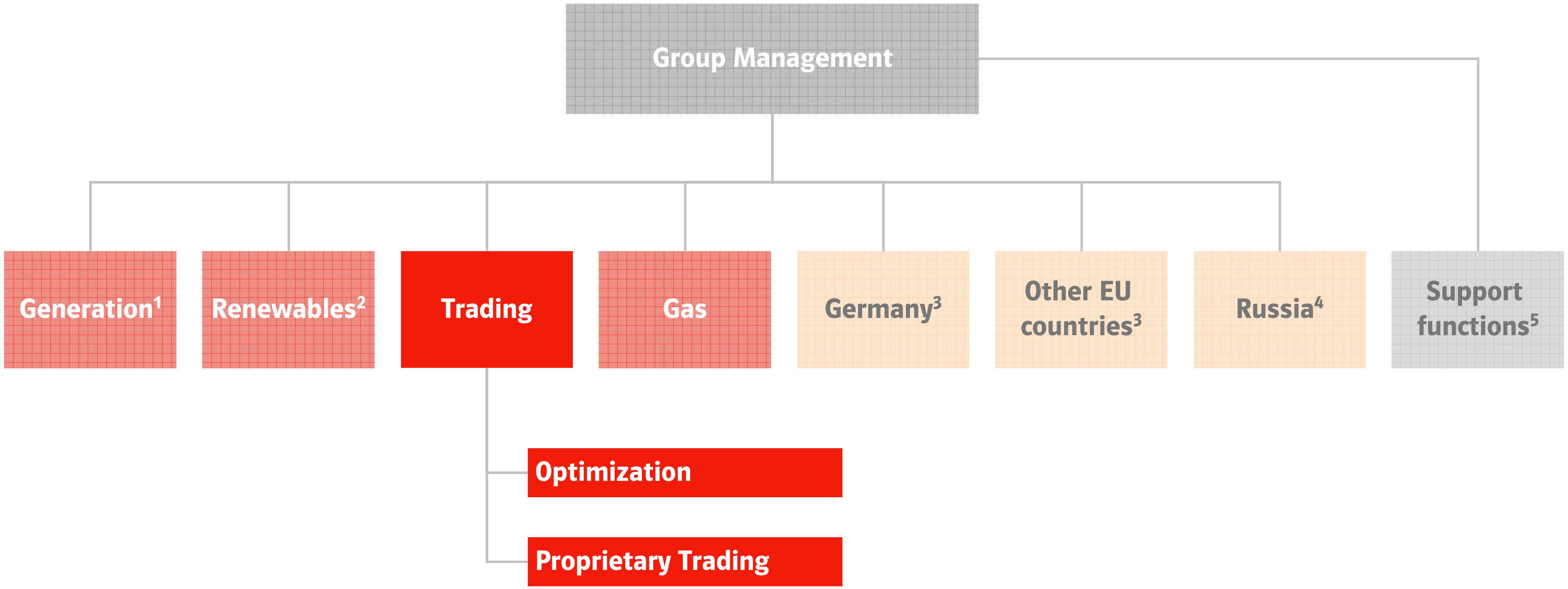
E.ON Group key financial targets

		New	Old
Results	**2011E**[1] **Adjusted EBITDA** (€bn):	9.1 – 9.3	9-1 - 9.8
	Adjusted EPS (€/share):	1.2 – 1.3	1.1 - 1.4
	2013E **Adjusted EBITDA** (€bn):	11.6 – 12.3[2]	>13[4]
	Adjusted EPS (€/share):	1.7 – 2.0[2]	~2.4[4]
	2015E **Adjusted EBITDA** (€bn):	12.5 - 13.0[3]	
	Adjusted EPS (€/share):	2.0 – 2.3[3]	
Dividends	**Dividend payout policy** (% adj. net income):	50 - 60	50 - 60
	2011 (€/share):	1.0	≥1.3
	2012 (€/share):	1.1	≥1.3
	2013 (€/share):	≥1.1	
Other	**Medium-term debt factor**	<3x	≤3x
	Investments 2011-13 (€bn):	~19	19
	Total disposals until 2013 (€bn):	~15	~15
	Rating target	Solid single A	Solid single A

Transparent financial targets for coming years
Assumed 2015 debt factor allows ~€6bn of additional growth CAPEX

1. 2011 post €0.5bn effect of achieved disposals (€9.1bn) 2. 2013 Post €0.9bn effect of achieved disposals (€9.1bn) 3. 2015 Post ~€1.7bn effect of total disposals effect (€~15bn) 4. Pre disposals

Trading within E.ON group structure



Leaner and more market oriented organization

1. Incl. EBITDA of all conventional generation (previously in Market Units) 2. Incl. hydro 3. Distribution and sales; gas sales included in Germany 4. Special focus country 5. IT, Procurement, Insurance, Consulting, Business Processes, these are not reported separately externally 6. "Outside Europe" to be reported separately after having reached the necessary size

Trading – Business strategy

Optimize commodities exposure and support business

Market environment

- Increasing scope and scale of integration of power markets across EU (e.g. market coupling between Nordic and CWE in November 2010)
- Increasing gas-to-gas competition in Europe
- Key commodities as well as LNG and CO2 traded on global markets

Strategic priorities

- Cross-regional and cross-commodity synergies: monetize value of flexibility in power plants, supply contracts, gas storage
- Seek new opportunities in cross-border activities (e.g. intra-day)
- Global commodity trading (e.g. coal & freight) backed by European portfolio
- Origination activities to earn higher margins on non-standard, non-commodity specific, longer term products

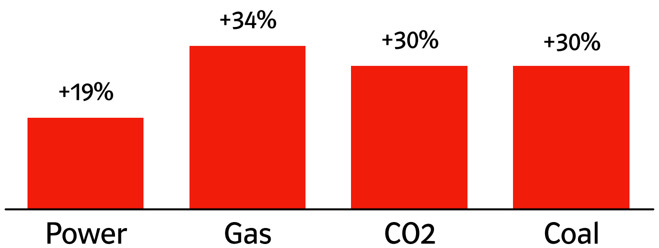
Leading energy trader

Trading – Sustainable value contribution

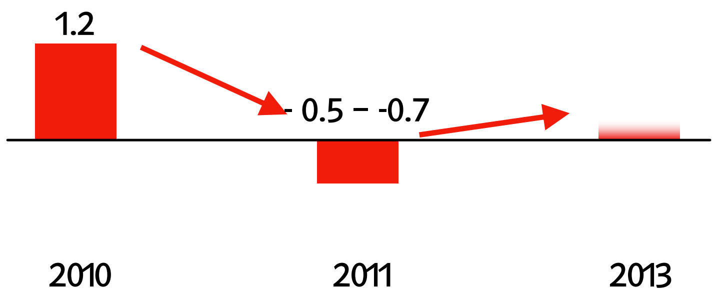
Leading energy trader

- One of the biggest and most diversified underlying power & gas asset positions
- Market access throughout Europe to capture synergies (e.g. reduction of credit risk)
- Global scope of trading to cover majority of E.ON's commodity risk position
- Strong support of European liberalization agenda (e.g. engagement for market coupling)

Year on year increase in Trading's volumes (2010 vs. 2009)



Adjusted EBITDA (€ bn)



2011

- Optimization result is negatively impacted by swing in internal transfer spread
- Extrinsic value suffering from reduced volatility
- Prop trading expected to improve compared to weak 2010

2012-2013

- Less distorted optimization result

Distorting effect of transfer prices to normalize by 2013

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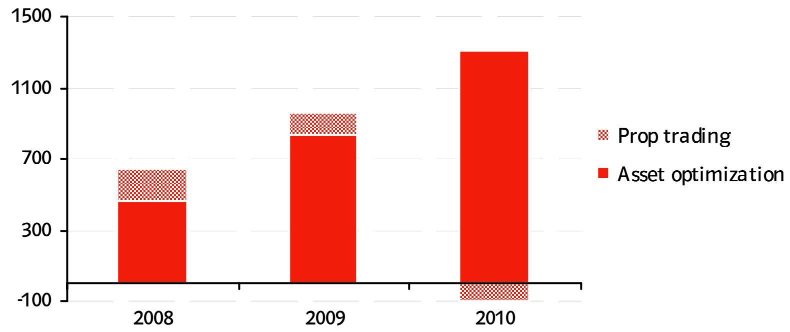
Discussion Material

Trading - E.ON's optimization and prop. trading function

- Conventional Generation
- Renewables Generation
- Global Gas
- E.ON Energy Trading
- Germany
- Other EU countries
- Russia

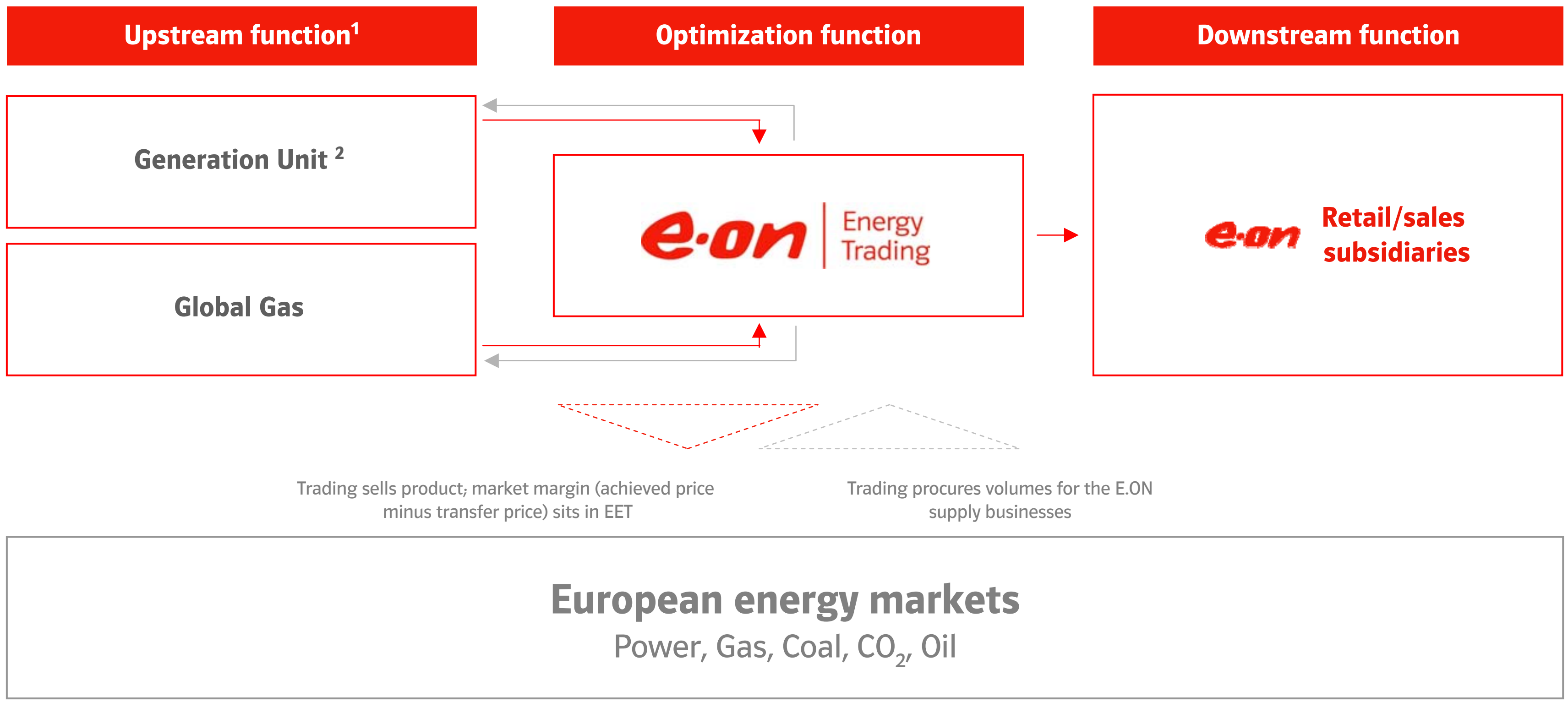
- **Cross-regional optimization**
  Single integrated view on all markets & physical assets
- **Cross-commodity optimization**
  Ability to realize benefits of correlation between commodities
- **Risk management**
  Integrated portfolio view and consistent risk/hedging strategy
- **Proprietary trading**
  Asset knowledge and understanding of market fundamentals

Adj. EBITDA development, 2008-2010 (€ m)



Integration of trading expertise delivers additional value

Trading is E.ON's centralized interface to the energy markets…



Power/gas volumes (own & procured)   Transfer price, fuel price and volumes

… backed by a strong portfolio of assets

1. In case of Global Gas gas volumes = upstream + procured   2.. Conventional Generation and Renewables Generation

Trading creates value for E.ON

Value creation at E.ON Trading

Prop trading

Optimization

- Arbitrage
  - Cross regional/border
  - Cross commodity
- Timing decisions

Risk management

- Cash flow risk
- Commodity risk
- Counterparty risk

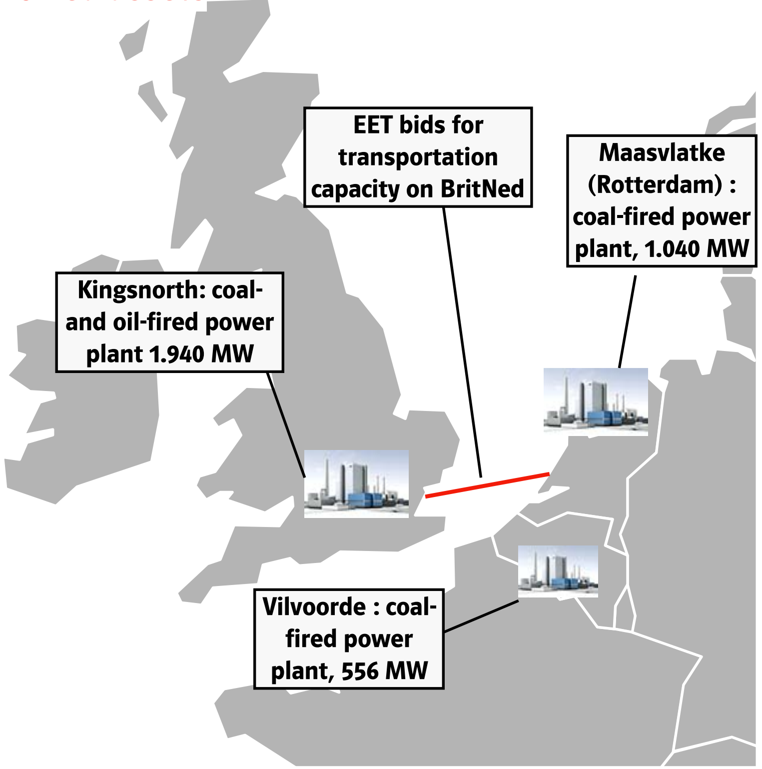
→ Hedging

Bulk of the value created at E.ON Trading comes from its risk management function and its (mainly) asset backed optimization function

Cross-regional optimization

Illustration via interconnectors

Involved assets



Optimization: use of balancing markets

Prerequisite

- Access to transportation capacity, e.g. BritNed

Idea

- Use of interconnectors (e.g. BritNed) to assist optimization and balancing of portfolios both for E.ON UK and E.ON Benelux
- Balancing power can be used to cover under- or over-supply situations in UK as well as in Benelux

Value points

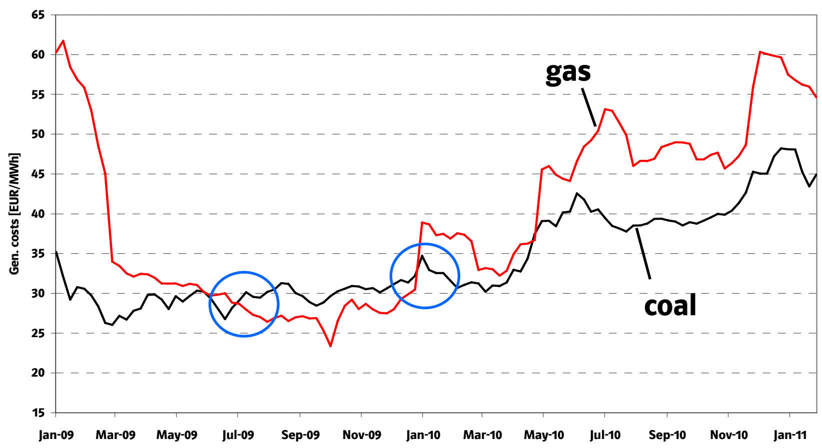
- Cross-regional arbitrage
- Reduction of penalty costs for system imbalance

Reaping the value of a broad asset base via cross-regional arbitrage

Cross-commodity optimization

Arbitrage via gas-to-power optimization

Generation costs in Germany – gas vs. coal



Gas-to-power optimization

Prerequisite

- Portfolio of gas- and coal-fired power plants
- Plan to generate with a gas-fired plant
- Gas volumes from a supply contract or market

Idea

- Coal becomes cheaper fuel to generate power in that period
- Decision: Sell the gas at a higher price and produce power with a coal-fired plant instead

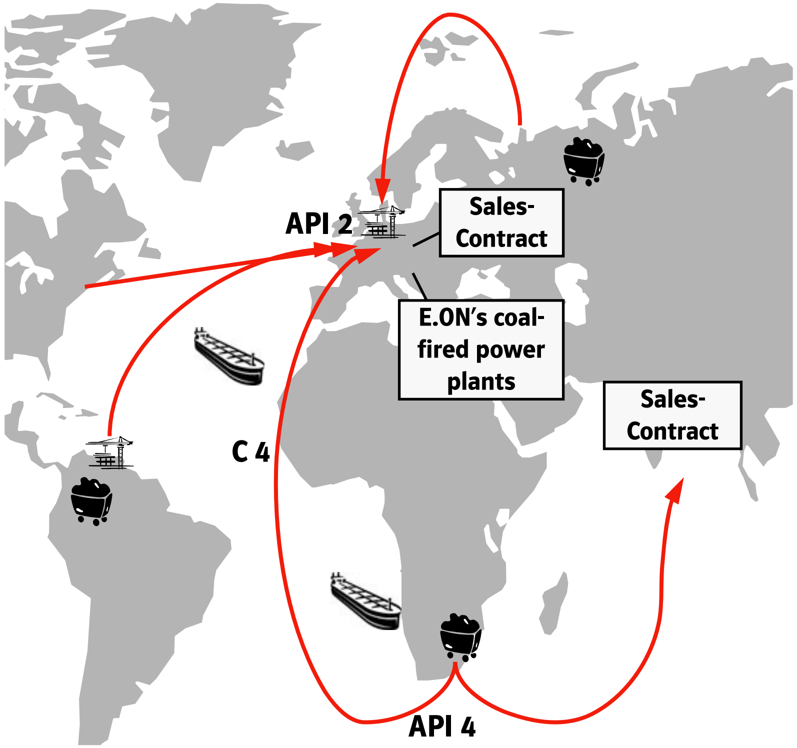
Value points

- Margin from selling the gas
- Margin producing power with cheaper fuel (coal)

Reaping the value of a broad asset base via cross-commodity arbitrage

Cross-commodity and cross-regional optimization

Global coal arbitrage



Prerequisite

- Combines supply opportunities in Columbia/South Africa with demand in Europe/ India
- Time charters offer shipment-flexibility to EET (leading to reduced transportation cost)

Idea

- Increase of dark spread or sales margin because of potential lower costs of coal supply, based on multi-sourcing strategy
- Arbitrage between API4, C4, API2:
  - e.g. buy API4 + C4, sell API2
  - buy API2, sell API4 + C4

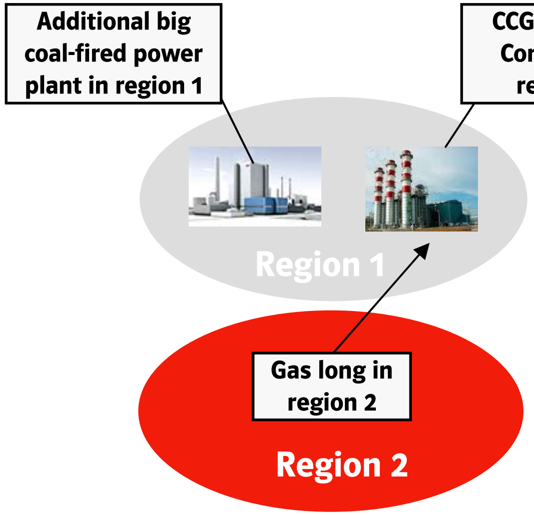
Value points

- Improve dark spread by sourcing cheaper coal
- Cost reduction through time-charter optimization

Leverage our large underlying demand to profit from global arbitrage opportunities

Cross-commodity & cross-regional optimization

Enabling arbitrage via origination



Definition of origination

- Physical or financial commodity transactions of a "non standard nature" - due to their scale, tenor or structure
- Transactions are of a longer term than traded curves, linked to physical assets or provide new optimization opportunities to the portfolio

Prerequisite

- Additional coal-fired power plant in region 1
  → the company's asset portfolio in that region will be dominated by coal-fired units

Idea

- By entering a CCGT tolling agreement the fuel mix for region 1 can be enhanced
- Additionally the company's long exposure to gas in region 2 is reduced by delivering volumes to the counterparty in region 1
- Generation portfolio improves without CAPEX

Value points

- Spark spread of the tolling agreement
- Portfolio-optimization value

Enhance portfolio value with origination structures instead of outright asset ownership

Hedging rationale

Ensure more stable earnings	• Hedging outright power risk strongly reduces y-o-y volatility in cash flows
Increase planning certainty	• Cash flow visibility needed to support capex planning
Reduce cost of capital	• For a given leverage hedging reduces the cost of capital

Trading's function as a risk manager is value enhancing

Hedging at E.ON is a key tool for risk management…

Hedging nuclear & hydro plants

- Characterized by high **intrinsic** value and high value at risk (unhedged)
- High intrinsic value is function of low variable cost of assets
- Value captured and risk managed by hedging on forward markets depending on price view and risk appetite

Hedging flexible plants

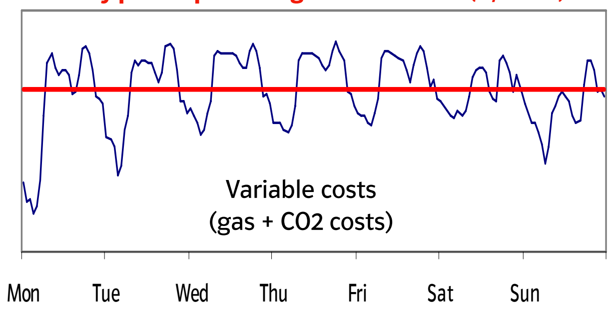
- Characterized by relatively high share of **extrinsic** value
- Power plants represent real options. In case of flexible units (gas, coal) optionality has a real value → extrinsic value
- Dynamic hedging strategies to capture intrinsic as well as extrinsic value

. . . but also for value creation

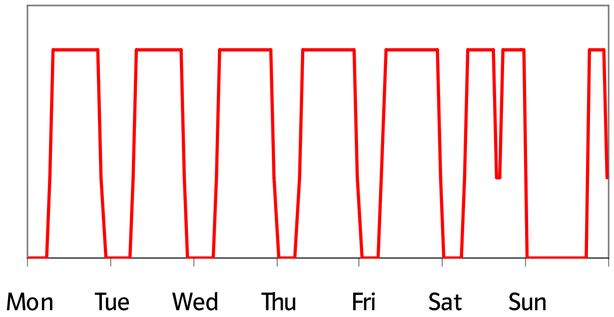
Dispatch optionality - key characteristic of flexible plants

A gas-fired unit

Hourly power price vs. generation cost (€/MWh)

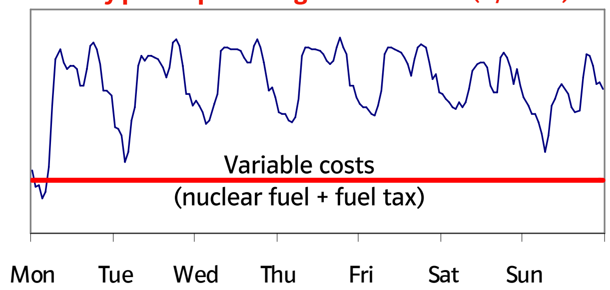


Planned hourly output (MW)

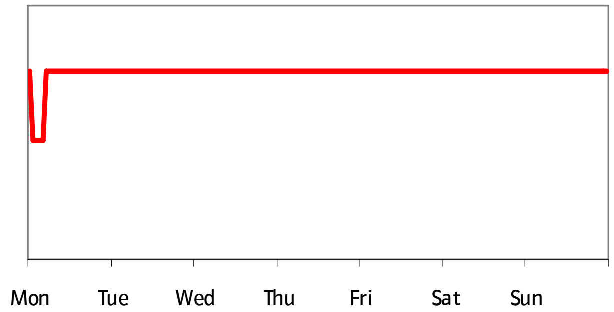


A nuclear unit

Hourly power price vs. generation cost (€/MWh)



Planned hourly output (MW)

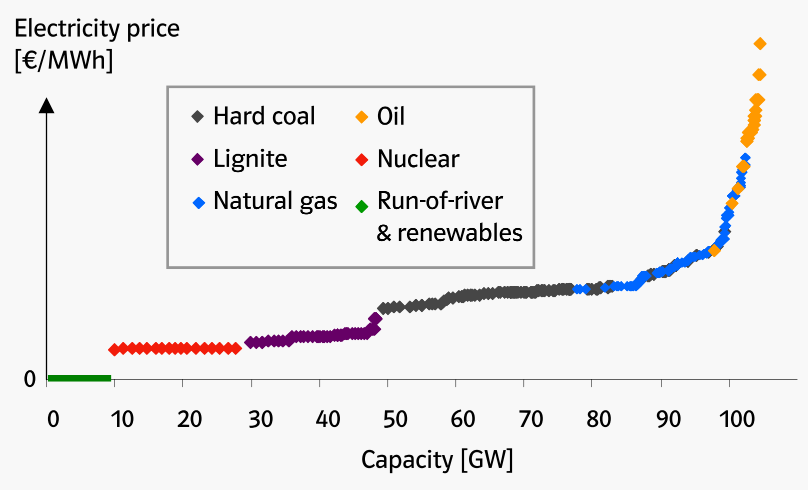


A power plant should run as long as the profit margin against variable costs is positive

Power plants are real options

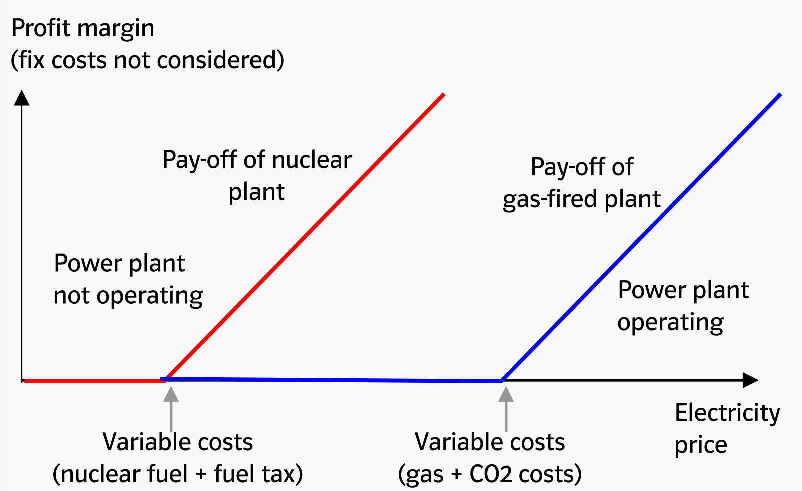
Merit order of German power plants

(Order of power plants on the basis of variable costs)



- On the electricity market, the price is set hourly driven by the variable costs of the marginal power plant [i.e. the last plant required to meet demand]

Pay-off of a power plant for a single hour



- A power plant runs and earns a positive profit margin if the power price is above its variable costs

Power plants can be considered as European call options

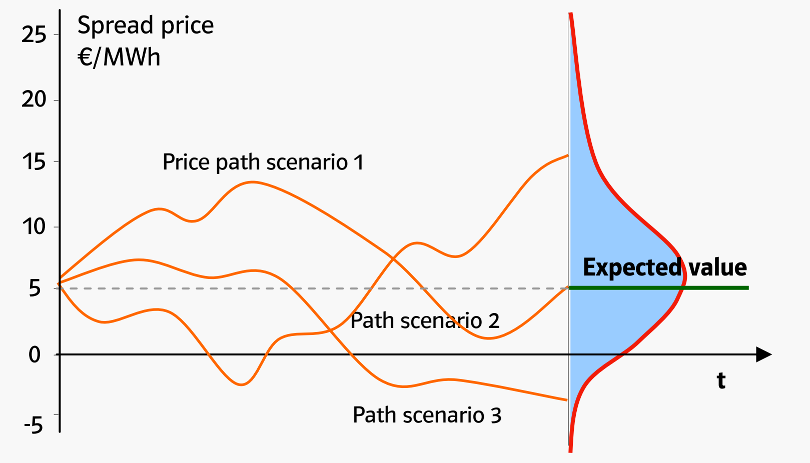
Sources of value creation

Optimization

Risk management

Additional value is inherent in flexible power plants

Price distribution

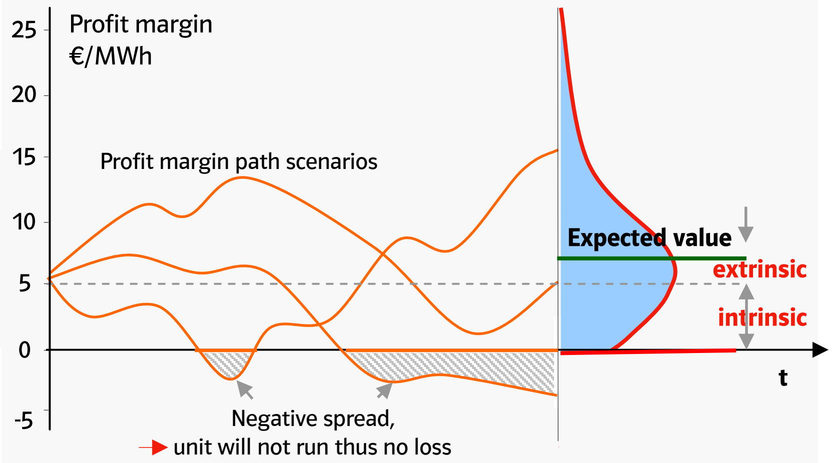


Today (forward market)
Spread forward price 5€

At maturity (delivery)
expected spread price 5€
(without market view)

- Intrinsic value is equal to the actual value of selling the underlying as forwards

Profit margin distribution



Today (forward market)
Intrinsic value is 5€

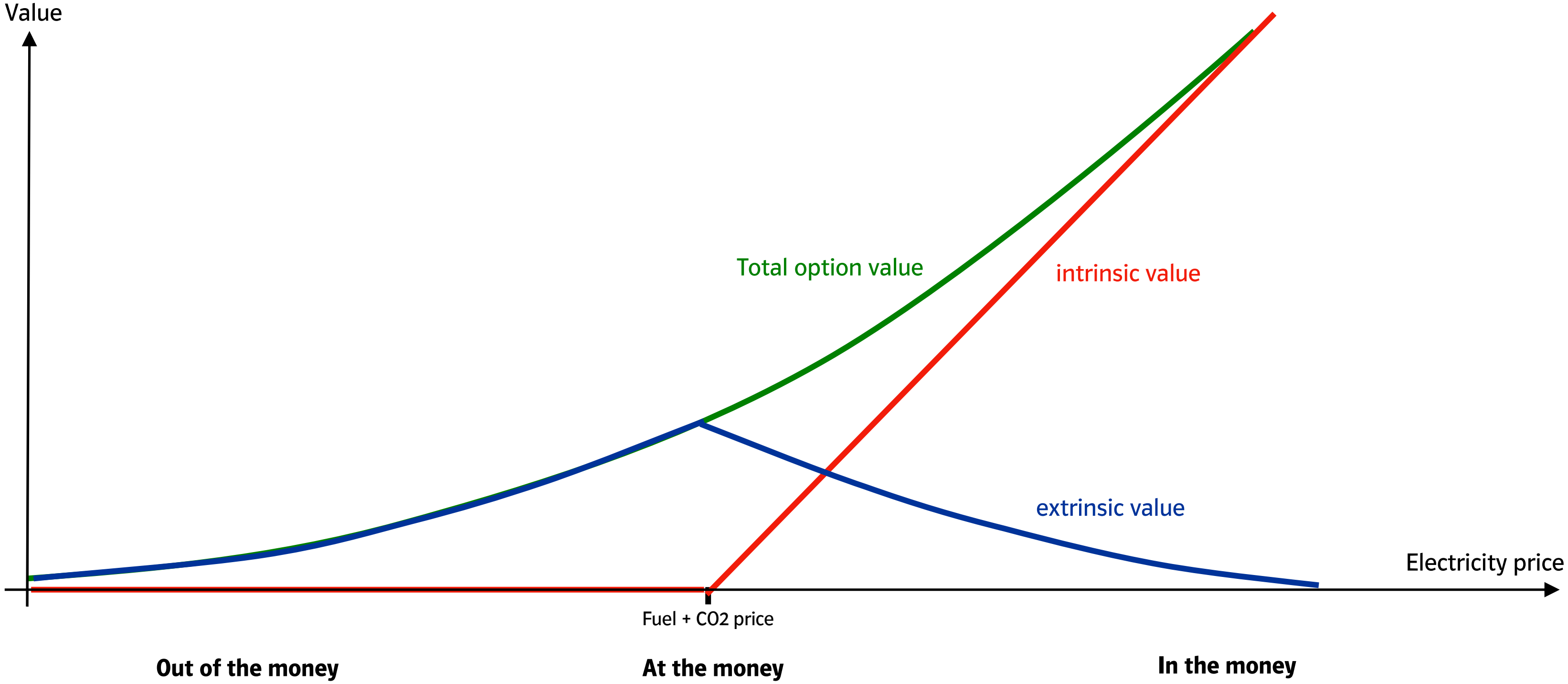
At maturity (delivery)
expected profit > 5€
(additional extrinsic value)

- The expected profit at maturity is higher than the observed intrinsic value in forward market. The difference is the extrinsic value.

Extrinsic value is essentially the value of not needing to run the plant when it would make a loss

Size of extrinsic value influenced by several factors 1/2

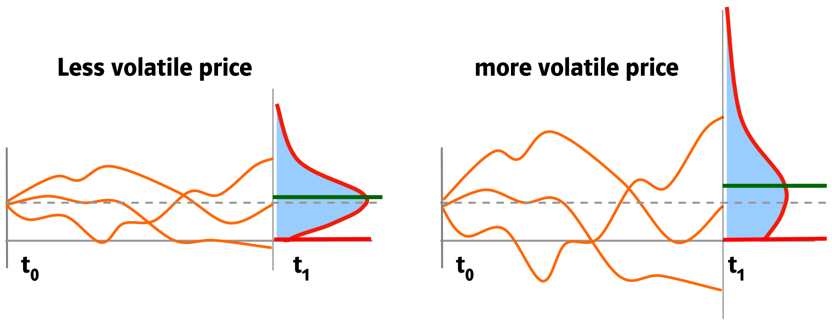
1 - moneyness of options



Hours of power plants that are nearly „at the money" have higher extrinsic value

Size of extrinsic value influenced by several factors 2/2

2 - volatility

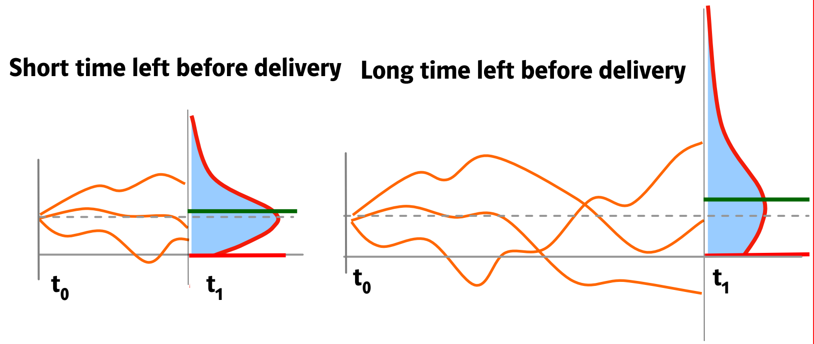


- Higher volatility increases the extrinsic value

Reasoning

- The more volatile the price, the larger the probability that an option change from ″in the money″ to ″out of the money″ or vice versa.

3 - time to maturity



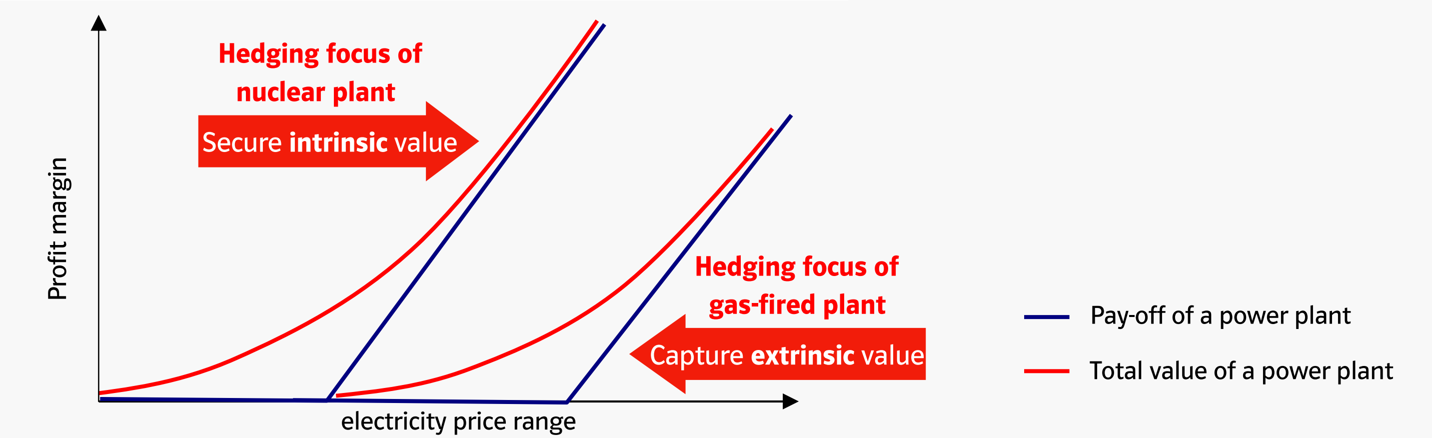
- Longer time to delivery increases extrinsic value

Reasoning

- The more time left before maturity, the larger the probability that an option change from ″in the money″ to ″out of the money″ or vice versa.

Hedging focus of different types of generation assets

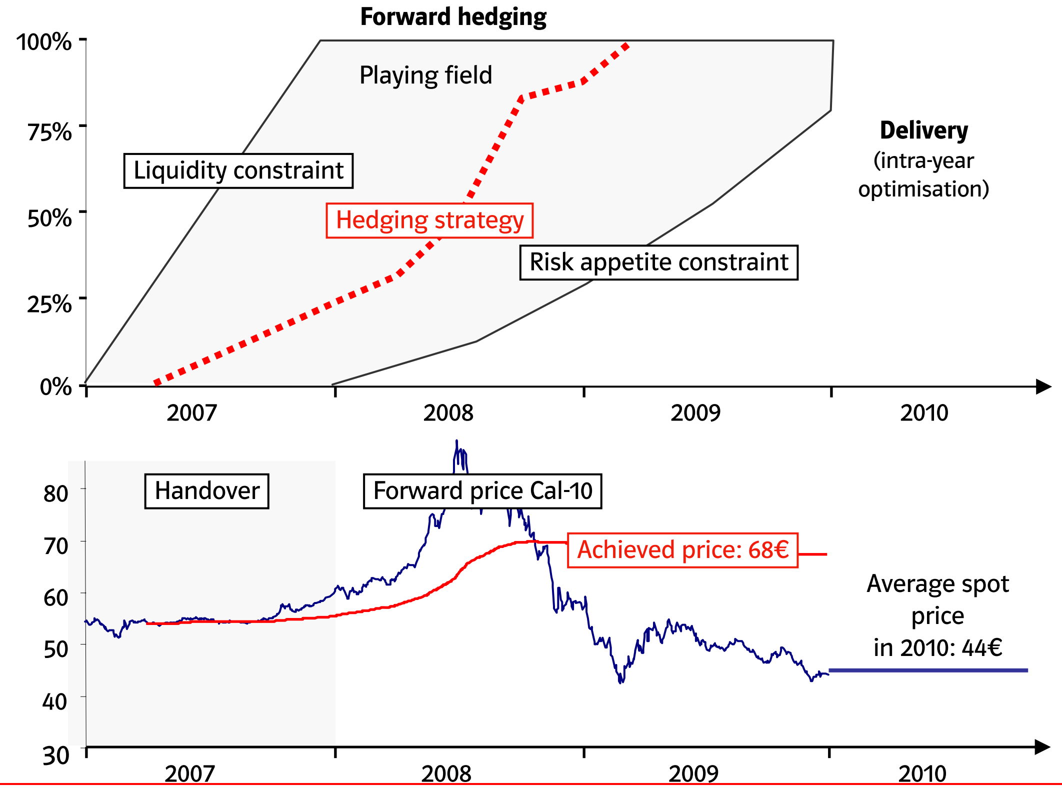
Different types of assets require different hedging focuses . . .



. . . for which different hedging methods are utilized

	Intrinsic value	Extrinsic value
Influencing factors	Power prices (nuclear, hydro) or spread prices (coal-, gas-fired)	Moneyness, volatility, time to maturity
Methods to capture value	Straightforward: hedge at forward markets	Complex: dynamic forward hedging, delta-hedging, etc.
Criteria for decision making	Price view, risk appetite	Volatility view, risk appetite, hedge costs

How E.ON Trading captures intrinsic value



- Upper boundary given by available market liquidity
- Lower boundary given by Group risk bearing capacity and risk appetite
- Optimized hedge path with the aim to maximize risk-adjusted return

Capturing intrinsic value is hedging of the natural long position under risk/return principles

How to capture extrinsic value in flexible power plants

Example 1: Dynamic forward hedging

Time	Spread price	Planned generations	Hegdes	Locked in profit
t1	10	generate	sell spread (sell power, buy coal & CO2)	+10
t2	-2	not generate	unwind hedge (buy power, sell coal & CO2)	+2
t3	4	generate	sell hedge (sell power, buy coal & CO2)	+4
			total	+16

- Through forward hedging and rebalance of hedges according to actual economic generation, a part of extrinsic value can be captured in forward market.

On a long term average the extrinsic value can be captured.
However, it is not guaranteed that the theoretical value can be captured in each time.

Example 2: Delta hedging

- Delta-hedging is a dynamic hedging strategy aimed at conserving the full value of a power plant, without taking a price view.
- By buying or selling the spread, the total position (power plant + spreads bought/sold) can be made delta-neutral, i.e. the value of the position does not change for small changes of the value of the underlying. If delta-neutrality is monitored and updated regularly, the full value of the power plant is conserved.

The extrinsic value can be captured each time. However a trade-off has to be made between high transaction costs and the certainty of capturing extrinsic value.

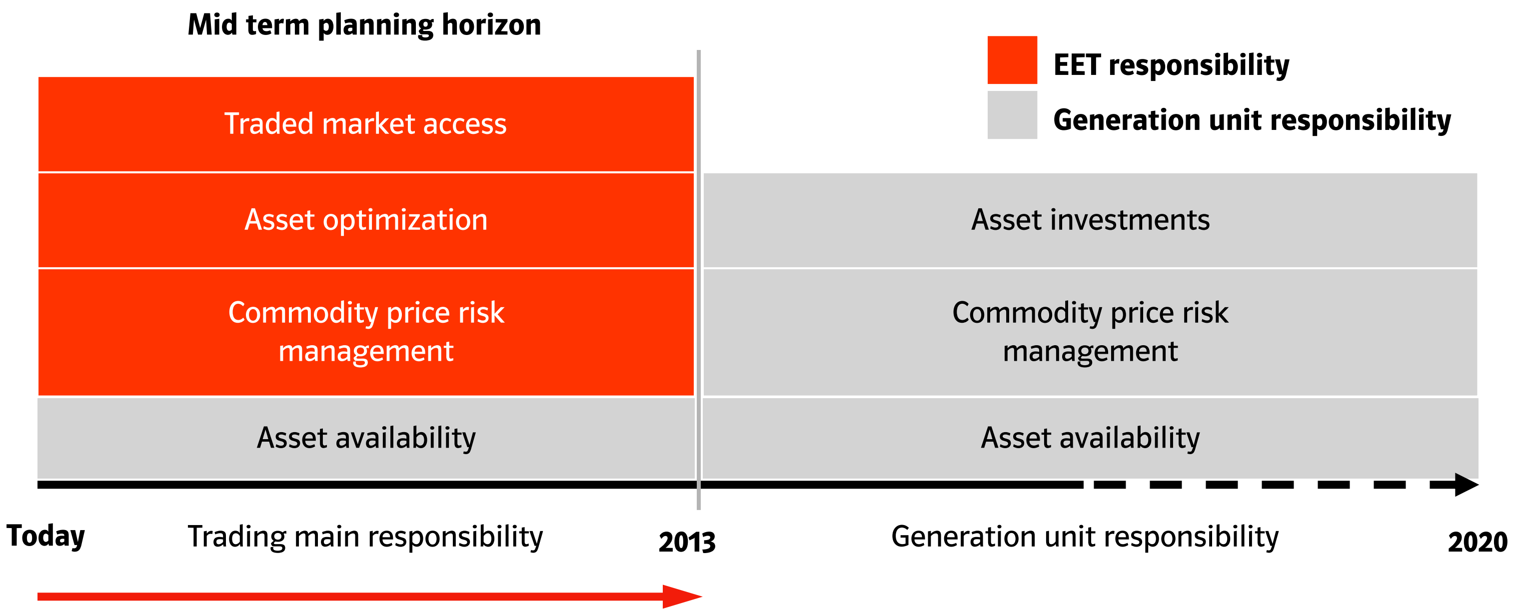
E.ON – Cleaner & better energy

Backup Material

Glossary

Term	Description
Economic generation	Volume of power that is ”in the money” for a given period in the future (based on forward market prices).
Clean Spark Spread	Theoretical gross margin of a gas-fired power plant from selling a unit of electricity, having bought the gas and the carbon emission certificate required to produce this unit of electricity.
Clean Dark Spread	Theoretical gross margin of a coal-fired power plant from selling a unit of electricity, having bought the coal and the carbon emission certificate required to produce this unit of electricity.
Intrinsic Value	Part of option value that is equal to actual mark-to-market price of underlying (actual value of selling the underlying as forwards)
Extrinsic Value	Time value of the option (total option value less Intrinsic Value)
Delta-hedging	A hedging strategy aimed at conserving the full value of an option, i.e. not only the "intrinsic" value, but also the "extrinsic" value.

Split of responsibilities and risk between Trading and generation unit



Trading is responsible for commodity risk management and the optimization three years prior to delivery

Transfer pricing mechanism for outright power

Understanding Trading's optimization result using a simplified scheme with an example of Cal 2010 delivery

Handover → transfer price

- Generation unit transfers all 2010 volumes to EET in course of 2007
- **Transfer price** for the transferred volumes is set up (based on 2010 forwards in 2007)

→ **Volume x transfer price = generation unit result in 2010**

Hedging → achieved price

- EET hedges volumes within risk limits
- **Achieved price** by EET evolving with hedging (e.g. for Central Europe this is € 68/MWh for Cal 2010)

→ **Volume x (achieved price – transfer price) = Trading outright optimization**

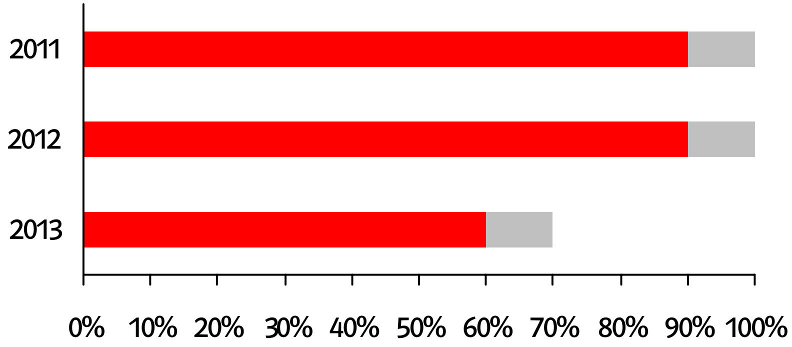
Volume
x
achieved price
=
Group's generation revenue

Delta between external achieved price and internal transfer price for a given year of delivery is reported in the Trading accounts in the optimization result in the year of delivery

Hedging of E.ON's outright generation

As of Sep 30, 2011

German, Benelux and French market

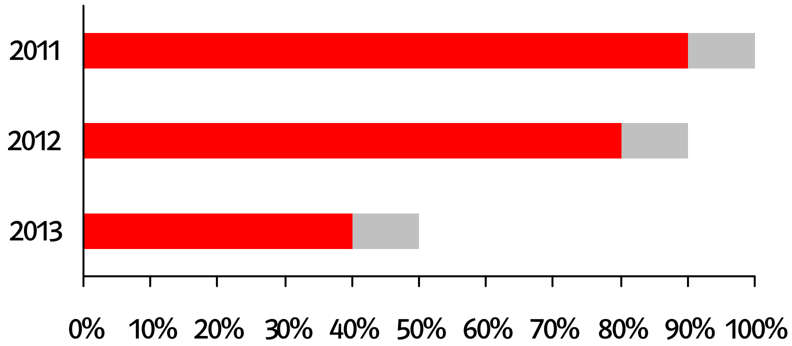


~ 59 €/MWh [1]

~ 54 €/MWh [1]

~ 56 €/MWh [1]

Nordic market



~ 43 €/MWh [1]

~ 43 €/MWh [1]

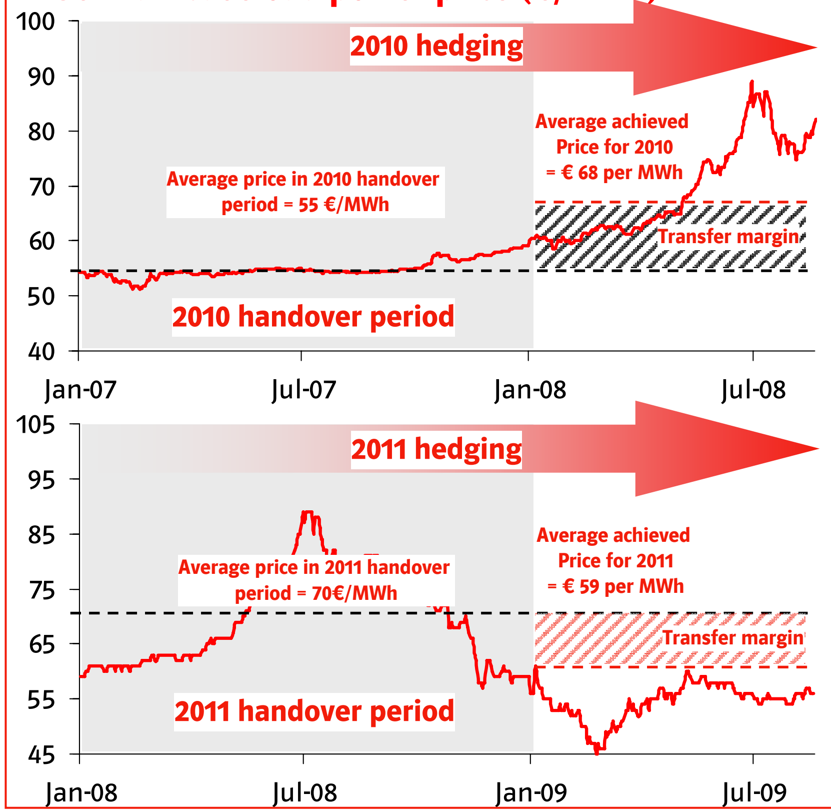
~ 45 €/MWh [1]

= percentage band of generation hedged

1. Average realized price only relevant for the pure outright power position (Nuclear/Hydro) sold in the respective year

Simplified example: Handover of 2010/2011 baseload volume in 2007/2008

German baseload power price (€/MWh)



Simplified examples - very different outcome

- The average price of 2010 volumes was ~€55 in 2007 (handover period) => transfer price
- As of June 2010 the average achieved price for outright power at EET's CE book is ~€68[1]
- Currently a positive transfer effect at EET and a negative one at MU Central Europe

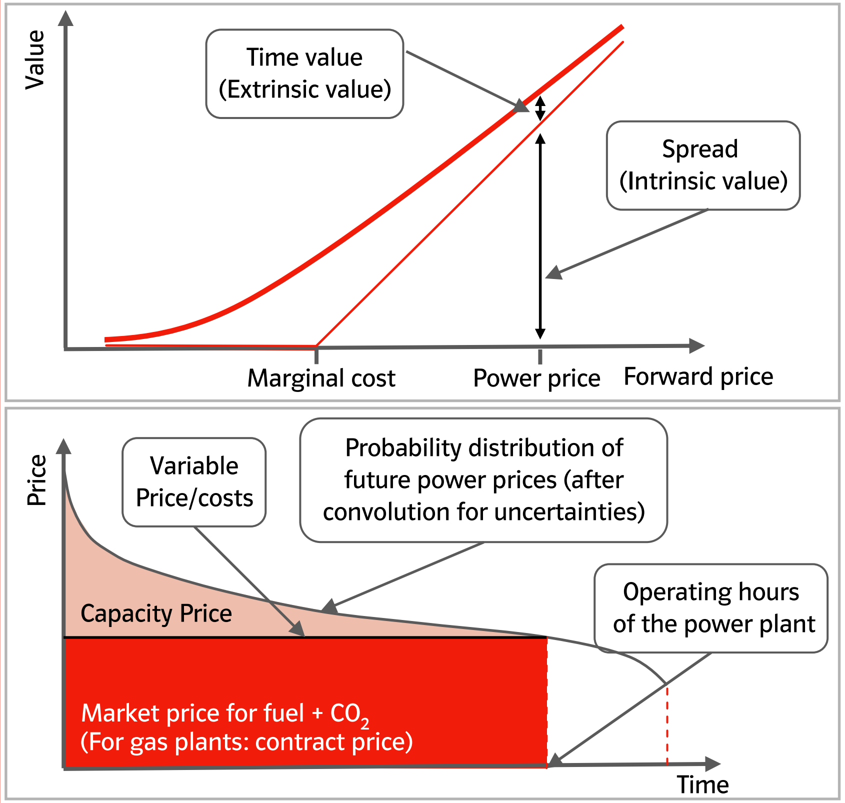
- The average price of 2011 volumes was ~€70 in 2008 (handover period) => transfer price
- As of June 2010 the average achieved price for outright power in EET's CE book is ~€59[1]
- Currently a negative transfer effect at EET and a positive one at MU Central Europe

Depending on the time of the handover transfer prices may turn out to be higher than average achieved prices

1. For outright power hedging please refer to slide 8

E.ON transfer price - Setting a price for optionality

Visualization of intrinsic and extrinsic value



Extrinsic and intrinsic value

- E.ON transfer price mainly consists of two elements
- Intrinsic value: clean spread based on market forward prices (as on previous slide)
- Extrinsic value: time value of the real option based on changes of market data (e.g. price volatility) and plant characteristics
  - Trading pays a price for the time value of the capacity
  - Value consists of the right (not the obligation) to exchange fuel for electricity (make or buy)
  - For a nuclear power plant the extrinsic value is basically zero
  - For the marginal plant of a system it is very high

Capturing the value of a flexible generation fleet

Example: make or buy strategy

Two simplified examples . . .

Example 1 - buy (in €/MWh)	**t1**	**t2**
Locked in clean dark spread	10	10
New clean dark spread (spot)		-6
Make (net result)		10
Buy (net result)		16

Example 2 – make (in €/MWh)	**t1**	**t2**
Locked in clean dark spread	10	10
New clean dark spread (spot)		6
Make (net result)		10
Buy (net result)		4

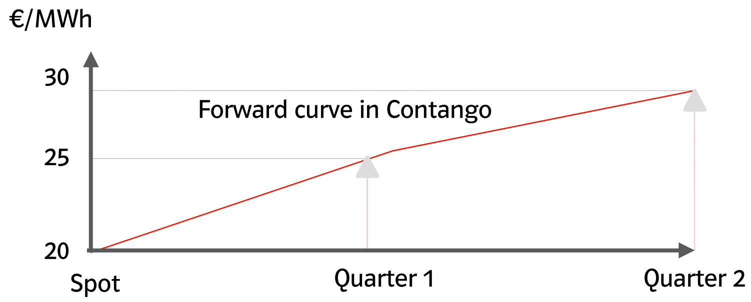
. . . for make or buy

- Example 1:
  If the real option is out of money at delivery, additional value can be generated above the lock-in price in forward
- Example 2:
  If the real option at a lower spread than hedged but in the money the decision would be to deliver the physical product as hedged

Extracting the maximal value from flexible power plants

Example: Time spread arbitrage in practice

Simplified example...



Selling 1TWh in Q1 has a value of € 25m

Selling 1TWh in Q2 has a value of € 30m

Hedging financially and postponing the physical production from Q1 to Q2 will create a profit of €5m [1]

...for time spread arbitrage

- It enables E.ON to profit from the shape or trends in the forward curve and exploit flexibilities in storage & contracts:
  - Nordic Hydro: the flexibility of the hydro-power is based on the storage possibilities in the reservoirs
  - Gas storage: Trading manages several storages around Europe with flexibility in selling gas
  - Take or Pay contracts: Trading manages several contracts with flexibility in take-volumes

Creating value from the flexibility in storages and supply contracts

1. Simplified – disregarding the time value of money

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What can we do to help you?

E.ON IR and reporting calendar

Date	Event	Location
March 14, 2012	Annual Report 2011	Düsseldorf
May 3, 2012	AGM 2012	Essen
May 4, 2012	Dividend payment	
May 9, 2012	Interim Report I: January – March 2012	Düsseldorf
August 13, 2012	Interim Report II: January – June 2012	Düsseldorf
November 13, 2012	Interim Report III: January – September 2013	Düsseldorf

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