

Impact of carbon prices on investment decisions

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More Growth, Less CO₂ – Our Strategic Roadmap for 2012

| What we aim to do | Target for 2012 |
|---|--|
| <p>➤ Defend and expand existing margins in RWE key markets Germany and UK</p> | <p>GER: defend/grow margins on current volumes UK: defend/grow volumes and profitability</p> |
| <p>➤ Increase level of regional diversification</p> | <p>Share of non-German operating result grows from 27% (2008) to 40 - 50%</p> |
| <p>➤ Boost proportion of renewables in our generation portfolio</p> | <p>More than tripling of installed base to 4,500 MW</p> |
| <p>➤ Reduce carbon exposure</p> | <p>Reduction by 20% (compared to 2006 emissions)</p> |
| <p>➤ Strengthen gas midstream activities</p> | <p>Profitably increase contracted European gas supply purchase volume from 40 to 60 bcm p.a.</p> |
| <p>➤ Grow equity gas business organically</p> | <p>Doubling of hydrocarbon production by 2012/2013 to 12 bcm p.a.</p> |

Specific Measures to reduce carbon exposure

Energy efficiency

Invest in best available technology: lignite, hard coal, gas, CHP

Strong R&D: Develop new technologies e.g. fluidised bed drying, increasing steam parameters

Energy efficiency business unit

Renewables

Substantial increase of current investment budget (on average at least 1 billion p.a. until 2012)

CDM & JI

€150 million budget

Target of 90 MT over 2008 – 2012

CCS

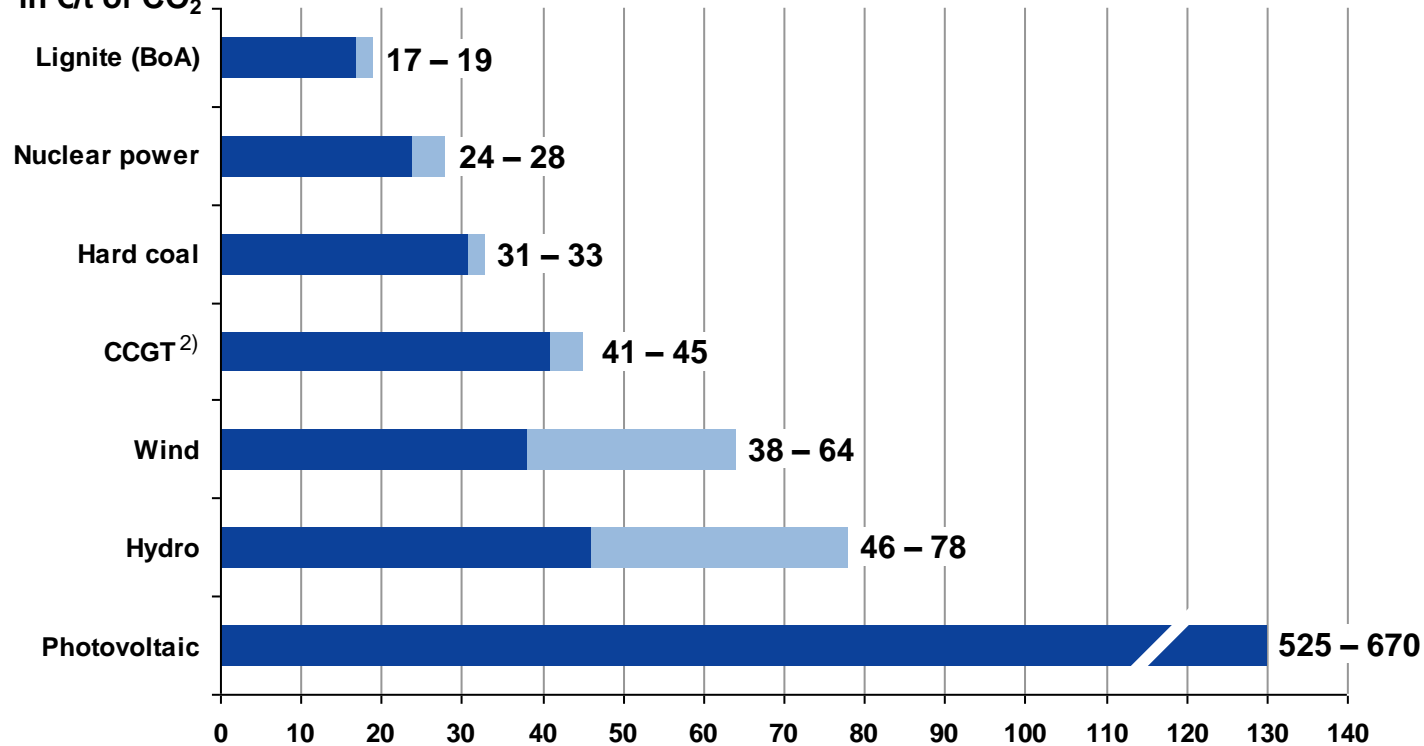
Industrial scale with coal gasification: 450 MW project

R&D

CO₂ Avoidance Costs Compared to Old Lignite

Specific CO₂ reduction costs¹

in €/t of CO₂



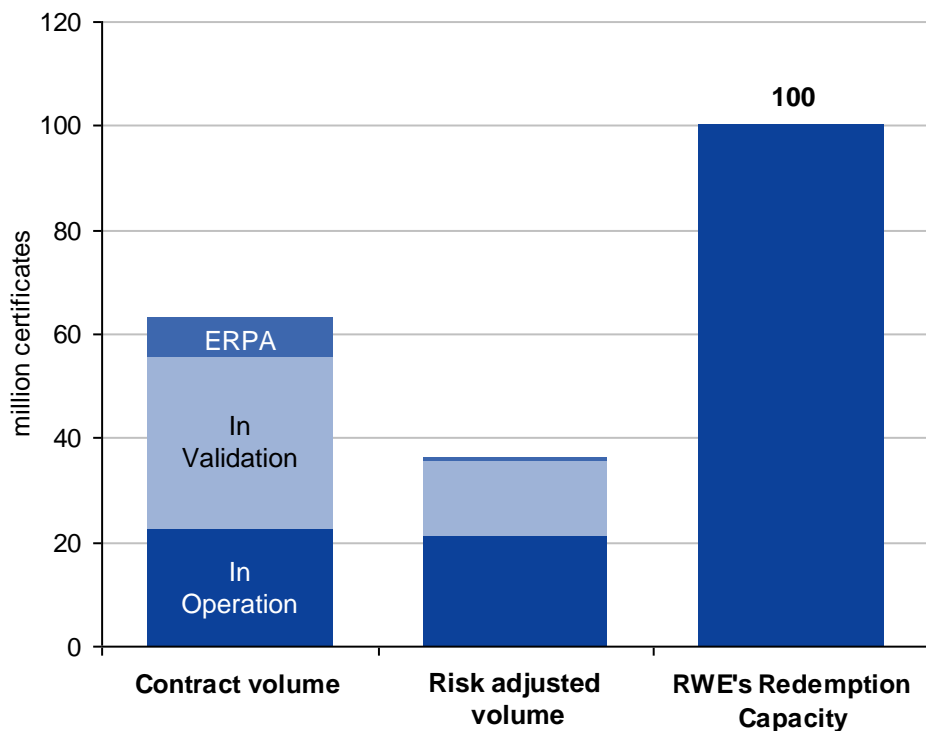
1) Calculation of costs:

- Allocation of CO₂ certificates is not taken into account
- Subsidies for renewables are not considered
- Rough estimation of costs of sequestration
- A comparison with prices of European emission allowances is not possible on basis of this illustration

2) CCGT: Combined-Cycle Gas Turbine.

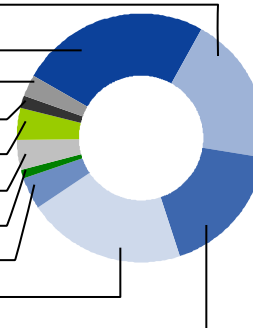
RWE's Kyoto Credit Portfolio 2008-12

Projects as of December 31, 2008



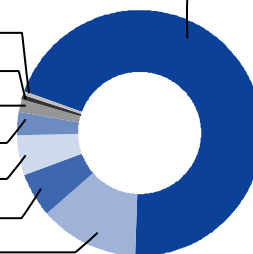
Contract volume by technology

| | |
|-------------------|-------|
| N ₂ O | 11.96 |
| Hydro | 15.01 |
| Other | 1.74 |
| Geothermal | 0.90 |
| Biomass | 2.67 |
| Coal mine methane | 2.25 |
| Biogas | 0.79 |
| Wind | 2.50 |
| Energy efficiency | 12.46 |
| HFC23 | 10.68 |



Contract volume by region

| | |
|-----------------|-------|
| China | 42.62 |
| Ukraine | 0.27 |
| Bulgaria | 0.40 |
| South-East-Asia | 1.03 |
| India | 1.83 |
| Indonesia | 3.30 |
| Egypt | 3.48 |
| South Korea | 7.90 |



Technology Development

- RWE Power plans to develop and build 450 MW coal-fired IGCC plant at Goldenbergwerk site in Huerth near Cologne
 - Includes CO₂ transport and storage to demonstrate the whole CCS-chain
 - Commissioning scheduled for 2014
- RWE Group R&D budget at €1bn 2007 to 2013 - more than two thirds are directed to carbon avoidance
- Further development of CO₂ scrubbing for advanced conventional power plant technology:
 - RWE npower plans to design and build the first carbon dioxide capture 1MW pilot plant at a UK coal power station (Aberthaw, South Wales)
 - Possible 25 MW demonstrator plant at Tilbury.
 - Testing and development of new capture processes and solvents with pilot facility at Niederaussem power plant (with BASF and Linde)
 - Similar project at AEP's hard coal-fired Mountaineer plant (1,300 MW) in New Haven, West Virginia (with AEP and Alstom)

Nuclear Strategy: Preservation of Nuclear Competence, Growth in New and Existing Markets, Zero CO₂

Investment criteria

- **Security:** Focus on countries with an existing nuclear framework (legal, infrastructure, waste)
- **Nuclear framework:** Highest standards (plant security, technology, quality), focus on new builds
- **Strategic fit:** attractive market, fit with RWE's portfolio and strategy
- **Financial criteria:** the same standard criteria as for other generation new build projects

UK

- New nuclear programme since 2006
- Auctioning of NDA sites in 2009
- JV with E.ON to build at least 6 GW

NDA sites

Romania

- Construction of two new CANDU units (2 x 720 MW) in Cernavoda
- Commissioning planned for 2015/16

Bulgaria

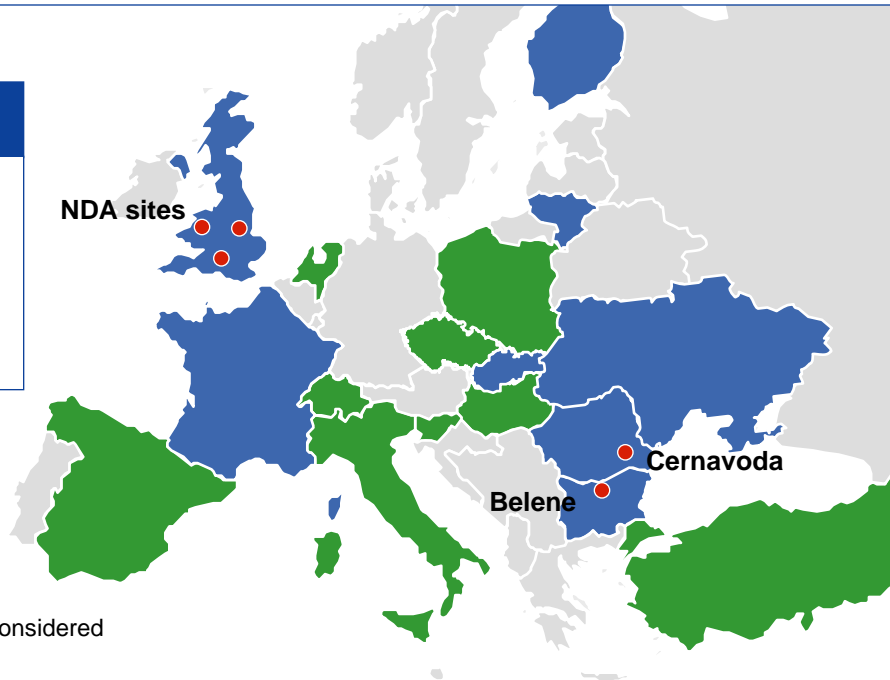
- Construction of two AES 92 units (2x 1,000 MW) pressurised water reactor units in Belene
- Commissioning planned for 2014/15

RWE activities

- NPP units being planned/considered

National frameworks

- National framework for new build until 2015
- National framework for new build between 2016 and 2025



Have the market mechanisms had a noticeable impact on companies investment decisions?

- Yes, absolutely
 - Operations and maintenance
 - Extension and replacement
 - New construction
 - New technology
- Other factors play a role:
 - Capacity balance
 - Subsidies
- The fact that carbon prices are uncertain and are not the sole driver is a fact of life in an uncertain world

So what's the real question?

Is the carbon price sufficient? The dangers of second-guessing

■ Supplementary support

- Why pay twice (eg, once for carbon and again for “low carbonness”)?
- Clear justification required
- Masking residual market signals = risk of picking losers

■ Floors

- Why discard upside?
- Overprovision

■ Caps and smoothing

- Under-delivery
- Moral hazard
- Crowd out commercial responses
- Markets can deal with price uncertainty but not policy uncertainty

How credible is a policy which admits failure from the outset?

Market design not intervention is the key

**Deeper =
efficiency**

- Flexible points of compliance
- Complementary policies

- International extension and linking
- Transitional offsets (projects/programs)
- Additionality
- Supplementarity
- Border measures

**Wider =
Environmental
credibility**

**Longer =
certainty**

- Wider and deeper = longer
- Compliance flexibility (banking/borrowing)
- Long-term signals vs short-term tuning

Conclusions

- Carbon prices already drive investment
- Further development of coherent market framework will deliver further benefits
- Avoid second-guessing market delivery