Coal: A sustainable energy source with long-term reliability

Michael Eyll-Vetter, Vice President Mine Planning, RWE Power AG
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Structure

- Why do we need coal?
- How can we move into a low-carbon energy system?
- Is coal a sustainable resource?
Coal is secure, reliable, affordable and sustainable

- Coal is the world's fastest-growing source of primary energy and the No.1 fuel for power generation.

- Hard coal and lignite represent almost 80% of EU-27 domestic fossil fuel reserves.

- Coal balances the EU energy mix and avoids supply and price risks.

- Coal mining and value chain create wealth in the EU, particularly in a number of disadvantaged regions.

- The coal industry employs around 280,000 people (indirect: 700,000)
Coal is widely used in most EU Member States
The use of coal helps to limit total import dependence

source: *EU Trends to 2030, 2007 update*, European Commission
The path to low-\(\text{CO}_2\) coal-based power generation of the future at RWE Power

Efficiency increase and higher flexibility thanks to continuous renewals

New-build of ultra-modern, flexible coal plants

Continuous renewal of power-plant fleet

Further increases in efficiency

*WTA* lignite predrying

Using CO\(_2\)

Using CO\(_2\) for biomass, materials production

CO\(_2\) capture and storage

CO\(_2\) flue gas scrubbing, coal gasification with CO\(_2\) storage

*WTA* – fluidized-bed drying with internal waste heat utilization; innovative process to increase efficiency by predrying lignite.
Continuous power-plant renewals in the Rhenish lignite-mining area

**BoA 1 at the Niederaussem power plant**

- **BoA technology as worldwide efficiency standard in lignite-based power generation:**
  - Efficiency increases of 12 percentage points compared with old systems
  - Reduction in CO$_2$ emissions by some 30% or nearly 3 million tonnes per 1,000 MW annually

**New-build: BoA 2&3 (Neurath pp)**

- **BoA 1 with 944 MW commissioned in 2003**
- **New-build BoA 2&3, commercial operations planned for 2011**
Sustainable coal mining and utilization in Europe

Ecological targets

Economic targets

Social targets
Sustainable coal mining and utilization in Europe

Ecological targets

- Low-CO₂ generation options
- Flexible power plants as partner to renewable resources
- Environmentally compatible mining on a continuous basis
- Recultivation and water-management measures are reliable and effective and are setting standards
Recultivation and water-management

Relocation of the Inde river

Direct water-introduction...

Blausteinlake with green corridors

...to secure wetlands
Sustainable coal mining and utilization in Europe

Ecological targets

• Future-proof apprenticeships and jobs
• High standard of occupational health and safety
• High value-added in the region
• Well-functioning stakeholder dialogue for the necessary general acceptance in the region
• Socially compatible resettlement

Economic targets

Social targets
Socially compatible resettlement

New Otzenrath/Spenrath
Sustainable coal mining and utilization in Europe

Ecological targets

• Security of supply
• Predictable low costs of power-generation in the long term
• Basis for technology transfer
• Attractive refined products for the heat market and environmental applications

Economic targets

Social targets
Sustainable coal mining and utilization in Europe

Ecological targets

• Security of supply
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Economic targets

Dust, Activated Carbon
Briquettes
In summary

- Security of energy supply:
  - Coal limits import dependence.

- Climate protection:
  - Cost-efficient climate protection from power-plant renewals/modernization, increases in efficiency and CCS/CCU
  - Coal is backup capacity for renewables

- Sustainable development
  - Climate protection, economic efficiency and security of supply must guide the balanced development of future energy supplies
  - Major contribution to regional development with value-adding jobs
  - Mining is sustainable from planning through to land restoration

- Coal is secure, reliable, affordable and sustainable