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The energy challenge

1. Rising demand
   - Population growth
   - Economic growth
   - More affluent society

2. Security of supply
   - End of “easy oil”
   - Resource nationalism
   - More unconventionals

3. Environment and society
   - Hydrocarbons remain dominant
   - CO₂ consequences
Coal: Affordable, available... acceptable?
Buggenum

Project description

- Nuon-owned, uses Shell coal gasification technology
- Integrated gasification combined cycle: 10–15% reduction in CO₂ production
- CO₂ capture easier and more cost-effective
- Enables use of alternative feedstocks such as biomass
- Results in low CO₂ base-load electricity
Shell clean coal portfolio

24 licences worldwide
18 licenses in China – 11 on stream

Yueyang (50% Shell)

Licenses in:
The Netherlands
The UK
The USA
Australia
Vietnam
Technology differentiation and deployment

Combining advanced technologies and strong support from experienced staff around the world

- Technology can process the widest range of coal
- Highest cold gas efficiency
- Design capacity confirmed
- Dedicated technology service teams
Shell’s coal gasification licences in China

- 18 licences for Shell coal gasification technology
- 11 plants currently in operation:
  - Hubei Shuanghuan, 930 t/d
  - Dongting JV (Shell and Sinopec), 2,000 t/d
  - Sinopec Anqing, 2,000 t/d
  - Sinopec Hubei, 2,000 t/d
  - Guangxi Liuhua, 1,100 t/d
  - Yuntianhua, 2,700 t/d
  - Yunzhanhua, 2,700 t/d
  - Yongcheng (Phase 1), 2,000 t/d
  - Shenhua, 2,000 t/d
  - Henan Zhongyuan, 2,000 t/d
  - Henan Yima Kaixiang 1,100 t/d
Shell’s first investment in a coal gasification plant

Yueyang Sinopec and Shell Coal Gasification Co. Ltd