

NRW Perspectives on Energy Directions

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The electricity power generation in the Australian States at the east coast and in NRW is clearly dominated by coal

	AUS	NRW
Population, Mio	20	18
Energy Consumption, PJ	5300	3900
Electricity Consumption, TWh	240	130
Average Efficiency PP (coal, Ho)	< 30%	> 30%
% Fuel Power Plants		
Black Coal	58,7	41,8
Lignite	25,2	45
Natural Gas	8,5	11,6
Renewables (Hydro)	7,3	1
Electricity in AUS cheaper by a Factor of	2,5 – 3	
CO2 Emission per capita AUS/D		3



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Integrated Climate- and Energy Program of the German Federal Government

Strategy to Reduce CO₂ Emissions

- Improvement Energy Efficiency and Savings
- Extension of renewables

Other:

- Legislation for CO₂ Storage started
- Decommissioning of 20 GW Nuclear by 2022 a burden for CO₂ reduction

Goals: Reduction of

- CO₂-Emissions by min. 40% in 2020 (base:1990)
- Electricity Consumption by 11% in 2020 (base: 2006)

The Program consists of 29 Measures

CO₂- Reduction Potential: 183 Mio. t

NRW alone: 81 Mio. t !!

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Initiatives NRW Energy and Climate Protection

Reduce energy consumption, especially electricity

- “NRW saves energy” (buildings, industrial processes, schools)
will reduce consumption from 2006 to 2020 by 20%

Increase renewable energy (electricity, heating, cooling, fuels)

- Wind, biomass, heat pumps, solar energy, wood pellets;
electricity generation by 2020 up to 20 TWh (3 years base load
of a 1000 MW PP)

Increase share of co-generation plants

- Electricity generation by 25%
- Develop more efficient technologies

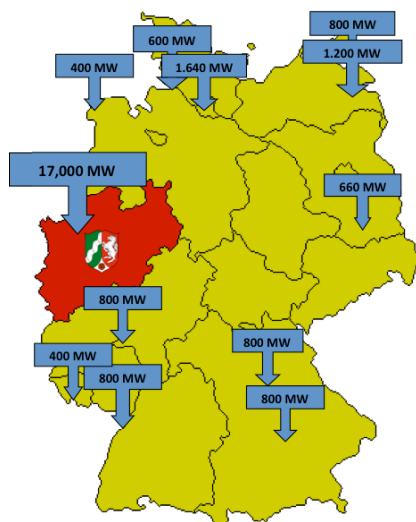
New high efficient power plants (30 Mio t CO₂)

Hydrogen and fuel cells

- Support R&D; NRW-Hydrogen HyWay ; Network 350 members
81 projects with 130' €

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Power Production with High Efficient New Power Plants (Total 26000)



What is planned in NRW?

Until 2012	
Hard coal	7,720 MW
Lignite coal	2,200 MW
Gas	2,650 MW
From 2012	
Lignite coal	4,400 MW
Total	17,000 MW

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The 3 German giant electric generators are heavily engaged in the process

- EON builds a 500 MW, $\eta=50\%+$ capture ready 700°C power plant. Material / component tests 7/05 to 12/13, engineering demo by 08/09, operation by 2015
- RWE Power builds a zero emission 450 MW IGCC-PP with CO₂-separation, transport und storage; operation is scheduled for 2014.
- Vattenfall builds a 30 MWth Oxyfuel pilot plant for lignite, Start up 2008, 3 to 4 years operation. Commercial beyond 2020.

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MOU'S signed in 2004 and extended in 2008

A base contact network with partners on the political, the industrial and the academic level exists in the MOU States – further expansion required

Some official NRW Visits to AUS done; balance welcome

Technical workshops organized

Projects:

1. Membranes for CO₂ separation in PP (UQ/Research Centre Jülich; follow up project in 2010)
2. Thermo-chemical and physic-chemical properties of coal gasified slag (UQ/Jülich)
3. CO₂ scrubber (duplication of the CSIRO pilot; Uni Duisburg-Essen)
4. SOFC for buildings (CFCL/Jülich)
5. CO₂ in coal (initiative from UQ and RWTH Aachen)
6. Hydrogen from algae (initiative from UQ and University Bielefeld)
7. VIC based Ceramic Fuel Cells Ltd with an assembling line in NRW

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Let us continue to work together in the
political, academic and industrial society

See you again.....
hopefully in NRW in 2010 ? ? ! !

Thanks

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