The German engagement in CCS activities

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Congress Centre Leipzig, 6th March 2007

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Projektträger Jülich
Outline

Germany is engaged in many international and European CCS related activities

• IEA Working Party Fossil Fuels (WPFF)
• IEA Implementing Agreements
  – Clean Coal Centre (CCC)
  – Green House Gas R&D Programme (GHG)
• Carbon Sequestration Leadership Forum (CSLF)
• Industrial Projects of German Companies
• EC Activities & Initiatives
  – ETP ZEP
  – ERA-NET’s, e.g. FENCO-ERA
International Organisations dealing with CCS

- Technology Platform Zero Emission Fossil Fuel Power Plant (ZEP)
- Mirror Group
- Co-ordination Action ERA-NET FENCO-ERA
- Fuel Cells
- Hydrogen and Fuel Cell Technology Platform (HFP)
- Co-ordination Action ERA-NET: Hy-Co
- Improve Efficiency
- Zero Emission including Capture
- Transport and storage
- Use e.g. EOR
- CO2 legal and other issues

- CSLF
- IPHE
- IEA WPFF
- IEA IA CCC
- IEA IA GHG
- IPCC
IEA WPFF:
Zero Emissions Technologies (ZETs) for fossil fuels

1. Communications: **Co-lead by UK and Germany**
   Inform key decision-makers and the public throughout the world about the potential and importance of Zero Emissions Technologies for fossil fuels.

1. Collaboration and Deployment

2. Cooperation

3. Safety and Security
IEA Implementing Agreements (IA)
Clean Coal Centre & Green House Gas R&D Programme

• Germany joint in late autumn 2005
  – the IEA IA CCC and
  – the IEA IA GHG

• IA CCC:
  Study on Research and Development Needs for Clean Coal Deployment
  (Prof. Kather, Technical University of Hamburg Harburg)

• IA GHG
  CCS Summer school
  Germany will host the spring 2008 ExCo meeting
Carbon Sequestration Leadership Forum (CSLF)

- CSLF charter was signed in June 2003
- Germany joint CSLF end of 2003

- Germany hosted the CSLF meeting September 2005, Berlin

- Active participation e.g. in PIRT and other task forces
- Some CSLF projects have German Participation
- The CSLF Project CO2SINK is coordinated by Germany
Europe is not homogeneous

- EU27 and 2 Candidate Countries: Political integration and enlargement

- European Economic Area: Successful global competitor
Co-ordination is needed

- Fragmentation of EU-wide energy technology research
  - Up to 27 national research programmes
  - Significant thematic overlap
  - Lack of critical mass

- Inefficiencies
  - Lack of EU-wide coordination of research expenditures
  - Decrease in competitiveness

⇒ Defragmentation and avoidance of inefficiencies need coordination and harmonization of programmes at EU level ⇐
European Research Area (ERA)

- The EC addresses the fragmentation of EU research through the general concept of co-ordination at the levels of
  - Politics
  - Programmes
  - Projects

- Mechanism introduced under FP6 **ERA-NET Scheme**
- to be initiated by (quasi) government organisations of Member States
There are 5 Energy related ERA-NET's

- Bio-energy
- PV ERA
- FENCO-ERA
- HY-CO
- INNER

Co-ordinated by Research Centre Jülich, Germany
Co-ordinated by SENTERNOVEM, The Netherlands
5 Energy related ERA-NET‘s

- Bioenergy ERA-NET
  is to strengthen European efforts to make use of the potential for renewable energy production from biomass and industrial production
  http://www.ERANETBioEnergy.net

- The ERA-NET HY-CO
  promotes the hydrogen and fuel cell technology towards a hydrogen economy
  http://www.HY-CO-Era.net
5 Energy related ERA-NET’s

- The ERA-NET INNER (Innovative Energy Research) aims at making use of findings from basic research in mathematics or materials science to identify new approaches for energy research
  [http://www.inner-era.net](http://www.inner-era.net)

- PV ERA NET aims to strengthen Europe's position in photovoltaic (PV) technology
  [http://www.pv-era.net](http://www.pv-era.net)
FENCO-ERA

• To develop a technology path that gives the opportunity to share knowledge and funding options for a step-by-step *improvement of the fossil energy technologies*.

• To link the R&D and demonstration needs of EU member states, the EU industry and academia at an extended European level to describe a technology path towards *low and near zero emission power plants*. 
FENCO-ERA: one part of an overall picture

Links to other initiatives

- Opportunity to create a critical mass activity in Europe
- Needs to be part of an overall strategic framework addressing clean fossil fuels as a key element of the energy portfolio
Background and Issue Drivers

- Population and income growth
- Climate protection targets
- PES increase
- Significant role of REN only in medium or long term
- Nuclear renaissance vs. acceptance
- Significant role of fossil fuels
- \( \text{CO}_2 \) emissions growth

\[ \Rightarrow \text{Decarbonization of energy supply needs full range of technological solutions and further development of fossil fuel technology} \]
Objectives

- Establish European level conformity of R&D programmes to
  - EU members’ needs
  - EU industry
  - EU academia

- Develop a fossil fuel energy technology path
  - Opportunity to share knowledge
  - Funding options to step-by-step improvement of fossil fuel energy technologies

⇒ To define technology paths towards low and near zero emission power plants ⇐
Focus and Project Structure

1. Increase policy coordination
2. Enhance technology cooperation
16 Partners

12 Countries

FZJ – PtJ
BMWi
BMWA
AFI
Energinet.dk
GSRT
CERTH
SENTERNOVEM
RCN
FCT
MEC
dti
FES

Affiliated Partners

Gig
MoEaC
MoE
FENCO-ERA Partners / Affiliates

<table>
<thead>
<tr>
<th>Country</th>
<th>Partner Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>Germany</td>
<td>FZJ – PtJ</td>
<td>Forschungszentrum Jülich Projektträger Jülich</td>
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<tr>
<td>Germany</td>
<td>BMWi</td>
<td>Bundesministerium für Wirtschaft und Technology</td>
</tr>
<tr>
<td>Germany</td>
<td>BMWA</td>
<td>Bundesministerium für Wirtschaft und Arbeit</td>
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<tr>
<td>Austria</td>
<td>AFI</td>
<td>Austrian FENCO Initiative</td>
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<tr>
<td>Denmark</td>
<td>Energinet.dk</td>
<td>Energinet.dk</td>
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<td>Spain</td>
<td>GSRT</td>
<td>General Secretariat for Research and Technology</td>
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<td>Greece</td>
<td>CERTH</td>
<td>Centre for Research and Technology Hellas</td>
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<td>Norway</td>
<td>SENTERNOVEM</td>
<td>SENTER-NOVEM</td>
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<td>Norway</td>
<td>RCN</td>
<td>The Research Council of Norway</td>
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<td>Portugal</td>
<td>FCT</td>
<td>Fundacao para a Ciencia e a Technologia</td>
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<td>Spain</td>
<td>MEC</td>
<td>Ministerio de Educacion y Ciencia</td>
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<td>UK</td>
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<td>Department of Trade and Industry</td>
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<td>UK</td>
<td>FES</td>
<td>AEA Technology plc</td>
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<td>Central Mining Institut</td>
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<td>MoEaC</td>
<td>Ministry of Economics and Communication</td>
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<tr>
<td>MoE</td>
<td>Ministry of Economics</td>
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### National Programmes of FENCO Partner Countries

<table>
<thead>
<tr>
<th>Programme Name</th>
<th>Annual Budget (Mio €)</th>
<th>Number of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>COORETEC GEOTECHNOLOGIEN</td>
<td>20</td>
<td>180 / 11</td>
</tr>
<tr>
<td>AFFF</td>
<td>0,1</td>
<td>(1) just started</td>
</tr>
<tr>
<td>PSO-research &amp; development-programme</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>OPERATIONAL PROGRAMME COMPETITIVENESS “Collaborations for Research and Technological Development in sectors of national priority”. a. CP “Natural Environment and Sustainable Development”, b. CP ‘Renewable Energy Sources and Energy Saving’</td>
<td>Concerted Programme (CP) 10.8 5.2</td>
<td>12 projects under realisation</td>
</tr>
<tr>
<td>Several</td>
<td>48,5</td>
<td>200</td>
</tr>
<tr>
<td>Program for environmentally friendly gas power technology – CLIMIT</td>
<td>6,2</td>
<td>22</td>
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<tr>
<td>Energy Programme</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>ENP, Clean use</td>
<td>23 / 1</td>
<td>102 / 8</td>
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<tr>
<td>Since 2005 CATS as follow-up of the Cleaner Fossil Fuel Programme (CFF)</td>
<td>10</td>
<td>60</td>
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For more information

Welcome to the homepage of FENCO-ERA - the Fossil Energy Coalition

A Coordination Action (CA) supported by the European Commission to establish an ERA-NET for Clean Fossil Energy Technologies
Thank you for your attention