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European CCS Demonstration Project Network

Directorate-General
for Energy
and Transport



Steinar Thon, Associate Director, DNV

14 September 2010

UK CCS Community Network

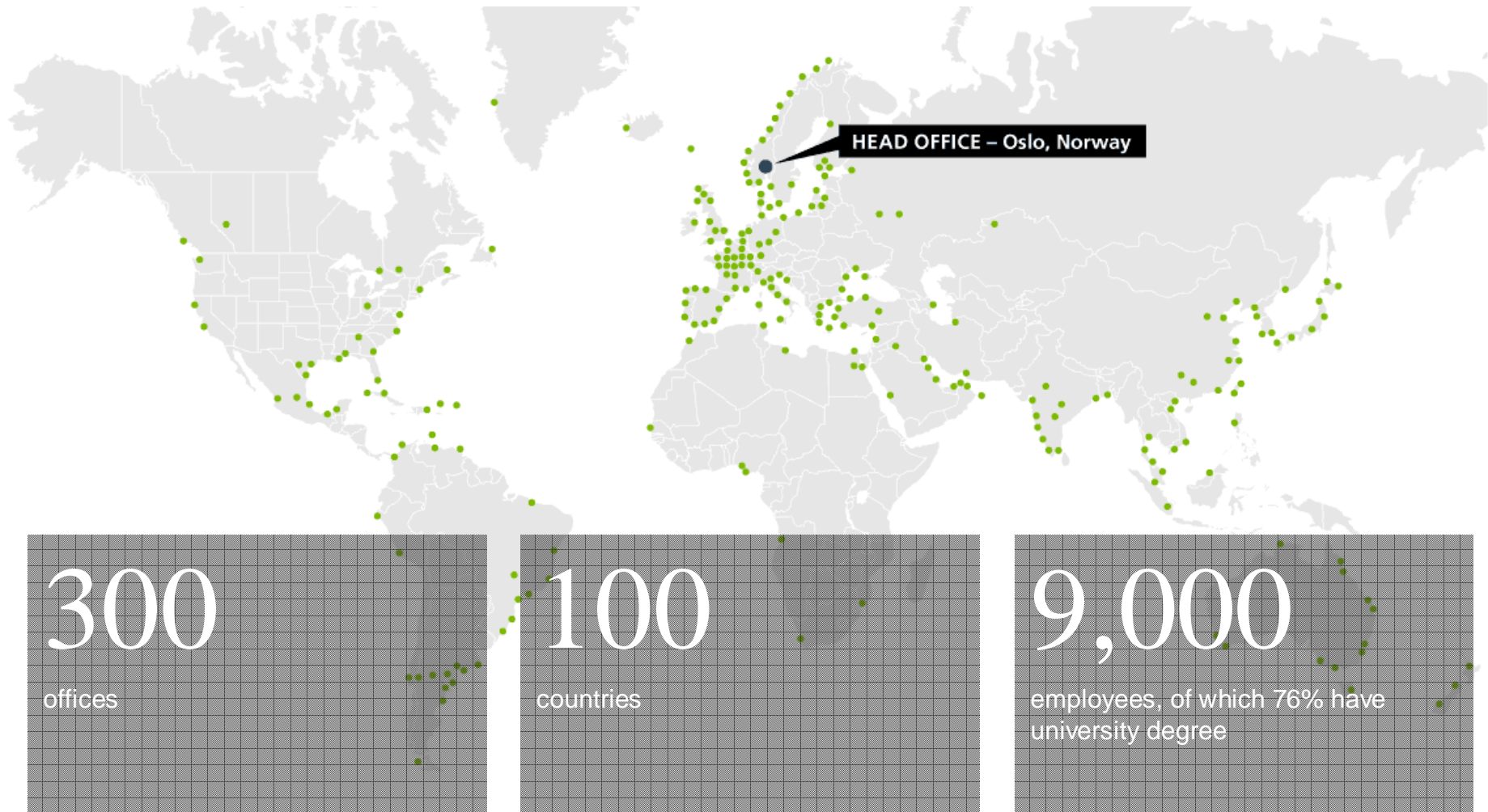


MANAGING RISK

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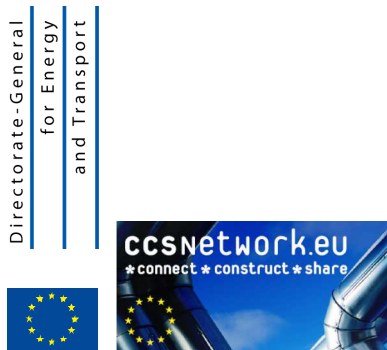
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Background and objective

- EU is committed to 20% reduction of GHG emissions by 2020
- The CCS Project Network is part of a portfolio of measures
 - Energy efficiency
 - Renewables
 - Stimulate construction and operation of up to 12 carbon capture and storage demonstration projects by 2015
 - European Energy Programme for Recovery (EPR)
 - New Entrants Reserve (NER300) under ETS
 - CCS Project Network
- Accelerate development of CCS and its deployment at commercial scale by 2020



To fulfil our brief by the European Commission we combine.....



“DNV shall assist the Commission in establishing the CCS project network by complementing general Commission capacities through:

- *The provision of specialised technical expertise, and by*
- *Organising events, as well as*
- *Monitoring participating projects using an appropriate methodology*

The work will be performed under the supervision of the European Commission”



..... DNV's experience within Knowledge Management.....



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.....with our capabilities within CCS

- World's leading GHG verifier – 45% market share
- Qualification of new technology
- Safety risk assessment
- Environmental impact assessment
- Independent review, due diligence
- Value chain assessment
- Flow assurance
- Dispersion modelling
- Development of guidelines etc



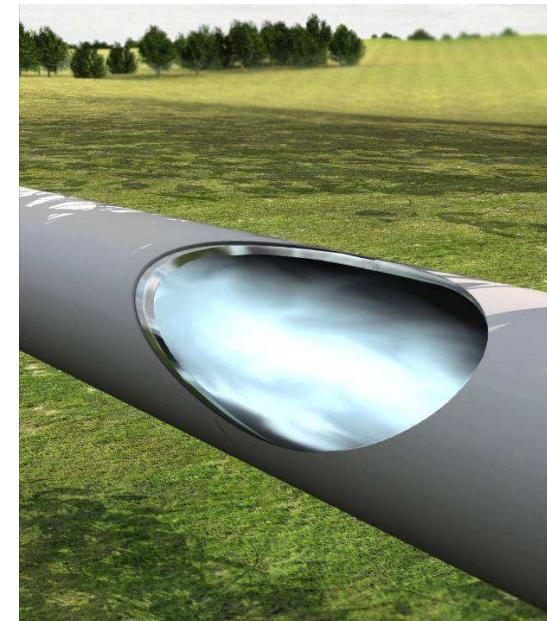
Knowledge management in the field of CCS

- Establish Qualification Criteria and assess applications
- Monitoring projects
- Support networking
- Support public awareness efforts
- International cooperation



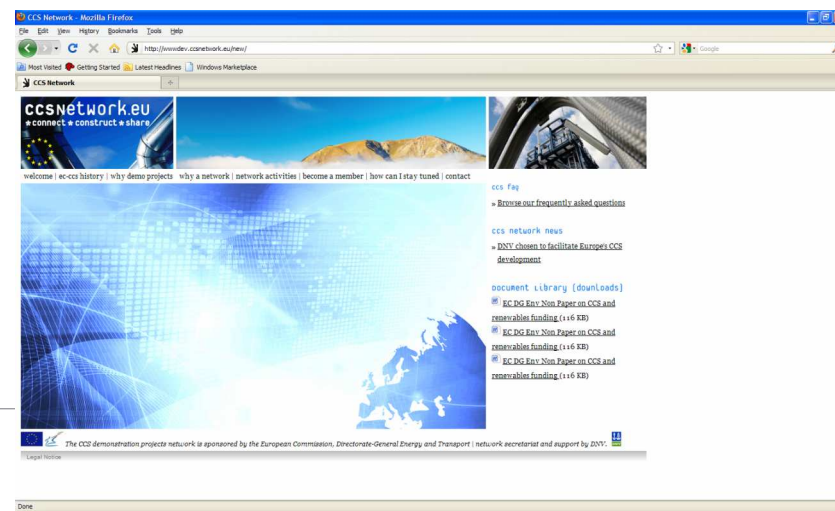
Added value of the Project Network to first-movers

1. Facilitate identification of best practices and enable knowledge-sharing amongst projects
2. Leverage experience of projects in order to enhance public confidence about CCS
3. Provide a common EU identity to Network members
4. Promote CCS, EU leadership and cooperation potential to third parties/countries



Means of achieving objectives

- Website for uploading and sharing of information on progress and performance, with restricted and public areas
- Events of various formats to identify knowledge-sharing themes and discuss best practice and lessons learnt
- Ongoing dialogue with projects along sharing themes
- Reports/events to disseminate public knowledge as appropriate & promote EU projects internationally
- All members receive recognition of their participation in an effort of common European interest



Qualification criteria – *purpose and overview*

1. Eligibility
2. Commitment to Project Network Goals
 - a. Knowledge sharing
 - b. Public awareness
 - c. Cooperation with 3rd parties
3. Demonstration of project credibility and maturity
4. Commitment to Network Protocol
 - A minimum level of documentation is requested to demonstrate that the project fulfils these criteria
 - Projects within European Economic Area (EEA) that can demonstrate that they fulfil the criteria will be invited to join
 - The Network does not distinguish between EU-funded and non-EU funded projects



Qualification criteria - *eligibility*

- Projects should have concrete plans to demonstrate operation of the **full CCS value chain**:
 - by end of **2015**
 - on a minimum power plant capacity of **250 MW, or equivalent** industrial output (500 kt avoided CO₂ emissions per year)
 - with at least **85% capture rate** of the treated flue gas stream



Qualification criteria - *knowledge sharing*

- **Value of knowledge sharing:**
 - Reciprocal exchange of good practice to accelerate CCS development
 - Evaluate effectiveness of CCS concepts (capture, transport, storage options)
 - Collect information on Environment, Health and Safety - to be communicated objectively to public
- **Intellectual Property** shall be respected. However, the performance of IP is generally subject to experience sharing
- **Key areas for knowledge-sharing include:**
 - Financial and energy costs of CCS installation and operation
 - Project management strategy, e.g. for public engagement or assessing storage options: good practice
 - Environment and safety data relating to operation of capture, transport and storage : public perception
 - Technical performance, e.g.; system availability : good practice
- **Commitment to knowledge-sharing** is a pivotal criterion



Knowledge capture and sharing - *networking*

- Knowledge markets
 - Annual plenary event
- Thematic sharing events
 - Intermediate events
 - F-2-f and virtual
 - +/- 3 parallel topic lines
- Project debriefs
 - Structured after action review
- Issue-based clinics
 - Ad hoc, emerging topics



Recent events and next steps

■ First Network Event

- Preparatory Meeting, December 2009 in Oslo
- Knowledge Sharing Agenda for 2010
 - Permitting
 - Public engagement
 - Risk Management

■ Thematic Sharing Event #1

- April 2010 in Bilthoven

■ Thematic Sharing Event #2

- June 2010 in Brussels

■ Knowledge Market

- October 2010



**Advisory Forum Meeting
17 September 2010**



Good practices & lessons learnt - Permitting

- Comprehensively understand the planning/permitting/consultation process is highly profitable
- Proactive public relations programme and proactive engagement with regulators. Personal relationships with the local community.
- Robust planning applications that address stakeholder issues
- In the site selection process - take a broader perspective than technology and cost, hence include environment, communities etc
- Spend much effort in the early planning stages ('optioneering') and to include stakeholders in the process to help avoid planning pitfalls.



Good practices & lessons learnt – Public engagement

- Integration of public outreach in project management is fundamental, also;
 - Integration across value chain
 - Integration across partners in the project
 - Integration with umbrella organisations
- Key messages from the project, both a consistent set of overarching messages and specific messages for specific stakeholder groups.
 - Who is the messenger?
- Social characterisation - a tool to enhance understanding of local stakeholders and site-specific social context.
- Monitoring of public outreach activities over the lifespan of the project to be initiated early, and to include baseline monitoring, media monitoring, local perception monitoring
 - Cooperation with research programmes may be beneficial



Good practices & lessons learnt – Risk management

- Risks related to CO₂ stream composition
 - CO₂ stream composition strongly influenced by the capture technology and fuel source. Different transport solutions and storage sites may have specific requirements
 - Standards for CO₂ streams in Europe do not exist and regulators are currently assessing how to manage this issue for the first CCS projects as they seek to implement the CCS Directive.
 - The Oskar and London Convention specifies that CO₂ for storage in an offshore geological location must be of at least 95% purity
 - Risk associated with taking investment decisions on pipeline and CO₂ clean-up designs in the coming 12 months if the future requirements for the integration of multiple CO₂ streams are unknown

- Interface risks, technical and organisational
 - Value chain interfaces and battery limits
 - Changed operating conditions for one element in the value chain, effects on others
 - Interfaces between several suppliers and sub-suppliers



Summing up

- One of EU's measure's to combat climate change
- CCS Project Network to support early movers
- Organise and facilitate knowledge sharing and dissemination of best practices
- Public awareness and engagement
- International cooperation
- CCSnetwork.eu
- First results are there already
- Networking of this nature is unprecedented

DNV helps CCS become a reality



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www.dnv.com

steinar.thon@dnv.com

+ 47 900 13 234



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