



Round Table
***Carbon Capture and Storage
Perspectives in Ukraine***

**18 May 2011
Donetsk, Ukraine**

Programme

A workshop co-organised by:

International Energy Agency

DTEK

And supported by:

Ministry of Energy and Coal Industry of Ukraine

Donetsk Municipal Council

Donetsk Regional State Administration

***Venue: DTEK Academy Hall
83 Postysheva Street
Donetsk, Ukraine***

Background: The Need for CO₂ Capture and Storage (CCS)

The International Energy Agency's *Energy Technology Perspectives* report indicates that existing energy policies will see CO₂ emissions increase by 130% between now and 2050, mainly due to higher levels of fossil fuel consumption. Fossil fuels are expected to remain the main global energy source, especially in emerging economies where coal is abundant. An energy technology revolution is needed to address this unsustainable pattern. In particular, we must increase energy efficiency, decarbonise the power sector and revolutionise transportation. CCS is one of the most promising options for decarbonising power generation and industry, with CCS projected to deliver 20% of the total CO₂ savings needed to cut global emissions by 50% by 2050. In particular, CCS holds great potential for coal- and gas-fired power plants, as well as for some activities in the industrial sector, such as cement, steel and chemical production. However, while CCS holds great promise, more needs to be done in major fossil-fuel economies to demonstrate and commercialise CCS technologies. The G8 leaders called upon the IEA to increase global collaboration on CCS, with the aim of accelerating lessons learned from early CCS projects.

Introduction to the workshop

The International Energy Agency (IEA), the leading international source of analysis and information on energy technology solutions for climate change. It has developed a series of technology roadmaps that identify key technology, policy, financing, and public awareness milestones for a suite of important climate change mitigation technologies. One of the most important technologies for international collaboration is carbon dioxide capture and storage (CCS), which the IEA believes will need to deliver fully one-fifth of the necessary greenhouse gas (GHG) emissions reductions to achieve global GHG stabilization by 2050.

Ukraine could become an important partner given its well-established coal industry, technical expertise and an interest in identifying new clean coal technologies. The IEA seeks to engage key stakeholders from the government, business and NGO sectors in Ukraine to facilitate discussions on global CCS development and possible CCS-related R&D in Ukraine.

The goals of this meeting are:

- Share knowledge of international trends on CCS
- Learn Ukrainian perspectives on CCS—challenges and opportunities
- Identify areas for international collaboration with Ukraine on CCS R&D
- Update IEA assumptions on CCS development up to 2020

Questions to be addressed at the workshop

- Global energy outlook and the role of Ukraine;
- How does improved power plant efficiency fit with emerging CO₂ capture and storage (CCS) technologies?
- What opportunities are there to demonstrate and deploy CCS in Ukraine?
- Should governments give policy support to improving the efficiency of power generation and deploying CCS?
- Does Ukraine have favourable conditions for CCS (location of capture and storage sites, experience with pipelines, new coal technologies facilitating capture, etc.)?

Technology demonstration and research

- Are there any CCS-related pilot projects under development/planning in Ukraine?

- What CO₂ capture technologies are these projects using (e.g., oxyfuel, post-combustion, or pre-combustion capture)?
- Has there been any investigation into CO₂ storage options and capacity (e.g., enhanced oil/gas recovery, saline formation)?
- Which parties are involved (government, industry)?

Financing

- What are the financing needs and options for CCS demonstration in the region?
- How much public and private funding is needed for demonstration?
- Are there self-financing models for CCS demonstration in the region?
- How should CCS deployment be financed?

Regulatory Issues

- What are the regulatory issues associated with CO₂ capture, transport and storage?
- Have there been any regulatory developments to support the early pilot projects (e.g., permits, environmental impact assessments, monitoring requirements)?

CCS awareness

- What is the current status of government and business awareness and education in the region?
- What is the most effective way to exchange CCS knowledge with stakeholders in the region?
- What is the current status of public awareness and education in the region?

International cooperation

- What type of cooperation are companies and governments looking for (e.g. format, outcome, etc)?

Wednesday, 18 May 2011
DTEK Academy, 83 Postysheva Street, Donetsk

The meeting will be moderated by:

Irina Verbitskaya, DTEK

Juho Lipponen, Head, Carbon Capture and Storage Technology Unit, IEA

9:00- 9:30 REGISTRATION OF PARTICIPANTS

9:30- 9:50 WELCOME ADDRESS:

Vladimir N. Ishkov, Head of Department of Industry and Infrastructure,
Donetsk Regional Administration

Yuri Ryzhenkov, Executive Director, DTEK

Juho Lipponen, Head, CCS Unit, International Energy Agency

9:50-11:25

SESSION I: SETTING THE STAGE

9:50-10:05 **Global Energy Outlook and the Role of Clean Coal Technologies**
Keith Burnard, Senior Energy Analyst, IEA

10:05-10:20 **Carbon Capture and Storage: Potential, Progress and Challenges**
Juho Lipponen, Head, Carbon Capture and Storage Technology Unit, IEA

10:20-10:35 **Ukrainian Coal Sector and a possible role of CCS**
Ukrainian speaker (TBD), Ukrainian Ministry of Energy

10:35-10:50 **CCS Projects and Kyoto Protocol: Perspectives in Ukraine**
Natalia Kushko, National Agency for Ecological Investment

10:50-11:10 Discussion

11:10-11:25 COFFEE-BREAK

11:25-12:15

SESSION II: ROLE OF CCS. LATEST TECHNOLOGY DEVELOPMENTS

11:25-11:40 **Carbon Capture and Storage: A Technology Overview**
Juho Lipponen, Head, Carbon Capture and Storage Technology Unit, IEA

11:40-11:55 **CO₂ storage: estimates, challenges, needs**
Neil Wildgust, IEAGHG

11:55-12:15 Discussion

12:15-13:20

SESSION III: POLICY, REGULATION, COST, INCENTIVES

12:15-12:30 **Incentives for CCS, regulatory requirements**
Ellina Levina, Energy Analyst, IEA

12:30-12:45 **Key Environmental Challenges for NAK Ukraine Thermal Power Stations**
Yuriy Trofimenko, Energy Company NAK Ukraine

12:45-13:00 **Incentives and regulations for CCS in the EU**
Hans Rhein, Head of Operation Section Energy, Transport and Environment, Delegation of the European Union to Ukraine

13:00-13:20 Discussion

13:20-14:30 LUNCH

14:30-15:40

SESSION IV: OPPORTUNITIES FOR CCS IN UKRAINE

14:30-14:45 **Clean Coal and CCS Technology Perspectives in Ukrainian Heat Power Industry**
Igor Volchin, Institute of Coal Technologies

14:45-14:55 **French Experience in CCS Project Development: Perspectives in Ukraine**
Aurelien Leynet, Bureau of Geological and Mineral Research, France
Nikolay Shestavin, Donetsk National University

14:55-15:10 **Enhanced Coal Bed Methane Recovery with CCS: Limitations and Possibilities**
Frank van Bergen, TNO Energy – National Geological Survey

15:10-15:20 **Private sector perspective**
Irina Verbitskaya, DTEK

15:20-15:40 Discussion

15:40-16:30

SESSION V: INTERNATIONAL COOPERATION IN CCS

15:40-15:55 **CCS projects around the world - Knowledge sharing experience**
Bob Pegler, GCCSI

15:50-16:05 **Public-private partnerships on CCS R&DD**
Demetris Koufos and Sergiy Maslichenko, Energy Efficiency and Climate Change, European Bank for Reconstruction & Development

16:05-16:30 Discussion

16:30-17:00

CLOSING REMARKS, CONCLUSIONS

16:40-17:00 *Juho Lipponen, Head, Carbon Capture and Storage Technology Unit, IEA*
Irina Verbitskaya, DTEK

17:00 RECEPTION