Opening remarks

made by State Secretary *Eli Blakstad*, Norwegian Ministry of Petroleum and Energy, Norway.

Ladies and gentlemen,

First I would like to thank you for inviting me to this conference. I find the topic for this conference; Transportation and storage solutions for CO_2 in the Baltic Sea region, very interesting and highly appropriate. I appreciate this opportunity to share some Norwegian perspectives on CO_2 capture, transport and storage - or CCS.

As we are all aware of, the world is facing some serious challenges. We are experiencing an increasing demand for energy. At the same time, we have to limit global warming to below 2 degrees Celsius above pre-industrial levels. These are both tremendous challenges that need to be tackled simultaneously.

If we are to meet the challenge of securing a sustainable future energy supply, CCS is an important part of the solution. The expected increase in consumption of fossil fuels will not be sustainable without the implementation of measures designed to tackle the CO_2 emissions. CCS is one of these measures that must be implemented. In the IEA Blue Map Scenario, CCS may contribute with as much as 19 per cent of the energy related emissions reductions needed for halving the global greenhouse gas emissions by 2050. Further, the European Commission's Energy Roadmap 2050 released last December states that CCS will have to be applied from around 2030 onwards in the power sector in order to reach the EU decarbonisation targets. In addition to CCS, measures such as energy efficiency and increasing the use of renewable energy sources represent vital parts of the future energy solutions. This illustrates the importance of continued efforts on CCS.

Norway has been one of the countries leading the way in the field of CCS. CCS is a central part of the Norwegian Government's policy on energy and climate change. This is for instance demonstrated by the fact that we for several years have been storing CO_2 in geological formations.

Since 1996, one million tonnes of CO_2 per year have been separated from the gas production on the Sleipner field in the North Sea for storage in a geological formation 1000 metres below the seabed. Environmental sound storage of CO2 is a precondition for a successful CCS chain. Consequently, the mapping, qualification and verification of storage sites are indispensable for CCS as a climate change mitigation measure. Monitoring of the reservoir shows no unexpected movement in the storage reservoir and no sign of CO_2 leakage. On the Snøhvit field, starting in April 2008, CO_2 from the gas stream is separated and stored before the natural gas is cooled to liquid natural gas. When the Snøhvit field is operating at normal capacity, up to 700 000 tonnes CO_2 may be stored each year.

A cornerstone in the Norwegian effort on CCS is the construction of a full scale CO_2 capture plant at the Mongstad refinery on the western coast of Norway. This work was started in October 2006. The project at Mongstad consists of two stages. The first is the building of The Technology Center Mongstad – the TCM. TCM will be opened in May this year. For us, the inauguration of the TCM will represent a great step forward for CCS in Norway and an important contribution to the development of full scale carbon capture technology. The centre is designed to capture 100 000 tonnes of CO_2 annually and will as such be the largest demonstration facility in the world. The intention of the centre is to create an arena for the development, testing and qualification of CO_2 capture technologies, aiming to elaborate full scale capture solutions for the future. The Norwegian Government has invested approximately 1 billion USD in TCM. It is important that the Norwegian experiences from the testing of different technologies at TCM will be communicated throughout the world.

The next stage - stage two - is large scale carbon capture at the Mongstad gas-fired power plant with an investment decision expected in 2016.

The Norwegian government is working on solutions for transporting and storing the CO_2 planned to be captured from the Mongstad gas-fired power plant. It is estimated that the annual amount of CO2 being captured will be up to 1 million tonnes of CO2. We expect that more than 40 years of petroleum experience and a large continental shelf will be valuable when it comes to the future transport and storing of CO_2. Norway's state owned company Gassco has since 2001 operated the Norwegian petroleum-related pipelines on the seabed, today amounting to almost 8000 km. Gassco has, in other words, solid experience in transporting oil and gas in a safe, reliable and cost-effective manner. The planned systems for transporting CO_2 will to a large extent correspond to existing oil and gas infrastructure. CO_2 transport systems will nevertheless differ some regarding, among others, the risk of corrosion and CO_2 leakage. We will be building on our experience from transporting gas and oil when developing systems and infrastructure for captured CO2.

Norway is strongly committed to further develop and contribute to a widespread dissemination of technologies for CCS. The Norwegian Petroleum Directorate has published a CO_2 storage atlas covering the Norwegian part of the North Sea. The atlas provides a thorough overview of geological formations expected to be well-suited for CO_2 storage. The Norwegian Petroleum Directorate has started the work to expand the atlas to cover the Norwegian Sea. Such comprehensive mapping and publishing of data by the authorities will represent an important step forward in the Norwegian efforts regarding the whole CCS value chain. Both the petroleum industry and research institutions have expressed their enthusiasm for the storage atlas. You will learn more about this exciting work in a later intervention. Furthermore, The Norwegian Ministry of Petreoleum and Energy has invited industrial actors to define offshore areas that can be used to store CO2. Five areas have been nominated and work will be done to identify reservoirs suitable for permanent storage of captured CO2. The aim is to provide the industry with sites suitable for permanent storage of captured CO2.

If we are to obtain CCS at a large scale globally, we will need extensive transport and storage facilities. I think we all can agree that there is little point in capturing CO_2 if we don't have a secure place to store it. The major stationary point sources of CO_2 emissions in the world are not necessarily close to the potential storage sites we currently know about. Different solutions, it being pipelines or other means of transportation, are hence a vital part of the CCS value chain. In order to transport potentially large amounts of CO_2 across national borders, an international regulatory framework is needed. I am therefore pleased that relevant topics related to CO_2 transport and storage will be addressed here in Warsaw.

When talking about CCS, it would be wrong not to mention that CCS is facing some serious challenges. The challenges appear at different levels: Complex and costly projects, comprehensive processes, legal and regulatory issues, commercially immature technology and the issue of public acceptance, all mixed together with the uncertainty of the future. The complexity explains – and justifies to a certain extent – the regrettable cancellations of some CCS projects in Europe during the past year, most notably Longannet in Scotland and Jähnschwalde in Germany. Further, the implementation of the EU CCS directive has proven difficult in many countries mainly due to lack of public acceptance for storing CO_2 onshore.

To draw some conclusions, in the short or medium term, it appears easier to gain public acceptance for offshore storage than for onshore storage. Furthermore, it has proven demanding to realize full scale CO_2 capture and storage within 2020. Despite the abandonment of important projects and other obstacles facing CCS, we see political will and financial ability in several countries to continue the efforts on CCS.

In Norway, we have had our share of CCS challenges, too. When looking back, we were a bit optimistic when defining the time frame for the CCS projects at Mongstad. We have to acknowledge that technology development often takes more time than we politicians expect. In my opinion, however, it is of great importance that the politicians set an ambitious agenda, make budgetary priorities and provide solid framework conditions to pave the way for the needed CCS progress. We cannot give up when encountering difficulties. The challenges facing CCS makes it even more important that leading countries like Norway continues the efforts on CCS.

The Norwegian government has aimed at overcoming the challenges relating to technology development, costs and regulatory issues by carrying out CCS projects in Norway, by actively participating in and supporting various international organisations and initiatives and by providing substantial public funding. Given that CCS is a commercially immature technology, public funding will be crucial at this stage in the process. The Norwegian government realises the need for mechanisms and incentives for the industry so that carbon capture, transport and storage can become commercially attractive. Close interaction between the state and the industry is important in order to generate long-term sustainable solutions, sharing the future commitments between the involved parties.

The need for long-term strategies for CO_2 source clusters and future CO_2 pipeline networks can only be reached through regional planning and development.

As a means to stimulating such development, deployment and dissemination of CCS technologies at a global scale, cooperation is a key. We therefore need to join efforts in order to contribute to a much needed reduction in global CO_2 emissions. On that note, I look forward to the findings from this conference. Hopefully, the conclusions being drawn here in Warsaw can be a valuable contribution leading to a more rapid and cost-effective implementation of source-to-sink transmission of CO_2 in the Baltic Sea region.

Thank you for your attention!