

IGU GAS Event 13 December 2009 Copenhagen, Denmark

HELGE LUND, CEO of Statoil

Ladies and Gentlemen;

Good afternoon and thank you for this opportunity to share some reflections on a topic of great interest to Statoil; climate change and the industry's response.

This week world leaders are gathered to discuss one of the most challenging issues of our future; how to respond to the climate change.

No doubt, we are facing a daunting task of great importance. But, it is important not to let the magnitude of the challenge overshadow our shared faith in the future.

The industry will play an important role in developing new technology and I am of the opinion that an ambitious agreement, with the right incentives, will be far better for the industry than no agreement.

Today, I will try to attack the difficult issue of climate change, by focusing on two issues; natural gas and carbon capture and storage, hereby referred to as CCS.

I will argue that both natural gas and CCS represents two necessary and important measures towards a lower carbon future.

There is no quick fix towards a non-carbon future, but there are measures ready to be implemented, that represent a rapid response to the climate challenge.

- In Statoil, we believe that natural gas will have to play an essential part when finding a solution to the climate change.
- It is our view that substantial emission reduction in the short to medium term cannot be realised without using more natural gas, on the expense of coal and to a lesser extent oil.

With the coming of unconventional gas resources like shale, we are actually witnessing something of a revolution, not very well known outside the industry.

- Today shale gas is primarily a US phenomena, but the prospects are more global
- For the US, the easiest and most compelling route to climate mitigation is to utilize their new abundant gas resources to substitute coal in electricity generation.
- Utilising more gas seem the obvious cost effective choice to meet energy security, reduce emissions and provide flexibility to facilitate entry of more wind generation

Let me explain the attractiveness of natural gas from our perspective more in detail;

First and foremost, natural gas is an attractive fuel due to large reserves:

- Proven natural gas reserves have grown in tandem with gas demand and production and unlike the oil, gas resource potential is not a concern on a global basis
- The reserve-to-production ratio has remained remarkably stable in the last 2-3 decades, at around 60-65 years (source: IGU Report 2009: "Reviewing the Strategies for Natural Gas")

Secondly, natural gas is a competitive fuel in most market segments and a continuous substitute to natural gas takes place in all major energy markets:

- Gas has been a competitive fuel for over 40 years in Europe and represents approximately 25% of the energy mix – a similar level as in the US.
- Gas is the preferred fuel for a number of appliances and uses due to generally high efficiency rates, relatively low investment and operating costs as well as being safe, reliable and convenient in use

..and last but not least; natural gas is the cleanest fossil fuel in terms of carbon dioxide emission and particles and is the perfect bridge towards a low-carbon future:

- Recent history confirms that penetration of natural gas in the power generation segment and other has had a positive effect on the emission level. The potential for further reductions is huge.
- Natural gas is flexible and it is the preferred fuel for a number of appliances and uses has the property of being able to substitute for any other fossil fuel in any application
- The link between natural gas and renewables should not be underestimated. In the power segment, flexible gas fired turbines are often needed to provide back-up for intermitted generation – such as wind

Based on the availability and the flexibility of natural gas it has to be a part of the equation when planning for a low carbon scenario.

Another key measure to meeting the climate challenge is CCS

- Even though huge resources are spent on developing renewable technologies, fossil fuels will still be the most important energy source for decades to come.
- It is therefore important to develop technology to reduce emissions from the use of fossil fuels. CCS will be important in this regard.
- Statoil has more than 10 years experience from CO₂ storage. At full capacity, we can store ~3 million tonnes of CO₂/year (Sleipner, In Salah, Snøhvit).
- Although there are great expectations to full scale CCS, it is important to have in mind that so far, no large CO₂ capture from flue gases (power plants, industrial flue gas) have been realised.
- Therefore, CCS currently does not play a predominant role and it will take time before it is a substantial measure to reduce carbon emissions
- As a company with huge gas reserves we have the right incentives for commercialising this technology. If we succeed with our efforts natural gas will not only be a bridging fuel – it could be the final destination!

In order to make CCS a part of the response to the climate challenges, I see three main challenges:

- First; the cost of capture, transport and storage is currently way higher than the CO₂ emission cost
- Secondly, many people still questions if CO₂ can be safely stored – especially onshore.
- And thirdly, full-scale technology for capture of flue gases is yet to be qualified

Let me start with the latter;

Statoil is working ambitiously and with great vigour to qualify new CCS technology for gas-fired power plants.

- Our project at Mongstad is probably the full scale project in the world closest to completion, but also here we have many hurdles to overcome.
- The Technology Center Mongstad represents the pilot and learning from TCM will feed into a full scale capture plant at Mongstad.
- I am certain that the Mongstad project will not represent the final solution, but I am also equally confident that it will be an important contribution in making CCS-technology more available and cost efficient.

A substantial legal effort concerning CCS has been done, but there are still outstanding legal and regulatory issues that need to be solved.

- These are in particular issues related to liability for long term storage and licensing for storage acreage.
- Much good work is being done by governments in this area: One recent success has been to have the London and Osoy conventions rewritten to allow CO₂ storage in geological formations under the seabed.
- Even though we have valuable experience in storage of CO₂ – we have stored CO₂ in Utsira since 1996 - we still have some way to go when it comes to public understanding and acceptance.

And finally, costs estimates of emerging technologies are uncertain since experience is limited and learning increases over time and experience.

- CCS from flue gases is currently not economically viable; The CO₂ price is too low to account for the higher technological risks and costs of the technology
- Therefore it would not be possible to invest in such a project under normal project development.
- In early stages of technology commercialization, state support and public – private partnerships are a necessity

As a commercial company, Statoil cannot consider new technology decisions without considering effects on short and long-term future profitability and competitiveness.

As an industry leader, I know placing a high price on CO₂ would be highly effective

- Production will become more efficient – and less carbon intensive energy sources will become more attractive
- With a sufficiently high global price on carbon dioxide, companies with an efficient production will increase their relative competitiveness

- If the global price of carbon dioxide is sufficiently high, capital and technology will be mobilized

Establishing a worldwide, predictable and long-term framework for dealing with carbon dioxide represents the most important contribution the politicians can make.

Global political leadership which take responsibility and does not underestimate its actual room for manoeuvre is needed.

Those leaders are now gathered here in Copenhagen, but whether good intentions are transformed into appropriate interventions and actions remains to be seen.

Thank you for your attention.