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**Key Messages**  
**Given at Bergen High-Level Conference:**  
***“Fighting Climate Change with Carbon Capture and Storage”***

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### **Background on Climate Change and Energy Challenges**

The energy sector accounts for more than 80% of global CO<sub>2</sub> emissions and 60% of global greenhouse gas emissions. In the International Energy Agency's 2008 *World Energy Outlook* business as usual scenario which presumes that policies remain unchanged, between 2006 and 2030, global CO<sub>2</sub> emissions from energy will jump by 45% (equivalent to 40.6 gigatonnes; with an annual growth rate of 1.6%). Emissions from OECD countries will remain almost stable, while an increasing share of emissions stem from non-OECD countries. This increase is driven largely by emissions from growth in the use of fossil fuels, primarily in emerging economies.

This trajectory puts the world on track for an unsustainable global temperature increase of around 6 degrees Celsius by the end of the century. Therefore, this is an increasingly urgent challenge: national and global decisions taken today that lock in existing conventional technologies will shut the door on substantially reducing CO<sub>2</sub> emissions in the future. To meet this challenge, there must be long-term national policies and global agreement on climate change policies. We need both. We must address the entire energy sector in all countries. And we must address emissions from fossil fuels.

In the 2008 *World Energy Outlook*, we proposed two scenarios that lead to stabilising CO<sub>2</sub> emissions – one at 550 parts per million (ppm) and another one at 450 ppm. Both scenarios assume a hybrid policy approach that combines a cap-and-trade system with sectoral

agreements and national policies & measures. Under the 550 scenario, all major economies are assumed to implement national policies and measures in the power generation, industry and buildings sectors. It is also assumed that major economies will participate in sectoral agreements in the iron & steel, cement and transportation sectors. To achieve the 450 scenario, emerging developing economies are assumed to participate in a CO<sub>2</sub> emissions trading system in power generation and industry from 2020 onwards, leaving plenty of time to prepare for such a system. To achieve the 450 ppm scenario, nothing short of an energy technology revolution is needed. In particular, measures in three areas are vital: Energy efficiency must play the primary role, accounting for 54% of CO<sub>2</sub> reductions. We also need increasing diversification of the energy mix through the use of more nuclear power and renewable energy. Finally, importantly for this event today, CO<sub>2</sub> capture and storage (CCS) is very important, particularly after 2020.

### **The Role of CCS and the Need for Large-Scale Demonstration**

The IEA's analysis indicates that if we are to achieve a CO<sub>2</sub> stabilisation scenario of 450ppm by 2050, CCS in power generation and industry will need to account for one-fifth of the necessary emissions reductions by 2050. The world needs to better understand the role of CCS in a sustainable energy future—CCS is not just a clean coal technology; in fact, it is a vital GHG control technology that will be needed to make power generation and heavy industry sustainable. However, the challenges ahead are great: in order to achieve this goal, we will need to substantially accelerate CCS demonstration and deployment: moving from 4-5 existing projects today to thousands of projects in 2050.

However, while we can all agree on the importance of CCS for a clean, secure energy future, actual CCS experience remains extremely limited. While we are learning very important lessons from the four major CCS projects that are operating today, we need many more. Due to the extremely rapid ramping up that must occur for CCS if it is to deliver the necessary reductions after 2020, we believe it is now or never for CCS. The window of opportunity is closing; we have the next decade to act. If we do not develop several large-scale integrated demonstration projects in the next decade, the cost of global climate mitigation will rise dramatically as we will need to turn to other technologies. Leadership is needed.

There are good reasons why it has been difficult to develop early demonstration projects. Power plants and industrial plants with CCS cost significantly more to construct and operate. Adding to this, we are in the midst of a global financial crisis. Commercial borrowing has become more difficult and the cost of capital has risen markedly. This means that many planned power sector projects—including CCS demonstrations—have been postponed or cancelled. Global electricity demand could fall by as much as 3.5% in 2009, the first contraction in demand since the Second World War.

### **Tracking Large-Scale CCS Demonstrations**

To address this, at their 2008 Japan summit, the G8 Leaders strongly endorsed the announcement of 20 large-scale demonstration projects by 2010. In July of this year at the Italy G8 Summit, the Leaders will adopt a process for publicly validating and tracking large-scale CCS demonstration projects. This will involve developing transparent, agreed-upon criteria and then identifying projects that meet these criteria. The IEA will work with our partners the IEA Working Party on Fossil Fuels, the Carbon Sequestration Leadership Forum and the Global CCS Institute to track these projects and to ensure that there is a well-rounded portfolio of projects that ensure CCS is ready in a variety of industrial and geologic settings. It is critical that we improve our engagement of the cement, chemicals, iron & steel, and other heavy industrial sectors that will need to utilise CCS to become sustainable in the future. We will also continue to raise awareness by creating a series of opportunities for major CCS project announcements throughout the year. We hope that this process will galvanize the leadership that is necessary from governments and industry.

### **CCS Roadmap**

In addition, the G8 leaders asked the IEA to develop global technology roadmaps to expand global energy technology coordination and to speed the transition to the cleaner technologies that are needed. As such, the IEA is working on 19 roadmaps for several priority technologies, including solar PV, wind, electric/hybrid vehicles, nuclear energy, the cement industry, and CCS. The CCS Roadmap will be announced this October at the IEA Ministerial, and will include detailed milestones and actions for policy makers and industry

to advance the technology, policy, financing and public awareness of this important technology.

### **Engaging Developing Countries: CDM and Centres of Excellence**

Due to the large expected growth in fossil fuel use in emerging countries, we simply must develop and widely deploy CCS in rapidly growing economies like China, India, Brazil, South Africa and others. The first critical step is to approve CCS in the Clean Development Mechanism so that these countries can have confidence that internationally approved methods are being used to ensure that stored CO<sub>2</sub> is safely monitored and measured. In addition, the IEA is expanding its work with its partners to place a special focus on advancing knowledge about CCS in these regions. These countries must be partners with us, working alongside of us as we test and refine these critical clean energy technology solutions. We are exploring options for setting up CCS Centres of Excellence in leading countries, whereby best practices can be shared via enhanced international collaboration, and we can speed up the process of global CCS demonstration.

### **Recognition of Norway as a Leader**

We thank the Norwegian government for its leadership. Norway has 50% of the large-scale CCS project base in the world today with its Sleipner and Snohvit projects, and has been a true pioneer in CCS. Its transparency in providing data and monitoring results from these projects has been invaluable in advancing CCS to its current status of development and public acceptance. Its development of innovative public/private partnerships to fund CCS demonstrations, and its legal/regulatory development offer models for the rest of the world to build from. Finally, Norway has also been a thought leader through the IEA, its Working Party on Fossil Fuels, its Implementing Agreements, and other bodies like the CSLF. We congratulate Norway on its leadership and look forward to a continued successful partnership in the coming decade.

### **A New Green Deal**

There is a path forward. The current climate and financial crises can and must be viewed as a global opportunity to invest in a clean, secure energy future. The IEA has been calling for a Clean Energy New Deal for many months now. The current stimulus packages are an

important first step, but they do not get us where we need to be on the path to a cleaner, more sustainable energy future. They do not invest enough in CCS. This event in Norway is an excellent call to action; we will carry these messages to the G8 Leaders in July and throughout the year, with the CCS Roadmap, outreach to developing countries, and to government capitols around the globe.