



## INTERNATIONAL ENERGY AGENCY

### CHIEF TECHNOLOGY OFFICER ROUND TABLE JOINT STATEMENT

#### **Introduction**

At the Gleneagles Summit in 2005 the leaders of the G8, meeting with leaders of Brazil, China, India, Mexico, and South Africa, addressed the challenges of climate change, clean energy, and sustainable development. As part of their Plan of Action they asked the IEA for advice on scenarios and strategies for a more sustainable energy future and they agreed to work with the IEA to reinforce links with the international business community.

Global R&D and deployment of advanced energy technologies is essential and urgent to address the threat of climate change, to support rising living standards around the world, and to improve energy security. As the Chief Technology Officers of over 30 leading companies active in the fields of fuel and power supply, transport, and energy efficient equipment and infrastructure, energy is at the core of our businesses. Between us we are spending over \$40bn p.a. on Research & Development. As G8 leaders said at the Heiligendamm Summit, private sector investment is and will remain the primary means of technology deployment and diffusion.

#### **Companies participating in this roundtable include:**

ABB Ltd., Air Liquide, Alstom, Ansaldo Energia, Areva, Robert Bosch, BP, Centro Ricerche Fiat, DuPont, EDF, Electrolux, Enel, Ford Motor Company, Halliburton, HITACHI, Honda, Hydro-Québec, Iberdrola, Philips, Renault, Royal Dutch Shell, St-Gobain, Sasol, Schlumberger, Sharp, Siemens, Tokyo Electric Power Company, Total, Toyota Motor Europe, United Technologies and Vattenfall

As Chief Technology Officers of major companies with leading energy technology programmes we welcome the opportunity to meet with the IEA, also under the auspices of the World Business Council for Sustainable Development, to review the global energy technology outlook and to discuss international collaboration. We welcome the opportunity to work more closely with the IEA and with the G8 and we have agreed to this statement which is addressed to G8 leaders at their next Summit meeting in Hokkaido in July 2008.

**Urgent government action is needed to facilitate the development and deployment of advanced energy related technology. There is a pressing need to design and implement a range of policy measures that will create clear, predictable, long term economic incentives for carbon reduction in the market.** It will only be on the basis of such incentives that business will be empowered to undertake the huge investment programmes that are now urgently needed to deliver competitive low carbon energy to consumers on the scale that is required. Governments need to create the economic opportunities to let technologies compete on environmental criteria without picking winners in advance and to create economic conditions that will make carbon-abating technologies competitive, based on GHG reduction performance. Intergovernmental agreements on a global post-Kyoto framework will be an important part of this.

If the world continues on its current path, global CO<sub>2</sub> emissions from energy production and use are likely to increase by more than 130%, reaching 62 billion tonnes per annum by 2050. More alarming, this outlook for CO<sub>2</sub> emissions has steadily increased in recent years. Urgent action is needed now. The longer we wait the more difficult the task of mitigating climate change becomes.

IEA projections have shown that substantial de-carbonisation of power supply and very large increases in energy efficiency in all sectors of the economy will be required, even to bring global CO<sub>2</sub> emissions back to their present levels by 2050. In that period global GDP could increase four fold. Reducing emissions to 50% of today's level is the minimum that the International Panel on Climate Change considers necessary to contain global warming to safe levels, as well as being an objective that G8 leaders at Heiligendamm agreed to seriously consider. This will require even tougher action in these areas, combined with real progress towards the decarbonisation of transport. The additional investment required in new energy infrastructure and equipment is estimated by the IEA to be in the range of 18 to 50 trillion dollars between now and 2050.

We already know, in general terms, the technologies that are needed, both for the lower carbon generation of energy and the much more efficient use of the energy we have. Applications include R&D and large scale deployment of:

- Energy efficient vehicles, appliances, equipment, office and street-lighting and more efficient motor and heating systems.
- More integrated energy-efficient buildings, including new architectural designs, systems and materials to improve thermal efficiency.
- Renewable energy including solar, wind, hydro and biomass together with energy storage facilities.
- More efficient power plants (including various combined heat and power (CHP) technologies) and industrial processes, with carbon capture and storage (CCS) as a key element in the solution where fossil fuels are used. This needs to include demonstration and deployment of CCS in major developing countries, as well as in developed countries.
- Safe nuclear power and technologies for spent fuel management.
- Large and small scale CHP and advanced heat pump systems, depending on local climate conditions.
- Lower transmission and distribution losses, including distributed power schemes.
- Advanced bio-fuels and technologies for low or zero carbon emission vehicles, mostly already under research and development, such as electric vehicles, plug-in hybrids and hydrogen fuel cells.

A number of the technologies are currently market ready, while others need further R&D effort. While many of them are already available at a relatively small scale, large investments will be required to enable mass scale substitution for the incumbent energy solutions, both in developed and in developing countries. These emerging technologies need markets and government based incentives for more rapid development and deployment. Action should start with technologies that are already available at an affordable cost and be progressively implemented bearing in mind the cost-efficiency criteria.

We recognise that many excellent Government initiatives are already in place, but their scale is well below what will be needed to meet the challenges at hand.

We call on Governments to act now to create the incentives and market conditions, including legal and regulatory frameworks and development of public infrastructure that will enable us to bring these technologies forward. Rigorous energy efficiency standards and building codes – including for new and existing buildings – are also needed to promote energy efficiency and reduce CO<sub>2</sub> intensity, the lowest cost option for reducing CO<sub>2</sub> emissions. We also encourage governments to continue the trend of setting renewable energy technology milestones. We call on governments to increase their support for RD&D, to advance basic science, and to work in partnership with industry to create technology roadmaps to clarify future direction and to speed the deployment of early stage technologies. National and international alignment of government action is required.

We also call on governments to reduce planning, regulatory, trade and other barriers to change in the energy sector. Government action is also needed to increase public awareness, acceptance and understanding of the energy and climate situation and to help the public to better understand their role in combating climate change. Governments and industry together must create the educational incentives and viable career paths that are necessary to ensure that human capital is available to meet the challenges of our energy future.

As technology leaders we represent companies with major commitments to energy RD&D that take their environmental responsibilities seriously and are, through deployment of new technologies and commercial development, taking leading roles in meeting the energy challenge in a responsible way. We are willing to work with the G8 and other developed or developing countries through the IEA, or in whatever way is most appropriate, including technology co-operation with companies in developing countries, to promote advanced energy RD&D and to help to bring forward these necessary and fundamental changes to the global energy economy.

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