Conventional energy sources and energy technology

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PURPOSE: to present a communication on the sustainable power generation from fossil fuels: aiming for near-zero emissions from coal after 2020.

CONTENT: this Communication is presented in the follow-up to the Commission Green Paper on "A European Strategy for Secure, Competitive and Sustainable Energy" adopted in March 2006. Its aim is to present a global view of the actions needed for the continued contribution of fossil fuels and particularly coal to the security and diversification of energy supply for Europe and the world in a way compatible with the sustainable development strategy and climate change policy objectives.

Fossil fuels represent an important element of the energy mix in the European Union as well as in many other economies. They are of particular importance for the generation of electricity: over 50% of EU electricity currently comes from fossil fuels (mainly **coal and natural gas**). Worldwide, growing total energy production is expected to rely increasingly on fossil fuels at least till 2050, particularly in a number of key geo-economic areas. The use of fossil fuels can also be envisaged for the coproduction of electricity and hydrogen on a large scale, opening a realistic and economically viable route to a hydrogen economy.

However, all **use of fossil fuels leads to CO2 emissions**, currently the most critical cause of global warming. If fossil fuels are to continue playing their valuable role in the energy mix, solutions must be found to limit the impact of their use to levels compatible with sustainable climate objectives.

As part of its Energy Policy for Europe, the European Commission has adopted this Communication on how to generate power from fossil fuels in a sustainable manner with a focus on sustainable coal technologies – these will enable coal to maintain its important contribution to secure and competitive energy supplies for Europe.

If the EU is to achieve its long term climate change objectives, much cleaner coal technologies and a significant reduction of CO2 emission will be necessary. Furthermore, developing **clean coal and carbon capture and storage technologies** is crucial at the international level: it is expected that twice as much electricity as today will be produced world-wide from coal by 2030. This will in turn bring new opportunities for European export as well.

In order to make sustainable fossil fuels a reality after 2020, the EU must establish a favourable regulatory framework for the development of these novel technologies, invest more, and more efficiently, into research, as well as take international action. The EU Emission Trading Scheme will also need to incorporate capture and storage in the future.

The Commission will in 2007 start work to:

- substantially increase the funding for R&D in the energy area, making the demonstration of Sustainable Fossil Fuels technologies one of the priorities for 2007-2013. It calls on Member States to show an equal commitment to R&D and demonstration in this area. It will also seek to ensure that action at both EU and Member State level complement the efforts by industry in the framework

of the Zero Emission Fossil Fuel Power Plant Technology Platform (ZEP TP). A European Strategic Energy Technology Plan will provide a suitable instrument for the overall coordination of such R&D and demonstration efforts and for the maximisation of synergies at both EU and national level;

- examine (inter alia by way of an in-depth impact assessment study to be undertaken in 2007) possible measures for achieving the demonstration of Sustainable Fossil Fuels, and particularly Sustainable Coal, technologies. On this basis, the Commission will determine the most suitable way to support the design, construction and operation by 2015 of up to 12 large-scale demonstrations of Sustainable Fossil Fuels technologies in commercial power generation;
- assess on the basis of recent and planned investments whether new fossil fuels power plants built and to be built in the EU use best available technologies regarding efficiency and whether, if not equipped with CCS, new coal- and gas-fired installations are prepared for later addition of CCS technologies ('capture ready'). If this turns out not to be the case, the Commission will consider proposing legally binding instruments as soon as possible, after a proper impact assessment;
- assess the potential risks from CCS and lay down requirements for the licensing of CCS activities and for adequately managing the risks and impacts identified. Once a sound management framework is developed, it can be combined with changes to the existing environmental regulatory framework at EU level so as to remove any unwarranted barriers to CCS technologies. The Commission will also assess whether to amend existing instruments (such as the Environmental Impact Assessment Directive or the Integrated Pollution Prevention and Control Directive) or propose a free-standing regulatory framework. It will assess which aspects of the regulatory framework are preferably addressed at EU level or, alternatively, at national level. The Commission will, in early 2007, hold a public internet-based consultation on different options for CCS to ensure the proper involvement of the European public in the evaluation of the environmental integrity and safety of the capture, transport and geological storage of CO2. In the review of the EU Emissions Trading Scheme (EU ETS), the Commission will address the recognition of CCS activities in the EU ETS. A proposal for the revision of the ETS is planned in the Commission Work Programme for 2007; it will relate to the period from 2013 and will aim at the projection of necessarily regulatory stability. It will seek a level playing field in line with the actual CO2 benefits, both between various CCS options and across the EU for investment in CCS technologies. The Commission will also consider intermediate options to take account of CCS activities undertaken during the period 2008-2012;
- continue its efforts to achieve a global agreement to limit and subsequently reduce global emissions of CO2 and other greenhouse gases, in line with the objective of limiting the increase in the earth's average temperature to a maximum of 2ºC above pre-industrial levels. The Commission will support the recognition of CCS activities respecting appropriate environmental safeguards as part of the broad portfolio of energy options necessary for the implementation of such agreement;
- support appropriate amendments to the international conventions (e.g. The Convention for the Protection of the Marine Environment of the North-East Atlantic – the "OSPAR Convention");
- aim for a clear and predictable long-term framework to facilitate a smooth and rapid transition to a CCS-equipped power generation from coal. This is necessary to enable power businesses to undertake the required investments and research in the secure knowledge that their competitors will be following a similar course. On the basis of the information currently available, the Commission believes that by 2020 all new coal-fired power plants should be built with CCS. Existing plants should then progressively follow the same approach. In order to make a decision, in terms of both the timing of any CCS obligation and the most appropriate form and nature of the requirement, the Commission will undertake in 2007 an analysis including a wide-ranging public consultation on the issue. On the basis of such an analysis, the Commission will evaluate what is the optimal retrofitting schedule for fossil fuels power plants for the period after the commercial viability of Sustainable Coal technologies is demonstrated;
- to accelerate the ongoing European collaboration with China in the demonstration of CCS (bringing the operation date from 2020 significantly forward), the Commission will look for opportunities to extend cooperation on demonstration projects to other key emerging economies (such as India, South Africa) and will seek to stimulate the creation of enabling policy and regulatory framework in

those countries. The Commission will examine options for co-financing such projects and for close coordination of demonstration projects in the EU and in third countries. At the same time, the Commission will seek to identify and exploit the synergies with efforts under way in other coal-using economies (including the US, Japan and Australia).