

MINUTES

INTERNATIONAL ROUND TABLE ON COAL *Clean Coal Technologies* Goethe-Institut, Brussels, 13 November 2012

1. Introduction and welcoming remarks

This meeting, hosted by Dr. Christian Ehler MEP and Mr. Bogdan Marcinkiewicz MEP, was held close to the European Parliament at the Goethe-Institut Brüssel to accommodate the 110 registered participants. Dr. Ehler welcomed members of the Central Europe Energy Partners (CEEP), EURACOAL and the World Coal Association, as well as Commission officials and many other stakeholders. Mr. Brian Ricketts of EURACOAL introduced the speakers.

2. High-Efficiency Low-Emissions Coal-Fired Power Generation – technology roadmap *Jean-François Gagné, Head of Energy Technology Policy Division, International Energy Agency*

Jean-François Gagné presented the IEA's forthcoming High-Efficiency Low-Emissions (HELE) Technology Roadmap that reflects the 2°C, 4°C and 6°C global temperature-rise scenarios to 2050 contained in the recent IEA publication *Energy Technology Perspective 2012*. One of that report's conclusions is that progress in almost all technology areas is too slow and that significant actions are required to get back on track. Up to now, fossil fuels have dominated energy demand and despite an increasing contribution over two decades, the share of non-fossil generation had failed to keep pace with the growth in generation from fossil fuels, particularly coal. Efficiency improvements to reduce CO₂ and other non-greenhouse gases must be further deployed. The challenge is clear: coal demand will continue to rise, yet the 2°C scenario requires significant *reductions* in coal use, hence the IEA's view is that it will be crucial to develop high-efficiency power plant technologies as a first step towards the wide deployment of CO₂ capture and storage (CCS). For example, modernising old power plants located in developed and developing countries could reduce emissions by up to 35%.

The construction of ultra-supercritical plants, which are already being operated in a number of countries, including China, will play a major role in the fight against climate change. Modern, nickel-based super alloys will enable plant components to withstand steam temperatures of 700°C and above. With the latest 1,500°C-class gas turbines, efficiencies of 50% (LHV, net) may be achievable at integrated gasification combined cycle plants, but their cost-competitiveness will depend on sufficient numbers of plants being deployed. By 2020, CO₂ emissions from coal-fired power generation must peak if the 2°C scenario is to be achieved, which is why greater efficiencies must be achieved in the power generation sector today. Also, power generation from low-grade coals, such as lignite, can be much more efficient with recent advances in coal drying. Mr. Gagné concluded by saying that CCS must be developed and demonstrated rapidly if it is to be deployed at a scale sufficient to achieve the 2°C scenario that global leaders had committed to.

3. Improving the Efficiency of Coal-Fired Electricity Production – the Prunerov case
Vladimír Budinský, Board Member – Strategy & Communication, Severoceske doly a.s. and Chair of UNECE Ad Hoc Group of Experts on Cleaner Electricity Production from Coal and other Fossil Fuels

Vladimir Budinský reported on the last meeting of the UNECE Ad Hoc Group of Experts on Cleaner Electricity Production from Coal and Other Fossil Fuels when participants discussed the important question of how to reduce greenhouse gas emissions in countries with substantial fleets of coal-fired power plants. Was it better to increase the efficiency of these plants by upgrading and replacing older units with modern equipment to reduce CO₂ emissions, or was it better to invest in renewable sources? Several case studies have shown that it is more cost effective to invest in the modernisation of existing plants rather than replacing them with renewables – at least in terms of cost per tonne of CO₂ saved, this being a crucial consideration for policy makers. The International Energy Agency (IEA) forecasts in its current policies scenario that world coal demand will continue to grow strongly over the coming decades – just as it has over the last decade – because coal is the least costly and most accessible fuel for fast-developing countries, as well as for many developed ones. Given this fact, Mr. Budinský believed that improving the efficiency of coal use was not an option, but a necessity.

Mr. Budinský presented a case study on the Pruněřov project being undertaken by CEZ, the Czech utility company. With new, larger generating units, the efficiency of power generation will be increased from 32.8% to 40% and CO₂ emissions cut by 41% – partly because the plant's total capacity will be smaller. Overall, annual emissions are expected to fall from 10 million tonnes today to 4 million tonnes from 2015. He concluded by inviting other experts to participate in the UNECE's work on power plant efficiency – a real-word approach that he said was vital.

4. Japan's Experience – incentivising the deployment of high-efficiency coal power plants
Yoshihiko Sakanashi, Executive Vice President, Electric Power Development Company (JPower)

Yoshihiko Sakanashi gave an overview of Japan's high-efficiency ultra-supercritical technologies: the average thermal efficiency of Japan's coal-fired power plants is the highest in the world at more than 41% and with near-to-zero NO_x and SO_x emissions. Before the Fukushima accident, Japan had planned to increase the share of nuclear to 53% by 2030 and renewables to 21%, whilst coal's share would decrease from the current 25% to just 11%. LNG and oil consumption for power generation should also have been cut. After Fukushima, the government decided to phase out nuclear energy 2030. The gap will have to be filled by renewables (35%) and fossil fuels whose share will therefore rise to 65% in 2030, compared with the planned fall to 26% before Fukushima. Many organisations are opposed to this new strategy, stating that it would jeopardise Japan's stable energy supply and harm economic growth. The future of the new strategy is therefore somewhat uncertain.

At the same time, coal-fired generation has to be reassessed in order to respond to environmental targets. New plant designs using ultra-supercritical technologies and enhanced efficiency of up to 48% are currently being developed. A large-scale IGCC demonstration project in Osaki with oxygen-blown coal gasification will go into construction in 2013 and will be built CO₂-capture ready. With the Osaki and other similar projects, Japan wants to demonstrate its willingness to contribute to worldwide CO₂ emissions cuts through its technology leadership and willingness to export state-of-the-art plants to other parts of the world.

5. Discussion

Juliette Langlais, Director of Environmental Policies Europe at Alstom spoke in support of the Commission's proposed amendment to the ETS Phase 3 auctioning profile (so-called "back-loading") – a view not shared by the coal industry – whilst Bogdan Janicki, Senior Advisor at CEEP explained the great need for investments in coal-fired power plant modernisation and renewal in central European countries. He called for a policy regime that recognised the benefits of such investments: less pollution; reduced CO₂ emissions; and more flexible generation. With current climate and energy policies, such investments were frozen – a situation that he said was untenable and needed to be addressed.

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Annexes: Presentations by Messrs. Gagné, Budinský and Sakanashi