

11 June 2014
Charlemagne Building, Brussels

TENTH COAL DIALOGUE

*Transforming energy supply
in the EU: what can coal and
clean coal technologies deliver?*

Programme

Co-chairs: Mr. Jan Panek, Head of Unit B3 – Internal Market III: Retail markets, coal & oil, DG Energy
Mr. Paweł Smoleń, President, EURACOAL

Welcome and keynote

From the European Economic and Social Committee: Mr. Dumitru Fornea, Head of International Relations Department, MERIDIAN National Trade Union Confederation of Romania and EESC Member (Group II)

Session I: Coal's contribution to the security of supply

Introduction and moderator: Mr. Phil Garner, Director General, Confederation of UK Coal Producers and Chair EURACOAL Environment Committee

Presentations by panellists:

“The current and future contribution of coal to the energy mix”

Mr. Stefaan Vergote, Head of Unit A4 – Economic Analysis and Financial Instruments, DG Energy

“Prospects for domestic coal production and imports into the EU – how to reduce geopolitical risks through diversification”

Dr. Erich Schmitz, Chief Executive, VDKi – Verein der Kohlenimporteure e.V. (Coal Importers Association)

Panel discussion with the audience moderated by Phil Garner: “How will the current debate on security of supply affect the role of coal in the European Union’s energy mix?”

Session II: Clean coal technologies – strengthening coal's contribution to sustainability

Introduction and moderator: Mr. Torsten Wöllert, Deputy Head of Unit C1 – Low-Carbon Technologies, DG Climate Action

Presentations by panellists:

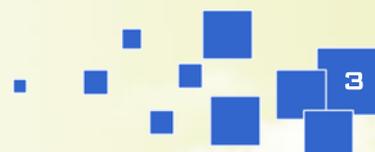
“Coal-fired power plants in the context of the ETS and the Large Combustion Plants Directive: what does EU legislation mean for investors?”

Mr. Kazimierz Szynol, Director – Jaworzno Power Plant, TAURON Polska Energia SA and member of the management board of the Polish Electricity Association (PKEE)

“Power plant improvement programme at STEAG – using clean coal technologies to improve efficiency and ensure flexibility as a means to balance intermittent renewables”

Dr. Hans Wolf von Köller, Head of Energy Policy, STEAG GmbH

Panel discussion with the audience moderated by Torsten Wöllert: “What can we expect from new technologies: a view on efficiency, flexibility and the potential for emission reductions?”



Session III: Determinants of future coal use – meeting the public acceptance, financing and regulatory compliance challenges

Introduction and moderator: Mr. Jan Panek, Head of Unit B3 – Internal Market III: Retail markets, coal & oil

Presentations by panellists:

“Best practices in lignite production: public participation in the planning and the rehabilitation of lignite sites to win acceptance”

Mr. Michael Eyll-Vetter, Vice President Mine Planning, RWE Power AG

“Financing coal-related projects under the EIB’s new energy-sector lending strategy”

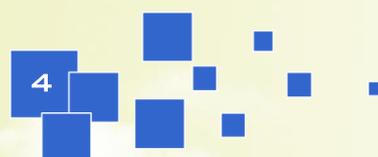
Mr. Roland Schulze, Managerial Adviser – Low-Carbon Energy Technology, European Investment Bank

Panel Discussion with the audience moderated by Jan Panek: “Examining the key drivers: How can coal fit into future energy mix? What does it take to deliver?”

Wrap-up and conclusions

EURACOAL President, Mr. Paweł Smoleń and Mr. Jan Panek, Head of Unit B3, DG Energy

All presentations are available on the EURACOAL website (www.euracoal.org)
– only selected slides are included in this summary report.



Introduction

The 10th Coal Dialogue, jointly hosted by the European Commission DG Energy and the European Association for Coal and Lignite (EURACOAL), reflected the current focus on energy security, with sessions on coal's contribution to security of supply and sustainability, alongside future challenges. An opening address by EESC Member, Dumitru Fornea, highlighted the need for more investment in clean coal technologies – a theme that was developed in presentations from the European Commission and coal industry representatives.

Welcome & keynote

Jan Panek, Head of Unit responsible for coal at DG Energy, opened the 10th EC-EURACOAL Coal Dialogue by thanking participants and expressing his wish for a good discussion. He passed on the apologies of Prof. Borchardt, Director at DG Energy, who could not chair the meeting due to other commitments.

EURACOAL President, **Paweł Smoleń**, listed the advantages of coal: an attractive price which helps economic growth; a reliable contribution to system stability; and a diverse availability from a liquid market with many suppliers. The challenge for coal is to be ever cleaner. However, clean coal technologies are available and when all these factors are put in balance, coal wins 4-0, making it one of the most attractive energy sources that can also back up renewable sources on a cold *stille nacht*.



Left to right: Jan Panek, European Commission; Paweł Smoleń, EURACOAL; Phil Garner, Coalpro and Erich Schmitz, VDKi

Mr. Smoleń expressed his frustration that at the High-Level Conference on Energy Security Strategy, organised by the Commission on 21 May 2014, coal was not on the agenda and barely mentioned,

despite the clear advantages of indigenous coal and lignite.

Dumitru Fornea, representing EESC Group II (Workers), gave a keynote speech in which he expressed his hope that more attention would be given to coal by the European institutions, especially given the EU's growing dependence on imported natural gas. He saw technological innovations taking place elsewhere that meant coal would remain a key raw material for chemicals and power production – notably the many coal gasification projects in China. However, Mr. Fornea felt that policymakers and consumers did not understand “clean coal”.

In discussion with his Spanish colleagues, the disadvantages of a fuel mix without coal in Spain had become clear, given the intermittency of wind and solar PV. However, the Commission appeared to ignore such grid security concerns and simply wanted coal pushed out of the energy mix, he said.



Left to right: Dumitru Fornea, EESC and Peter Tjan

On the international coal market, he observed that producers who export to Europe, from Russia or Colombia for example, do not operate to the same environmental standards as European producers, leading to a tilted playing field. Within the EU, he was proud that the EESC had succeeded in changing the Commission decision on State aid for hard coal mining which resulted in a less aggressive phase out of aid by 2018.

Talking of his own country's experience, he was disappointed that hard coal mining might end by 2018, despite significant reserves in Romania. There had been some investment to develop hard coal, but it had been ineffective because of corruption or bad decisions on how to replace old, Soviet technology from the 1950s. Good governance was crucial, he said, since without it, EU hard coal producers would never be able to compete with Colombian and other imports. The problem was political, he said, because policymakers do not properly understand coal. In Romania, for example, a coal-fired power plant is planned near the Black Sea, at Braila, fuelled with

South African coal, despite large deposits of local coal being available just a few hundred kilometres away.

Mr. Fornea accused outside interests of wanting to eliminate coal mining in Europe: producers and traders from other countries would naturally like to see only demand for coal with no indigenous supply, whilst NGOs did not reflect the views of local, often poor citizens. It was wrong that a small number of companies and unrepresentative groups can carry so much influence, he said.

Looking more broadly, China enjoys cheap electricity, therefore its industry is developing well and corporations move production there, creating jobs and wealth for its people. If the European institutions cannot fulfil these basic needs of jobs and wealth, then citizens will revolt, as in Bulgaria in February 2013. Subsidies there for renewable energy sources pushed up electricity prices by 8% which led to public uproar and collapse of the government. In Bulgaria and elsewhere, coal is not the enemy of other energy sources: all the industry wants is a technology-neutral approach, he explained.

Mr. Fornea saw a growing problem with financing: the state banking sector and, increasingly, private banks were refusing to invest in the coal industry. Given that the European tax payer had bailed out this failed sector, he pointed to the double standards applied by governments.

Coal means not only electricity, but also raw materials for other industries. From reports by the European Coal Combustion Products Association,

one can see that large players like Holcim and Lafarge are using fly ash to produce construction materials and that the quantities supplied are insufficient to meet annual demand – coal is thus part of a circular economy.

Mr. Fornea argued passionately that the public perception of coal must be changed. In general, public opinion in Europe is against any mining, despite the clear need for raw materials. Many, especially the young, do not appreciate that mineral commodities must be mined somewhere. Hence, courageous decisions must be taken by policymakers. The Commission, which in his opinion is the *de facto* European government, needs to take bolder measures to ensure a fair treatment for the use of coal in the European energy mix and in this sense might be surprised by the level of support in the European Parliament for a pragmatic approach.

EURACOAL President, **Mr. Smoleń**, added that coal should stay in Europe, otherwise jobs, experience and technology would be lost and member states would have to import virtually everything needed for modern life.

He agreed that coal is not against any other energy source – there is enough space for everyone: coal will stay and renewables will continue to develop. However, coal cannot be replaced by wind since it will take decades to develop a distribution network with new storage technologies that can match the reliability of the current network. The question was whether investment would be allowed in modern coal plants with low emissions or whether we would simply rely on the old coal plants from a past era.

Sessions

Session I: Coal's contribution to the security of supply

Phil Garner, Director General of the Confederation of UK Coal Producers (Coalpro), began by asking what “security of supply” actually means. For different people, it means different things: residential consumers want light at the flick of a switch; businesses base their production decisions on the availability of secure electricity; while utilities must assess the market need for secure supply. For everyone, energy is essential, but Mr. Garner argued that policy does not always take proper account of each and every one of the three energy-policy objectives: price, sustainability and security.

The current and future contribution of coal to the energy mix

Stefaan Vergote, Head of Unit – Economic Analysis and Financial Instruments at DG Energy, recalled that the European Council had asked the Commission to present a European energy security strategy by June 2014, in response to the crisis in Ukraine. The Commission’s published analysis covers not only short-term issues (measures for the coming winter), but also long-term concerns. He admitted that no single number can define security of energy supply, but believed that the Commission’s energy policy was now supported by better economic analysis.



EU Energy Security Strategy (28/5/2014)

key actions:

1. Immediate actions aimed at increasing the EU's capacity to overcome a major disruption during the winter 2014/2015
2. Strengthening emergency/solidarity mechanisms including coordination of risk assessments and contingency plans; and protecting strategic infrastructure
3. Moderating energy demand
4. Building a well-functioning and fully integrated internal market
5. Increasing energy production in the European Union
6. Further developing energy technologies
7. Diversifying external supplies and related infrastructure
8. Improving coordination of national energy policies and speaking with one voice in external energy policy

A study by the Commission, accompanying the strategy, shows that overall, the EU’s energy import dependency has increased since the mid-1990s, from

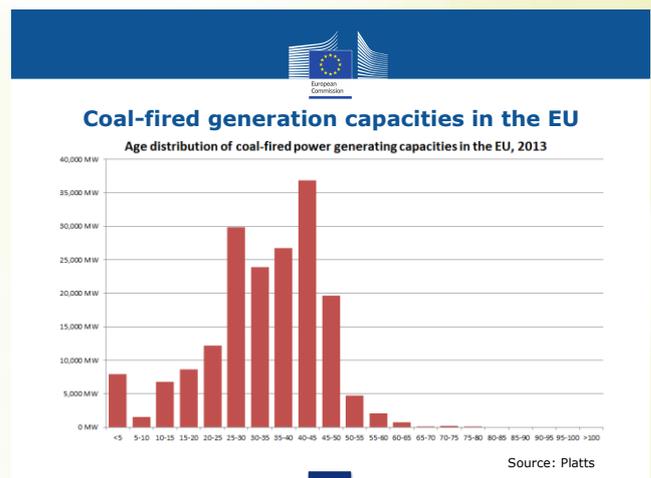
43% to around 53%. The growth in oil import dependency is well known, but gas and coal imports also grew. After significant declines in the production of indigenous oil, gas and coal due to depletion or uncompetitiveness, import dependency has stabilised since 2006 – driven by policy measures and an economic crisis that moderated demand.

Of relevance to the coal industry are measures proposed by the Commission in its energy strategy on the development of indigenous energy sources. The exploitation of hydrocarbons and clean coal with CCS are thus on the agenda.

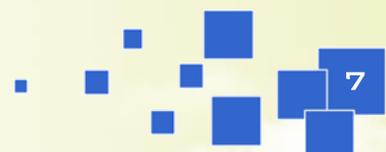
Over the last decade, the steady production of lignite and increased imports of hard coal have compensated for a drop in local hard coal production. Imports of hard coal come from a variety of sources, mainly Russia, Colombia and the US.

Electricity output grew until 2008, but has since stabilised. Coal’s share in power generation fell from 35% in 1995 to 27% in 2012. However, at 27%, coal is the most important energy source for power generation, followed by nuclear. Renewable energy sources, including large hydro, were in third place (24%), followed by natural gas (19%).

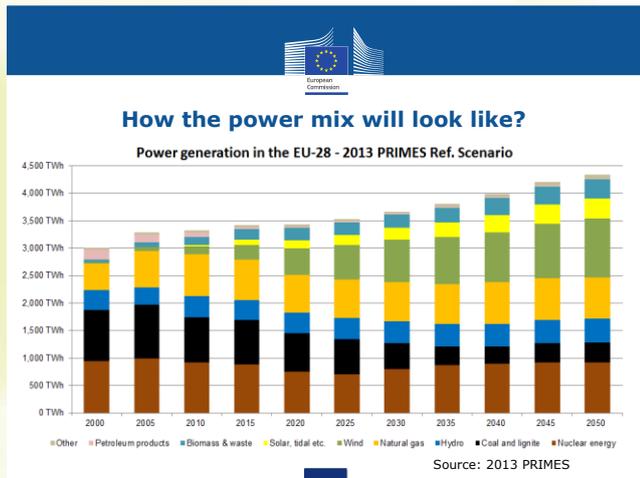
In the EU, significant coal-fired power generation capacity will need to be replaced or retrofitted in the coming decade, which presents an important investment challenge.



Mr. Vergote highlighted the future power generation mix envisioned by the Commission in a reference scenario, a high-renewables scenario and a scenario with CCS. These PRIMES-model scenarios are used in Commission analyses and all show the share of coal gradually declining until 2030, after which it shrinks



significantly. At the same time, the share of gas and nuclear will also slightly decrease, while the shares of wind and solar (and, to a lesser extent, biomass) will increase to replace conventional sources.



In conclusion, there is a particular challenge for coal in the fuel mix. The Commission aims to increase combustion efficiency because it would result in lower emissions for the same power output. Ultimately, Mr. Vergote concluded, CCS would be very important for coal so must be demonstrated in Europe and gain better public acceptance. He acknowledged the Commission's disappointment that the NER300 had so far failed on CCS, calling on industry to help push this technology forward.

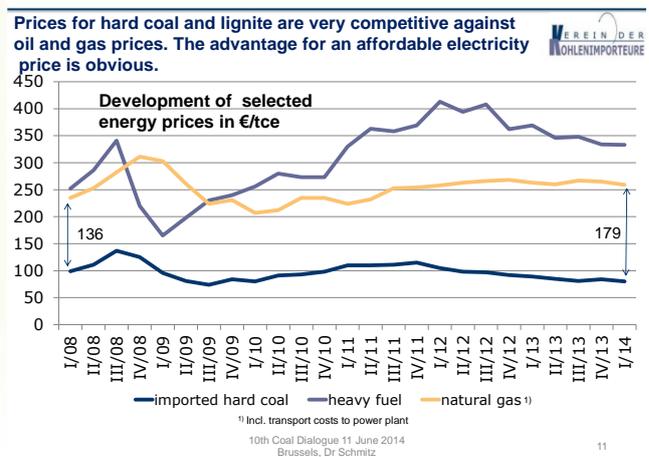
Prospects for domestic coal production and imports into the EU - how to reduce geopolitical risks through diversification

Erich Schmitz, Chief Executive of the German Coal Importers' Association (VDKi), explored the prospects for domestic EU coal production and imports, focusing in particular on how to reduce geopolitical risks through diversification. Dr. Schmitz asked why the Commission refers to "solid fuels" rather than the traditional name "coal". Hard coal reserves are extensive and widely spread across the globe: proven reserves could last for another 100-110 years with resources for over 2 000 years. Lignite offers a stable pillar of indigenous primary energy in Europe, with reserves sufficient for another 140 years.

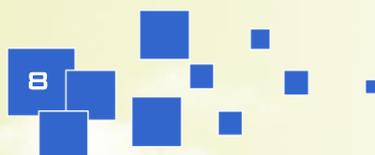
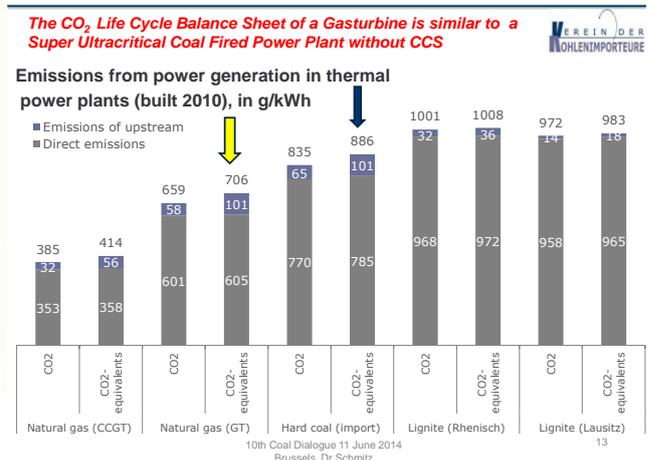
There is a liquid international coal market: the increased demand for hard coal over the past thirteen years was easily supplied by a doubling of seaborne coal trade. Reflecting on the current crisis, Dr. Schmitz said that steam coal imports from Russia

could be replaced by other suppliers to the Atlantic and Pacific markets without any major disruption to the global market – a finding confirmed by the Commission.

Coal supply will remain important to meet primary energy demand in Europe, even as the share of renewables increases. In 2013, hard coal imports increased in all of Europe's major markets. For example, in Germany, imports increased to replace lost German coal production and because gas is no longer competitive for electricity generation. The prices for hard coal and lignite are very competitive against gas prices by a margin of €179/tce. The advantages of an affordable electricity price are obvious, Dr. Schmitz said.

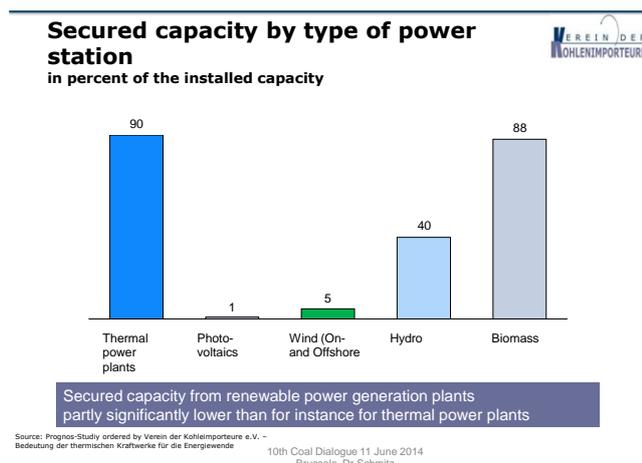


Presenting the CO₂ life-cycle emissions for gas-fired plants and for an ultra-supercritical coal-fired power plant without CCS, Dr. Schmitz showed that emissions from these do not differ significantly. He expressed his opinion that future investments in CCGTs are not economic, especially if plants run for only 1 000 to 2 000 hours each year. For such system-balancing roles, open-cycle gas turbines



might be more economic, but their CO₂ emissions are much higher. Coal plants could therefore be the preferred option.

Referring to secure capacity by type of power plant, Dr. Schmitz noted that secure capacity from renewable power plants is significantly lower than from thermal power plants. Photovoltaics offer only 1% security in terms of secure bids received by the German Energy Agency (dena), while wind offers 5%, both significantly lower than the 90% secure capacity from thermal power plants – all expressed as percentage shares of installed capacities.



In summary, coal is the fossil fuel with the largest global resources. Hard coal is traded worldwide in a range of qualities, coming mainly from politically stable countries. Coal production increased in 2012 to 7 200 billion tonnes, being once again the fossil energy source with the highest production growth rate. Coal is the means for guaranteeing security of supply, he observed. However, in Europe \$2.2 trillion of new investment will be needed by 2035 to replace aging infrastructure that includes coal-fired plants, according to the International Energy Agency (IEA).

Discussion

George Milojcic, Chief Executive of the German Brown Coal Association (DEBRIV), noted that secure capacity from wind turbines was just 0.3% during some weeks. Despite its now huge capacity, the contribution to security of supply from wind is very low and that means 100% back-up is needed, with significant system costs. Dr. Milojcic argued that such integration issues were too often ignored.

Maciej Burny, representing the Polish Electricity Association (PKEE), commented that Europe has now

the greenest policies, but not affordable prices or secure supplies. Mr. Burny considered the lack of equilibrium between different technologies, with a heavy focus on renewables. Coal is only mentioned by the Commission in connection with CCS which is a distant prospect in Europe given the lack of CCS demonstration projects. He recommended that the Commission's objectives should be developed according to the tools available.

Torsten Wöllert from DG Climate Action queried the distinction between "energy security" and "security of supply", noting the tight relationship between fuel security and electricity supply security. Dr. Schmitz answered that they are two sides of the same coin and stressed that having a renewables system means having a parallel back-up system. He suggested that the Commission should take a closer look at the affordability of running two systems.

Brian Ricketts, Secretary-General of EURACOAL, commented on recent developments in the US where the President's clean power plan aimed to improve the fuel consumption of coal-fired power plants by 6%. He suggested that such an improvement could also be made in Eastern Europe and asked if the Commission had any plans to improve the efficiency of coal-fired power plants.

Mr. Panek replied that he was glad to see the US taking measures ahead of the UN conference on climate change in Paris in 2015. He agreed that clean coal technologies were a necessary part of the response.

The chair, **Mr. Garner**, was pleased to see a figure on the investment needs in Europe. His concern was affordability and, implicitly, the competitiveness of European industry. He agreed that there is not enough knowledge about CCS or its sustainability and affordability. He called for a technology-neutral approach that did not limit the options available for future generations.

EURACOAL President, **Mr. Smoleń**, said that the industry was not looking for subsidies and not lobbying against others. The truth was that renewables will grow and coal will stay. A super grid would be an expensive folly and with no large-scale energy storage it was wrong to suggest that renewables could displace conventional generation. More attention should be given to the security that coal offers, he concluded.

Session II: Clean coal technologies – strengthening coal’s contribution to sustainability

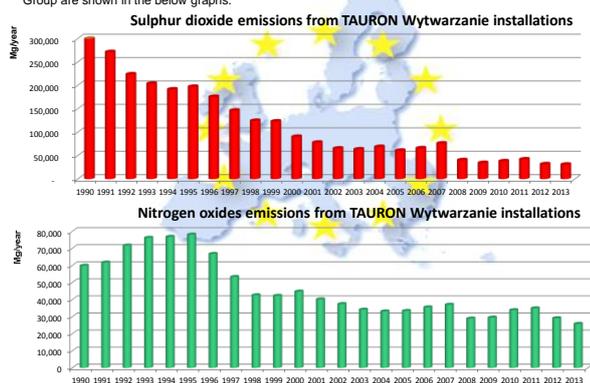
The session chair, **Torsten Wöllert**, Deputy Head of Unit Low-Carbon Technologies in DG Climate Action, explained that his unit works closely with colleagues in DG Energy. He saw one big challenge for coal: its perceived sustainability. Whilst the standards of coal mining had improved over the years, there was a need for further innovation in coal use. The industry should look at new alliances to address this challenge, he suggested. For example, there are efforts to mitigate carbon emissions in other parts of the world, such as in the US and China. Carbon abatement was a reality, he said, making CCS an imperative for the future of coal.

Coal-fired power plants in the context of the ETS and the Large Combustion Plants Directive: what does EU legislation mean for investors?

Kazimierz Szynol, Director of Jaworzno Power Plant at TAURON Polska Energia SA, outlined the current Polish power system and forecast electricity generation by fuel. In both, coal is the dominant energy source so will remain a strategic fuel in Poland, guaranteeing energy security as more renewables and even nuclear are introduced.

3.4. Modernizations to meet LCP Directive requirements and the repowering

Results of the investment projects related to sulphur dioxide and nitrogen oxides emissions in TAURON Group are shown in the below graphs:



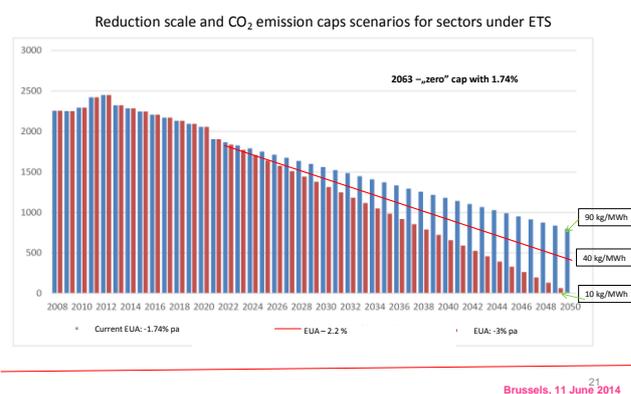
In its EU accession treaty, Poland had several derogations for emissions: to the end of December 2015 for SO₂ and to the end of 2017 for NO_x. Currently, Poland is phasing out old, uneconomic and non-ecological installations and is modernising other installations. To meet the national target for 2030, the energy sector should reduce SO₂ emissions

by 85% and NO_x by 60%. So far, investment in modernisation, for example by TAURON, has led to significant emission reductions.

Regarding the Industrial Emissions Directive (IED), all new installations were deployed with the IED in mind. However, derogations under Articles 31-35 need to be fully respected for the periods foreseen, so that CHP plants, for example, can operate within agreed SO₂, NO_x and dust parameters. There are also concerns regarding the best available techniques reference document for large combustion plants (LCP BREF), due to conflicts with the IED and its high economic cost. Mr. Szynol suggested that any new, revised LCP BREF adopted by the Commission should address these concerns.

From 2008 to 2011, three supercritical power units, with a total capacity of 1 780 MW were commissioned as part of a replacement programme to replace old capacities with the best new technologies. Currently, four supercritical coal-fired power units, with a total capacity of 3 585 MW and a net efficiency of 46%, are under construction. They will replace old power units with poor efficiencies of 32-33%, which means a CO₂ emission reduction of around 40%. Having the potentially high costs of the EU ETS in mind, Mr. Szynol argued for compensation mechanisms and guarantees for such investments.

5.5. Challenges resulting from the ETS Directive and EU economy and power sector decarbonization plans



Poland is dependent on imports of gas and oil, but not of coal; therefore coal is a natural fuel of choice, particularly in light of the Ukrainian crisis. However, to ensure a significant future role for coal in power generation, Poland needs access to CCS or CCU technologies. However, the Commission’s scenarios for 2050 imply reduced coal burn and expensive CCS which will result in the loss of coal mining jobs and a growing fuel import dependency.

Mr. Szynol questioned the “leading by example” policy of the EU in its negotiations on GHG emission reductions, because Europe alone cannot stop climate change. Emission targets for member states have to be realistic and take into account their particular needs.

Political intervention in the ETS, aimed at artificially increasing allowance prices (e.g. proposals for back loading and a market stability reserve), is unacceptable, according to Mr. Szynol. Climate goals must take into account commercially available technologies and all fuel options should remain open for member states, taking into account domestic fuel resources.

7.1. Conclusions

- Coal rehabilitation in the EU is a prerequisite of the power independence. Coal cannot be discriminated as it is a vital element of the energy security of Poland and the entire EU;
- „Clean Coal Technology” development is indispensable;
- Launch of the capacity remuneration system is indispensable in order to maintain the existing conventional generation and to create an appropriate atmosphere for the construction of new installations;
- ETS was developed to obtain CO₂ emission reduction based on market mechanisms at lowest cost. Interference into ETS is unjustified;

For investors, EU energy and climate policy is confusing; thus, investments in new conventional power plants are postponed or delayed. Some energy-intensive sectors had seen a decline in their competitiveness, resulting in a shift of operations from Europe to the US and Asia. Moreover, from the perspective of 2050, Poland may witness a loss of c.12.5% of GDP with current policies.

7.2. Conclusions

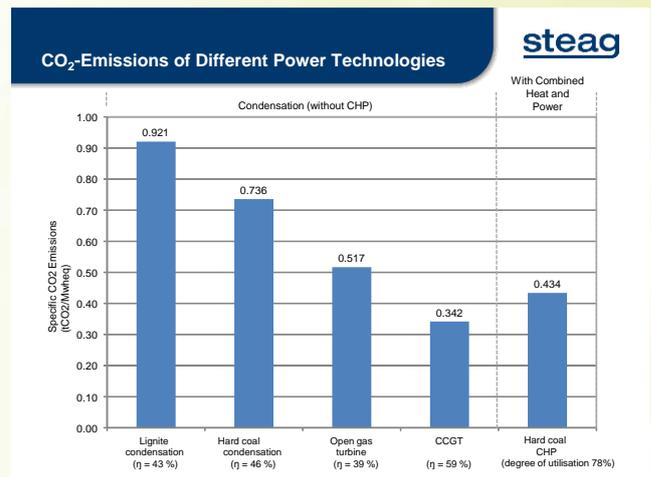
- Ambitious EU climate goals should not jeopardize power security as well as the competitiveness of the economy and energy-intensive companies;
- Poland and Europe need coal for the generation of electrical energy with the application of clean technologies so as to improve energy independence;
- New restrictive emission standards account for increase of the costs and premature phasing out of conventional capacities;
- Coal fired power plants can deliver cheap, reliable, flexible and clean electricity for the next decades;
- Erasing coal from the fuel mix means loss of jobs in the mining industry and in the factories producing equipment for the PP.

Brussels, 11 June 2014

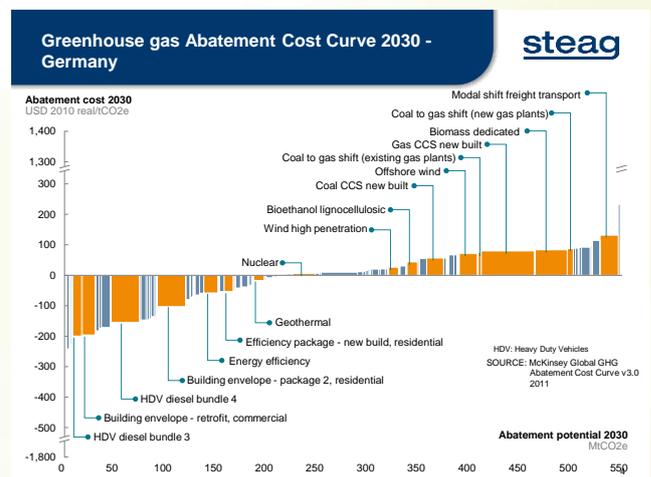
Mr. Szynol concluded that ambitious EU climate goals should not jeopardise energy security or economic competitiveness, especially for energy-intensive companies.

Power plant improvement programme at STEAG – using clean coal technologies to improve efficiency and ensure flexibility as a means to balance intermittent renewables

Hans Wolf von Köller, Head of Energy Policy at STEAG GmbH, began with a comparison of CO₂ emissions for different power technologies. With CHP, coal has one of the lowest CO₂ emissions. Even so, he argued for a holistic approach, looking at life-cycle CO₂ emissions.

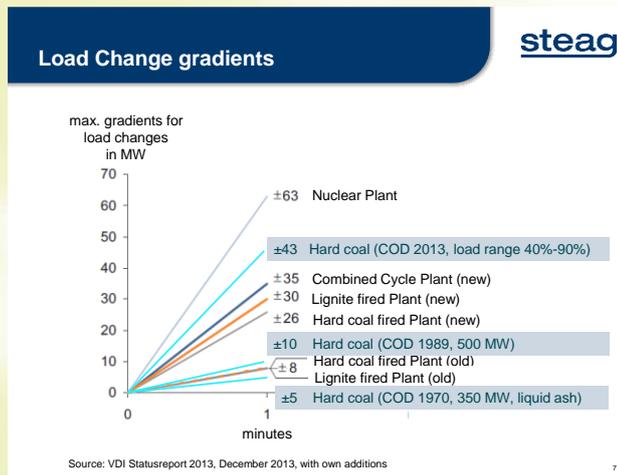


According to a McKinsey analysis, CCS is an expensive way to mitigate emissions. A solution would be to look at the entire system and reduce emissions wherever possible at the lowest cost.



Dr. von Köller then presented his company’s newest coal-fired power plant, Walsum 10, which has an efficiency of 46%, consumes 20% less coal and is one of the most flexible plants in Germany. He noted that the investment was made on the promise that new power plants which reduce CO₂ emissions would receive free carbon allowances, although these never materialised.

A lot can be done technically to improve efficiency and reduce emissions with retrofit projects, ranging from the water-steam cycle and steam generator to ESP and FGD. For example, new steam turbine retrofits lead to increased flexibility and greater output. The net minimum load for STEAG power plants was reduced considerably thanks to such measures, with minimum loads of less than 10%, making the plants ideal for back up of renewables.



Due to the increasing share of renewables, the ability to follow load changes is more and more important. New coal-fired power plants have very similar ramp rates to gas-fired power plants, making them an economic solution to balance intermittent renewables.

Coal Power Plants take a decisive part in the energy transition

- contribution to **security of the supply**, replacement of nuclear power plants, diversified fuel sources, close to the consumption
- **stabilization of the system** through the efficient balancing of the strong fluctuations of renewable energies
- **containment of expenses** with low variable costs and high flexibility
- **CO₂-reducing** by use of combined heat and power systems and modern technologies

... because a comparable technology is not available

Dr. von Köller concluded that coal power plants contribute to security of the supply with diversified fuel sources. They stabilise the system, reduce costs because of their low variable costs and high flexibility, and reduce CO₂ emissions with the use of CHP and modern technologies.

Discussion

The chair, **Mr. Wöllert**, noted that at the end of July, the Commission would select winning bids in the NER300 programme that includes CCS projects. He believed that CCU should also be on the innovation agenda. For example, the German chemical company, Bayer, already uses CO₂ in the production of high-quality building insulation with great success.

Peter Petrov, Research Programme Officer at DG Research and Innovation, asked how STEAG sees clean coal technology in terms of flexibility and off-load performance which was often as important as design-point performance. **Dr. von Köller** replied that load changes increase CO₂ emissions from CCGT power plants, while coal-fired power plants offer a better choice from the standpoint of part-load efficiency.

Andrew Purvis of the Global CCS Institute was happy to hear that the European Commission would continue with its CCS programme. Consultant **Peter Tjan** recalled that the Bełchatów CCS project in Poland was funded by the EU and Norwegian government, but not by the Polish government. **Mr. Szytnol** replied that the European Commission had to convince the Polish Ministry of Economy in order for such a project to succeed. **Mr. Smoleń** added that CCS projects in Germany and Poland had failed because the developers, Vattenfall and PGE, could see no clear financial benefits from completing the projects. The discussion on CCS should be more serious, he added. **Mr. Wöllert** considered that the failure of the projects was due to missing German regulation in the case of Vattenfall and due to government hesitancy in the case of Poland. He was of the opinion that CCS should be promoted more by the coal industry itself. A representative from the Polish permanent representation commented that there is an issue with the public acceptance of CCS in Poland and in Europe in general. Even the flagship ROAD project in the Netherlands has some problems. He suggested that the Commission should engage more in the technological advancements needed.

Dr. Milošević recalled that, when the CCS discussion started in 2005, a global agreement was widely expected from the UN climate conference in Copenhagen. The technology itself works, as the new CCS plants in the US and Canada show. At EURACOAL, it was seen as an infrastructure question – provide a transport and storage infrastructure and

CO₂ capture by industry would follow. He explained that infrastructure would need a long time to develop and urged that work begin on the preconditions needed to build pipelines and prove storage sites. Dr. Milojevic argued that we should start the debate on how to develop the infrastructure first. **Mr. Wöllert** replied that CO₂ infrastructure is indeed included in the Connecting Europe Facility and CCU would help with public acceptance, as seen in North America with EOR.

Dr. von Köller intervened, noting that demanding CCS too early might hinder investments in new plants and that a more certain way to mitigate emissions would be to improve power plants, as STEAG was doing.

Mr. Panek concluded the session by highlighting the importance of public acceptance and financing for the future of CCS – topics for the following session.

Session III: Determinants of future coal use – meeting the public acceptance, financing and regulatory compliance challenges

In this final session, the challenges facing the coal industry were examined. Public acceptance of mining is determined by many factors, some of which can be influenced by government and industry. For example, Germany has a well-established permitting procedure for mining and, although long, results in fair compensation and forewarning for those affected. Even with public support, a successful project requires financing, often from a number of sources, public and private. In 2013, the European Investment Bank changed its energy-sector lending criteria in a way that favours the use of natural gas over coal. A representative from the Bank explained these changes.

Best practices in lignite production: public participation in the planning and the rehabilitation of lignite sites to win acceptance

Michael Eyll-Vetter, Vice President of Mine Planning at RWE, presented the best practices in lignite mining that are needed to win public acceptance. He described a holistic approach to opencast mining, based on the necessity of lignite in energy supply.

The complex approval procedures, high standards of operations and diverse restoration activities all ensured public acceptance in Germany.

Holistic opencast mining concept

- Lignite's necessity for energy supply**
- Complex approval procedures**
 - Overall concept approved by Lignite Commission
 - Individual aspects and details under mining, water and public law
 - Public participation, stakeholder dialogue, information
- Mining process meets high standards**
 - ...from start
 - ...to finish
 - Technical: emission control
 - Ecological: reclamation
 - Social: resettlement
- Diverse activities to ensure public acceptance**
 - Public acceptance depends on dialogue at all levels
 - Highly visible projects and activities support the development in the region

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Coal is and will remain an important contributor to Germany's electricity supply in the next decades; but lignite can be used for other purposes as well, such as CHP and water cleaning or gasification to produce liquid fuels and chemicals.

Lignite makes a crucial contribution to security of supply and price control in Germany's energy mix

Category	Value
Gross power production in 2013 (bn kWh)	629
Changes 2013/10 (bn kWh)	
Nuclear	-43
Renewables	42
Lignite	16
Hard coal	8
Natural gas	-23
Other/oil	-2.5

Energy mix after 2022: Renewables 35-45%, Natural gas, coal 55-65%

Lignite is a mainstay of Germany's electricity supply. Lignite, hard coal and RES closed the capacity gap formed since 2010. Lignite will also be a mainstay of the energy mix of the future.

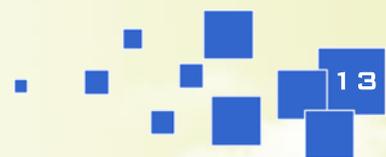
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Approval processes for lignite mining in Germany are complex and involve a Lignite Commission, made up of representatives from all stakeholders. **Mr. Eyll-Vetter** briefly described the approval procedure.

Approval procedure in brief

The flowchart shows the 'Lignite Mining Plan' leading to 'State/regional planning procedures' and 'Lignite sectional plans/resettlement'. It also branches into 'Master Operating Plan' and 'Public proceedings/permits under water law', which further lead to 'Main Operating Plan' and 'Special Operating Plans'. The process is governed by 'State planning procedure', 'Approval procedure under mining law', and 'Approval procedures under public and water law'. A 'Monitoring' phase is indicated at the bottom.

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Public participation is facilitated at several stages of the planning procedure. For example, citizens from one municipality were involved in the design of a lake to be created after the closure of a local mine.

2 Complex approval procedures

Update on the situation of Garzweiler II

- In its judgement of 17 December 2013 the Federal Constitutional Court (*BVerfG*) confirmed the constitutionality of the Garzweiler II opencast mine as legitimate public interest objective; crucial for power generation
- In March 2014, the state government reaffirmed the necessity of extracting lignite from all three opencast mines.
- Restriction: The 4th resettlement section of the Garzweiler II opencast mine, required for extraction after 2030, is to be dispensed with.
- A guideline decision is to be elaborated until 2015.
- This would fundamentally alter basic assumptions underlying the Garzweiler II Lignite-Mining Plan, so that it would have to be amended.
- This declaration of the state government as early as today comes as a surprise; it is important that this process will be well-ordered and free from premature decisions.
- We adhere to the approved extraction boundaries; still, it is necessary that we deal with possible consequences – particularly as regards planning required in future and additional costs.
- We also assess the chances for success of an action.



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In North Rhine-Westphalia, security of energy supply is assured by the three billion tonnes of approved lignite reserves, which provide a reliable basis for long-term energy supply. On 17 December 2013, the extension of the large mine, Garzweiler II, was approved as legitimate and in the public interest by the German constitutional court. North Rhine-Westphalia confirmed this decision, despite adding some hurdles regarding mining after 2030.

RWE sets high ecological standards: in the Rhenish mining area, over 20 000 hectares have been re-cultivated, attracting 2 200 animal and 700 plant species, alongside leisure and recreational areas. Resettlement respects individual and shared values.

Mr. Eyll-Vetter gave some examples of inter-municipal planning initiatives. For example, a former conveyor belt has been turned into a wide path for walkers, cyclists and inline skaters.

Upshot: sustainable long-term lignite mining balances energy mix and avoids supply and price risks

- Lignite's necessity for energy supply**
 - Lignite will be a mainstay of the energy mix of the future
 - Lignite does not require any subsidies and ensures price control and security of supply
- Complex approval procedures**
 - From state/regional planning to mining law and other specific law procedures
 - Public participation takes place at several stages of the planning and approval procedure
- Mining process**
 - High technical standards: emission control
 - High ecological standards: biodiversity-protection measures and recultivation
 - High social standards: resettlement
- Diverse activities to ensure public acceptance**
 - Partnership-based cooperation at several levels

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Financing coal-related projects under the EIB's new energy-sector lending strategy

Roland Schulze, Managerial Adviser for Low-Carbon Energy Technology at the European Investment Bank, spoke about the financing of coal-related projects under the EIB's recently published energy-sector lending strategy.

The EIB's lending strategy, explained Mr. Schulze, is based on three pillars: to secure energy supply and reduce geopolitical uncertainty; to enhance local and global sustainability; and to be economically cost-effective and so support growth and employment. Overall, the EIB has lent approximately €84 billion to the energy sector since 2007, which is 15-20% of total EIB lending. In 2013, energy sector lending rose to €12 billion or around 17% of total EIB lending; almost one third of this lending went to renewable energy projects.

The EU bank

EIB and Energy

The 3 Pillars of Energy Lending Criteria



- Secure supply**
 - geopolitical
 - uncertainty
- Sustainable**
 - locally
 - globally
- Economic**
 - cost effective
 - Growth & Employment

Lending Priorities since 2007:

- Renewable energy – RE
- Energy Efficiency – EE
- Security of energy supply
- RDI – Research, Development & Innovation
- Outside the EU – External energy security and economic development

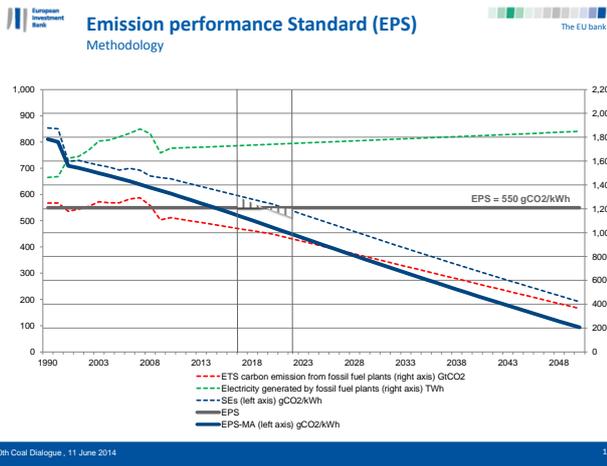
Blending, Advising activities

- Technical assistance (e.g. ELENA for sustainable energy, NER300 for innovation)
- Equity and EU-EIB risk sharing facilities (RSFF, LGTT)

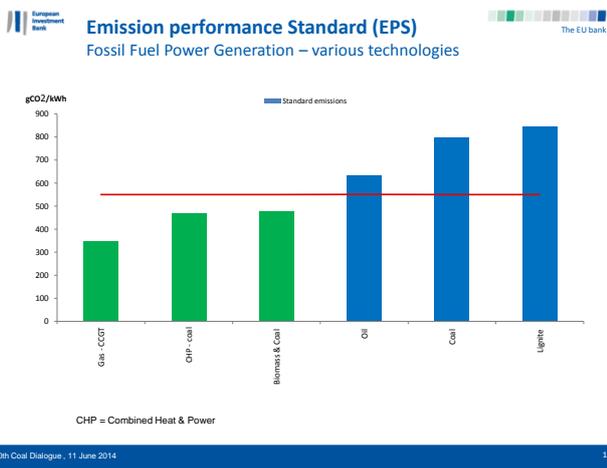
10th Coal Dialogue - 11 June 2014 3

In June 2013, the Bank changed its lending criteria, after a public consultation, with the objective of supporting clean, affordable and secure energy projects. The “no-regrets” sectors of energy efficiency, energy networks, renewable energy and energy RTD projects were prioritised. As a consequence, fossil-fuel generation projects that are not considered consistent with EU climate policy would be screened out.

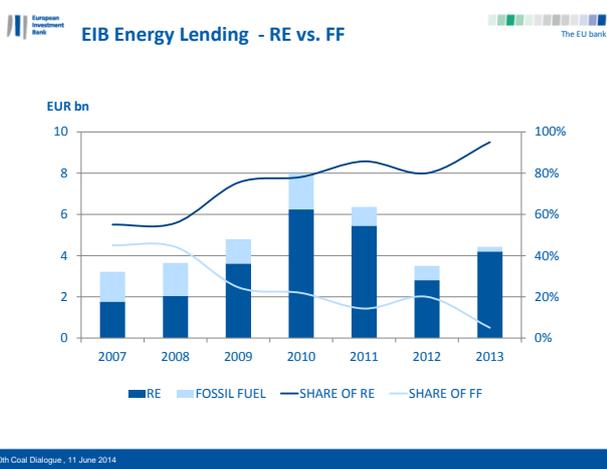
The new screening criteria that has now been introduced is an emission performance standard (EPS) of 550 gCO₂/kWh. The figure, which will be revised from time to time, was calculated as a moving average of the ratio of the targeted annual carbon emissions from power plants and the electricity generated by the same plants in the same year. The targeted annual carbon emissions are consistent with the ETS Directive (2009/29/EC).



This new criteria makes unabated power-only coal- or lignite-fired power stations ineligible for EIB loans, unless these are equipped with CCS. Gas-fired CCGT, coal-fired CHP and biomass-coal plants remain eligible.



Finally, there are limited, tightly defined exceptions for funding, in the case of energy islands and where a “substantial contribution” is made to poverty alleviation.



Discussion

Brian Ricketts, Secretary-General of EURACOAL, commented that the EPS criterion was not in the public consultation, being added only later. Coal is still exploited and countries want to build clean and modern coal-fired power plants. In the case of Romania, for example, new power plants are to be built with Chinese capital and technology, to the detriment of European companies, such as Siemens or Alstom. To have CCS, we need a prosperous economy, due to the high costs involved, but the Bank’s strategy appears to ignore economic competitiveness. Instead, it is an interpretation of EU climate and energy policy that would see coal banned, even though there is no EU directive that bans coal and member states are, in any case, free to exploit coal.

Mr. Schulze replied that the decision to include an EPS was taken by government representatives – being board members of the Bank – as a result of the public consultation. He noted that project sponsors could possibly obtain finance for coal-fired power plants from sources other than EIB, if they wish. The Bank’s main objective is to finance projects that are compliant with EU policies: financing of unabated coal-fired power plants does not at present belong in the “no-regrets” category.

Wrap-up & conclusions

In his conclusions, the Head of Unit Internal Market III: Retail markets; coal & oil, **Jan Panek**, said that the coal industry must be seen to be tackling greenhouse gas emissions – the climate issue would not go away. As long as industry and the Commission continued to work in that direction, then there would be no question that coal (and lignite) will continue to contribute to security of energy supply. He added that when the Commission uses the term “solid fuels”, it is not out of political correctness or “doublespeak”, but merely a term that encompasses coal, lignite, oil shale and peat. The messages directed at coal apply to all these solid fuels. He welcomed the tangible examples of good practices in the Rhenish lignite-mining area. The proactive approach seen in Germany was not new to the Coal Dialogue, but public acceptance and regulatory compliance were issues across many member states and Mr. Panek saw a need for similar good examples in other member states.

Mr. Panek highlighted the importance of seeking political consensus and synergies between coal and other energy sources. He welcomed the suggestions of intelligent ways forward, combining further deployment of renewable energy with the latest progress on coal combustion technologies. The increasing flexibility of coal-fired plants, reported during the meeting, may be a promising path forward for coal. There had also been a clear call to seek alliances with the chemical industry on carbon capture and use (CCU) and with users of heat to improve the overall efficiency of coal use by adopting CHP. But ultimately, the coal industry must re-engage with CCS, he concluded.

For EURACOAL President, **Paweł Smoleń**, the perception of coal was an important issue to be addressed, but one that was difficult to discuss. He said that the industry offers its full co-operation to ensure that it has its proper place in the energy mix where there is room for many energy sources. As a reliable and stable source of energy, coal will contribute to the future development of the power system. In particular, coal does not leave Europe exposed to the monopolistic behaviour of gas suppliers.

He observed that many EURACOAL members are convinced that coal is forbidden by EU policy. Whilst this might not be true in practice, it is nevertheless the perception held by many. For them, the decarbonisation policy looks like a policy to remove coal, not a policy to reduce emissions and thus create a low-emission society. This perception leaves many business leaders reluctant to invest in coal, and consequently exposes the EU to the dangers highlighted by the International Energy Agency in its recently published investment survey. Mr. Smoleń called for a non-discriminatory approach to the energy mix, noting that the industry is not seeking subsidies or any other special treatment.

What he did not want to see was a policy of invisibility towards coal – pushing the industry underground would do nothing to prepare it for the future. With governments and NGOs leading public opinion against coal, he called for more debate and information on what eliminating coal would actually mean for society. Eliminating energy poverty and ensuring industrial competitiveness depend on affordable energy from coal especially, he said. On CCS, Mr. Smoleń concluded that with the right approach, technologies being developed now would be ready for wide deployment in twenty years, but that it would be premature to demand these today. ■

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