



Annual Report 2011

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Message from the President Dr.-Ing. Hartmuth Zeiß



Dr.-Ing. Hartmuth Zeiß
President of EURACOAL

The euro crisis dominated EU politics during 2011, but energy and climate policy was not forgotten. Both DG Climate Action and DG Energy looked ahead 40 years with their roadmaps to 2050. These will influence decisions taken over the coming years and will also help to define the EU's position on the international stage. The EU must show real leadership, not only in the field of climate policy, but also in strengthening competitiveness and security of supply.

The terrible disaster at Fukushima in Japan marked 2011 as a year when the energy debate in Europe, especially in Germany, took a sharp turn. The European Commission swiftly initiated stress tests on the EU's 143 reactors whilst Germany revised its former policy of life-time extension and decided to phase out its use of nuclear power by 2022. Beyond the disaster at Fukushima, 7 GW of coal-fired power plants and related port infrastructure were lost to the Japanese tsunami and reminded governments everywhere of just how important it is to have a robust power system with reserve capacities. As intermittent renewables grow to account for more of EU electricity supply, the need for reliable capacity, backup and grid services must become a priority to ensure security of supply (see page 4).

Once again, in 2011, global coal use grew strongly – China's coal output rose 8.7% to 3.52 billion tonnes, according to the National Bureau of Statistics, and the country imported 182 million tonnes, overtaking Japan to become the world's largest coal importer. China now accounts for half of all coal consumption. Globally, coal has been the fastest-growing source of energy over the last decade, growing at around 5% per year. The "low-carbon revolution" is simply not happening, because none of the alternative energy options is yet able to compete with coal on cost of electricity. Wind, wave and solar rely on subsidies that some governments and some consumers can afford, but for most countries, especially developing countries, alternative energy sources remain too expensive. Investment in low-carbon energy may be a sound business decision in some countries, but climate protection requires all countries to act together. This was the aim of the 17th Conference of the Parties to the UN Framework Convention on Climate Change that concluded on 11 December 2011 in Durban where the inclusion of CO₂ capture and storage (CCS) in the clean development mechanism was a very positive outcome (see page 6).

Ensuring energy security when the wind doesn't blow or the sun doesn't shine

- Diversity of fuel types and fuel sources is a prerequisite for energy security. Coal, both locally mined and imported from a diverse number of reliable exporting countries, fulfils this requirement.
- Energy storage is also vital to energy security and electricity storage will become more important as more intermittent renewables are deployed. The cheapest “virtual” store of electricity is a coal stock at a coal-fired power plant.
- Related to energy storage is power system flexibility. Coal-fired plants, especially newer ones, are very flexible and are the perfect complement to renewable energy sources.

Message from the President

Along with global energy consumption, CO₂ emissions from fossil-fuel combustion have grown. In 2010, emissions are estimated by the International Energy Agency to have been 30.6 billion tonnes. The European Commission bases its energy policy on achieving certain emission reductions over the coming years, and assumes that the rest of the world will follow. However, the evidence is clear: the rest of the world is not following. Global CO₂ emissions have grown by a massive 46% since the 1990 baseline year of the Kyoto Protocol and, at 12%, the EU's share is relatively small. Whilst we welcome an energy policy that addresses climate objectives, we must ensure that the Commission properly reflects the important role of coal in its communications and legislative proposals. Coal is the No.1 fuel for electricity generation in the EU and remains our most economic and secure source of electricity.

The EU 2020 target is to cut total greenhouse gas (GHG) emissions – which include CO₂ – by 20% over thirty years and means a fall from 5.8 billion tonnes of CO₂-equivalent in 1990 to some 4.6 billion tonnes in 2020. The collapse of heavy industry in Eastern Europe during the 1990s and fuel switching from coal to gas in, for example, the UK, Spain and Italy allowed GHG reductions to be achieved relatively easily and without any specific policy drivers. However, with the targets now proposed for 2050, EU emissions must be cut three-times faster than during the period from 1990 to 2020. This cut in GHG emissions by the EU will reduce the forecast global GHG emissions of 71 billion tonnes by only 7% in 2050 – the EU, acting alone makes little difference to the global picture of rising emissions.

This is the main reason why EURACOAL is so interested in power plant efficiency and CCS – deployed not just in the EU, but around the world. They offer what appears to be an absolutely necessary response to the climate challenge and policymakers should reflect the role that modern coal – some say “smart coal” – can play. Power plant renewal, modernisation and CCS offer a certain route to lower carbon emissions. A combination of renewables, nuclear in some countries and fossil fuels – coal and gas – with CCS provide the pillars of a secure, low-carbon energy future.

EURACOAL wants to see policies that encourage new plant build: high-efficiency power plants and plants that are CO₂ capture-ready. Whilst CCS is already practiced by the oil and gas industry, and at pilot plants, its large-scale application for power generation faces barriers. We know a lot more about CCS than we did just five years ago. The Commission has been progressive with a CCS Directive and funds to support, at least in part, some very large projects. Many projects have demonstrated that CO₂ can be captured – the engineers have delivered on that promise and costs will surely fall. What we have not seen is the successful completion of large-scale integrated demonstration projects for power generation. Utility companies are not specialists in CO₂ transport or storage infrastructure and it seems that a separation of tasks – between plant operators and specialist infrastructure companies – could contribute to the solution. But more than that, the transport and storage of CO₂ does not receive the necessary political support, often because of significant public opposition. Additional incentives and a strong political commitment are necessary to push CCS projects forward in the EU and we look forward to a Commission communication on this in 2012.

UNFCCC Kyoto Protocol: A positive outcome

The failure to reach agreement in Copenhagen in 2009, followed by the weak “Cancún Agreements” in 2010, meant that expectations were not high among the negotiators in Durban – which included EU negotiators led by the Polish government. After a final marathon session lasting sixty hours, agreement was reached to prepare a legally binding post-Kyoto agreement by 2015, taking effect in 2020, and binding all 194 countries to emission goals. In the meantime, it is likely that the Kyoto Protocol will continue after 2012, at least until the new agreement is in place. The “Durban Platform” is notable because it includes China, India and other developing countries, as well as the USA. However, the agreement comes too late to put us on a path that would limit global temperature rise to 2°C. The EU’s policy objective, supported in principle by the major economies within the G8, will be missed. A rise of 3°C or 4°C looks to be inevitable.

Immediately after the Durban meeting, Canada announced that it would withdraw from the Kyoto Protocol. With its booming oil sands sector, Canada has no hope of achieving its Kyoto target and did not relish the prospect of paying billions of dollars to buy assigned amount units (AAUs), from say Russia, to meet its commitment. The Kyoto Protocol now covers only 21% of global greenhouse emissions, based on the latest data for 2008 from the IEA.

The UN process moves slowly, step by step, but has failed in its objective to cut global emissions. Despite the global financial crisis, CO₂ emissions continue to rise; the Kyoto Protocol has had no discernible impact on this trend. In fact, the core driver for CO₂ emissions since 1990 has not been how many wind farms are built in Europe, but the enormous increase in fossil fuel use at the global level, concentrated mainly in China. Only if those emissions are tackled will the EU’s 2°C policy objective be achieved.

In this respect, there was one very positive outcome from the Durban meeting. At Cancún in 2010, a decision was taken to make CO₂ capture and storage (CCS) eligible as a project activity under the clean development mechanism (CDM), provided that certain issues were addressed, namely “modalities and procedures”. In Durban, a set of rules was adopted such that CCS has finally gained international recognition as a legitimate low-carbon technology in the fight against climate change. Without a replacement for the Kyoto Protocol, the financial value of credits from any projects under the CDM is uncertain, but most observers believe that CDM projects will continue in some way and the coal industry can be very pleased that CCS projects are now eligible.

Message from the President

Europe has the capacity to set a good example by developing technology, establishing good practices and taking realistic energy policy decisions. If we are successful enough to maintain our strong industrial base, powered by a robust energy system, then other regions of the world might be inspired to follow.

Looking ahead to 2012, the Danish Presidency of the EU will likely influence much of the debate for the whole year by setting the scene for the Cypriot Presidency in the latter half. The Danish Presidency will promote sustainable growth, under the banner of “a green Europe”, by working on the EU’s targets for 2020 and beyond. In the energy sector, efforts will be directed at energy efficiency, renewables and energy security. In fact, the Presidency envisages a framework for energy savings along the entire energy chain, from production to use, which EURACOAL believes should include the efficiency of power generation. Under the headline of “a dynamic Europe”, the Danish Presidency will promote a well-functioning internal energy market through the expansion of energy infrastructure, as envisaged by the Commission. This should see more competition – playing to the strengths of coal. On the 2050 roadmaps, the Danish Presidency will seek to ensure that Council gives direction on longer-term goals. The Presidency also wants a strong EU voice at the Rio+20 UN Conference on Sustainable Development in Brazil in June, when the EU will need to present a common position on climate action (see page 8).

I was delighted that, in November, EURACOAL was able to support the Second European Coal Days, hosted in the European Parliament by Dr. Christian Ehler MEP and Mr. Bogdan Marcinkiewicz MEP. The message I heard from Mr. Philip Lowe, Director-General of Energy, and later from the Commissioner for Energy, Mr. Günther Oettinger, was that the EU needs to show leadership and to push ahead with clean coal technologies, including CCS. Whilst I agree, CCS must be seen as the end point. I reiterate that there are steps to be taken along the way. We must invest in more efficient coal-fired power plants that are ready to be retrofitted with CCS when it is competitive. We need a roadmap for a European CO₂ transport infrastructure. And we need policy and regulation to enable CO₂ storage, whilst addressing the issue of acceptance. In December, EURACOAL sponsored a dinner debate in the European Parliament with Dr. Fatih Birol, Chief Economist at the International Energy Agency. He described coal as the “forgotten fuel”, using statistics to show just how much of the world’s recent economic growth has been fuelled by coal. However, he too expressed some doubts about how quickly CCS can be commercialised. EURACOAL calls for a new plan for CCS that reflects the need to deploy it widely and outlines what steps are needed today in the EU.

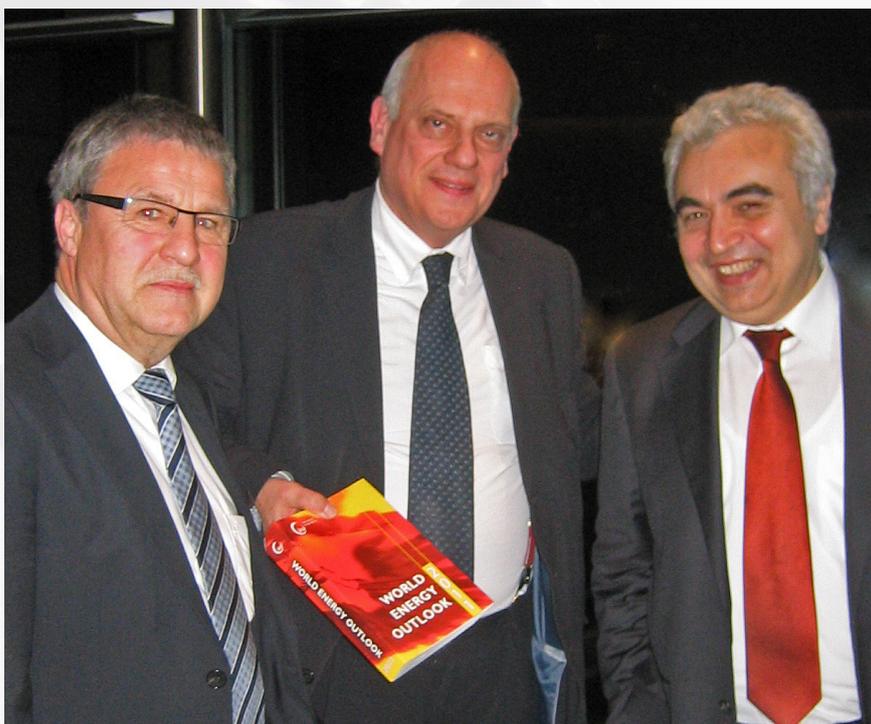
These then are the challenges that EURACOAL must address in 2012 with the help and guidance of members. I offer my thanks to all EURACOAL members who have worked hard with our secretariat in Brussels to promote our common interests over the last year.

Dr.-Ing. Hartmuth Zeiß President

Key Points from DG Climate Action: Roadmap for Moving to a Competitive Low-Carbon Economy in 2050*

- The 2020 targets for 20% renewables, 20% GHG emission reduction and 20% reduction in energy use all stand.
- New, longer-term GHG reduction targets are adopted, with an 80% to 95% reduction by 2050.
- The power sector is expected to deliver very substantial CO₂ savings, driven by more aggressive emissions trading, and perhaps by energy taxation and other measures to deliver a 60% cut in emissions by 2030 on the way towards complete decarbonisation by 2050.
- The EU will become heavily dependent on imported oil and gas by 2050: oil supply will be entirely dependent on imports and over 90% of gas demand will be imported.

* COM (2011) 112, 8 March 2011



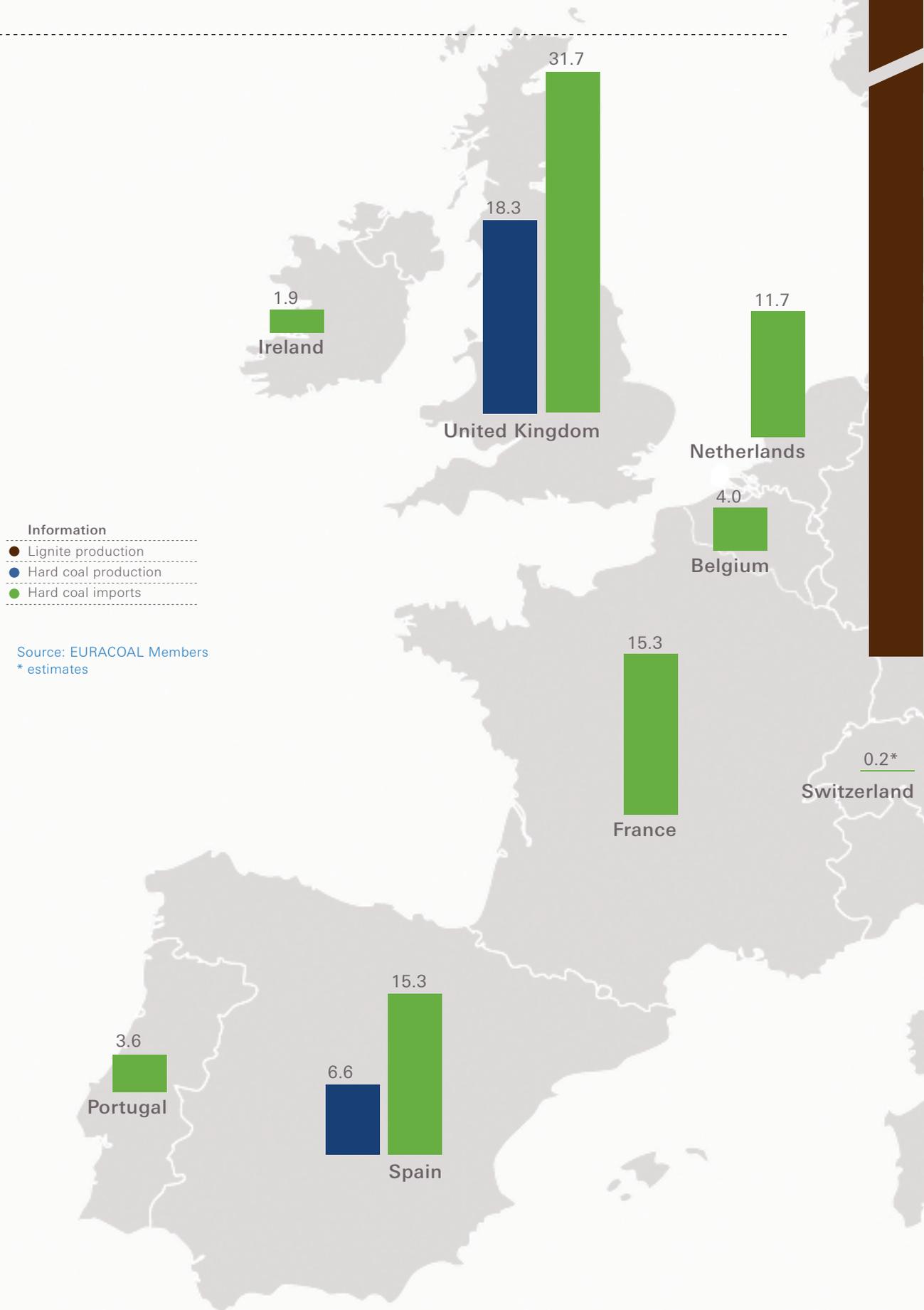
1 - Dr.-Ing. Hartmuth Zeiß, EURACOAL President and Chairman of the Managing Directors at Vattenfall Europe Mining AG & Vattenfall Europe Generation AG (left) with Mr. Giles Chichester MEP (centre) and Dr. Fatih Birol, Chief Economist, International Energy Agency (right) at a European Energy Forum dinner debate sponsored by EURACOAL in the European Parliament, Brussels on 7 December 2011.



2 - In August 2011, EURACOAL was honoured to receive from the Governing Council of the Bulgarian Chamber of Mining and Geology (BCMG) a special award "for its contribution to the development of the Bulgarian mining industry". The award – a silver medal – was presented at the National Miners Day Celebration in Sofia to coincide with BCMG's 20th anniversary.

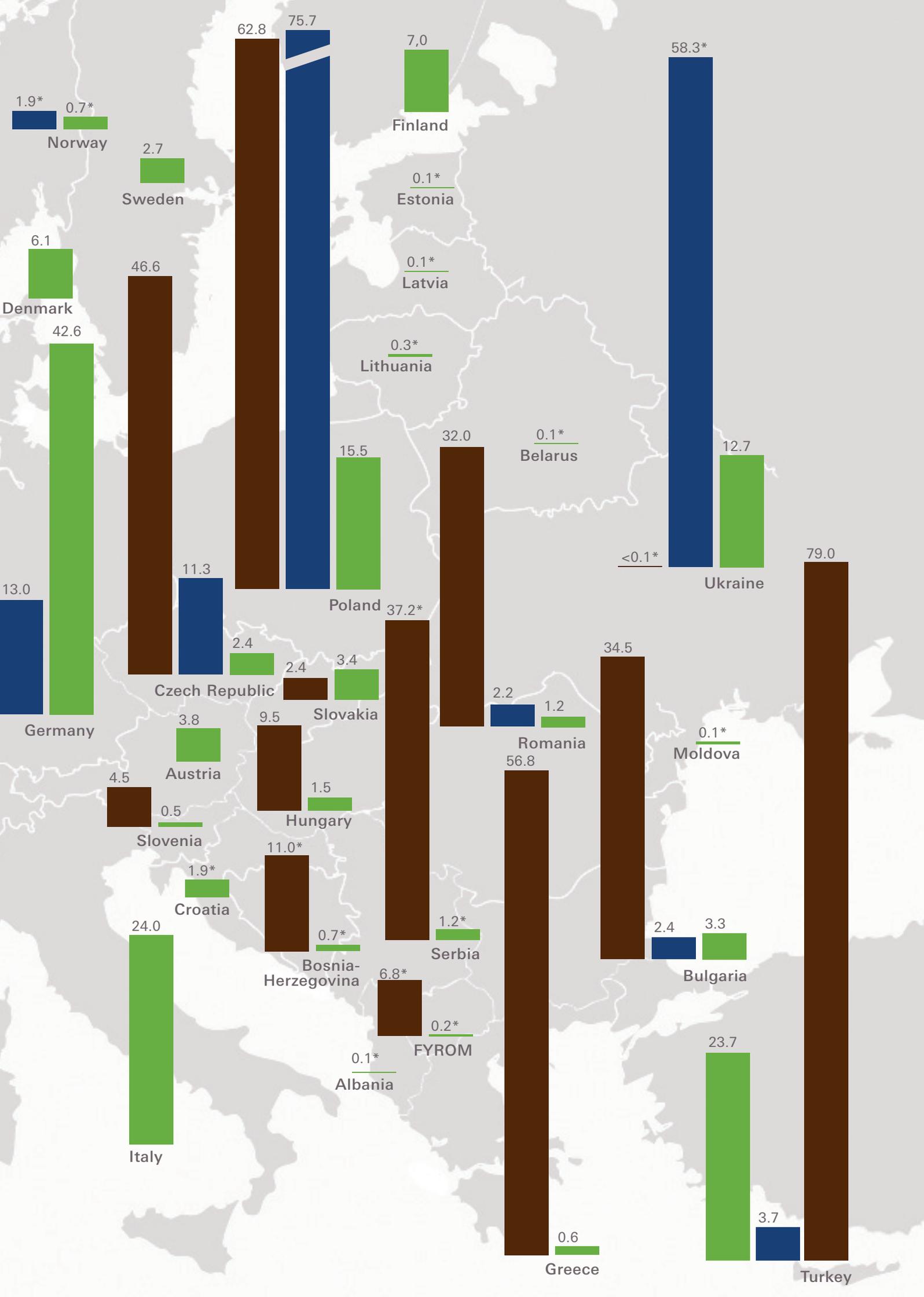
Coal in Europe 2011

Lignite production, hard coal production and imports (in Mt)



Information
 ● Lignite production
 ● Hard coal production
 ● Hard coal imports

Source: EURACOAL Members
 * estimates



Report by the Secretary-General Mr. Brian Ricketts

Together with EURACOAL's committees, the secretariat kept members informed on coal-related activities and initiatives at the EU level during 2011. Meetings were held to promote the interests of the coal sector with the European Commission, European Parliament and Member State representations, as well as other bodies such as the European Economic and Social Committee. In addition, presentations were made at a number of important conferences, including VDKi, Hamburg, Germany; Handelsblatt, Berlin; Alushta, Ukraine; PPWB, Bełchatów, Poland; RWTH Aachen, Germany; World Mining Congress, Istanbul, Turkey; ZPGWK, Katowice, Poland; BCURA, London; Coaltrans, Madrid; UNECE, Geneva, Switzerland; and the International Energy Agency, Paris. EURACOAL continued its co-operation with the World Coal Association and welcomed the support of the Central Europe Energy Partners at events in 2011.

In January, President Barroso and Environment Commissioner Potočnik launched the seventh and last flagship initiative under the Europe 2020 Strategy: *Resource-efficient Europe*. The Europe 2020 Strategy aims at building smart, sustainable and inclusive growth for Europe. It was launched in March 2010 to replace the Lisbon Agenda which some critics say failed to reach its goal of making the EU, "the most competitive and the most dynamic knowledge-based economy in the world".

The *Resource-efficient Europe* initiative will guide EU policies on energy, transport, climate change, industry, commodities, agriculture, fisheries, biodiversity and regional development to achieve many objectives, including GHG emission reductions of 80% to 95% in the EU by 2050, tightened air quality legislation and making the Union

more resilient to future rises in global energy and commodity prices.

Indeed, President Barroso and President Sarkozy of France have both called for efforts at the international level – by the G8, by the G20 and by the EU – to mitigate the "unexplained" price volatility of all commodities, including coal. Neither wants to see commodity markets suffer the same meltdown that financial markets experienced in 2008. President Sarkozy foresees a finite and limited supply of commodities to meet the needs of nine billion people in 2050, threatening societal breakdown, hunger and war. Market transparency, a central transaction register, and further regulation of commodity and derivative markets all feature in new EU legislation that includes cash deposits and margin calls for many derivative traders. This is likely to slow the growth in coal swaps.

In another development, the Commission proposed a revision of the Energy Taxation Directive to introduce a combined energy and CO₂ tax across the EU for the non-ETS sectors. Unwelcome as it is, this proposal does not affect large-scale electricity generation from coal or lignite, or other uses that fall under the EU Emissions Trading Scheme (ETS).

The well-established European Round Table on Coal or "Coal Round" in the European Parliament continued with three meetings in 2011. This non-party political grouping of MEPs with an interest in coal, chaired by Dr. Christian Ehler MEP, allows EURACOAL members and invited guests to debate topical issues with MEPs. For example, in March, EURACOAL President Zeiß led a discussion on "Surging Global Demand for Coal" which examined growing coal

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production in China and Russia and what this means for the EU. We were delighted to welcome Mr. Oleg Pertsovskiy, Head of Strategy at SUEK – the Siberian Coal Energy Company. The two guest speakers were Dr. Moriz Paulus of the Institute of Energy Economics at the University of Cologne – working on secondment at the IEA on a new coal market report – and Dr. Kevin Rosner, an American expert on the Russian energy sector who offered his geopolitical perspective on energy supply.

At the end of May, a Coal Round on coal conversion gave a platform to the Innovative Braunkohlen Integration initiative in Middle Germany. This group aims to make use of Germany's substantial lignite resource as a chemical feedstock. The capital investment needed for the gasification process is large, with or without CCS, and Prof. Bernd Meyer called for fuel-specific benchmarks under the EU ETS to improve the economics. Mr. Serge Périneau, President of the World Coal-to-Liquids Conference offered an overview of coal-to-liquids – covering mainly South Africa and China, but also citing a number of interesting projects in other countries.

In November, the Coal Round turned its attention to CO₂ capture and use (CCU), an interesting complement to CCS. The use of algae to produce biomass and the microbial conversion of CO₂ offer the exciting prospect of recycling CO₂ into useful products. Also on the agenda, was the carbon footprint of coal compared with natural gas – both conventional gas and shale gas. Dr. Hans-Wilhelm Schiffer of RWE presented the results of recent analyses which show that policymakers must look beyond emissions at the point of use if they are to fully understand the climate impact of different fuel choices.

The coal industry has lobbied for a two-track approach for the development of coal-fired power generation: improved efficiency and CO₂ capture and storage (CCS). Both tracks are needed to reduce emissions. Recently, the CCS track has dominated policy in the EU, and even more so in certain Member States. The International Energy Agency's CCS roadmap, published in November 2009, influenced governments to demand CCS, despite it not yet being in any way commercial. Efficiency improvements will be covered in a new roadmap from the IEA on high efficiency and low emissions (HELE roadmap), scheduled for publication in 2012. EURACOAL is supporting this work and hopes that advice from the IEA will push governments back to the two-track approach.

During 2011, EURACOAL members worked closely with our Polish members and supported a number of activities in Poland. On 5 July, the European Parliament rejected a proposal to increase the EU's 2020 CO₂ emission reduction target to 30%. Polish MEPs voted against the proposal and the Polish government was alone in being the only Member State not willing to support the proposal in an earlier Environment Council meeting, in June. The "Katowice Declaration", which addresses EU climate and energy policy from the perspective of Poland, was agreed by participants at the 20th anniversary conference of the Polish Hard Coal Employers' Association (ZPGWK) in October. EURACOAL President Zeiß forwarded this declaration to Presidents Buzek and Barosso, as well as to the Director-Generals of Climate Action, Energy and Environment.

EURACOAL is engaged in a Sectoral Social Dialogue at the European level covering the extractive industries sector. In a process

EC-EURACOAL 7th Coal Dialogue, 26 May 2011

The 7th Coal Dialogue, jointly hosted by the European Commission and EURACOAL, covered two major topics: energy policy and coal-related R&D.

Ms. Mechthild Wörsdörfer, in charge of DG Energy's 2050 roadmap, explained how many scenarios could deliver the substantial carbon savings presented in DG Climate Action's 2050 roadmap. Dr. Milošević spoke on behalf of EURACOAL and Dr. Franz Bauer of VGB in Germany presented a detailed account of the steps that would need to be taken to allow a substantially greater contribution from renewables, whilst maintaining a secure and reliable electricity grid.

The second topic was R&D and Prof. Krzysztof Stanczyk from the Central Mining Institute or GIG in Poland represented EURACOAL alongside Dr. Jürgen Czwalińska, chair of our Technical Research Committee. Unconventional coal extraction technologies and novel coal conversion processes, to produce chemicals from lignite for example, deserve a place in EU-funded research. The EC Research Fund for Coal and Steel funds R&D in conventional coal extraction, coal conversion and coal use technologies, but the upcoming debate on Framework Programme 8 or Horizon 2020 should look at how to support development of the flexible and efficient backup power plants that will be needed in the future.

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managed by DG Employment, EURACOAL members meet with other employer associations and employee representatives from the mining industry to discuss matters of mutual interest. In 2011, EURACOAL co-operated with Social Dialogue members on the "Budapest III Declaration" on indigenous coal production, responding to Council Decision 2010/787/EU on State aid to facilitate the closure of uncompetitive coal mines. The requirement for coal mines that continue to operate after 2018 to repay State aid is onerous: any mine that has to repay a historic legacy of State aid is effectively prevented from operating competitively. EURACOAL members, in Spain for example, are fighting hard to have this requirement changed and EURACOAL will continue to support all steps towards a competitive industry.

The Commission's "Raw Materials Initiative", launched in 2008, gathered momentum in 2011 with the publication by DG Enterprise of a new strategy. It is based on three pillars: equitable access to sustainable raw materials on the world market; improving the extraction conditions in Europe; and, promoting recycling and resource efficiency. Whilst it is generally welcomed by industry, it only applies to non-energy raw materials, so the coal industry must seek such supportive policy elsewhere. In September, Mr. Reinhard Bütikofer MEP was rapporteur for the Parliament's own-initiative response to the Commission's "Raw Materials Strategy for Europe". The so-called "Bütikofer Report" was the subject of many amendments. One of these called for the Commission to come forward with proposals for a tax on mineral resources, water extraction and land use. This would have been a very unwelcome move, especially

given the scale of water extraction and land use by the coal and lignite mining industry. EURACOAL was able to agree and use a joint position paper developed with members of the Social Dialogue to influence MEPs. The amendment calling for tax proposals was withdrawn prior to voting.

In September, amendments proposed by MEPs to the Seveso III Directive on major accident hazards could have been disastrous for the coal industry. A proposal to classify CO₂ as a hazardous substance was clearly ill thought out and thankfully received little support. However, another proposal to include shale gas extraction, and hence – because of the wording – coal and lignite mining, went to a vote in Plenary where it was narrowly defeated thanks to a successful lobby by EURACOAL.

The Energy Efficiency Plan, published in March by DG Energy, laid the foundation for the Energy Efficiency Directive proposed in June. The proposal focuses on end-use energy efficiency, notably in buildings and by the public sector. The starting point is the third of the EU's 20-20-20 targets: a non-binding 20% reduction in energy-use. The directive makes clear that EU energy consumption should be capped at 1,474 Mtoe by 2020. In 2009, the EU used 1,702 Mtoe, so we should reduce our energy consumption. This either implies a complete decoupling of energy consumption and economic growth, which has never happened in any country, or a cap on economic growth, which would seem to be economically damaging for the EU.

Of most concern to EURACOAL was the Commission's unfettered belief in the future role of combined heat and power (CHP). An early draft of the directive required CHP at new and refurbished power

EC Berlin Fossil Fuels Forum

In May, EURACOAL members supported a European Commission workshop on planning and authorisation of surface coal mining. A wide variation in the approach to authorising new mine projects was reported in different Member States. Some countries view coal mining as an important economic activity and have put in place processes to ensure that projects can proceed in a way that meets the legitimate expectations of all parties, including third parties who should be compensated for any disruption that they suffer.

In other countries, where there is no stated national need for coal mining, the planning process is less certain. Approvals can drag on for many years, with legal challenges – both from those opposed to mining and by project developers – and with no certainty of a successful outcome for the developer.

For EURACOAL, a definitive statement from the Commission on the value of indigenous coal to EU energy supply would be desirable. This might allow some Member State governments to express more clearly a national need for the exploitation of local energy resources, such as coal and lignite. In this respect, the conclusions of the 2010 Berlin Fossil Fuels Forum plenary meeting are helpful because they support the exploitation of indigenous fossil fuel resources, including coal.

Report by the Secretary-General

plants, priority dispatch of CHP and connection of power plants to heat supply networks. Member States would have to devise national plans so that power plants are only constructed near to industrial, commercial or residential heat loads. Such a requirement would damage the prospects for large-scale coal-fired generation in the EU and whilst mandatory CHP was not included in the proposed directive that is now before Parliament, tabled amendments would bring it back in.

Unfortunately, there is nothing in the directive on the potential for upstream energy efficiency improvements at power plants. Yet, the draft impact assessment makes clear that there is huge potential to improve the efficiency of coal-fired power plants. In this respect, it is worth noting that, in April, the Polish government passed an Act that will introduce a White Certificate scheme to encourage energy efficiency. Up to 20% of the certificates can be generated by upstream energy efficiency improvements at power plants. With this in mind, EURACOAL proposed to the Commission that the focus of the directive should be shifted away from promoting CHP to the promotion of upstream energy efficiency, however it is achieved.

In October, President Zeiß represented EURACOAL at the Berlin Fossil Fuels Forum meeting where he made valuable interventions that promoted our clean coal strategy and responded to the Commission's focus on best practices (see page 16).

The Second European Coal Days took place in November, hosted by Dr. Christian Ehler MEP of Germany and Mr. Bogdan Marcinkiewicz MEP of Poland. A dinner debate in the prestigious Bibliothèque Solvay was followed by a series of events and an exhibition in the

European Parliament. Once again, coal's profile was raised within the European institutions during the successful Coal Days and some key points emerged:

- Agreement that progress with CCS demonstration needs to be accelerated, not only to secure Europe's energy future, but also to show global leadership. If CCS is not taken up in China and India, then the EU's climate protection goals will not be achieved.
- Director General of Energy, Mr. Philip Lowe announced that the Commission would publish a communication on CCS in the third quarter of 2012.
- Mr. Lowe was sceptical about the warning from Mr. Hans Ten Berg, Secretary-General of Eurelectric, that support for renewables at any cost and forever is not a sustainable policy.
- At the high-level dialogue organised by Dr. Ehler in the Parliament, Commissioner for Energy, Mr. Günther Oettinger said that clean coal technologies are a good middle way, balancing environmental objectives with affordability, and offering technology export opportunities.

In 2011, the Commission had the difficult task of drafting a coherent *Energy Roadmap 2050*. It had to marry many competing objectives, whilst reflecting some new realities on nuclear power, energy prices and progress with CCS. The roadmap reflects these realities by presenting a number of future scenarios, without expressing any preferences on energy sources or technologies – see the Energy Policy Committee report and special section below.

Organisational changes within the European Commission, made at the end of 2011, mean that there is

Report by the Secretary-General

no longer a dedicated Coal and Oil Unit. Responsibilities for coal now rest with a number of desk officers, spread across many units. However, co-ordination of coal policy remains the responsibility of one Unit Head who EURACOAL will continue to liaise with on policy whilst dealing with others on new energy technologies and clean coal, CO₂ capture and storage, coal markets and international relations.

Finally, my thanks go to EURACOAL members for their good co-operation and support in 2011 and to my staff who delivered much more than could have been expected from such a small team. Our move to a modern office at the end of 2011 rounded off an eventful year in Brussels.

1 - In September 2011, RWE hosted a site visit to Garzweiler opencast lignite mine and the nearby Niederaußem power plant for Commission officials and Parliamentarians who learnt much about the coal and lignite industry from EURACOAL members.





2 - The publication of *Coal industry across Europe 2011* in October was the culmination of a great effort by members and the secretariat. A breakfast launch in the European Parliament was well attended and a lively discussion with MEPs followed presentations by EURACOAL Vice President Mr. Phil Garner (left) and our host Mr. Jan Březina MEP from the Czech Republic (right).



3 - Mr. Philip Lowe, Director-General for Energy at the European Commission addresses guests at a dinner debate hosted by EURACOAL in the Bibliothèque Solvay, Brussels on 29 November 2011 – part of the Second European Coal Days in the European Parliament.



4 - Mr. Bogdan Marcinkiewicz MEP (centre back), Mr. Joseph Daul MEP, Chairman of the European People's Party Group (front right) and Dr. Christian Ehler MEP (right) at the opening ceremony of the Second European Coal Days exhibition in the European Parliament, Brussels, 30 November 2011.



5 - In October, the EURACOAL Secretary-General was honoured to receive this gold medal after delivering the 60th Robens Coal Science Lecture to members of the British Coal Utilisation Research Association at the Institute of Physics in London.

COMMITTEE ACTIVITIES

Energy Policy Committee Dr.-Ing. George Milojcic, Chairman

The Energy Policy Committee deals with general energy policy and specific coal-related issues, particularly in connection with initiatives of the European Commission and the decision-making processes of the European Parliament and Council. As energy policy is shaped under the shared competence of the European institutions and Member States, an exchange of views on energy-policy trends in Member States is crucial. The opinions of the European coal industry on policy principles and current issues are prepared by the committee and brought to the attention of policymakers in Brussels and the Member States. In 2011, the Energy Policy Committee met on 16 March and on 22 September in Brussels.

An important signal was sent by the European Council on 4 February 2011, when President Barroso underlined that the 20-20-20 targets still reflect the current political state-of-play in the EU. Environment policymakers and certain NGOs pleaded to have the EU's greenhouse gas (GHG) reduction target for 2020 raised to 30%. Since a follow-up agreement to Kyoto is not imminent, even after the UNFCCC conference in Durban, and since more stringent climate objectives would mean the re-negotiation of Member States' burden sharing, a change to the targets for 2020 cannot be envisaged at the moment. Other topics have priority, such as the EU's response to the financial crisis and ensuring economic growth.

Commission initiatives in 2011 focused mainly on the internal market and energy solidarity. The Energy Policy Committee carefully followed the Commission's activities on a long-term energy strategy to 2050. In the course of the year, a series of discussions took place,

during which the coal industry presented its position. The *Energy Roadmap 2050* communication and supporting documents published in mid-December include important statements on what the Commission would like to focus on before 2020 and how a long-term European energy strategy could be shaped over the coming years.

The Commission repeatedly made it clear before publication of the *Energy Roadmap 2050* that it aims to decarbonise the energy sector and considers that drastic reductions in CO₂ are necessary across the EU by 2050. Scenarios were developed and political strategies formulated on this basis in the roadmap. Unswervingly, the Commission continues to pursue its pioneering role in the global climate response – a position that receives much support in the Parliament – while refusing to develop a “Plan B”. As a political manoeuvre, this may achieve goals, so long as it does not further burden Europe's energy and industrial sectors. The loss of wealth and jobs – through carbon leakage – remains a real threat. An unbalanced policy, possibly resulting in harmful and irreversible structural changes to industry, must therefore be avoided, especially in the crucial energy sector.

The EU objectives for 2020, i.e. the 20-20-20 targets, can be seen in this context as challenging but achievable. For the coal industry, modernisation, i.e. retrofitting existing plants and building new, highly-efficient power stations, remains important. The desired development of renewable energy sources places additional requirements on the flexibility of power stations. Here, coal competes with natural gas. The latest technical developments show that coal- and gas-fired power stations are equally flexible.

COMMITTEE ACTIVITIES

Energy Policy Committee

The Commission's thinking on flexible and reliable energy-supply options, not to mention fuel switching from coal to gas in the power sector, is important in this context. In the coal industry's opinion, it is important here to consider life-cycle emissions, i.e. GHG emissions from the production of natural gas, from its transport through long pipelines and from LNG liquefaction and regasification terminals. Logically, CCS remains important for both coal and gas. Within DG Energy, there is support to improve CO₂ capture techniques and to focus on building a CO₂ transport and storage infrastructure.

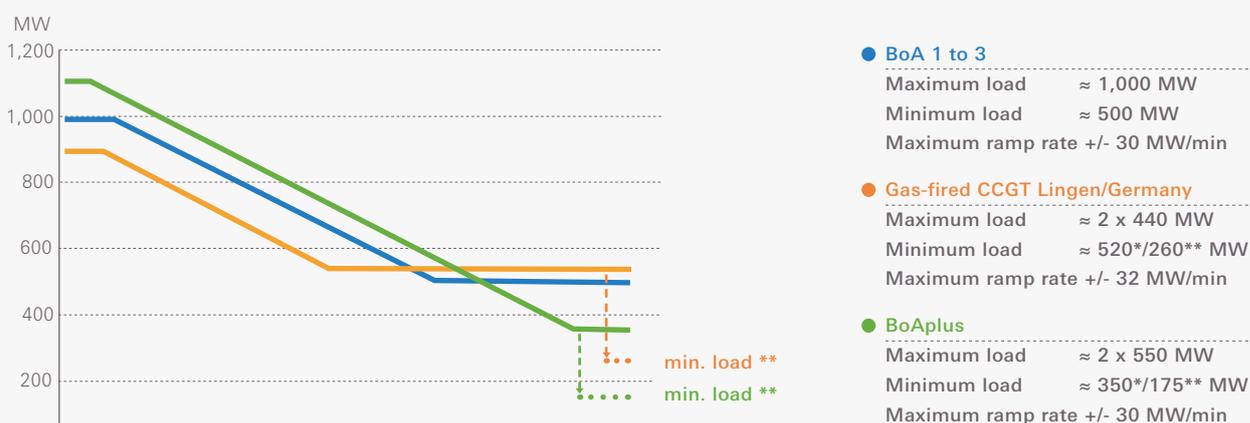
EURACOAL is concerned by some recent trends, for example in the UK where the EU energy and climate package is being overtaken by national measures. The UK government White Paper "Secure, affordable and low-carbon electricity" has to be questioned. Its policies are explicitly hostile to coal and, if they were systematically implemented, they would clearly have negative impacts on coal use in the UK. EURACOAL fears that this will set a bad example to other nations who seek to use coal more cleanly.

After 2011, a year of orientation and discussion of long-term policies, the Commission has now clearly defined a work programme for the coming years in its *Energy Roadmap 2050*. For EURACOAL, this covers a wide spectrum of topics and the energy and climate policy discussion in Brussels is sure to gain momentum.

An on-going topic for the Energy Policy Committee is EURACOAL's participation in the Berlin Fossil Fuels Forum. This mainly concerns the Working Groups that meet regularly in Brussels. An important date was the 7th plenary that took place on 24/25 October 2011 in Berlin. As in the past, EURACOAL had the opportunity to participate in two important sessions on CO₂ capture and storage and on good practices in indigenous fossil fuel exploitation. The European Coal Round Tables initiated by Dr. Ehler MEP in the European Parliament and the 2nd European Coal Days during the last week of November 2011 were also important occasions to present the thinking and analysis of the Energy Policy Committee.

The participation of EURACOAL members in the Energy Policy Committee was again active in 2011. Members' high level of competence and commitment was the basis of fruitful discussions and altogether successful work, for which members are cordially thanked.

1 — Modern coal-fired plants are just as flexible as the latest gas-fired plants and can balance intermittent renewables such as wind and solar with large and fast load changes - BoA = lignite-fired units with optimised plant technology



* 2 boilers operating / ** 1 boiler operating

COMMITTEE ACTIVITIES

Environment Committee Mr. David Brewer, Chairman

The most important issue addressed by the Environment Committee in 2011 was the on-going Large Combustion Plants Best Available Technology (BAT) revision process – LCP BREF in short. This is important because the Large Combustion Plants Directive (LCPD) and Industrial Emissions Directive (IED) both require BAT not entailing excessive cost to be applied which means that the Emission Limit Values (ELVs) in these Directives may be reduced further. Other important issues on the horizon in 2011 included the upcoming revisions of the Gothenburg Protocol and the National Emissions Ceilings Directive (NECD).

It is important here to recognise the inter-relationship of the various emission control measures. Apart from the IED and the LCP BREF revision process, revisions of the Gothenburg Protocol and, following that, of the NECD, may result in further tightening of emission limits. Although these revisions would not directly affect ELVs at individual plants, they may reduce overall emission ceilings in individual Member States, which may therefore have the same effect. The risk is of “leap-frogging” emissions reduction requirements resulting in uncertainty, the potential need for repeated investment and, overall, a difficult climate for investment. EURACOAL will work with its partners, such as EURELECTRIC, to avoid or at worst minimise this risk.

The LCP BREF revision is conducted by the European IPPC Bureau and will assess BAT for emissions control at large combustion plants. A wide range of parties is involved and EURACOAL is well represented. Upstream and downstream processes are excluded, hence the transport and storage of CO₂ from CCS plants is not covered, but the revision will cover mercury. EURACOAL’s view on mercury is that existing control measures for other pollutants, particularly FGD plants, also reduce mercury emissions and do so adequately. An Intergovernmental Negotiating Committee on mercury is looking to agree a legally binding instrument at the UN level. A risk here is that ash from coal-fired power stations may be regarded as a mercury waste regardless of whether it actually poses a hazard. The implications of such a classification would be very serious and EURACOAL is engaged in work related to the process.

Issues raised by industry in the BREF kick-off meeting included the need to define and exclude from the revision start-up and shut-down periods. This is important as coal-fired plants in a number of Member States are operating, and will increasingly operate, as mid-merit plant rather than on base load – such flexibility is needed to balance intermittent renewables. Secondly, because emissions vary greatly with size of plant, industry has asked for coal and lignite plants to be split into different size categories, and this has been accepted.

A revision of the Gothenburg Protocol is now under way. As negotiations are conducted at international level, and as it is not limited to the European Union, EURACOAL cannot be involved directly and it will be necessary to work with officials in national governments. There is as yet no official notification that work has commenced on a revision of the NECD.

On other issues, the Transitional National Plan rules have now been agreed for the implementation of the IED. The rules offer the maximum flexibility that EURACOAL had been seeking.

Implementation of the Mining Waste Directive is well under way in Member States and any difficulties are being overcome. But, there are European Working Groups looking at waste characterisation and the inspections, monitoring and closure regime, the outcome of which could interfere with the implementation process. It will be important to ensure that these do not result in any onerous new requirements.

As ever, constant vigilance will be required in 2012 to ensure EURACOAL is engaged in emerging issues at an early stage.

COMMITTEE ACTIVITIES

Technical Research Committee Dr.-Ing. Jürgen Czwalinna, Chairman

In 2011, the EURACOAL Technical Research Committee (TRC) met three times: on 23 February for a workshop in Essen, on 18/19 May in Liège and on 6 December (Brussels). In addition to these regular meetings, the chairman and other TRC members were heavily involved in a review exercise managed by the European Commission.

According to Article 38 of Council Decision 2008/376/EC of 29 April 2008 on establishing the Research Fund for Coal and Steel (RFCS), a monitoring exercise of the RFCS programme, including an assessment of the expected benefits, is due every seven years. Work on the first exercise started in February 2011 and a report will be published by the end of 2013, based on completed projects.

The exercise is being carried out by a committee composed of coal and steel experts appointed by the European Commission. The coal sector is represented by four experts, including three members of the EURACOAL Technical Research Committee. They are also involved as rapporteurs for the monitoring report and for the assessment report.

The evaluation builds on nearly 300 completed questionnaires received from Technical Group experts, project co-ordinators, R&D managers and senior industrialists, each containing many comments and useful suggestions for improvements to the programme implementation. Starting with a screening of 198 projects completed in the observation period, a sample of 45 projects will be assessed in more detail. An advanced version of the draft monitoring report will be presented to the Coal and Steel Committee (COSCO) of Member State representatives at its meeting on 26 April 2012; the draft

assessment report is due later in 2012.

At the February workshop, 55 project ideas were considered and distilled into ten new proposals, in addition to six existing proposals ready for resubmission. Proposals responded to priorities in the field of coal mining under the 2011 RFCS call:

- increasing the efficiency of mine production and development by utilising information and communication technologies (ICT) for improved process optimisation;
- prediction and reduction of the long-term effects of the geomechanical or hydrogeological aspects of mine design; and
- control of underground gas emissions in operational mines and novel methods of mine climate control.

In May, the prepared proposals were subject to peer review by TRC members who then took the opportunity to visit EcoTechnoPôle Wallonie to witness high-temperature, high-pressure gasification tests in progress.

The last meeting was held immediately prior to a scheduled meeting of the RFCS Coal Advisory Group. Topics covered included the outcome of the 2011 RFCS proposal evaluation, carried out during week commencing 10 October, and progress with the RFCS monitoring and assessment exercise. EURACOAL members scored well in coal mining project proposals (Technical Group for Coal – TGC1) and consequently are involved in all four projects supported in this area, either as co-ordinators or partners. The issue of unlimited liability in new contracts for RFCS projects was also discussed, alongside the Commission's requirement for

project participants to hold project monies in interest-bearing accounts. EURACOAL sought and received guidance on both these issues from the Commission.

For the 2012 RFCS call, a preparatory workshop for those with an interest in mining engineering project proposals is scheduled for 22/23 February 2012 in Marl, kindly organised by EVONIK. In addition EURACOAL member ISSeP in Liège will revive a workshop to prepare joint projects on coal preparation, conversion and upgrading (TGC2), as well as coal combustion, clean and efficient coal technologies and CO₂ capture (TGC3), to be held in Liège on 28 March 2012.

In the second half of 2011, the Commission continued its preparations for the next RTD Framework Programme, called "Horizon 2020". It will start in 2014 and cover the period until 2020. The Commission's formal proposals were adopted in late November. So far, the perspective for fossil fuel production and use is rather limited as the main emphasis of the programme is on climate protection and consequently on renewable energy sources. Unless amended, the only possible area for participation is through the development of "competitive and environmentally safe technologies for CO₂ capture, transport and storage" under the "low-cost, low-carbon electricity supply" action. The TRC will monitor future developments and EURACOAL will lobby for flexible and efficient backup power generation to be included, alongside novel coal exploitation and conversion projects.

COMMITTEE ACTIVITIES

Market Committee Mr. Nigel Yaxley, Chairman

The Market Committee held meetings on 25 May and 16 November in Brussels. Sharing up-to-date production and trade information allows committee members to better understand coal flows in the EU and to reflect on historic price developments. Thanks to contributions from EURACOAL members, notably VDKI, the committee again published two Market Reports in 2011. These are appreciated as a reliable source of data by the European Commission and industry alike. Whilst the 2011 figures reported below are preliminary, they illustrate some clear trends.

The practice was continued of inviting external speakers to address the Committee on matters of interest or concern, and during the year Members were pleased to welcome representatives of the European Commission and the World Coal Association.

World Coal Market Developments

Preliminary figures for global hard coal production show a historic high of 6.7 billion tonnes of coal. Since 1990, coal production almost doubled, with China accounting for most of this growth. The country now produces half of all global coal production.

Seaborne hard coal trade in 2011 rose by 32 million tonnes to total 878 million tonnes: 653 million tonnes of steam coal and 225 million tonnes of coking coal. The most significant changes in steam coal trade were observed in Indonesia (+16 Mt), the US (+15 Mt) and Russia (+13 Mt).

The 10.1% rise in US exports was a highlight of 2011, showing the flexibility of US producers and shippers, but also reflecting the weak domestic market for coal in the US given that natural gas prices fell below 3 US\$/mmBTU by year end. Alongside Colombia, the US was once again a swing supplier into the lacklustre Atlantic market where the on-going eurozone crisis and growth in subsidised renewable

1 – Steam coal prices at ports in northwest Europe, 2005 - 2011

Source: IHS McCloskey, NWE, CIF



COMMITTEE ACTIVITIES

Market Committee

generation dampened coal demand. Nevertheless, coal remained competitive in Europe given strong gas prices (e.g. UK NBP spot prices were 50-60 p/therm or 9.0-9.6 US\$/mmbTU in 2011) and falling CO₂ prices (see below). With new coal-fired plants being commissioned in Germany and the Netherlands, plus strong demand growth in Turkey, coal imports from the Atlantic market will likely grow in 2012. The impact of Germany's swift decision to phase out nuclear may also strengthen coal demand.

In the booming Pacific market, China overtook Japan to become the world's largest coal importer – respectively importing 183 million tonnes and 175 million tonnes. Japanese coal imports were weaker by 5.1% in 2011 following March's destructive earthquake and tsunami which damaged over 7 GW of coal-fired power plants along with port and rail infrastructure. In India, a strong rupee boosted demand for steam coal imports which reached a new high of 85 million tonnes, in addition to 33 million tonnes of coking coal. Australia exported 281 million tonnes of hard coal (including 148 million tonnes of steam coal), behind Indonesia whose exports increased 11% to reach 323 million tonnes. With freight rates at very low levels, Asian buyers took advantage of the low CV sub-bituminous coal on offer from Indonesia. By the end of 2011, loaded prices for coal in Australia were higher than the delivered price to the ARA ports of Amsterdam, Rotterdam and Antwerp, reflecting just how much stronger the Pacific market has become compared with the Atlantic market. Although volumes dropped in 2011, the coal swaps market remained liquid and offers both buyers and sellers a means of hedging risk.

The Pacific and Atlantic markets were once linked by South African exports which flowed into both markets. However, South African deliveries to Europe have dwindled as the closer Indian market is now more attractive. This means that Colombia and Russia now determine the linkage between the Pacific and Atlantic markets, resulting in a far more complex price relationship.

World crude steel production rose to a record 1,527 million tonnes in 2011, an increase of 6.8% on 2010, with strong growth in Turkey, South Korea and Italy. China's output grew 8.9%, cementing its position as the world's largest producer with 45.5% of global output. Notable changes in the related coking coal market were lower exports from Australia (-24 Mt), because of flooding in Queensland during the early part of 2011, and from Russia (-2 Mt), which were compensated for by higher exports from, above all, the US (+11 Mt) and Mongolia (+7 Mt) where overland coal exports to China increased to 21 million tonnes of mainly coking coal.

European Coal Market

EU hard coal production in 2011 slightly declined to 129.5 million tonnes, whilst the lignite industry enjoyed an increase in output of almost 29 million tonnes across Member States to 425.6 million tonnes. There was a notable increase in Bulgarian lignite output to 34.5 million tonnes (+27%), meeting demand from the recently commissioned 670 MW AES power plant at Galabovo. In Romania, lignite production grew 15% to 32.0 million tonnes. In some countries, such as in Germany where hard coal mining will end in 2018 and in Spain, the decline in indigenous hard coal production was more than matched by growth in coal

COMMITTEE ACTIVITIES

Market Committee

imports. Further information on the European coal market can be found in EURACOAL's regular coal market reports.

Coal Prices

Coal prices at northwest European ports peaked in the summer of 2008 before dropping significantly on account of the global economic crisis. Since then, prices have seen a recovery to reach the relatively high levels of 120-130 US\$/t during H1 2011, before falling during the second half of the year to 100 US\$/t because of an unseasonably warm start to the winter and hence a build-up of stocks.

Spot prices for US low-volatile coking coal averaged 280 US\$/t FOB in 2011, with prices lifted by the tight Australian supply. Prices are now mostly contracted on a quarterly basis, but an emerging spot market is becoming more important. The weak US dollar

again made US coking coal imports attractive in Europe. Being traded in relatively low quantities, the coking coal market will inevitably stay volatile and unpredictable, often with a delayed response, as was observed following the Queensland floods – many customers will draw down stocks when prices are high, before negotiating new contracts once prices have subsided.

Spot prices for coke remained very high, reaching 500 US\$/t CIF ARA during H1 2011, but falling to 395 US\$/t by year end.

Freight Rates

Sea freight rates in general remained very low in 2011, with shipping companies barely covering their marginal operating costs. The Baltic Dry Index hovered between 1,000 and 2,000, compared with peaks above 10,000 in 2007 and 2008. Surplus fleet capacity and rising fuel costs led operators to

2 – Allowance prices under the EU Emissions Trading Scheme, 2005 - 2011

Source: European Energy Exchange



COMMITTEE ACTIVITIES

Market Committee

experiment with slow-steaming on some routes. Rates are likely to remain depressed in 2012 as new vessel deliveries are again forecast to exceed scrappages. Based on the current order book, and assuming some cancellations, the Capesize fleet could grow from 245 million DWT to 275 million DWT in 2012.

Freight rates from South Africa to ARA, which was once a very important route, have fallen to around 9 US\$/t and are often no longer correlated to the API2-API4 spread. Indeed, during 2011 this spread turned briefly negative, suggesting that coal was worth more at Richards Bay than at European ports.

Carbon Prices

Low and volatile allowance prices under the EU Emissions Trading Scheme (ETS) were the subject of much debate during 2011, especially towards the end of the year when prices fell to around € 8/tCO₂. Whilst these low prices reflect that emission reduction targets are being met, they offer little or no incentive for operators

or new entrants to invest in low-carbon technologies such as CO₂ capture and storage. This has led to calls by the European Commission, European Parliament, NGOs and even some industrialists for a “one-off” intervention in the market to boost prices. This would be unwelcome and would discredit the scheme as an efficient market-based instrument to reach emission-reduction objectives that have been agreed at the highest political level.

Phase I of the ETS ran for a three-year period from 2005 to 2007. Prices collapsed close to zero when the market assessed that there would be an oversupply of allowances. At the start of Phase II in January 2008, prices recovered and peaked at around € 28/tCO₂ in mid-2008, only to collapse again as the global economic crisis and a reduction in demand by industrial sectors saw companies sell their surplus allowances. Prices fell to as low as € 8/tCO₂ and although they recovered to around € 15/tCO₂ for much of 2009 and 2010, they weakened again during the course of 2011 to new lows.

ENERGY ROADMAP 2050

A Coal Industry Response

The European Commission *Energy Roadmap 2050* forms part of the EU's strategy to move towards a low-carbon economy by 2050 under the flagship initiative for a resource-efficient Europe. The roadmap is best understood as a political document that shows how a substantial decarbonisation of the energy sector might be achieved. Indeed, the low-carbon goal takes priority over any serious consideration of energy security and economic competitiveness. In this respect, it cannot be viewed as an impartial assessment of what future energy supply options would be in the EU's best interests.

By marrying some plausible assumptions with other less plausible ones, the Commission crafts a number of scenarios each of which could deliver massive reductions in greenhouse gas (GHG) emissions over the coming decades. Three analytical models were used by the National Technical University of Athens to develop the scenarios. The PRIMES model balanced energy supply with demand for key sectors of the economy and determined energy prices using a partial equilibrium simulation of market clearing in the EU. A general equilibrium model (GEM-E3) was used to determine GDP and economic added value by sector, whilst a stochastic model of global fossil fuel price formation (PROMETHEUS) set import prices. Much skill must be needed to produce meaningful and sensible results from these complex models. Given their use in public policy making, it would be clearly desirable to make them open source so that third parties could verify and validate the published results. Although the models used are far from transparent, this should not detract from the Commission's key conclusion: many low-carbon technology pathways are available. In fact, the cost estimates do not favour any particular pathway. This suggests that governments should establish technology-neutral and fuel-neutral energy policy frameworks which allow markets to deliver the desired large-scale deployment of low-emission technologies. Governments will continue to have a role in the early stage deployment of many new technologies, but the *Energy Roadmap 2050* shows that picking winners for commercial deployment should not be attempted by any government.

Key Points from the Roadmap

- An 80% to 95% reduction in EU GHG emissions below 1990 levels by 2050, if other developed countries make comparable commitments – current policies would lead to a 41% reduction in the EU.
- Targets for 2030 – the Commission will prepare a new strategy in 2012 to increase the share of renewables post 2020 and set milestones for CO₂ capture and storage (CCS), with possible policy changes to address funding of demonstration plants, CO₂ infrastructure and legal issues associated with cross-border CO₂ transport.
- An EU-wide framework to boost security of energy supply and solidarity by creating certainty and stability for investment. This applies especially to renewables support which the Commission says would be less costly if Member States followed a common approach.

Five Decarbonisation Scenarios to 2050

Five scenarios illustrate possible ways to decarbonise the energy system while ensuring security of supply, solidarity and competitiveness. Although none is likely to materialise, the Commission presents them as "no-regrets" options that justify "a long-term technology-neutral framework".

- High energy efficiency – much depends on changing consumer behaviour and introducing more radical measures, for example, urban and spatial planning and combined heat and power (CHP)
- Diversified supply technologies – market-based solution with no support for specific technologies (assumes public acceptance of nuclear and CCS)

ENERGY ROADMAP 2050

A Coal Industry Response

- High renewables – 97% renewables in electricity consumption, with costly transmission and storage, including renewable power imported from outside the EU
- Delayed CCS and a higher share of nuclear
- Low nuclear – 32% of electricity from plants with CCS in 2050 (2% in 2030) with no new nuclear plants

Under these scenarios, primary energy demand would fall by between 32% and 41% by 2050 from its 2005/06 peak as energy efficiency measures succeed, largely because of the high energy prices assumed. The share of electricity in final energy demand almost doubles by 2050 as it is used more and more for transport and heating. Average electricity prices would be highest under the high renewables scenario (€ 199/MWh), but other scenarios show increases of between 34% and 44% compared with 2005 (€ 109/MWh). Overall, households and SMEs spend a greater part of their expenditure on energy.

Total energy system costs are expected to rise from around 10.5% of GDP today to over 14% of GDP in 2050, with higher capital outlays. Although Table 1 shows little variation between the costs of the five scenarios, all are significantly greater than today – more than double in absolute terms. Despite these higher costs, GDP is assumed to grow at a healthy 1.7% p.a. (c.f. 0.58% p.a. 2005-2010). If economic growth is weaker, energy system costs would then become an enormous burden for everyone.

Coal's share in EU electricity generation drops from around 28% today to between 2.1% and 13.1% in 2050 in the five decarbonisation scenarios, with corresponding falls in the share of coal in the primary energy mix. One of the reasons for this decline in the EU's most competitive energy source for electricity generation is the assumption made on the capital cost of new power plants. The Commission assumes that coal-fired plants with CCS are over 50% more costly than recent analysis by the International Energy Agency. Such a disparity highlights one of the many uncertainties in the Commission's scenario analysis.

1 – **Energy system costs** for the five decarbonisation scenarios in *Energy Roadmap 2050* compared with 2005.

Note: Cumulative system costs exclude ETS auction payments and disutility (e.g. a less comfortable temperature at home).

Even if recycled in the economy, these are costs borne by energy consumers, so are included here in the average annual system costs.

	Average annual system costs 2011-2050, € (2008) billions	Cumulative system costs as a percentage of GDP
● 2005	c.1 200	10.50%
● 2050		
High energy efficiency	2 788	14.56%
Diversified supply technologies	2 735	14.11%
High renewables	2 795	14.42%
Delayed CCS	2 773	14.06%
Low nuclear	2 772	14.21%

ENERGY ROADMAP 2050

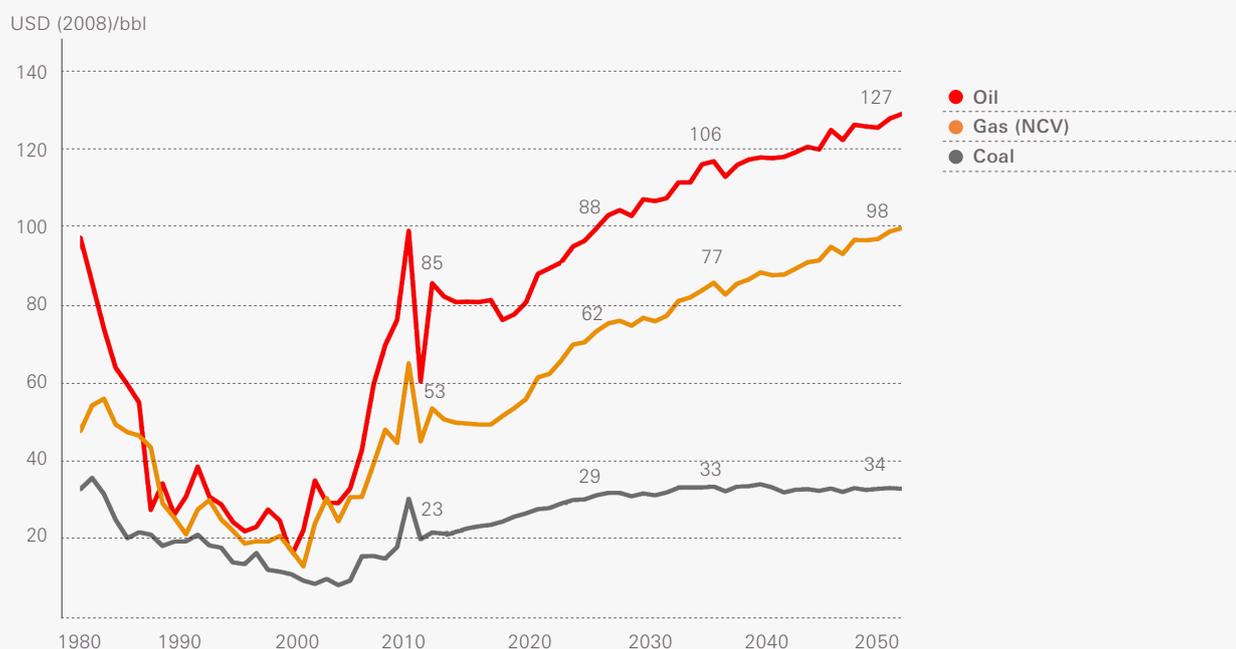
A Coal Industry Response

EURACOAL Response

The five decarbonisation scenarios presented by the Commission reflect the political aspiration to reduce GHG emissions by 80% to 95% in 2050. By not expressing a preference for any particular scenario, the Commission is sending a clear signal to Member States that national political preferences on energy mixes will be decisive. This is a welcome outcome.

EURACOAL supports the European Council's conclusions of 4 February 2011 that, "the EU needs to ensure safe, secure, sustainable and affordable energy that contributes to Europe's competitiveness." These are the cornerstones of a sound energy policy. In this respect, EURACOAL welcomes the Commission's observation that, "Coal in the EU adds to a diversified energy portfolio and contributes to security of supply." Yet, coal use is projected to halve by 2030 and fall by over 90% in 2050, depending on the uptake of CCS. EURACOAL finds this projected fall in coal use to be unrealistic given that coal remains a cost-competitive fuel in the Commission's fuel price assumptions, as shown in Figure 2 for imported coal. Moreover, we note that this coal price forecast comes from PROMETHEUS – a world energy price model – and does not reflect the price benefits of indigenous coal production. Users of indigenous energy face lower price risks than users of imported coal: prices are more certain and subject to less volatility. Thus, coal should be even more competitive than suggested by the PRIMES model. Whilst the GEM-E3 model should highlight the economic impacts of the different scenarios, we are surprised that the Commission raises no particular concern over the EU's growing energy import dependence. All scenarios point to a general trend of rising energy prices, so it should surely be a strategic aim to maximise the economic rent retained in the EU by using indigenous energy resources whenever these are competitive.

2 – Fossil fuel prices in the reference scenario (USD(2008)/bbl) - Coal prices rise to USD(2008) 147/t (6,000 kcal/kg) by 2050 in the reference scenario – oil and gas prices are assumed to rise more steeply, to USD(2008) 127/bbl in the case of oil. In the decarbonisation scenarios, coal prices eventually fall to USD(2008) 92/t by 2050 because of lower demand.



ENERGY ROADMAP 2050

A Coal Industry Response

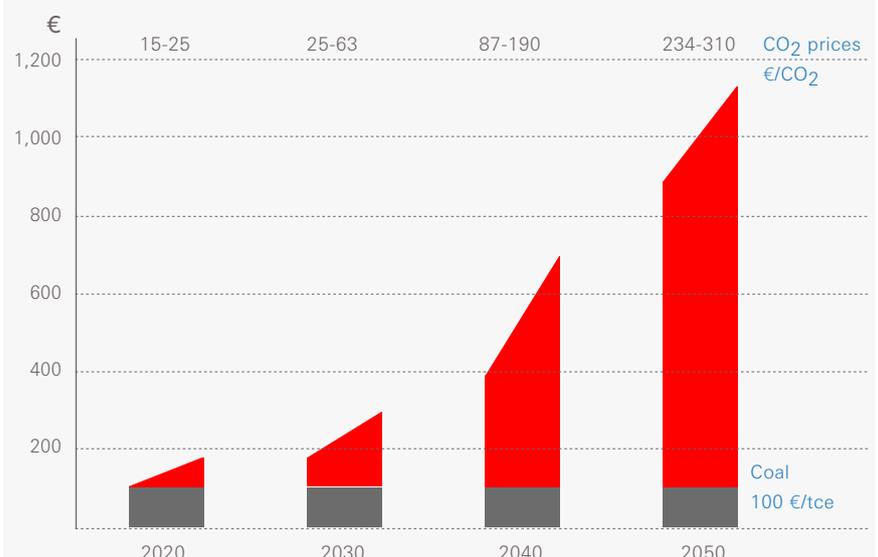
A high carbon price is assumed under all five decarbonisation scenarios, growing to between € 234/tCO₂ and € 310/tCO₂ in 2050. It is, of course, impossible to predict future carbon prices: unlike natural resources, where the long-run marginal cost of their extraction can give a proxy for price, carbon markets are an artificial construct and subject to political interference. However, EURACOAL cannot understand why such high carbon prices are assumed, because we already have carbon abatement technologies today that can deliver large-scale reductions at far lower costs (e.g. € 40/tCO₂ to € 80/tCO₂ in the case of CCS). The high carbon price is not plausible and would lead to the untenable increase in energy prices shown in Figure 3.

On energy efficiency, the Commission anticipates a doubling in the rate of annual average improvement from 1.4% (1990-2005) to 2.5% or even to 2.7% in the high-energy efficiency scenario. It is hard to imagine this taking place without major structural changes to the EU's industrial base and EURACOAL is concerned that more of Europe's energy-intensive industries will relocate outside of the EU.

Oil, natural gas, coal, nuclear and renewables figure in each of the scenarios, albeit in different proportions, thus allowing Member States to pursue different energy mixes, assuming a well-connected internal market that reduces the risks of supply disruptions. EURACOAL fully supports the Commission's proposal to look at different electricity market models so that flexible and back-up generation receives a proper return on investment.

The roadmap focuses almost uniquely on the EU's goal of decarbonising energy supply and largely neglects the other key objectives of energy security and competitiveness. Here, EURACOAL has always promoted diversity. More generally, the assumption that the EU can afford an ever-rising energy bill has to be challenged. If rising energy prices strangle economic growth and tightening carbon targets destroy many of the 255 000 jobs in the coal industry, then the Commission's analysis offers little in terms of prosperity. Maximising the value of the EU's indigenous coal and lignite reserves should, EURACOAL believes, be a Commission

3 — Assumed coal and CO₂ prices in the *Energy Roadmap 2050* point to an implausibly expensive cost of carbon abatement in the five decarbonisation scenarios, much higher than the cost of CO₂ capture and storage - a CO₂ emission factor of 3.21 t CO₂/tce is assumed for coal.



ENERGY ROADMAP 2050

A Clean Coal Strategy

Coal offers a number of advantages which can often complement the pros and cons of other energy sources:

- Coal underpins security of energy supply and competitiveness.
- The cheapest virtual store of electricity is a stockpile of coal at a coal-fired power station.
- The flexibility of coal-fired generation matches the flexibility of gas and both can balance the variable output from renewables.
- The transition to a low-emission economy has many facets: improving the efficiency of coal-fired power generation delivers early and certain results.
- Longer term, CO₂ capture and storage (CCS) can be applied to all fossil fuels. Delaying the deployment of CCS and allowing the power utility sector to become ever-more dependent on natural gas gives short-term emission reductions in the EU at the expense of long-term diversity and security.
- EU policy must be holistic: the environmental performance of the whole supply chain needs to be examined for energy and goods imported from outside the EU. For example, importing renewable energy only makes sense in the unlikely event that exporting countries have a surplus, having met their own energy needs. It would be perverse if they increased their use of fossil fuels to free up renewable energy for export to the lucrative EU market.

ENERGY ROADMAP 2050

A Coal Industry Response

priority. As well as the direct wealth creation from coal- and lignite-supply chains, their exploitation provides competitive energy for all industrial sectors.

There are risks associated with unilateral climate action by the EU. Indeed, the roadmap expresses concern about a loss of competitiveness and carbon leakage if the EU acts alone, "The opportunities for trade and cooperation will require a level-playing field beyond the European borders." To avoid carbon leakage, EURACOAL supports the argument made by the Commission that certain industrial sectors should continue to benefit from free carbon emission allowances based on benchmarks.

The roadmap notes that, regardless of global action:

1. The EU must, in any case, invest to replace its ageing energy system.
2. The scenarios presented would attract investment into the EU.
3. The EU can gain early mover advantage.
4. Import dependence can be reduced.
5. There are co-benefits of reduced air pollution and better health.

EURACOAL notes that there can be no certainty that all these outcomes will actually occur or that their value will justify the cost of unilateral action by the EU.

The Commission's "Plan B", if there is no global climate agreement, leads to border taxes and damaging trade wars. In its final report, the independent advisory group appointed by the Commission asks that the EU makes clear whether its unilateral CO₂ reduction targets are unconditional and so "trump" all other objectives. If so, they recommend that measures to ensure security and protect competitiveness are laid out, taking into account life-cycle analysis. The group challenges the EU's climate policy, with its focus only on Member States' CO₂ emissions, noting the EU's rising carbon footprint as it imports ever more goods and services from beyond its borders. EURACOAL recommends that the Commission addresses this good advice and other important questions raised by the advisory group.

Conclusion

The Commission's openness on the future energy pathway for the EU is welcome. Nuclear energy, renewable energy sources and the efficient use of fossil fuels, with the wide deployment of CCS post 2030, offer a diversity that will allow Member States flexibility in their energy mixes. Indeed, EU energy policy must reflect national differences and build on the positive aspects of the EU's internal market for energy. It is in such a market place that coal demonstrates its cost competitiveness and will continue to do so for many years to come. It is surprising therefore that only two sentences are devoted to coal in the roadmap. Another fossil fuel – natural gas – is promoted as "critical for the transformation of the energy system". The Commission must choose whether it believes in a free internal market, where energy sources compete fairly and environmental targets are met (see pages 32 and 34), or in a regulated energy market with frequent intervention to ensure the "right" outcome. The growth in renewable electricity generation in particular, driven by different national targets and different feed-in tariff structures, presents a real challenge to a properly functioning internal market.

ENERGY ROADMAP 2050

A Clean Coal Strategy (cont.)

EURACOAL proposes a three-step clean coal strategy that not only reflects the findings of the Energy Roadmap 2050, but also offers a global response to the climate challenge in place of an EU-centric response.

A three-step clean coal strategy:

- Introduce state-of-the-art technology across the EU coal-fired generation sector to boost efficiency, enhance flexibility and reduce emissions.
- Develop the next generation of high-efficiency, flexible technologies for coal-fired electricity generation.
- Demonstrate and deploy CO₂ capture, transport and storage – as less integrated and therefore less complex activities – at coal-fired power stations around the world, in tandem with CCS for other fuels and other sectors.

R&D will be important to bring forward efficiency improvements and reduce the cost of CCS. EURACOAL supports the Commission's conclusion that, "Higher public and private investments in R&D and technological innovation are crucial in speeding-up the commercialisation of all low-carbon technologies." To this end, it is vital that the EU Strategic Energy Technology Plan (SET-Plan) and related initiatives by industry are properly supported by Member States and from the EU budget. Advanced fossil fuel production, advanced fossil power generation and CCS are all important activities under the SET-Plan. EURACOAL agrees with the roadmap's conclusion on the need to better prepare for the deployment of CCS, "CO₂ infrastructure, that does not currently exist, will be required and planning should be started soon." Today, it is the sheer complexity of large integrated projects that is slowing progress, alongside a lack of public awareness of the costs and implications of effective action against climate change. Establishing an infrastructure would allow CCS projects to proceed by relieving capture project developers of the need to establish acceptable transport routes and storage sites.

ENERGY ROADMAP 2050

A Coal Industry Response

The *Energy Roadmap 2050* communication is the start of a two-year process that the Commission hopes will lead to a new energy policy framework, with targets for 2030. It explores possibilities, but does not set out any concrete measures or proposals. These will come later, as detailed in the Citizens Summary, starting with communications on the internal market (2012 Q2), renewable energy (2012 Q2), CCS (2012 Q3), energy technologies (2012 Q3), energy efficiency (2013 Q1) and proposals on nuclear safety (2012 Q3). EURACOAL looks forward to playing its part in the promised stakeholder dialogue during 2012 and 2013, before the Commission builds on the four cornerstones of its energy policy for the decades after 2020: competitiveness, security of supply, safety and sustainability.

To conclude, the *Energy Roadmap 2050* is a step in an on-going political process. Crucially, Member States must decide what efforts they are willing to take in these times of economic crisis and to what extent they want to adopt detailed EU objectives on, for example, energy efficiency, renewables and co-ordinated support measures for low-carbon technologies and the necessary back-up power generation. Given energy's key economic role, it seems that the Competitiveness Council should be as interested as the Energy Council in the on-going development of a roadmap that is set to have a great influence on the EU's future industrial competitiveness.

Members & Activities

EURACOAL's mandate

The European Association for Coal and Lignite is the umbrella organisation of the European coal industry. The associations and companies representing the coal industries of 20 countries work together in EURACOAL. Coal producers, importers, traders and consumers all have seats and votes in EURACOAL.

By integrating the countries of eastern and central Europe, and welcoming Members from neighbouring countries outside the European Union, EURACOAL has anticipated political developments taking place in Europe. The Association, evolved from CECSO (the European Solid Fuels' Association) after the expiry of the Treaty establishing the European Coal and Steel Community (ECSC Treaty) in 2002.

EURACOAL's mission is to highlight the importance of coal's contribution to security of energy supply within the EU, to energy price stability, to added economic value and to environmental protection. EURACOAL seeks to be an active communicator, with the aim of creating an appropriate framework within which the European coal industry and coal consumers can operate.

Around 30% of the power generated in the EU-27 is coal-based. Steel producers and other energy-intensive industries all need large quantities of energy. Coal is therefore an important and reliable source of energy in its own right and will remain a vital component of EU energy supply.

EURACOAL's activities are entirely geared towards the interests of its Members. This includes the whole process chain, beginning with coal extraction, marketing and transport,

right through to coal use at power stations, in the steel industry, in other industrial and commercial sectors and by private households. Coal research plays an important role here to optimise processes.

EURACOAL is the voice of the coal industry in Brussels, actively involved in the political process and always a proponent of coal as a vital component in a balanced European energy mix. EURACOAL's activities are directed towards:

- keeping Members informed on all coal-relevant matters at the EU level,
- creating a platform for Members to hold discussions and exchange opinions,
- voicing the interests of the coal industry at European level,
- creating favourable political and regulatory conditions, especially via the European Parliament, the Commission and the Council,
- exchanging information and working with the Commission and Parliament,
- participating in the European Commission's Social Dialogue with industry,
- supporting activities of the European Economic and Social Committee,
- offering Members a platform to develop joint R&D projects,
- co-operating with other politically relevant associations and interest groups in Brussels to boost awareness of coal and the industry's interests, and
- public relations work to promote coal.

EURACOAL is a Brussels-based European association, responsive to the considerable powers of the EU institutions, especially the European Parliament and the Commission. It represents the interests of its Members in its dealings with these institutions, participates in expert discussions and helps shape public opinion. EURACOAL's committees are the cornerstone of the Association. They elaborate positions on energy, environment and research policy, as well as on coal markets. While EU decisions are primarily determined by the Brussels-based institutions, the Council – and therefore the Member States – also have far-reaching powers. The contribution that EURACOAL Members make to energy and environmental policy at national level is therefore just as important as the collective representation of their interests in Brussels. When looked at this way, EURACOAL is not just a platform for voicing the collective interests of Members, but a forum for information exchange where Members can explore issues of concern to the coal industries in individual Member States.

Major Activities of EURACOAL

The EU's general objectives - to implement the single internal market, to increase the Community's economic strength, to protect consumers and to achieve reasonable standards in respect of environmental protection – have all created a wide scope for legislative initiatives, and much of this impacts on the coal industry. The liberalisation of power and gas markets, the introduction of EU rules on subsidies and the adoption of measures aimed at strengthening commercial businesses by introducing competitive market structures all open up good opportunities for coal – but are also fraught with risks. The coal industry

Members & Activities

welcomes the Commission’s various strategies on energy and climate, noting the major challenges that lie ahead.

EURACOAL considers it vitally important for Europe to develop robust energy and environmental policies for the long term. These will open up new opportunities for coal in the power generation sector – more efficient plants, cleaner plants and plants fitted with CO₂ capture and storage. With the right frameworks in place, the EU can benefit from a secure, low-carbon future with coal and become a beacon for those developing countries where coal use is rising rapidly.

In the area of environmental protection, EU legislation has an impact on the production and use of all forms of energy. In particular, it affects the relative

competitiveness of oil, gas and coal. Some of EURACOAL’s most important activities here have focussed on:

- access to resources to avoid the hasty abandonment of mines and to legally protect raw material resources,
- climate protection policies, such as the Emissions Trading Scheme, and support for renewable sources of energy and combined heat and power (CHP),
- policies and regulations to demonstrate CO₂ capture and storage (CCS), including financing of CCS projects and infrastructure solutions to transport and store CO₂,
- clean air policy, as reflected in the Large Combustion Plants

Directive and the Industrial Emissions Directive,

- management of mining waste and residues from power plants,
- water protection, mining activities and groundwater, and
- soil and nature conservation, such as rehabilitation of mine sites or large-scale nature conservation projects linked to infrastructure development.

EURACOAL responds to Commission initiatives and formal legislative procedures in Parliament with advice from industry specialists. Properly briefed policy makers and politicians will generally make better decisions. In this way, EURACOAL raises the legitimate interests of a key sector of the economy, namely the European coal industry.

1 – EURACOAL - an international partnership

General Assembly

Coal producers, importers, traders, coal-based power utilities, R&D institutes

Executive Committee

(discussions, opinion forming, work programme, lobbying positions)

President

Dr.-Ing. Hartmuth Zeiß - Vattenfall

Vice Presidents

Mr. Phil Garner - UK Coal
 Dr. Maksymilian Klank - ZPGWK
 Prof.-Dr. Franz-Josef Wodopia - GVSt

National Delegations

35 members from 20 countries

Committees (chairs)

Energy Policy Committee
 Dr.-Ing. George Milojcic - DEBRIV

Technical Research Committee
 Dr.-Ing. Jürgen Czwilinna - Evonik

Environment Committee
 Mr. David Brewer - CoalPro

Market Committee
 Mr. Nigel Yaxley - Coallmp

Brussels Secretariat

Secretary-General: Mr. Brian Ricketts
 Deputy: Mrs. Gitta Hulik
 PA: Mrs. Marguerite Johnson

2 – EURACOAL - serving the interests of the European coal industry

European Institutions:
 Council - Parliament - Commission

EURACOAL

National Coal Associations and coal-related companies

National Institutions:
 Parliaments & Governments



Members & Activities

1 – Members

Country	Member Association / Company	as at February 2012
Belgium	ISSeP – Institut Scientifique de Service Public (Scientific Institute of Public Services)	
Bosnia-Herzegovina	RMU Banovici d.d.	
Bulgaria	MMI – Mini Maritsa Iztok EAD	
Bulgaria	Vagledobiv Bobov dol EOOD	
Czech Republic	ZSDNP – Zamestnavatelský svaz dulního a naftového průmyslu (Employers' Association of Mining and Oil Industries)	
Finland	Finnish Coal Info	
France	BRGM – Bureau de Recherches Géologiques et Minières (Research Institute of Geology and Mining)	
Germany	DEBRIV – Deutscher Braunkohlen-Industrie-Verein e.V. (German Association of Lignite Producers)	
Germany	GVSt – Gesamtverband Steinkohle e.V. (German Hard Coal Association)	
Germany	VDKI – Verein der Kohlenimporteure e.V. (Hard Coal Importers' Association)	
Greece	PPC – Public Power Corporation SA	
Greece	ISFTA – Institute for Solid Fuels Technology and Applications	
Hungary	Mátrai Kraftwerk AG	
Italy	ENEL S.p.A.	
Poland	PPWB – Porozumienie Producentów Wegla Brunatnego (Confederation of Polish Lignite Producers)	
Poland	ZPWGK – Związek Pracodawców Górnictwa Wegla Kamiennego (Polish Hard Coal Mining Employers' Association)	
Poland	GIG – Główny Instytut Górnictwa (Central Mining Institute)	
Poland	EMAG Institute of Innovative Technologies	
Poland	KOMAG Institute of Mining Technology	
Romania	APFCR – Asociatia Producatorilor si Furnizorilor de Carbune din Romania (Coal Producers and Suppliers' Association of Romania)	
Romania	PATROMIN – Asociata Patronala Miniera din Romania (Mining Employers' Association of Romania)	
Serbia	EPS – Elektroprivreda Srbije (Electric Power Industry of Serbia)	
Slovak Republic	HBP – Hornonitrianske bane Prievidza, a.s.	
Slovenia	Premogovnik Velenje d.d.	
Spain	CARBUNION – Federación Nacional de Empresarios de Minas de Carbón (National Coal Mining Employers' Association)	
Spain	Geocontrol, S.A.	
Sweden	Svenska Kolinstitutet (Swedish Coal Institute)	
Turkey	TKI – Turkish Coal Enterprises	
Ukraine	DTEK	
Ukraine	Ukrvuglerobotodavtsy (All-Ukrainian Coal Industry Employers' Association)	
United Kingdom	CoalPro – Confederation of UK Coal Producers	
United Kingdom	CoalImp – Association of UK Coal Importers	
United Kingdom	Coaltrans Conferences Ltd.	
United Kingdom	Golder Associates (UK) Ltd.	
United Kingdom	University of Nottingham	

2 - Committees

Committee	Chairman	Secretary
Energy Policy Committee	Dr.-Ing. George Milojcic (DEBRIV)	Mr. Zygmunt Borkowski (ZPGWK)
Environment Committee	Mr. David Brewer (CoalPro)	Mr. Bernd Bogalla (GVSt)
Market Committee	Mr. Nigel Yaxley (Coallmp)	Mrs. Gitta Hulik (EURACOAL)
Technical Research Committee	Dr.-Ing Jürgen Czwalinna (Evonik)	Mr. Bernd Bogalla (GVSt)

3 - Executive Committee

Executive Committee Members as at February 2012

Dr.-Ing. Hartmuth Zeiß	Germany	President EURACOAL and Chairman of the Managing Directors, Vattenfall Europe Mining & Generation AG
Mr. Phil Garner	UK	Vice President EURACOAL and Director, CoalPro
Dr. Maksymilian Klank	Poland	Vice President EURACOAL and Vice President, ZPGWK
Prof. Dr. Franz-Josef Wodopia	Germany	Vice President EURACOAL and Chief Executive, GVSt
Mr. Mustafa Aktaş	Turkey	General Director, TKI
Mr. David Brewer	UK	Director General, CoalPro
Mr. Zdeněk Bučko	Czech Republic	Sokolovská uhelná právní nastupce a.s.
Mr. Munever Cergic	Bosnia-Herzegov.	Director General, RMU Banovice d.d.
Prof. Dr. Sc. Eng. Józef Dubinski	Poland	General Director, Central Mining Institute
Dr. Jürgen Eikhoff	Germany	Production Director, RAG AG
Dr. Renata Eisenvortová	Czech Republic	European Affairs Manager, Czech Coal a.s.
Dr. Nikolaos Galitis	Greece	Human Resources Director, Public Power Corporation SA
Mr. Magnus Grill	Sweden	Chief Executive Officer, Swedish Coal Institute
Mr. Milan Jakovljević	Serbia	Director Coal Production Department, EPS
Ing. Rastislav Januščák	Slovakia	Director of the Supervisory Board, Hornonitrianske bane Prievidza a.s.
Mr. Constantin Jujan	Romania	Director General, Compania Nationala a Huilei s.a.
Dr. Nikolaos Koukouzas	Greece	Director of Research, CERTH/ISFTA
Mr. Mirosław Kugiel	Poland	President, ZPGWK
Dr. Johannes Lambertz	Germany	Chief Executive Officer, RWE Power AG
Mr. Oscar Lapastora Turpin	Spain	Vice President, CARBUNION
Dr. Marios Leonardos	Greece	Director Mines Planning & Performance Dept., Public Power Corporation SA
Mr. Roman Łój	Poland	Chairman of the Board, Katowicki Holding Węglowy SA
Mrs. Mercedes Martín Gonzáles	Spain	Director General, CARBUNION
Dr. Milan Medved	Slovenia	General Manager, Premogovnik Velenje d.d.
Dr.-Ing. George Milojcic	Germany	Chief Executive, DEBRIV
Mr. Constantin-Viorel Petcu	Romania	Chairman, APFCR
Dr. Erich Schmitz	Germany	Chief Executive, VDKI
Mr. Oleksandr Selischev	Ukraine	Head of Strategic Planning & Analysis, DTEK
Eng. Evgeni Stoykov	Bulgaria	Executive Director, Mini Maritsa Iztok EAD
Mr. Radim Tabášek	Czech Republic	Chief Reclamation Officer, OKD a.s.
Mr. Stefan Tanev	Bulgaria	Deputy Executive Director, Mini Maritsa Iztok EAD
Mr. Bernd Tönjes	Germany	Chairman of the Board, RAG AG
Dr. Catherine Truffert	France	Research Director, BRGM
Dr. Joachim Witzel	Hungary	Member of the Board, Mátrai Kraftwerk AG
Mr. Stanislav V. Yanko	Ukraine	Head of the Union, Ukrvuglerobotodavtsy
Mr. Nigel Yaxley	UK	Managing Director, Coallmp
Mr. Roberto Zangrandi	Italy	Head EU Affairs, ENEL S.p.A.
Mr. Ognyan Zarev	Bulgaria	Manager, Vagledobiv Bobov Dol EOOD
Mr. Stanislav Zuk	Poland	President, PPWB

