A strategic long-term vision for a prosperous, modern, competitive & climate-neutral economy

EURACOAL Position Paper on *"A Clean Planet for All"* (COM(2018) 773)

Key Points

- The climate challenge requires global solutions with similar ambitions everywhere.
- A carbon-neutral EU economy by 2050 is highly ambitious: the necessary technologies need to be developed and deployed, and carbon-leakage risks need to be clearly addressed.
- Without large-scale energy storage, conventional thermal power generation will still be needed.
- To gain public support and to maintain EU competitiveness, solutions have to be affordable.
- EU member states should remain free to choose their own (different) energy mixes.

Coal's contribution today:

- The EU coal sector has reduced its CO_2 emissions by over 47% since 1990, thus helping to meet targets in the UNFCCC Paris agreement. No other sector has done as much.
- The extraction and use of coal is linked to over 200 000 high-quality, well-paid direct jobs, as well as indirect jobs at suppliers.
- Coal contributes to affordable and competitive electricity prices and thereby to EU prosperity, reinforcing the EU as a place to do business.

Coal's contribution tomorrow:

- Coal is a partner for electricity generation from renewables: existing coal power plants respond flexibly to the ups and downs of wind and solar power.
- Under the EU ETS, the coal sector will continue to reduce its emissions, cost-effectively. Accordingly, **the EU emissions trading system should remain the only instrument used to drive down CO_2 emissions in the power sector**.

Coal's contribution the day after tomorrow:

- EURACOAL supports a climate and energy policy based on **accelerated technological progress through near-term research, innovation and entrepreneurship** within a non-discriminatory, technology-neutral, competitive market place that delivers a wide portfolio of sustainable, low-carbon solutions which consumers are willing to pay for.
- Coal's contribution to progress will be reliable and affordable electricity from power plants that are now cleaner than ever before. The coal sector is already pushing forward new energy storage options; new processes that supply clean hydrogen; and a circular-carbon economy that allows any carbon-based material, including plastic wastes and woody biomass, to be recycled into new products, without carbon emissions.

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EU vision for 2050 – *"A Clean Planet for All"*

Global solutions for the climate challenge

The climate challenge requires global solutions.

The climate challenge requires global solutions, with global initiatives such as the UNFCCC Paris agreement. However, unilateral action by the European Union can serve as a blueprint for other countries, *if* it strengthens the EU's economic competiveness. To give policy predictability, investment certainty and planning security, it is indispensable that the European Union gives itself a long-term climate strategy. The aim to completely decarbonise the EU economy, with net-zero carbon emissions or "carbon neutrality" by 2050, is highly ambitious and can only be achieved if carbon-leakage risks are clearly addressed, if the necessary technologies are deployed and if the different starting points of member states and their regions are taken into account. In particular, decisions on energy mixes should remain in the hands of member states (TFEU Article 194).

Global greenhouse gas emissions

In 2018, energy-related emissions increased by an estimated 1.7% at the global level.[1] Although the European Union accounted for just 9.0% of global greenhouse gas (GHG) emissions in 2015, as shown in Figure 1, it can play an important role in international climate-protection policy, so long as it can transform itself into a low-carbon economy in a competitive and socially acceptable way. During this transition, coal can play an important, but ultimately declining role. The EU emissions trading system (ETS) plus the European Commission's very welcome Coal Regions in Transition Platform initiative should give the coal sector the time and the money needed to implement reasonable, long-term measures as less coal is used across Europe.

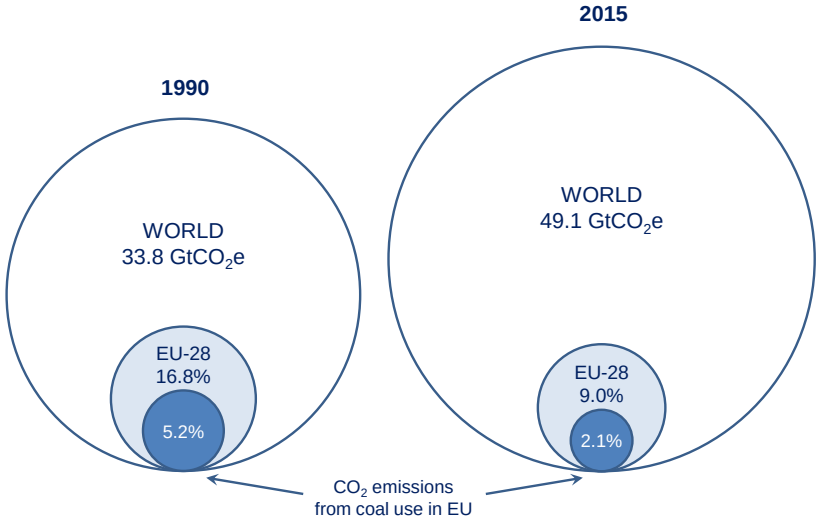

Figure 1 – Global greenhouse gas emissions, 1990 and 2015
(excluding aviation and marine bunkers)

Source: IEA (2018), *CO_2 emissions from fuel combustion*, OECD – International Energy Agency, Paris, 2018

[1] *Global Energy & CO_2 Status Report 2018 – the latest trends in energy and emissions in 2018*, OECD – International Energy Agency, Paris, March 2019. BP reports 2% in *BP Statistical Review of World Energy 2019*, BP plc, London, June 2019.

Greenhouse gas emissions in the European Union

Coal use in the European Union accounted for 1.9% of global GHG emissions in 2016, having fallen below 1 $GtCO_2e$ (IEA, 2018). Coal offers many benefits for the economy and society: it provides reliable electricity at competitive prices, it enables steel and concrete production, and it delivers the energy needed to keep buildings warm or cool.

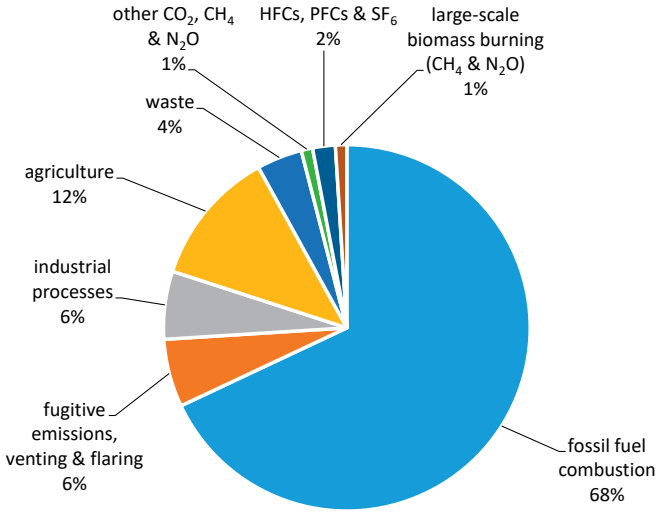

Figure 2 – Global greenhouse emissions by gas / source in 2015

Source: IEA (2018), *CO_2 emissions from fuel combustion*, OECD – International Energy Agency, Paris, 2018

The EU coal sector has already reduced its CO_2 emissions by 47% since 1990.

The EU coal sector has already reduced its emissions markedly: a **47%** reduction in CO_2 emissions between 1990 and 2016, as shown in Figure 3. As such, it has greatly contributed to the overall decline of EU GHG emissions, helping to meet the targets agreed in Paris at the UNFCCC COP 21 climate conference held in December 2015. More has to be done, of course, and the coal sector will continue to make reductions in the future. That is why EURACOAL

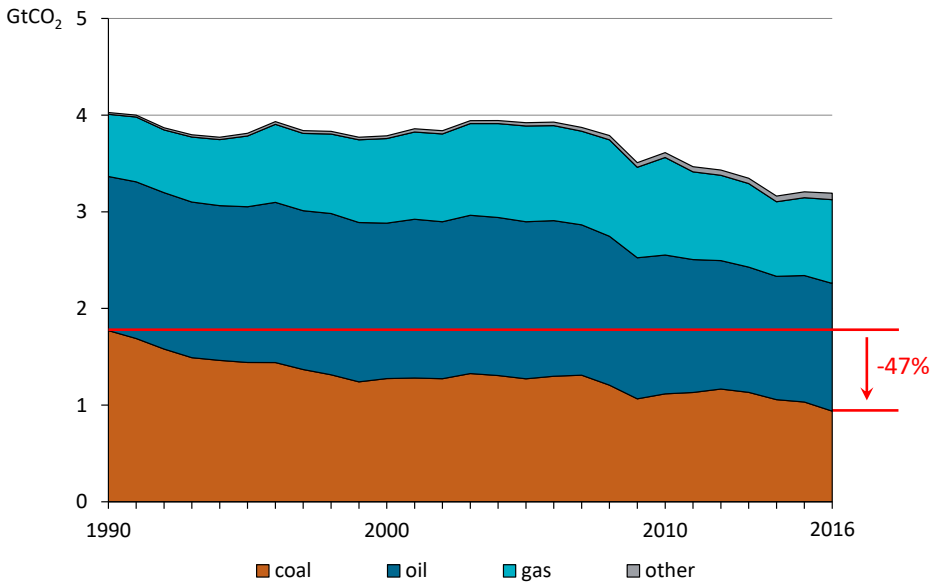

Figure 3 – CO_2 emissions from fuel combustion by fuel type in the EU-28, 1990 to 2016

Source: IEA (2018), *CO_2 emissions from fuel combustion*, OECD – International Energy Agency, Paris, 2018

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supports a CO_2 emission cap under the EU emissions trading system (ETS). Under the current framework, this cap will deliver a CO_2 reduction of around 90% by 2050 in the electricity sector and other energy-intensive industries. So, this fits with the long-term objective agreed in 2009 for a 80-95% reduction of greenhouse gas emissions by 2050, with steps along the way. This system ensures the cost-effective and economically efficient reduction and the eventual elimination of CO_2 emissions from the energy sector as a whole, because the cap falls to zero by 2058. After then, no more allowances will be issued and all sectors covered by the ETS must have decarbonised or disappeared.

The EU emissions trading system should remain the only instrument used to drive down emissions in the power sector.

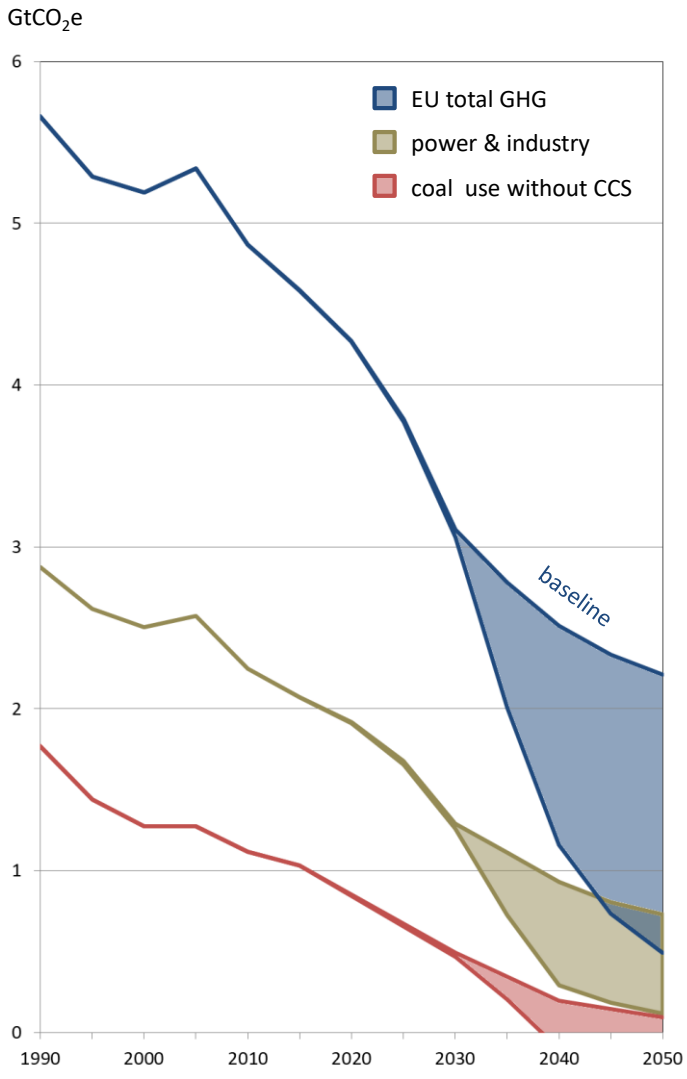

Figure 4 – GHG emission reduction pathways in the EU, 1990 to 2050 showing the range of scenarios reported by the European Commission in its long-term strategic vision for a climate-neutral economy

Sources: European Commission (2018), In-Depth Analysis in Support of the Commission Communication COM(2018) 773 *A Clean Planet for all - a European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy*, Brussels, 28 November 2018 (§7.7). IEA (2019), "Emissions of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6", *IEA CO_2 Emissions from Fuel Combustion Statistics* [database https://doi.org/10.1787/data-00431-en], OECD – International Energy Agency, Paris, 2018 (accessed on 30 July 2019). EURACOAL estimates for CO_2 emissions from coal use based on industry trends.

New technologies for recycling carbon within the economy will help deliver the reduction required under the EU ETS, as will a continuation in the general decline of coal use. What EURACOAL cannot support are any further measures outside the EU ETS that interfere with this trading system and thereby distort incentives. For example, CO_2 emission performance standards or minimum carbon prices have no place in a competitive, market-based ETS.

In its communication on a long-term vision for a carbon-neutral economy, the European Commission presents a baseline scenario to 2050 alongside nine decarbonisation scenarios. These emission reduction pathways are shown in Figure 4 for total EU greenhouse gas (GHG) emissions, as well as emissions from the power sector and industry. Coal use is an important, but declining share of total EU emissions, as the chart shows. It is comforting to note that, on *current trends*, emissions from coal use are on the right track and should reach zero at some point after 2040, depending on the scenario. That is not to say coal use will disappear – technology solutions such as carbon capture and storage (CCS) can allow continued coal use beyond 2050 in a carbon-neutral economy.

On current trends, emissions from coal use in the EU are on the right track.

Rising global methane emissions from North American shale gas production

Climate policies focus on the greenhouse gas CO_2. However, new scientific reports show that the global atmospheric concentration of methane – a far more potent greenhouse gas than CO_2 – rose in 2014, 2015, 2016 and 2017 at rates not seen since the 1980s.[2] They also reveal that the "carbon signature" of the rising atmospheric methane concentration points to North American shale gas and oil as the probable main source.[3] This is completely at odds with the declining GHG emissions trend observed in the EU and needs to be addressed by the EU on a global level.

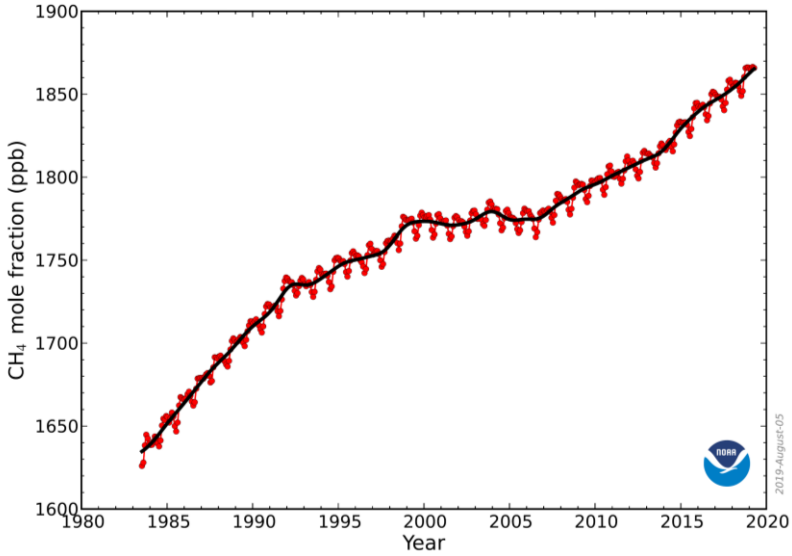

Figure 5 – Methane levels rising – globally-averaged, monthly mean atmospheric methane concentration and 12-month moving average from 1983 to 2019

Source: NOAA (2019), *Trends in Atmospheric Methane – global CH_4 monthly means*, Earth System Research Laboratory, National Oceanic and Atmospheric Administration, www.esrl.noaa.gov/gmd/ccgg/trends_ch4, last updated 5 August 2019.

[2] Nisbet, E. G., E. J. Dlugokencky *et al.* (2019), "Very Strong Atmospheric Methane Growth in the 4 Years 2014-2017: Implications for the Paris Agreement", *Global Biogeochemical Cycles*, vol.33, iss.3, pp.318-342, 18 March 2019.
[3] Howarth, R. W., "Ideas and perspectives: is shale gas a major driver of recent increase in global atmospheric methane?", *Biogeosciences*, vol.16, iss.15, pp.3033–3046, 14 August 2019.

Separately, a report published by Global Energy Monitor, a green NGO, points to the additional energy demands and opportunities for fugitive methane emissions in the production, liquefaction, seaborne transport and regasification of liquefied natural gas (LNG).[4] On a 20-year horizon, the report finds that the global warming impact of current proposals for new LNG terminals exceeds current proposals for new coal-fired plants by 25%.

Coal in the world and the European Union

Coal provided 13% of EU energy supply in 2018. Around the world, 96% of commercial primary energy supply comes from conventional sources: fossil fuels, hydro power and nuclear (see Figure 6). Although not always included in energy statistics, around 5% comes from traditional solid biomass. Less than 1% comes from new renewable energy sources, including wind turbines and solar PV, as shown in Figure 7.

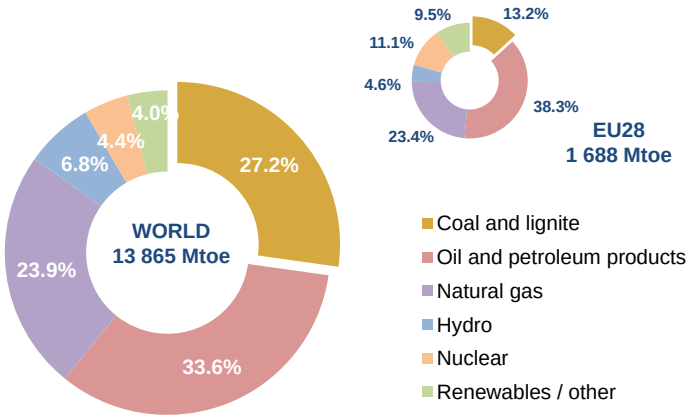

Figure 6 – Coal in world and EU energy supply, 2018 (excluding traditional solid biomass)

Source: BP (2019), *BP Statistical Review of World Energy 2019*, BP plc, London, June 2019.

Coal is the most abundant, affordable and securely available fuel in the EU: 92% of our energy reserves lie in coal beds.

Coal is abundant, affordable and available – annual consumption is forecast to remain at seven billion tonnes.

	Gtce	share
Hard coal	20.9	51.3%
Lignite	16.4	40.4%
Oil	1.2	2.9%
Natural gas	1.8	4.4%
Uranium	0.3	0.8%
Total	40.7	100.0%

Table 1 – Non-renewable energy reserves in the European Union

Source: BGR (2017), *BGR Energy Study 2017 – data and developments concerning German and global energy supplies*, Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover, December 2017.

[4] Nace, T., L. Plante and J. Browning, *The New Gas Boom – tracking global LNG infrastructure*, Global Energy Monitor, San Francisco, CA, June 2019.

Looking to the future, annual coal use around the world is forecast to be flat out to 2040 at around seven billion tonnes. Given this magnitude of coal use, technology solutions will be needed and should be supported.

The G20 countries account for *c.* 80% of global GHG emissions.

The EU should integrate its own climate strategy into an internationally oriented, broad strategic approach. Most important will be the response of the G20 countries who together account for about 80% of global GHG emissions. By joining climate protection efforts, implementing a market-based, cost-effective approach and carefully addressing social implications, the EU can help shape a strategy that strengthens Europe. The communication *"A Clean Planet for All"* can thereby serve as a valuable starting point; however, politics must go beyond. It has to be kept in mind that only market-based solutions have longevity, *i.e.* solutions that citizens are willing to pay for because they are better than the alternatives. In general, a two-speed or even two-centred European Union should be avoided by taking the interests of all member states adequately into account.

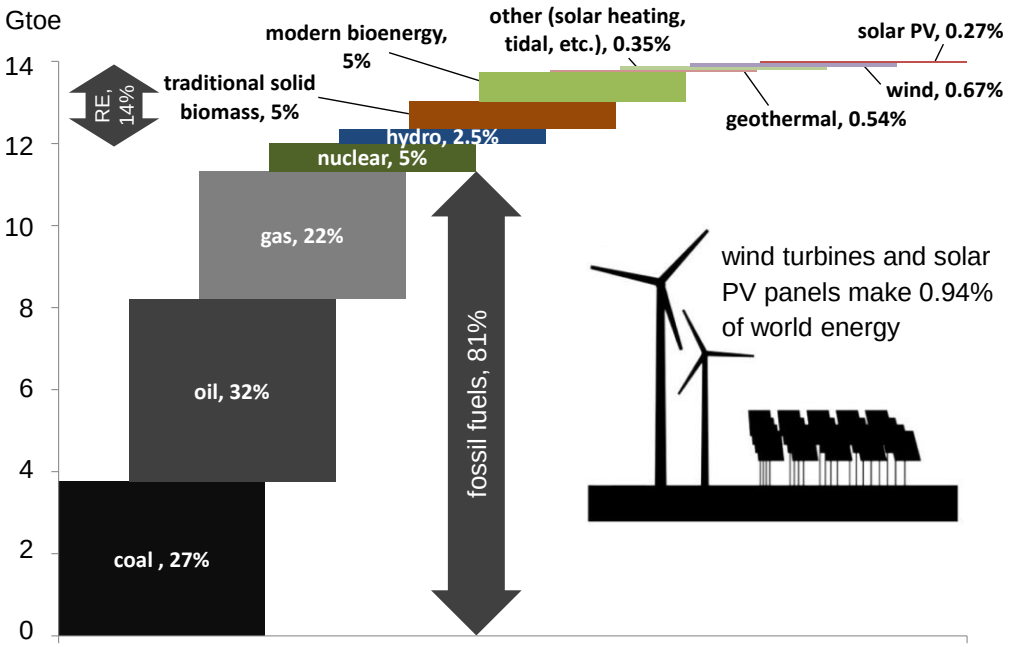

Figure 7 – Global energy mix in 2017
(including traditional solid biomass, *e.g.* wood and dung)

Source: IEA (2018), *World Energy Outlook 2018*, OECD – International Energy Agency, Paris, 2018

The contribution of coal to the economy of the European Union

The extraction and use of coal supports high-quality direct jobs, as well as indirect jobs at suppliers: the coal industry directly employs over 200 000 people in well-paid jobs, and supports many more at the suppliers of equipment, services and materials. Salaries in the coal sector are well above the average – reflecting high levels of productivity. Coal production in the European Union is best-in-class in terms of work safety and environmental management.

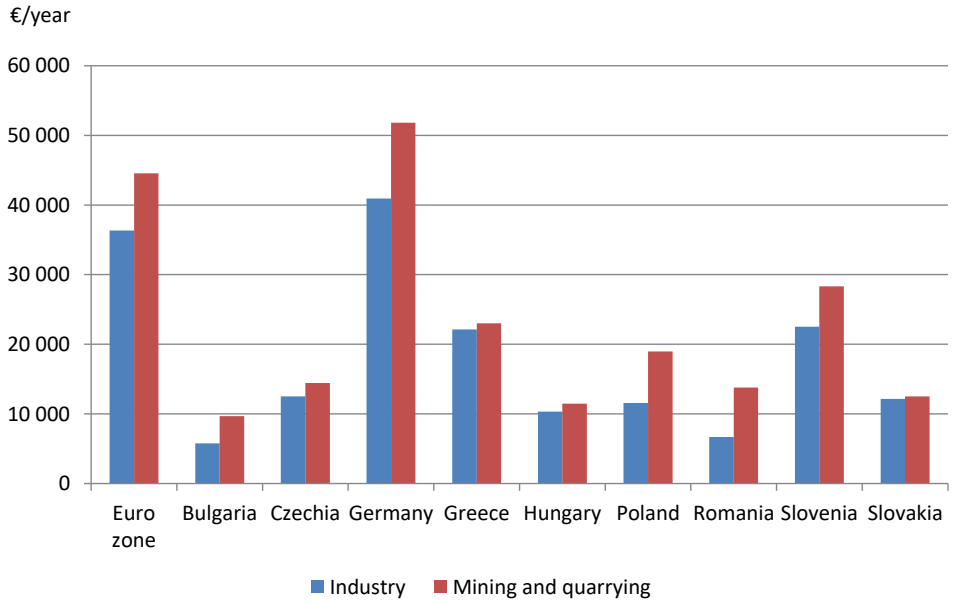

Figure 8 – Average annual wages in the mining and quarrying sector, which includes coal mining, compared with wages across industry in EU member states, 2014

Source: Eurostat (2018), Mean annual earnings by sex, age and economic activity [database earn_ses14_27], Eurostat, Last update: 18.05.18 (accessed 15 July 2019).

Sitting at the start of a long value-chain, the coal industry itself creates wealth, but coal, whether indigenous or imported, also contributes to competitive electricity prices and thereby to the overall prosperity of the European Union. In 2018, 20% of the European Union's electricity came from coal-fired power plants. At the same time, coal is a partner for electricity generation from renewable energy sources: electricity generation from coal responds flexibly to the variable supply from renewables, thus ensuring security of electricity supply and system stability.

20% of EU electricity comes from coal.

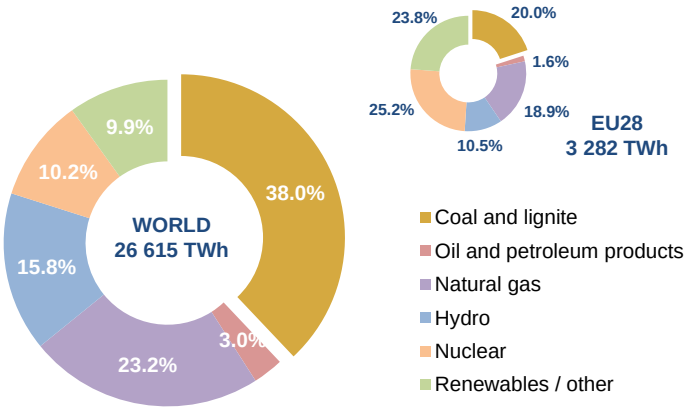

Figure 9 – Coal in world and EU electricity supply, 2018

Source: BP (2019), *BP Statistical Review of World Energy 2019*, BP plc, London, June 2019.

In those regions of the European Union where coal exploitation is becoming less economic, the coal industry is in transition and steps are needed to create new employment

opportunities as mines close. The Coal Regions in Transition Platform, hosted and managed by the European Commission, is a good example of the type of action needed.

CCS allows coal to be used with a smaller environmental footprint.

In other regions with economically accessible coal reserves, coal will continue to be important for decades to come: to at least 2050 in Slovenia, the Czech Republic, Bulgaria, Romania and Greece, for example, and beyond then in Poland. Here, advanced technologies, such as CCS and carbon capture, use and storage (CCUS) which are proven and work effectively in the US, Canada and Norway, will allow coal to be used with a smaller environmental footprint, in line with the current targets of the EU ETS. Developing and showcasing new coal technologies can also influence how developing and developed countries around the world exploit their coal – which they will do according to current forecasts. In the case of CCUS, this offers the opportunity to convert not only coal into useful new materials, but also various types of waste and biomass – a truly circular, carbon-neutral economy.

A secure electricity supply during the energy transition

As new renewable energy sources grow, such as wind turbines and solar PV, conventional power plants will continue to be needed to supply electricity on windless nights, for example. Building a network of expensive interconnectors between EU member states cannot be the only solution as wind patterns across the EU are correlated: when the wind stops blowing in Germany, it is probable that wind speeds are also low in France and Denmark, as illustrated in Figure 10. The secured capacity of the European wind turbine fleet is just 4-5% of its nominal capacity, while its annual average capacity factor is 22-24% (VGB, 2019).

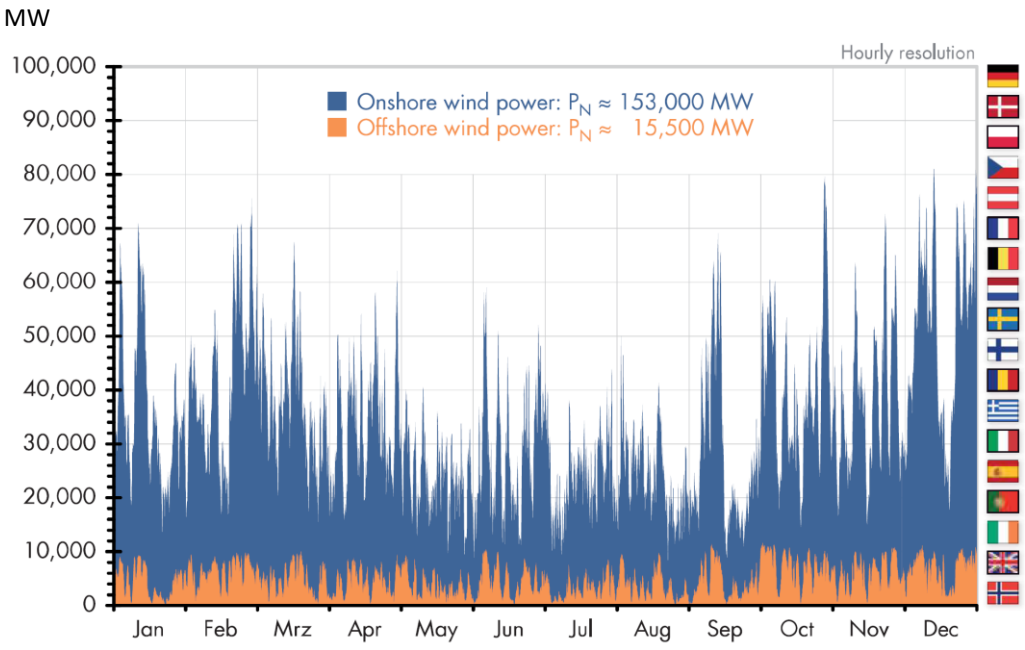

Figure 10 – Aggregate wind power output in 18 European countries, 2017
(Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Spain, and the United Kingdom) using hourly data from Entso-e

Source: VGB (2019), "Wind energy in Germany and Europe: status, potentials and challenges for baseload application – Part 2: European situation in 2017", Thomas Linnemann and Guido S. Vallana, *VGB PowerTech Journal*, no. 3, VGB PowerTech e.V., Essen, Germany, 2019.

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Conventional thermal power plants are therefore needed to provide the necessary backup when new renewable energy sources fail to deliver. There are currently no large-scale energy storage or demand-side management (DSM) technologies available, or any other alternatives for the foreseeable future to fill the gaps in renewable power supply.

While new gas plants could provide this backup service, they are a superfluous investment as they would simply replace well-performing coal plants for a very limited period. Any new gas plants would quickly become stranded assets as carbon emissions from all fossil-fired power plants must decrease under the EU ETS cap. This is one of the reasons why coal still has a role to play in the energy transition – its use being in line with the climate targets for the energy sector set by the ETS.

Overall demand for electricity will increase during the energy transition as electric cars become more popular and electric heat pumps replace gas-fired boilers for heating. Once again, under the EU ETS, coal-fired power plants can deliver what is needed for an interim period. In fact, without coal, power prices for industrial and residential users would rise because of the higher costs of mainly imported gas.

EURACOAL position on the 2050 vision

EURACOAL wants to see a transition to a cleaner energy system. There are many sensible, cost-effective measures to be taken that will protect and restore the environment, reversing the damage caused by centuries of agriculture and industry. We should embrace new technologies with a positive attitude and allow fair competition to deliver affordable solutions.

EURACOAL supports a climate protection policy with ambitious targets for 2050, *provided* the energy transition is based on technological progress within a non-discriminatory, competitive market that delivers solutions which consumers are willing to pay for. In particular, storage technologies need to be developed and deployed. The EU ETS should remain *the only way* to drive down CO_2 emissions in the power sector. Coal's contribution to this progress will be: affordable electricity from power plants that are now cleaner than ever before. The coal sector is already working on new energy storage options and new processes that allow carbon to be recycled instead of being released into the atmosphere. These processes can supply clean hydrogen and deal with the growing mountain of plastic wastes: in fact, any carbon-based material, including woody biomass, can be turned into useful new products in a circular-carbon economy.

EURACOAL supports ambitious targets for 2050, *provided* the energy transition is based on technological progress within a non-discriminatory, competitive market.

In its 2050 climate vision, the European Commission writes that, "Immediate and decisive climate action is essential" to avoid turning the Earth into a "hothouse". This action is not costless for society: the Commission estimates additional annual investments of €175 billion to €290 billion – an annual *per capita* cost of €500 or over €1000 for the average household. This helps to quantify the challenge lying ahead.

EURACOAL does not support unilateral action by the European Union which endangers security of supply, competiveness and social welfare. Unilateral action by the European Union can only serve as a blueprint for other countries if it adequately addresses EU economic competiveness and societal concerns. The different starting points of EU member states and their regions have to be taken into account. Under the EU ETS, which sets a clear and predictable framework to deliver cost-effective and economically efficient emission reductions, coal will play its role in the energy transition.

EU climate and energy policy should accelerate research, innovation and entrepreneurship.

In summary, a soundly based EU climate and energy policy should accelerate near-term research, innovation and entrepreneurship in a wide portfolio of low-carbon solutions, reinforcing the EU as a place to do business. It should be market-based, non-discriminatory and technology-neutral. Accordingly, the emissions trading system should remain the only instrument used to drive down CO_2 emissions from electricity generation.

EURACOAL

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