WHY LESS CLIMATE AMBITION WOULD DELIVER MORE FOR THE EU

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Summary

A more realistic EU climate policy can deliver considerable emission reductions at a lower cost, allow economic growth and provide security of energy supply.

- In these times of high energy prices and low economic growth, the Commission proposes a 2030 climate and energy policy that would be three times tougher than current policy and insists on going it alone, even if there is no new international climate agreement. Its proposed 40% GHG reduction target would mean making the same emission reduction over a single decade (2020-30) as has yet to be achieved over three decades (1990-2020).
- The coal industry asks that any target for 2030 must be realistic and only decided after the 2015 climate summit in Paris.
- If the 2030 target is not part of a binding global agreement, it would result in higher energy prices and a less competitive energy supply in the EU. Without an international agreement the risk of carbon leakage is high and the effects on global emissions are low.
- The significant effort required by European industry under the Commission's proposal would reduce global emissions by just 0.25%.
- An isolated EU climate policy would result in a greater share of gas in the fuel mix for power generation: geopolitical and price risks would grow, especially in the Member States of Central and South East Europe.
- Since 2000, the EU's import bill for oil and gas has tripled to 4% of GDP. Coal has stayed competitive, not least because it is the EU's most significant indigenous energy resource and is freely traded on the international market. As a partner for intermittent renewables, coal-fired and gas-fired power plants are equally flexible, but coal can do the job more cheaply and more securely.
- In the long term, fuel switching to gas is no answer to the climate challenge. The 80-95% cut in GHG emissions by 2050 would require CCS at even gas-fired power plants where it is a more expensive option than for coal plants.
- Marrying the continued use of coal with the need to reduce emissions can be achieved by improving the efficiency of Europe's older coal-fired power plants where emissions of CO_2 can be reduced by 30% or more. EURACOAL estimates that total annual investment needed is between €5 and €10 billion across the EU, vastly lower than any alternative and with no hike in energy prices.

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Introduction

It is not easy to explain why "less can be more". However, in the case of EU climate and energy policy, the truth is that a less ambitious policy – some might say a more realistic policy – would deliver greenhouse gas (GHG) emission reductions at a much lower cost than a policy which favours targets that are unaffordable and therefore unrealistic.

It has now become obvious that the fast expansion of solar PV in Germany from 2009 to 2013 gave the illusion of a prosperous solar industry, an illusion that has since faded. The party is over and now there is a hangover: many companies have gone bankrupt and jobs have been lost. The solar boom leaves a debt to be paid by German consumers over the next 20 years of €100 to €200 billion. Given that the prices for PV installations have fallen in recent years, it seems that less ambition would have delivered more. Technologies and the timing of their introduction are key questions.

Economics is perhaps the single most important driver in today's world. People generally want as much as possible for their money ("more for less") and the control of GHG emissions should not be seen as being any different. This paper explores why a more progressive policy on power plant modernisation and renewal could deliver emission reductions at a lower cost to society, demonstrate global leadership and, crucially, avoid the risk of an over-dependence on imported natural gas which appears to be the default option for future power generation in many Member States without providing a reliable solution.

The EU's CO_2 budget

On top of the 20% reduction target for 2020, the European Commission proposes a further 20% reduction in GHG emissions during the 2020s, both compared with a 1990 baseline (Figure 1). In fact, the proposed reduction over a single decade from 2020 to 2030 is the same that has yet to be achieved over the three decades from 1990 to 2020 – three times faster in times of uncertainty, high energy prices, low growth and with no international climate agreement. Is this "more ambitious" approach the right way forward?

The only times that such a steep reduction in emissions has been seen in the EU were during the economic meltdown in Eastern Europe as the Iron Curtain disappeared and during the 2008 global economic crisis. In normal economic times, emission reductions of 0.5% to 1.0% per year have been achieved – depending on the rate of economic growth and improvements in efficiency. The Commission proposes a 2.2% annual reduction which would carry an uncertain price.

The European Commission proposes a very ambitious climate target for 2030 in the EU, but fails to show what it means in a global context.

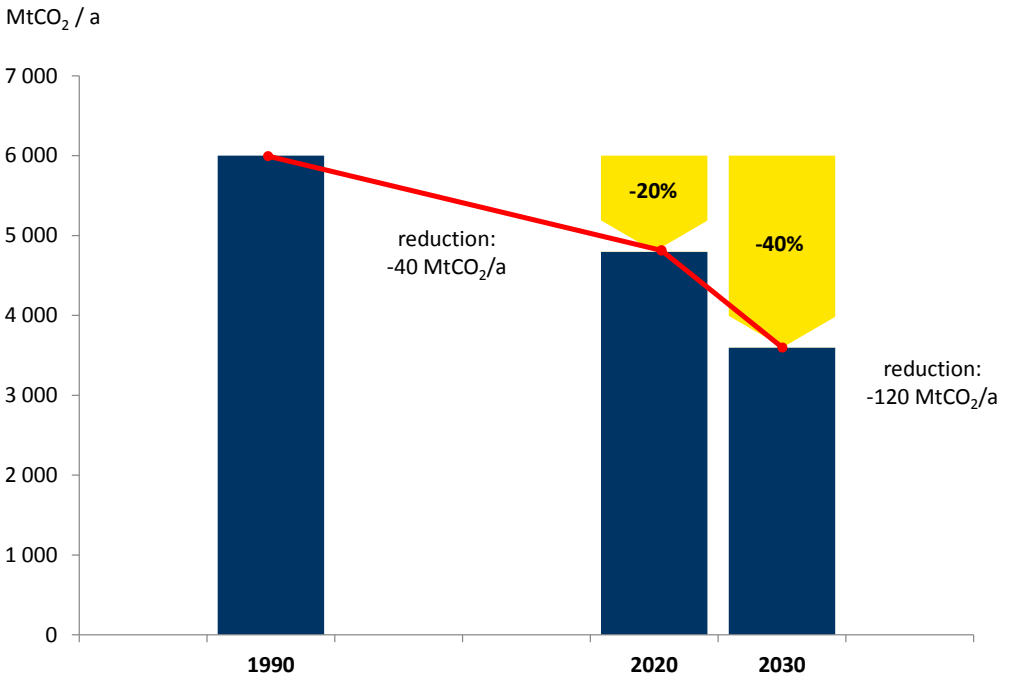

Figure 1 – Greenhouse gas emission reduction path in the EU: as much to do in one decade as in the previous three decades

The EU ETS and the EU ETS cap

The most important instrument in EU climate policy is the EU emissions trading scheme (EU ETS). Introduced in 2005, the scheme now covers around 45% of all CO_2 emissions. It effectively caps the emissions from key sectors of the economy and has a politically agreed target for 2020: a 21% reduction compared with a 2005 baseline (Figure 2). In 2013, the European Commission published a Green Paper to explore what policies to implement post-2020. The subsequent proposals, made in January 2014, are for a 40% overall GHG reduction target from 1990 levels which translates into a 43% CO_2 reduction target for the ETS sectors compared with 2005. The decline in the number of allowances auctioned each year would be substantially steeper than in earlier trading periods. This new target is justified by the Commission because it would put the EU on a linear but three-times steeper track to meet an 80-95% GHG emission reduction by 2050.

Is this new target of any real relevance in the global context? What are the technologies or innovations to justify this speed up? What are the side-effects on growth and a competitive power supply in the EU? These are the questions to be discussed.

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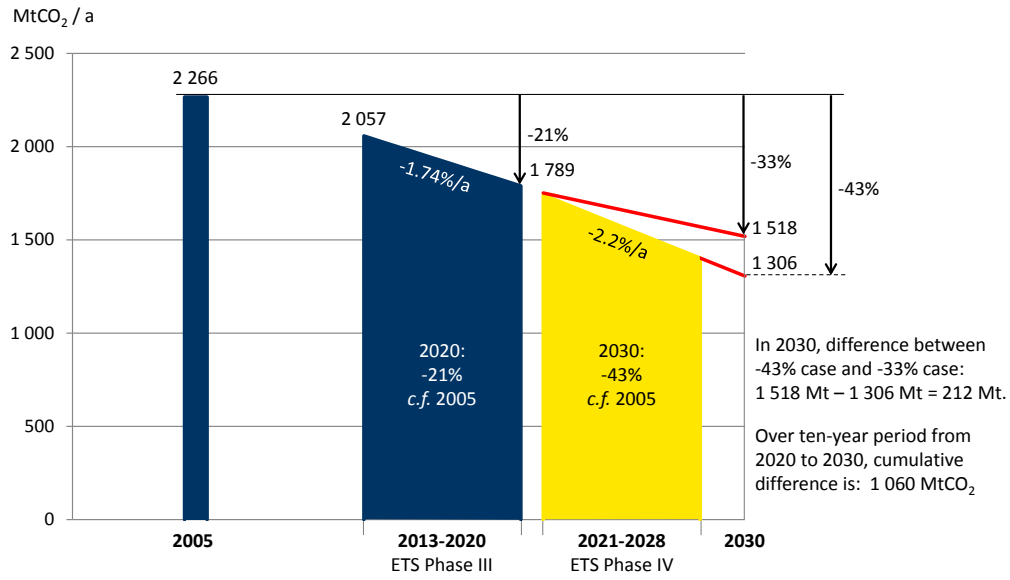

Figure 2 – Availability of CO_2 emission allowances under the EU emissions trading scheme

Source: EU ETS data viewer, European Environment Agency, accessed 11.08.2014

The significant effort required by European industry under the Commission's proposal would reduce global emissions by just a quarter of one percent.

As an example: what is the difference between a 33% and a 43% reduction in emissions compared with the 2005 baseline of 2 266 million tonnes of CO_2 equivalent? A 33% reduction requires CO_2 emissions to be reduced from 1 789 million tonnes in 2020 to 1 518 million tonnes in 2030. In the case of a 43% reduction, emissions must fall from 1 789 million tonnes to 1 306 million tonnes of CO_2.

Over the decade 2020-2030, the difference is around 1 000 million tonnes of CO_2. Is this a significant figure? Estimates show that global emissions over the same decade will be around 400 billion tonnes. The one billion tonnes of CO_2 saved by the EU ETS is thus equivalent to just 0.25% of predicted global emissions. Is this a material contribution to global emission reductions? If not, then how could less ambition deliver more?

A lower target, for example the -33% target, could be achieved by the modernisation and renewal of existing industrial and power generation installations, making a positive contribution to productivity and economic growth. The tougher -43% target proposed by the Commission would have little impact on global GHG emissions, but would certainly result in much higher carbon prices, fuel switching to natural gas and a less competitive energy supply in Europe. The carbon leakage issue would be a major threat to industry in Europe.

The EU ETS: a means, not a target

The EU has established an ambitious climate strategy, beginning with the "20-20-20" targets for 2020. The climate and energy package, adopted unanimously in 2009 after a lengthy debate, is demanding but was accepted by Member States because it includes hard-won compromises. Now, the EU is considering targets for 2030 and reviewing the instrument.

The ETS is delivering its objective for 2020: the ETS sector will reduce its CO_2 emissions by 21% compared with a 2005 baseline in a cost-effective and economically efficient way. The scheme is a success. At a time of very high energy prices and in the midst of an economic crisis, low CO_2 prices are desirable and initiatives to raise the CO_2 price are neither necessary nor justified.

Article 28 of the ETS directive stipulates that there would be no tightening of the EU's 2020 GHG reduction target unless an international agreement were to be reached – an important precondition for many Member States in 2009 when they agreed to the directive. There has been no new agreement, although there is some hope of reaching an agreement at the 2015 UN climate conference in Paris.

The headline, "strengthening the EU ETS", should not be equated to higher CO_2 prices. To strengthen the EU ETS, policymakers should keep it as the main instrument to achieve EU GHG emission reduction targets in a cost-effective way and refrain from using other instruments that target CO_2 reductions in the same sectors. For example, a carbon price floor or carbon tax introduced by one Member State undermines the common EU climate policy. Similarly, emission performance standards are contrary to the IED and undermine the EU ETS.

Any meaningful reform of the EU ETS should take place post 2020. EURACOAL calls on the Commission to prepare a report on how investments in the modernisation of industry, in the power sector in general and in clean coal technologies in particular, have been influenced by the current allocation rules. On the basis of experience gained in recent years, there must be an in-depth debate on carbon leakage in the industrial sector and fuel switching in the power sector. The question has still to be answered on whether the EU ETS provides a stable and investment-friendly framework to support Member States who wish to modernise the sectors covered by the EU ETS.

Fuel switching cannot answer the CO_2 challenge

If life-cycle emissions are considered, then then difference between coal and gas narrows.

In the power sector, burning more natural gas emits less CO_2 than burning coal but leads to higher prices for all consumers and new security of supply risks in the short term. Moreover, if life-cycle emissions are considered along the whole supply chain, then the difference between coal and gas narrows. For example, upstream GHG emissions during production and transport of natural gas, especially in the case of long-distance LNG transport, have a great impact.

In the long term, the necessary deep cuts in emissions will require carbon capture and storage (CCS) on even gas-fired power plants. This would result in much higher power prices and supply risks in the long term. It would cost much more to make the deep cuts because the CCS process itself requires energy and gas is an expensive source for that energy. To conclude, fuel switching from coal to gas is linked to higher prices, greater supply risks and is no answer to the CO_2 challenge.

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The cost of climate policy

In many Member States, enormous sums are being spent to meet EU climate policy targets, especially to meet renewable energy targets. However, this money is not being used as effectively as it could be. Vested interest groups – equipment producers, financiers, NGOs, landowners and local businesses – play a big part here. Beside this, renewable energy has a certain "feel good" factor, but that good feeling quickly evaporates when energy consumers are faced with the bill.

Future carbon prices will depend on the EU ETS cap for the period 2020-2030 and on the price differential between coal and gas. Today and for the foreseeable future, modernisation – that is investment in highly efficient coal- and gas-fired power plants as well as competitive nuclear and renewable sources – can relieve demand for EU ETS allowances and so match a realistic GHG emissions reduction target. Investment should be at the centre of any EU energy and climate strategy. Investment leads to higher efficiency and lower emissions: new plants have lower operational costs and replace inefficient production from older plants. Of key importance for investment by all industries is a view on future carbon prices. If industrialists were asked what the optimum CO_2 allowance price should be, most would answer, "low or zero" as long as the EU ETS is an isolated scheme in the global context. Predictable, relatively low and stable carbon prices would support investment and hence efficiency gains could be realised.

Only those with a vested interest call for high carbon prices in the EU, notably the nuclear and renewables sectors and even the gas sector. In fact, renewable sources and gas-fired generation would need very high EU ETS allowance prices to be competitive. This would result in electricity prices of two- or three-times higher than today and that would harm consumers, both residential and industrial. For this reason carbon prices are not really relevant to supporting new renewable technologies. If society wishes to support new renewables, then special schemes are needed, outside of the carbon market.

A balanced energy and climate policy with realistic targets for the EU ETS cap results in predictable carbon prices. What then would be the difference during the decade 2020-2030 on the burden of EU ETS allowance costs for industry and power producers? In the -33% case, CO_2 emissions from 2020 to 2030 would be 16.2 billion tonnes. In the -43% case, they would be 15.2 billion tonnes over the same decade. If one assumes a €5/tCO_2 price in the -33% case, then EU ETS allowance costs would be €81 billion. In the -43% case, with an assumed €30/tCO_2 price, the cost would be €456 billion over the decade. The difference of around €375 billion would have to be paid by consumers. This money would not be available to enterprises – it would be a tax-like burden which would harm the competitive position of European industry and reduce the ability and desire of industry to invest.

With a 43% target for the ETS sector and assuming a €30/tCO_2 price, electricity costs for consumers would increase by €375 billion.

But this is not the whole story of what consumers would have to pay if carbon prices were driven up because fuel switching would add even more costs. If power prices were to rise by say €0.03 /kWh, then the European electricity bill would increase by around €100 billion per year (power demand in the EU-28 in 2012 was 3 295 TWh). There would then be huge wind-

fall profits in favour of nuclear and hydro power plant operators and exporters of gas to Europe. Energy-intensive industry and millions of jobs would be at risk. Less can be more.

Costs and risks of fuel switching

An underlying premise of EU climate policy in the past was that fuel switching from coal to natural gas would deliver GHG emission reductions. That was certainly true in the 1990s, partly true in the 2000s, but not in the 2010s when gas use for power generation has been declining because gas is now very expensive compared with coal. Figure 3 shows the position in 2012 when the fuel costs for coal in power generation were less than half the costs of using gas. Two things could change this situation in favour of gas: lower gas prices (>50% lower) or higher CO_2 allowance prices (10 times higher).

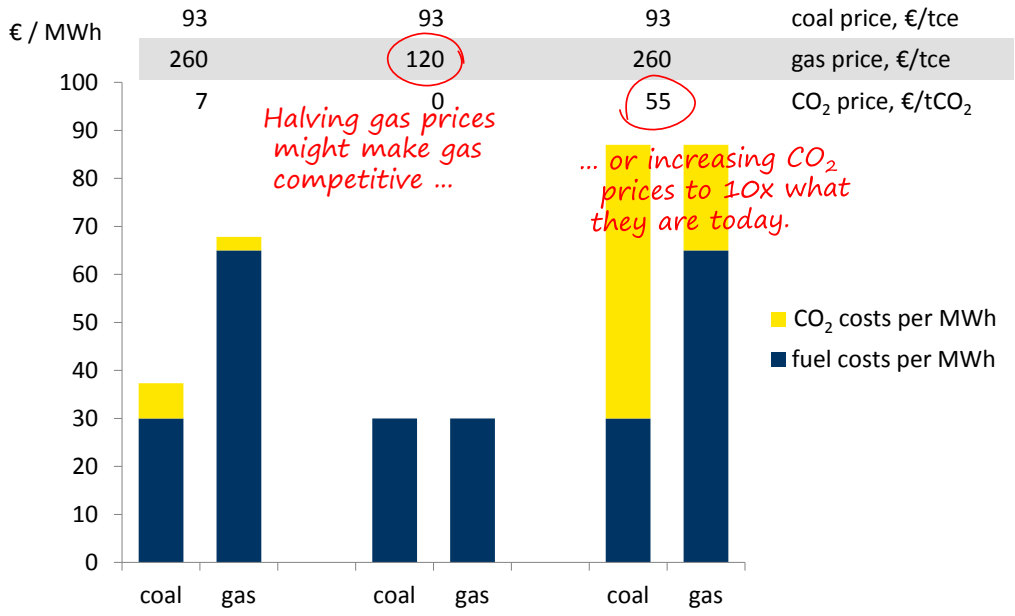

Figure 3 – Coal-versus-gas competition in 2012: gas wins if gas prices were to decrease by one half or EU ETS allowance prices were to increase by a factor of 10

Note:
assumed power plant efficiencies: 38% for coal; 49% for gas

Europe's growing energy import bill

Lower gas prices would be good for the EU economy, but there appears to be little prospect that gas prices will fall, given the dominant position of a small number of gas exporters to the EU and growing demand for gas elsewhere in the world. While the price of all energy commodities has risen over the last two decades, oil and gas prices have increased markedly more than either coal or electricity prices, as shown in Figure 4. Relying on gas for electricity generation would mean higher electricity prices for industry which, in turn, would be damaging for the whole EU economy. It would push more citizens into energy poverty.

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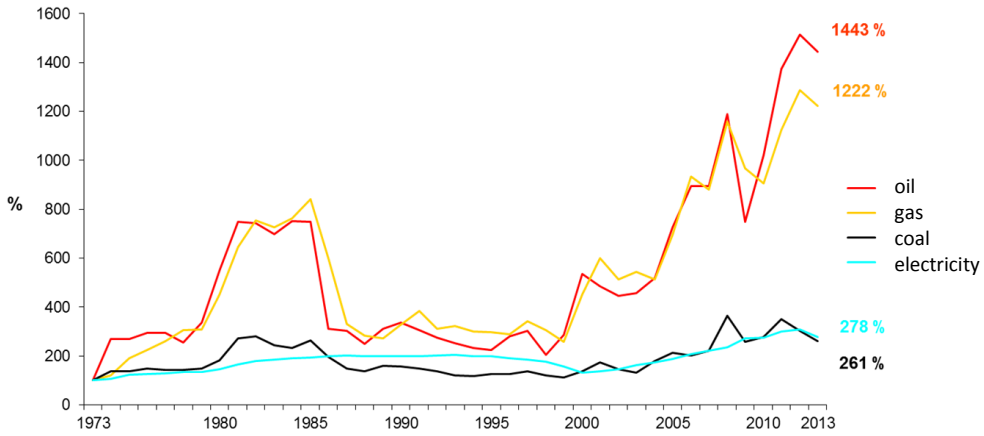


Figure 4 – Energy import and electricity prices in Germany, 1973 to 2013

Note:
[1)] Consumer price index: 1973 = 100 → 2011 = 273
Source: StaBuA / BAFA, 02.2014

The remarkably modest rise in electricity prices over the last four decades is thanks to coal and nuclear.

Figure 5 shows that our energy import bill has risen dramatically in recent years: from €150 billion in 2002 to €549 billion in 2012. 96% of that bill is spent on importing oil and gas – the cost of importing coal is rather small. This unchecked growth has seen energy import costs rise from a 1.5% share of GDP to 4.2%. To put this rise into perspective, 2% of GDP is equivalent to the cost of current R&D spending in the EU; public education accounts for 5% of GDP, while health care is between 6% and 10%.

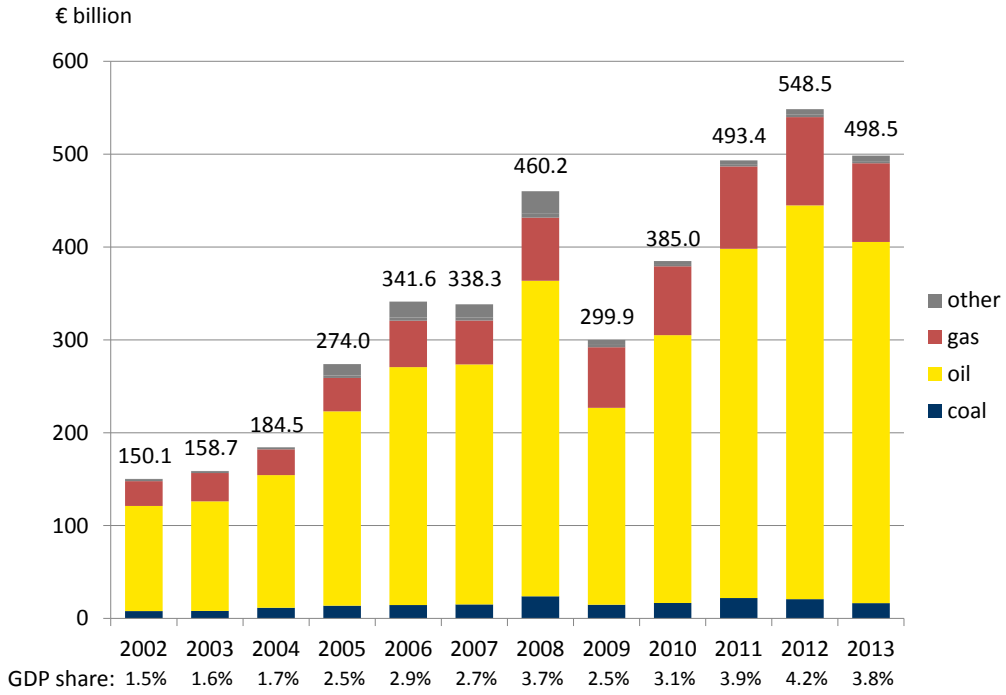
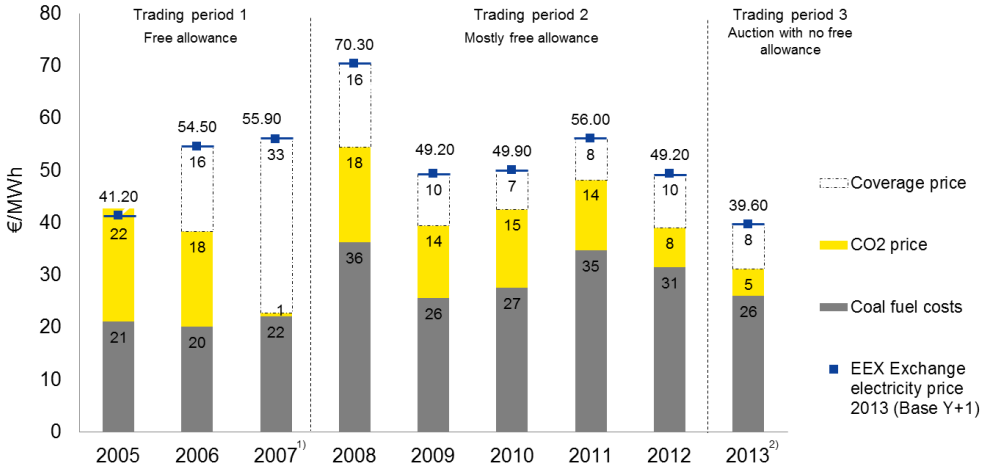


Figure 5 – The EU's energy import bill for oil, gas and coal, 2002-2013

Note: "other" includes electricity, but is mostly confidential data for oil and gas imports
Sources: Eurostat databases of EU trade by SITC (DS-018995 last update 24.09.2014) and GDP (nama_gdp_c)

Coal and carbon prices are of key importance for power prices

The price of electricity is determined by many factors: capital investment costs, fuel costs, operating costs, transmission and distribution charges, and taxes and levies. Since 2005, the price of carbon has to be added to this list, *i.e.* the price of ETS emission allowances. Figure 6 shows the evolution of electricity prices in Germany since the EU ETS began. It is clear that coal and carbon costs determine power prices on the Leipzig power exchange. If policymakers were concerned to ensure that the EU remains attractive to industry, then they must ensure that electricity prices are competitive. Therefore, coal and carbon prices are of utmost importance. To reduce investment risks, prices need to be predictably low over the next ten to twenty years. If not, then industry will migrate elsewhere – a real risk that has been clearly spelt out by the EU chemical industry and other energy-intensive industries.



	2005	2006	2007	2008	2009	2010	2011	2012	2013
€/tce	65	62	68	112	79	85	107	97	80
€/t CO_2	20.61	17.40	0.66	17.38	13.21	14.34	12.94	7.22	5.00

Figure 6 – Evolution of electricity and EU ETS emission allowance prices in Germany, 2005 to 2013

Notes:
[1)] CO_2 prices tended to nil because no banking/transfer of certificates for the subsequent period was possible
[2)] estimated
[3)] power plant efficiency used to calculate fuel and CO_2 allowance costs: 38%
Sources: AG Energiebilanzen e.V., VIK and own calculations as at 20.02.2014

An affordable fuel mix for power generation

The fuel mix for power generation is currently well balanced across the EU (Figure 7), although varies widely between Member States. Half of generation comes from non-fossil sources, principally nuclear and large hydro. This diversity is good for the EU and should be maintained because it results in strong competition between non-renewable energy sources and hence helps to ensure that prices reflect the long-run marginal cost of operating power plants, without excess profits. Given the oligopoly of gas suppliers to the EU, this diversity is also essential protection against price gouging by those suppliers.

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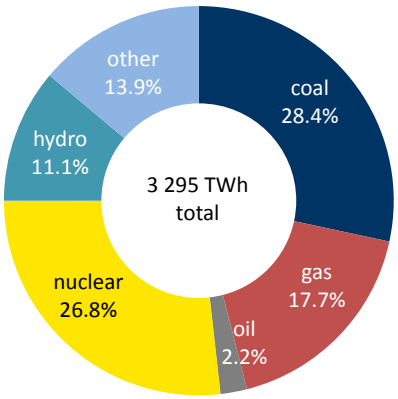

Figure 7 – Gross power generation in the EU by primary energy source, 2012

Source: Eurostat database nrg_105a last update 29.04.2014

GHG emissions reduction is a global challenge

A global challenge must be answered by a global strategy. Nobody can do it alone. Europe accounts for a relatively small share of global CO_2 and other GHG emissions. Since 1990, there have been dramatic changes in the world of energy and CO_2 emissions: today, Germany is the only European country among the world's top-10 emitters (Figure 8).

It would be no real solution if Europe's climate policy were to go it alone; that would lead nowhere. The superfluous debate about short-term intervention in the EU ETS has regrettably blinded us to the importance of this issue. What is needed are political initiatives to put together an international agreement. This still has to be done.

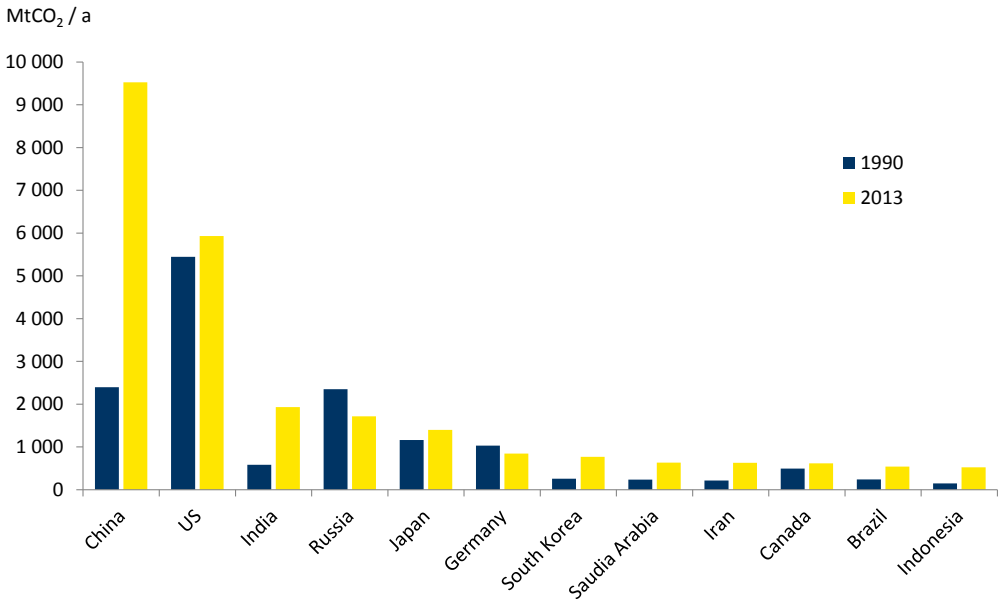

Figure 8 – CO_2 emissions from different countries in 1990 and 2013, including the top-10 emitters in 2013

Source: BP Statistical Review of World Energy, June 2014

Keeping coal in the energy mix – an Action Plan

To marry the continued use of coal with the need to reduce emissions can be achieved easily in the short term by improving the efficiency of Europe's older coal-fired power plants. Replacing old with new typically reduces fuel consumption and hence emissions of CO_2 by 30% or more. That reduction comes at no additional costs to society because coal-fired power plants are already competitive in their own right without any need for subsidy. It does, however, require a favourable policy environment that recognises the need for investment in modernisation and renewal. EURACOAL estimates that the total annual investment needed is between €5 and €10 billion across the EU (*c.f.* the €20 billion that Germany alone spends on renewable energy each year). The European Commission, working with industry, should lay out an action plan for coal in the EU that allows such investments to take place sooner rather than later.

Keeping CCS in play

Deep cuts in GHG emissions cannot be achieved by efficiency improvements alone. The use of any fossil fuels in the power sector and by large industry will become more challenging as we move towards 2050. In anticipation of this challenge, the Commission is right to support the demonstration and commercialisation of carbon capture and storage (CCS) and new plants should be built "capture-ready". For various reasons, the development of integrated commercial plant designs with CO_2 capture, transport and storage is running behind schedule, compared with the original plans. On the one hand, the changed climate, energy and economic framework conditions play a role. On the other hand, the targeted approach originally adopted by the European Commission and Member States to demonstrate CCS on a large industrial scale with individual "source-to-sink" projects is proving to be more difficult to implement than originally expected.

A new approach should be considered under the headline "infrastructure first". The preconditions for introducing CO_2 capture in the industrial and energy sectors need to be investigated. Plant operators will implement CO_2 capture only if an appropriate transport and storage infrastructure is available that meets their capacity and cost needs in a timely manner.

Policymakers have a choice: the cost of deploying low-emission technologies on a large scale can be reduced by R&D and by infrastructure investment. The International Energy Agency has shown that by including CCS in the future energy mix, the cost of meeting 2050 climate goals will be at least 16% lower. To achieve this, EURACOAL believes that governments will have a central role in establishing a CCS infrastructure which industry can rely on in the same way that it currently relies on transport infrastructure, energy- and water-supply infrastructure and telecommunications infrastructure.

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Conclusions

The European Commission should send a signal that climate policy goals will in future be in line with technological progress and economic development. Instead of pushing for higher carbon prices, which would be economically damaging because of the impact on EU industry, the Commission should welcome the fact that GHG emission reduction targets can be met with low carbon prices and at a low cost to society.

The widespread modernisation of Europe's coal-fired power plants offers a low-cost route to emissions reductions through improved efficiency. Other co-benefits include cleaner plants with lower emissions of conventional pollutants.

Perhaps one of the most important benefits that comes from the modernisation of coal-fired power plants is the avoidance of a further "dash for gas" that would be neither affordable nor strategically desirable. Energy supply is closely entwined with current global tensions and the EU needs to think carefully about how it invests for the future. The magnitude of recent investment in renewable energy would make a material difference in many areas of society: from education to health care, from investment in R&D to the creation of special economic zones for industry, from power plant modernisation in poorer EU Member States to cleaning up power plants in neighbouring states such as Kosovo and Ukraine, from early introduction of CCS in industry to developing the framework for a CCS infrastructure that should be fully available mid-century.

The EU should pursue a growth agenda that creates the wealth to pay for a cleaner environment and ensures that we are not dependent on imported gas supplies that are too expensive and leave us strategically weak in times of crisis. If the EU can achieve growth alongside affordable emission reductions, then this would be a powerful example to show that the climate challenge can be tackled without compromising economic development. In this way, the EU could be seen as a beacon to follow by China, India and other major energy-consuming countries that are rapidly catching up with Western living standards.

In the medium term, realism is good advice to follow. In the long term, the ambition should be directed towards innovation. The EU has to prepare for deep cuts in CO_2 emissions beyond 2030. A precondition for this is intensified R&D because today's technologies are not sufficient. A good example of a policy that responds to this need is the Horizon 2020 research programme. Similarly, a responsive European industrial and energy policy can be set by a realistic 2030 climate policy framework.

In summary, a LESS ambitious EU climate policy for the period from 2020 to 2030 that is both achievable and affordable can be a role model to follow and deliver MORE for the EU.

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