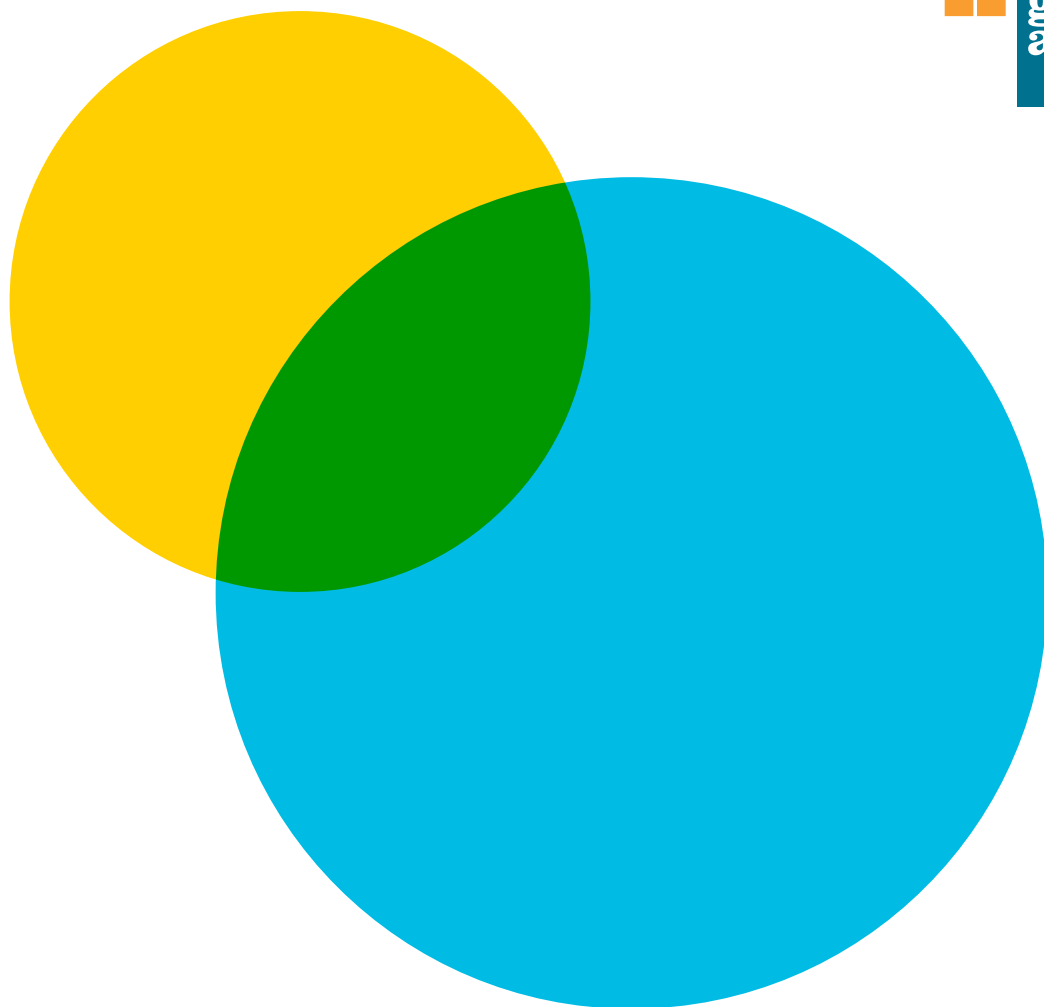


# What has EU climate and energy policy done for the UK?

A review with 20 climate and energy specialists



**green  
alliance...**



# **What has EU climate and energy policy done for the UK?**

## **A review with 20 climate and energy specialists**

by Rachel Cary and Friederike Metternich

### **Green Alliance**

Green Alliance is a charity and independent think tank focused on ambitious leadership for the environment. We have a track record of over 30 years, working with the most influential leaders from the NGO, business, and political communities. Our work generates new thinking and dialogue, and has increased political action and support for environmental solutions in the UK.

This report is published under Green Alliance's Low Carbon Energy theme, which is focused on the renewal and rapid decarbonisation of the UK energy sector.

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# What has EU climate and energy policy done for the UK?

## Introduction

We interviewed 20 experts from business, NGOs, government and academia to ask them how well they think the European Union's climate and energy policies have performed. Whilst the conclusions we present here do not represent the views of all those we interviewed, we found a remarkable level of agreement about the successes and weaknesses of EU climate and energy policy.

There was a striking consensus that the EU had played a positive role overall in the UK's energy outcomes, even amongst those who had criticisms of individual policies. There was widespread concern that the UK would struggle to maintain a coherent energy and climate programme if it were to leave the EU.

We are now at a crossroads in European climate and energy policy. In March 2013 the European Commission launched a Green Paper on the 2030 climate and energy package and it hopes to agree a framework with all 28 member states in 2014.

Our review shows that the 2020 package was ground-breaking in many ways: it has had a monumental impact on European and global climate politics, and was instrumental in creating the largest market for renewables and carbon trading in the world.<sup>1</sup>

If the EU is to continue its leading role in energy and climate policy internationally, it needs to get the 2030 package right. Doing so will mean addressing flaws in the 2020 package, identified in this review.

We conclude that, overall, EU climate policy has been a powerful, positive force in helping the UK to meet its energy investment and climate change goals. We are optimistic that the next round of EU policy making can also work for the UK and our wider interest in achieving a low carbon world.

# Interviewees

**Steven Altmann-Richer**  
senior policy adviser, CBI

**Jason Anderson**  
head of European climate and energy policy, WWF  
European Policy Office

**Tom Burke**  
environmental policy adviser to Rio Tinto plc; visiting  
professor at Imperial College and University College, London;  
founding director E3G

**Steve Davies**  
energy policy development manager, E.ON UK

**Sarah Deblock**  
EU policy director, International Emissions Trading Association  
(IETA)

**Alesha De-Freitas**  
team leader, Europe climate and energy team, Climate Change  
and Energy Group, Foreign and Commonwealth Office

**Jill Duggan**  
director of policy, Doosan Power Systems

**Dr Nick Eyre**  
programme leader, lower carbon futures group, Environmental  
Change Institute, University of Oxford; and Jackson senior  
research fellow, Oriel College, Oxford

**Jonathan Gaventa**  
programme leader, E3G

**Dr Robert Gross**  
senior lecturer, Centre for Environmental Policy; and director,  
Centre for Energy Policy and Technology, Imperial College  
London

**Professor Michael Grubb**  
senior research associate, Faculty of Economics, University  
of Cambridge

**Naomi Harris**  
associate director, Bellenden

**Jean Lambert**  
Green member of the European Parliament

**Guy Newey**  
head of environment and energy, Policy Exchange

**Dr Doug Parr**  
chief scientist, Greenpeace

**Mike Rolls**  
director, business development, sustainability and  
government affairs, Siemens UK

**Jürgen Rosenow**  
analyst, political affairs and corporate communications,  
political and regulatory affairs, E.ON SE

**Dr Raphael Sauter**  
policy analyst, environmental governance programme,  
Institute for European Environmental Policy (IEEP)

**Steven Schofield**  
deputy head, UK government relations, Shell

**Joanne Wheeler**  
senior policy advisor, UK Green Building Council (UK GBC)

# Why do we need environmental policy at the European level?

The advantages of having climate and energy policies at the European level are numerous. European policy has not only had environmental benefits, but has also helped European businesses, reducing their regulatory burden and creating sufficiently large markets for their operations.

## **Transboundary pollution requires transboundary action**

Climate change is a global problem and requires co-operation between large numbers of countries. Europe represents a sufficiently large group of countries which have similar ambitions in terms of carbon reduction, that trade heavily with each other and have been faced with similar challenges along the road to decarbonisation. Many types of pollution such as nitrogen oxides (NO<sub>x</sub>) and sulphur oxides (SO<sub>x</sub>), created by power stations, factories and vehicles, travel long distances. Reducing long range pollution requires transboundary action.

## **A level playing field**

The adoption of common environmental standards reduces the regulatory burden for companies that operate on a pan-European level. Importantly, common European policy and regulation can level the playing field so environmentally progressive companies are not at a disadvantage. It also creates sufficiently large markets for abatement technologies to be developed and their costs to be reduced through economies of scale and widespread deployment.

## **A common market for products**

Setting product and vehicle standards at an EU wide level is appropriate as national markets would be too small. Setting common standards across a larger market enables innovation to take place and reduces the burden on manufacturers. Similar standards in other member states create export markets for environmental goods and services. This is of benefit since trade within Europe is high. In 2010, 54 per cent of UK goods and 40 per cent of UK services were exported to other member states. Across the EU, trade between states accounted for 64 per cent of all exported goods and 56 per cent of all exported services.<sup>2</sup>

## **Improving standards globally**

The EU market is also large enough to influence manufacturers outside Europe, improving product standards elsewhere. In fact, Europe continues to be enormously influential and still constitutes the largest economy in the world.<sup>3</sup> Likewise, one interviewee from a major global business stated that their business had adopted European environmental standards in its operations outside the EU.

● **“In the absence of a global deal, acting on a European level makes absolute sense and is exactly the kind of thing the EU should be doing.”**

**Guy Newey, Policy Exchange**

● **“Having a unified European approach is usually much more cost effective for businesses than national policies, which differ from country to country.”**

**Sarah Deblock, IETA**

● **“Common European policy has allowed a company like E.ON to develop some economies of scale, because there is commonality across markets.”**

**Stephen Davies, E.ON**

● **“The eco labelling directive and its predecessors are an obvious example of where there is a very clear European competence and that’s being used, although not as effectively as it should be. Our appliance standards are not as good as in many other countries, but we’re heading in the right direction and the European level is the right level to do it.”**

**Dr Nick Eyre, University of Oxford**

● **“The EU is basically a trading block so the real power lies in building a single market and creating a level playing field within the EU for goods and services. In the case of renewables, because there is a liberalised energy market, companies benefit from compatible policies across borders.”**

**Jason Anderson, WWF**

### **A stable framework for long term investment**

The large coverage and range of views mean that any policy position adopted by the EU as a whole has a strong impact on the global community. Although the decision making process can be protracted, this is seen as a real benefit by investors, especially those in sectors with long lived and capital intensive assets; the decisions are seen as more steadfast and less subject to short term political intervention.

### **Ability to develop effective policies, share learning and fund new technologies**

Adopting common policy frameworks allows member states to share knowledge and compare the effectiveness of different policy options. The process can create a push and pull effect where good practice shown by leading member states is adopted by others, and the general level of ambition is raised over time.

Individual member states are unlikely to have sufficient funds to develop the long term technologies needed for decarbonisation. Pooling resources and sharing learning should enable solutions to be developed more quickly and at a lower cost.

### **Ensuring Europe achieves energy security at lower cost**

Common European energy policy should lead to energy security at a lower cost for several reasons. Member states with different types of renewable sources have a greater ability to share them, which evens out supply. Perhaps more importantly, it enables member states to use their back-up assets more efficiently: they can, for example, share fossil fuel power stations that are needed when renewable output is low. By bundling together demand for energy, demand profiles are not only evened out, but there is a large collective procurement power, helping to secure more favourable trade agreements. An increase in co-operation and harmonisation of rules between power markets enables greater trade, so lower energy prices can be accessed elsewhere in Europe.

By trading carbon between many countries reductions can be made where it is more economical to do so. It also creates a sufficiently large market for trading. Individual member states are simply not big enough to create sufficiently liquid markets: the UK's emissions trading scheme had less than 40 participants. The EU Emissions Trading Scheme (ETS) reduces price distortion, as the carbon price is the same for all countries.



- **“The upside of slow decision making is that once it’s done, it’s going to be more solid. At least you know where you’re going and industry has confidence to invest at scale.”**

**Professor Michael Grubb,  
University of Cambridge**

- **“You can now see which policies were more effective and more efficient and which ones were less so. For example the Commission is now working on guidelines for best practice in the area of renewable energy.”**  
**Dr Raphael Sauter, IEEP**

**“If each country had to do all its own energy technology research independently there would be a lot of duplication and wasted effort.”**  
**Jonathan Gaventa, E3G**

- **“By being increasingly interconnected, and having a geographically diverse generation mix we can improve our energy security and drive down costs”**  
**Naomi Harris, Bellenden**

**“Due to the single market there is a bigger demand and due to the bundling of demand we have advantages in international markets.”**  
**Jürgen Rosenow, E.ON SE**

**“The trading of energy allows you to decarbonise much more cheaply than you’d be able to do otherwise.”**  
**Jonathan Gaventa, E3G**

# What have been the significant successes?

European climate and energy policy has yielded many successes, including leading the way internationally in mandatory greenhouse gas emissions reductions. This has increased the deployment of renewables, improved air quality and established the EU ETS, the largest carbon trading scheme in the world.

## **Ambition for greenhouse gas reduction**

The EU has played an important role in setting out its ambition for greenhouse gas reductions. It is important for countries within the European Union and further afield to see the direction of travel clearly signposted and to know they are not going it alone.

## **Increased renewables deployment**

The Renewable Energy Directive led to a significant increase in renewables deployment, especially in member states that were dragging their heels. It had a positive impact on the UK, pushing it to address ways to incentivise renewable energy. There is acknowledgment that the directive was important in setting the UK onto a path towards more renewables and in sending a signal to investors. The directive led to a dramatic change in ambition and a complete culture change amongst civil servants. It drove down the costs of renewables by increasing competition and it allowed the creation of major European renewable energy supply companies. ....

## **The creation of a market for carbon**

The EU ETS is politically important as it shows that carbon markets can be successfully created and integrated within a conventional energy market and it has led to a proliferation of similar schemes around the world. There are also major compliance benefits which are often overlooked. Under the EU ETS around 11,000 installations in 31 countries have to comply and 45 per cent of EU carbon dioxide (CO<sub>2</sub>) emissions are now traded under the scheme.<sup>4</sup> .....

● **“The European Renewable Energy Directive has been extraordinarily important. I have no doubt that the UK would have backed down from that scale of renewables commitment if it hadn’t been for the European directive. To transform the energy system, you need some pretty strong posts hammered into the ground against which business can credibly risk sizeable amounts of money in new industries.”**

**Professor Michael Grubb,  
University of Cambridge**

**“The renewables directive led to a complete culture change in the energy civil servants. For the first time you were seeing a level of ambition amongst the civil service. It was a forced ambition, but it was ambition nonetheless. Before that renewables had been treated like a bit of a joke.”**

**Dr Doug Parr, Greenpeace**

● **“The ETS is legally binding on the operator, and not only on countries, and in this way circumvents the Achilles heel of EU legislation, which is that countries are often slow or fail to properly implement EU directives. It also means that 11,000 installations are now being regularly monitored.”**

**Jason Anderson, WWF**

### **Cleaner power stations**

European legislation, such as the Large Combustion Plant Directive (now part of the Industrial Emissions Directive) has driven the uptake of abatement technology, increasing the rate at which many member states, including the UK, have cleaned up their power stations.<sup>5</sup> This has resulted in improved local air quality and reductions in regional pollution such as NOx and SOx.<sup>6</sup> The directives have also created new industries in abatement technologies.

### **Reducing emissions and energy use in vehicles and products**

Progress to implement tight emissions standards for new cars has been slow and watered down several times by the Environment Council and the European Commission as a result of manufacturer lobbying.<sup>7</sup> However, the threat of binding legislation has led to a significant reduction in carbon emissions from new passenger vehicles and increases in fuel efficiency, saving UK drivers billions. It has also had an international impact. The initial voluntary agreement that European car manufacturers signed up to, which is now mandatory, led to similar commitments from both the Korean and Japanese manufacturers' organisations.<sup>8</sup>

The introduction of product standards has meant that the most energy wasting appliances have been taken out of the market. Bans on incandescent light bulbs alone are projected to be saving consumers £108 million on average per year between 2010 and 2020.<sup>9</sup> The overall benefits of the Ecodesign Directive, estimated by the Department of Climate Change and Energy, are projected to be worth £26 billion in total, or £158 per household per year by 2020.<sup>10</sup>

### **Giving the UK a louder voice in international negotiations**

The UK has successfully used its membership of the EU to amplify its voice at international climate negotiations. Past EU leadership on the international stage has led to other major economies developing a significantly stronger domestic stance on greenhouse gas emissions reduction than expected, even if this has not been matched by formal binding targets. The UK has had considerable influence over the EU's position and maximises its leverage by operating within the EU bloc. It has many respected experts and has had a significant impact on the position developed by the EU's negotiating team at international climate talks.

● **“The coal lobby was quite strong in the UK and so the clean up of power stations certainly wouldn’t have happened as quickly as it has. I think that European legislation has really enabled a transition to a much cleaner energy system, both in air quality and climate terms.”**

**Jonathan Gaventa, E3G**

● **“Responsible for only two per cent of global emissions, the UK on its own can’t be a major player in international agreements. However, the EU countries together form the largest market in the world and have real clout in the negotiations.”**

**Jill Duggan, Doosan Power Systems**

# What have been the problems and unintended consequences?

## **Centralised decision making excludes some voices**

The complexity and length of decision making processes can make it hard for small organisations to have a say, which can result in large companies and industry having more input. Whilst national governments are also open to lobbying, the European process is arguably subject to less scrutiny from civil society. This can lead to the perception that processes are top down.

## **Lobbying has watered down policy**

Agreeing policy across 28 member states can reduce the level of ambition, especially where there needs to be unanimous agreement to pass new legislation.<sup>11</sup>

## **The 2020 greenhouse gas emissions target was not ambitious enough**

The 2020 greenhouse gas emissions target did not lead to any reductions beyond business as usual as a result of the European recession, resulting in large surpluses of EU Allowances (EUAs) and Annual Emissions Allocations (AEAs).<sup>12</sup> Efforts to increase the target to 30 per cent have been unsuccessful.

## **The plan for the EU ETS did not account for economic activity and was not adequately supported politically**

Similarly, the EU ETS trajectory failed to take account of economic activity and wasn't backed by sufficient political will. Without major reform it is unlikely to provide the high carbon prices necessary to drive fuel switching, let alone structural changes to the sectors covered by the ETS. As it is the flagship European climate policy, failure to rescue the scheme will put Europe's leadership role at risk and reduce EU influence at international negotiations.

● **“EU energy policy potentially risks increasing the dominance of the larger utilities, purely on a basis that they can afford to engage.”**

**Naomi Harris, Bellenden**

**“Complexity is a form of exclusion. If policy formation is going to be subject to democratic input and oversight, accountability and control, it needs to be simple enough for people to understand.”**

**Dr Doug Parr, Greenpeace**

● **“If you look at the activities of Poland and the attempted structural reforms of the EU ETS, or indeed of the 2030 package, it is actually bringing down overall ambition.”**

**Dr Doug Parr, Greenpeace**

**“Where you get qualified voting you can get some things through. But in other areas, such as energy taxation, it’s hard to get decisions through.”**

**Jean Lambert, MEP**

● **“At the outset of the EU ETS, political ambitions were not high enough – that is the main reason for current difficulties.”**

**Jill Duggan, Doosan Power Systems.**

**“An emissions trading system makes a lot of sense if you have scarcity in the market but we don’t and we don’t have a real price. The same is true in the non-traded sectors, where there is so much credit in the system that there is very little demand for AEs”.**

**Jason Anderson, WWF**

### **Slow progress building necessary infrastructure**

A well functioning, integrated electricity and gas market requires common infrastructure, such as adequate gas storage and networks, and electricity transmission networks that are able to handle flows of electricity between countries. There have been attempts to plan and develop transmission networks on a pan-European basis, individual system operators are starting to work together with the creation of the European Network of Transmission System Operators for Electricity (ENTSO-E). Whilst the creation of ENTSO-E is welcome, it lacks any sizeable budget to deliver its aims and regulators still make decisions at an individual member state level. An informal target was set in 2002 for member states to secure ten per cent of their electricity capacity through interconnection by 2005. In 2010, nine member states had still not met this target, including the UK.<sup>13</sup>

### **Slow progress developing a common energy policy**

Progress on developing a common energy policy has been less impressive than that on climate, as national governments have been wary of handing over sovereignty on something so closely aligned to national interest.

Some have questioned whether the move to a single, energy only electricity market (where generators are only paid for each unit of electricity they produce and not for the capacity they provide) is now out of date. Energy only electricity markets have been developed for fossil based power systems and may not be suited to running assets like renewables efficiently. These conventional energy markets are also failing to give the necessary long term signals for investment for both fossil and renewable projects alike.<sup>14</sup> As we integrate higher amounts of renewables and other low carbon generation into the electricity system, fossil fuel power stations will increasingly only run when renewable output is low and their costs may not be covered by electricity sales alone. Many countries, including the UK, are introducing capacity markets so that power stations are paid for being there, not just for the electricity they sell.

### **Disappointing progress on energy efficiency**

The lack of a legally binding target has resulted in much more focus on renewables. It is now unlikely that the 2020 target of a 20 per cent improvement in Europe's energy efficiency will be met, despite recession and despite the fact that energy efficiency is one of the cheapest ways to reduce emissions.<sup>15</sup>



● **“As far as I’m aware there is no pan-European gas storage, no new gas connectors and, despite significant rhetoric, little progress on connecting up a North Sea electricity grid.”**

**Tom Burke, environmental policy adviser**

● **“The UK basically remains an island with a couple of wires attached. The mentality is still largely that of an island. You can argue the pros and cons of that, but clearly there are opportunities for a more cost effective energy system, if the UK would do a bit more international trading.”**

**Professor Michael Grubb, University of Cambridge**

● **“Whereas European climate policy has shown leadership, the attempts to develop common energy policy have been a disaster.”**

**Tom Burke, environmental policy adviser**

● **“Why, at European level, are we requiring mandatory targets for renewables and carbon but not efficiency, when energy efficiency should have economic benefits? Maybe the answer is that you expect member states to do energy efficiency anyway. But the effect is that action on renewables has had a higher profile than action on efficiency. It is clear in other areas, like landfill, that a mandatory European deliverable with penalties attached does make people sit up and take notice.”**

**Dr Nick Eyre, Oxford University**

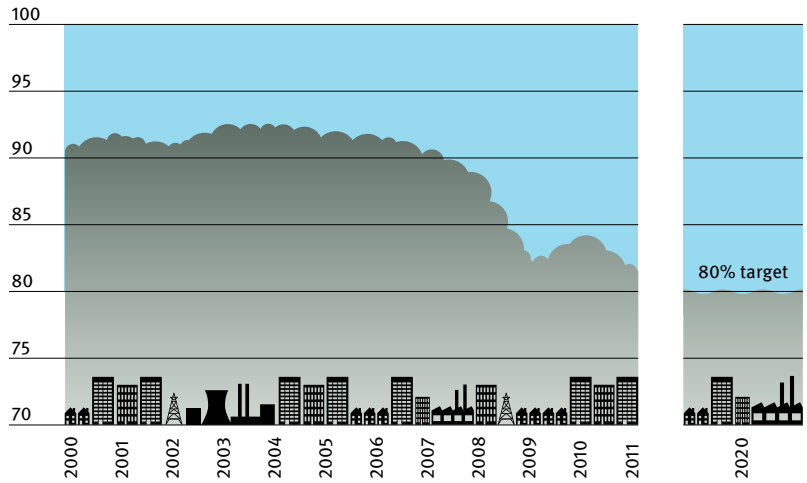
# Facts and figures

## An unambitious greenhouse gas emissions target

The greenhouse gas emissions reduction target of 20% from 1990 levels by 2020 will be met. But, as this graph shows, it hasn't been ambitious enough as the target has nearly been reached already due to the European recession since 2008.

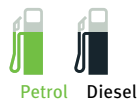
EU greenhouse gas emissions 2000-11<sup>16</sup>

Index: 1990 = 100

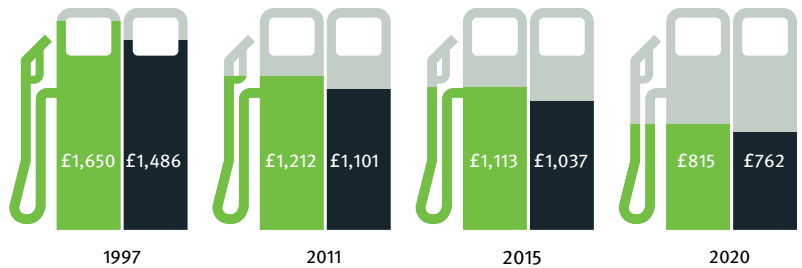


## Standards on new cars have saved UK consumers billions<sup>17</sup>

CO<sub>2</sub> standards for new vehicles have significantly reduced fuel costs, and will reduce them further in future.



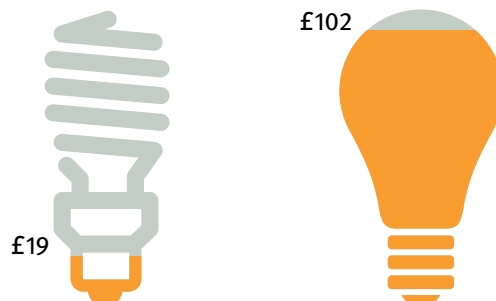
Annual fuel cost per car to drive 15,000km



## More efficient lightbulbs have reduced electricity bills

EU legislation has led to the phase out of inefficient products like incandescent lightbulbs.

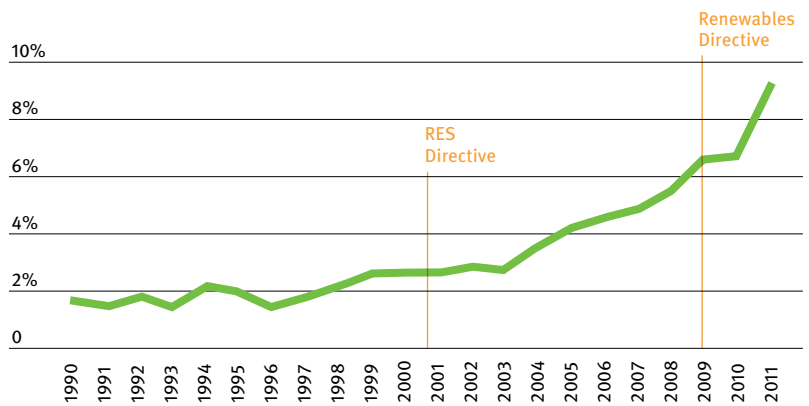
Annual lighting cost per UK household<sup>18</sup>



### Kickstarting renewable electricity generation in the UK

Both the 2001 Directive on Electricity Production from Renewable Energy Sources (RES Directive) and the 2009 Renewable Energy Directive had a strong impact on UK renewable electricity generation, which grew by 98 per cent 2001-07 and 88 per cent 2007-11.

Electricity generated from renewable sources as % of gross electricity consumption<sup>19</sup>

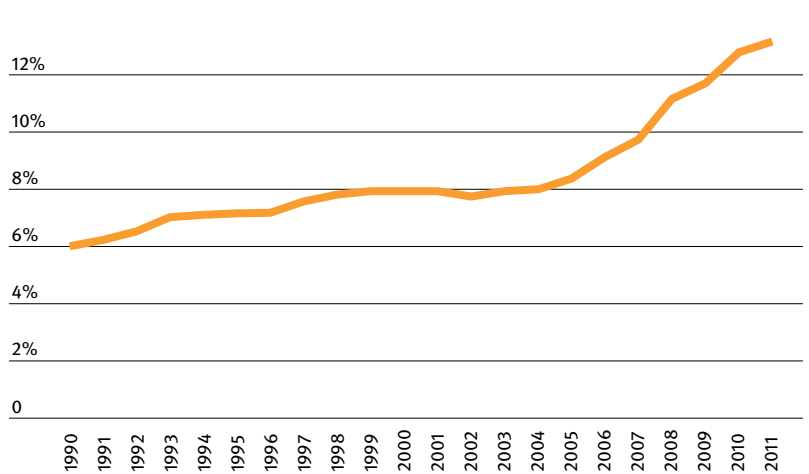


### A thriving EU renewables market

The Renewable Energy Directive had a significant impact on renewable deployment, setting up mandatory targets for renewable energy use in Europe.

The targets, negotiated in 2007-08 and agreed in 2009, resulted in a 34 per cent increase in renewable energy sources in final energy consumption since 2007.

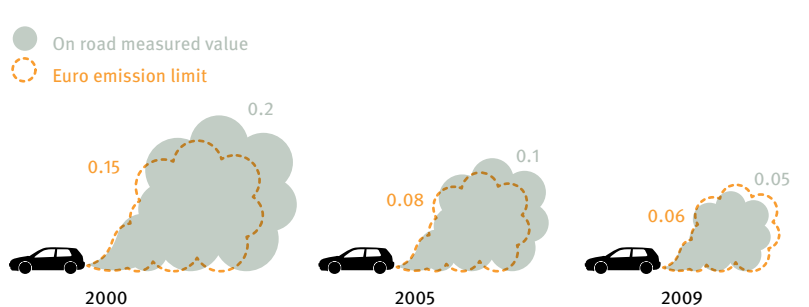
Share of renewable energy in gross final energy consumption<sup>20</sup>



### Reduced pollution from cars

Vehicle standards have not only reduced CO<sub>2</sub> emissions but have also decreased local air pollution, such as NO<sub>x</sub>.

NO<sub>x</sub> emissions from cars<sup>21</sup>



### **Issues with European efficiency policies**

Despite its success, the ecodesign directive has suffered from very slow implementation, partly as a result of poorly designed processes, and partly due to low resources available at EU level. This means around 40 per cent of potential ecodesign carbon savings are not being achieved.<sup>22</sup> The European Commission has also been fighting the UK to drop its policy to reduce VAT on energy efficient materials and products, arguing that the UK can only grant differential VAT on social, not environmental grounds. There have also been problems developing Energy Performance Certificates (EPCs) for buildings so they are comparable between countries.

### **Flaws in the Renewable Energy Directive**

The rapid uptake of renewables in many member states led to significant energy price increases in some countries. This resulted in retrospective changes to renewables support schemes which, in turn, created significant uncertainty for the renewables industry.<sup>23</sup> The cliff edge caused by not having a target post 2020 is also an issue for the renewables industry and its investors.

In the UK, the Renewable Energy Directive led to significant investment in low cost renewable electricity technologies which have questions over their wider sustainability, eg over the efficient use of imported biomass through extensive use of co-firing and electricity only biomass.

In many member states there has been a lack of attention to renewable heat, despite it being typically lower cost than many electricity options. Heat is harder to tackle as there is a more diffuse market and projects are smaller scale. Renewable transport has not made much progress either due to the u-turn on biofuels because of concerns over sustainability and food security and the slow adoption of electric vehicles.

### **Mixed efforts to co-fund and commercialise new technologies**

The commercialisation of carbon capture and storage (CCS) is a prime example of where progress can only be made if there is a pan-European response. However, progress to date has been disappointing. The terms of the NER300 competition, which uses the money from selling ETS emission allowances to support CCS and innovative renewable technology, have been overly prescriptive. The programme has suffered from uncertain and inadequate funding due to the low carbon price.<sup>24</sup>

● “Energy performance certificates have done a great deal of good across member states at raising awareness of energy issues, making sure each building has a label, a bit like fridge labels. The problem is that they are measured in inconsistent ways, so a B rated building in Britain is potentially completely different from a

B rated building in another member state. If you are a company that works across different markets, that’s not helpful. Another problem is that EPCs only measure expected, not actual, energy performance. We need operational energy ratings for our buildings to really drive change.”  
Joanne Wheeler, UK GBC

● “In the British case the impact of the Renewable Energy Directive was broadly positive but it was arguably too aggressive and short term. It has created political dissonance because of costs and a cliff edge, which is not great for investment. However, it shouldn’t lead to a blanket

ban on technology specific targets. Part of the pain felt in the UK was due to our poor historic performance, as the Commission’s burden-sharing rules allowed for progress in previous six years, so we’re now playing catch up.”  
Dr Robert Gross, Imperial College London

● “The framework programmes at the research end have been very useful, but I’m not sure how much real technological innovation has benefited from European political co-operation. The big one was going to be CCS, and that’s obviously fallen flat on its face.”  
Professor Michael Grubb,  
University of Cambridge

# The UK has been both a leader and a laggard

## Where the UK has been ambitious:

### Setting carbon budgets

The UK has led the way in adopting a legally binding greenhouse gas emissions reduction target for 2050 under the Climate Change Act and in setting up an independent body, the Committee on Climate Change, which advises government on carbon budgets.

### Setting up a carbon trading scheme

The UK set up the world's first carbon trading scheme in 2002 and was a front runner for the EU ETS. This gave many UK brokerage and verification businesses an advantage and London remains the carbon trading centre of the world.<sup>25</sup>

### Introducing energy efficiency obligations on suppliers

In 1994 the UK became the first country in Europe to introduce an obligation on suppliers to save energy. Supplier obligations have resulted in subsidised or free insulation being given to millions of homes.<sup>26</sup>

### Banning inefficient boilers

In 2005 the UK government banned non-condensing boilers, going ahead of the European product standards.

## Where the UK has been slow or has blocked progress:

### Reluctant adoption of the renewables target

Before the Renewable Energy Directive was adopted in 2009, setting mandatory targets, the UK's position changed rather dramatically from being opposed to binding targets to being in favour of them. In 2007 Prime Minister Tony Blair backed the EU renewable energy targets, making a u-turn over green energy and overruling his industry minister Alistair Darling, who wanted a flexible and non-binding approach. Civil servants were horrified at the implications for the UK; they were concerned that the government lacked the policies to attract the level of investment needed to meet the target. The target led to a more than eightfold increase in renewable energy capacity in just 12 years. Until 2009, there was repeated lobbying to weaken the 20 per cent target.<sup>27</sup>

### Blocking legally binding efficiency targets

Due to concern that the directive would not take account of previous efforts to increase energy efficiency, the UK government blocked the adoption of legally binding energy efficiency targets in the Energy Efficiency Directive.

### Watering down the Industrial Emissions Directive

Industrial activity plays an important part in the European economy, but it has a significant environmental impact and has been subject to EU legislation since the 1970s. After two years of negotiations, in 2010 the European Parliament and the European Council reached an agreement on the new Industrial Emissions Directive, which replaced the Integrated Pollution Prevention and Control Directive, the Large Combustion Plants Directive and five other directives.<sup>28</sup> In the negotiations, the new standards to be applied to large combustion plants were particularly controversial. Countries, such as the UK and Poland, successfully watered down the legislation by introducing a range of exceptions for large combustion plants.<sup>29</sup>

### Where the UK has led the way, only to change direction:

#### Going for privatisation

The UK was a trailblazer when it liberalised its electricity sector in the 1990s, however the Electricity Market Reform process signals a move away from sole reliance on market signals to greater governmental intervention. This could reflect the recognition that competition and market signals alone may not deliver the transformation to a low carbon system we need.

#### Stabilising the price of carbon

Despite setting up the world's first carbon trading scheme, recent moves by the UK have undermined the ETS. Because prices under the EU ETS were low in 2013, the UK introduced its own carbon price floor in April 2013.<sup>30</sup> This was seen by many as a ruthless revenue raiser by the Treasury. It puts UK industry at a disadvantage to the rest of Europe and many were against its introduction, urging the government to work at a European level to improve the EU ETS instead.

# What would leaving the EU mean?

The vast majority of interviewees said that leaving Europe would be inadvisable on climate and energy grounds for a number of reasons:

- It would be costly for business as it means an uneven playing field and less influence on policies that companies have to comply with.
- It would increase uncertainty for businesses, making them less confident in their ability to plan for the future, or invest in the necessary technology and skills.
- It may risk weakening UK climate policy, as it would remove an important safeguard if future UK governments were more opposed to action on climate.
- The EU would also lose out if the UK left as it has been a positive driver of climate action.
- The UK might reduce its international work on climate change as it would be harder to justify with less global influence.
- Some interviewees thought it would make energy trading harder, as the UK would have to renegotiate trade agreements with other countries. It may also make it harder to build interconnectors to other member states as there are several stages to go through and the UK could not use EU funding. However, some thought trade with other countries would not be affected.

If the UK left the EU it could follow Norway's example and join the European Economic Area instead. Some suggest this would be costly and subject to rules the UK would have no influence over. However, others suggest the UK could choose only to adopt rules and regulations that are beneficial.

## **What being outside the EU has meant for Norway**

After Norwegians voted against EU membership in 1994, Norway joined the European Economic Area (EEA). EEA membership allows access to the single market while maintaining an independent national agenda protecting key domestic industries from EU regulations. This arrangement has benefited the Norwegian economy as the EU remains its largest import and export partner. However, access to the single market comes at a price: Norway makes a significant contribution to the EU budget and has to adopt most of the EU's rules and legislation without having any formal input or right to vote on EU policy.

The EEA is supposed to implement EU rules within a period of six months, but this rarely happens. As a consequence, national investment is negatively affected and Norwegian businesses are at a competitive disadvantage. The directive on energy efficiency of buildings and the Renewable Energy Directive took several years to implement in Norway, which diverted investment to other countries.

This form of association with the EU may be suited to Norway, a country with a small population, rich in oil and gas. But, the British economy is far more global in scope and, as Norway's prime minister has said, the "UK as a world power would not accept to being bound by a large number of EU laws and regulations without having a say in them."<sup>31</sup>



● **“Climate risks slipping off the UK agenda if we were to leave the EU. I think it would be bad news for global climate ambitions. There are mechanisms to stay involved through the ETS but overall I can’t see it as positive.”**

**Guy Newey, Policy Exchange**

● **Leaving would be daft. Our energy supply would be much less secure and more expensive. We’d be much more exposed to decisions made by others with much less ability to influence the outcome.”**

**Tom Burke, environmental policy adviser**

● **“As a European member state, the UK currently has a role in shaping European policy. European neighbours that are outside the EU are not part of the negotiations where European policies are decided. Very often these countries apply similar policies to what has been agreed at the EU-level, but they haven’t had the opportunity to influence what these policies should look like.”**

**Sarah Deblock, International Emissions Trading Association**

**“We would have to negotiate a huge amount of bilateral agreements, we would still have to comply with a lot of the EU rules and I can’t see what the incentive would be for the EU to give us a free ride on that. The EU is in the early stages of negotiations for a free trade agreement with Japan and the States and, if it were to succeed in those negotiations and we were outside the EU, we’d only have to go through it again. There are a lot of risks in having to renegotiate our agreements with other markets.”**

**Naomi Harris, Bellenden**

# What are the lessons for the 2030 climate package?

In the coming year, Europe will negotiate a new package for 2030 which will set out its climate and energy pathway. This will impact on the international climate negotiations in 2015. There are some crucial lessons we can learn from the 2020 package: including the need to significantly reform the EU ETS, set smarter targets for renewables and energy efficiency and focus more on infrastructure.

## **Open up the negotiation process to more stakeholders**

The European Commission needs to run the negotiations more democratically and involve a wider set of stakeholders than the 2020 process. There is a need for earlier engagement with businesses as well as NGOs.

## **Be more ambitious**

The 2020 greenhouse gas emissions target was not sufficiently high to create any real structural or lasting behaviour change. The 2030 package needs to set out an ambitious target of at least 40 per cent by 2030.

## **Reform the EU ETS**

Back-loading will help to rescue the scheme in the short term but further measures will be necessary to enable better control of the supply of permits or measures to stabilise EU Allowance prices. An independent body could be established to adjust the volume of permits in the scheme on a regular basis, to ensure scarcity of permits. It will also be important to limit the use of international credits, to move to full auctioning of permits and to increase hypothecation into energy efficiency and R&D.

The number of allowances in the carbon market must account for any new energy efficiency or renewables legislation. This is an argument for both mandatory renewables and efficiency targets, as they would be easier to account for. ....

## **Introduce ambitious but more intelligent targets for renewables and efficiency**

The arguments for further targets for both renewables and efficiency are strong. Many renewable technologies such as offshore wind still require significant government support. A renewables target would provide the renewables industry and investors with greater clarity and could reduce the cost of deployment by enabling greater economies of scale. Clear targets help to attract investment and should enable industry to achieve cost reductions through economies of scale.

Renewables are likely to play a significant role in most decarbonisation scenarios.<sup>32</sup> An energy efficiency target is also needed as there is a consensus that a greater level of energy efficiency is vital. Many remaining cost effective efficiency measures would be 'no regret' options and a mandatory target would attract investors because they can see a long term market for efficient goods and services. ....

- **“If you don’t have people on the boat for EU renewable energy targets then your emissions trading system may fall apart because it isn’t easy to anticipate how much of the emission reduction will be met by disparate national renewables policies for example, and it will be difficult to set an appropriate allocation.”**  
**Jason Anderson, WWF**

**“We need to show to the world that the ETS is working and maintaining competitiveness in Europe. It should be at the cornerstone of EU’s climate policy for 2030.”**  
**Steven Altmann-Richer, CBI**

- **“You need multiple targets for different purposes and transforming complicated industrial systems does take more logistics than just a single price. It’s been extraordinarily important to have a clear goal of what renewable energy is expected to do for industry, supply chain development, government policy and regulatory policy.”**  
**Professor Michael Grubb, University of Cambridge**

A pan-European target for renewables may be more efficient. Given the security of supply and industrial benefits of renewables, it is likely that many member states will continue with individual targets and support mechanisms, even in absence of a European target. In this case, deployment is likely to be far more fragmented and less efficient, as there will be limited scope for trading and doing things where they are cheapest.

There is scope to make improvements on the 2020 approach. More sophisticated targets are required that differentiate between the deployment of renewables, which might make significant contributions to member states' supply and investment in longer term renewables, such as wave and tidal technologies, which may be of benefit to the global community.

Geography will become increasingly important. It may be necessary to select areas for new technology deployment based on natural resources. For example, there could be a target for concentrated solar power and the associated grid requirements, but instead of being applied to an individual member state, it could apply across southern Europe.

### **Focus on infrastructure**

There will need to be an increasing focus on infrastructure. There are a number of pan-European projects that should be built such as the North Sea grid. CCS pipelines across Europe must also be developed.

The creation of the European network of transmission system operators for electricity (ENTSO-E) and the move to some pan-European planning of electricity networks is to be welcomed. However, there is no obligation on national regulators to act in the interest of another member state. Pan-European projects should be backed up by adequate levels of funding, which is unlikely to come from the EU budget alone.

More pan-European regulation is needed to ensure more investment on a common interest basis and not only at the individual member state level. The development of interconnectors must also take into account balancing benefits and should not be based on price differences between countries alone.

### **Pool resources to fund new technology**

European co-operation will be vital to commercialise new technologies such as CCS and to tackle hard to treat industrial processes. By pooling funding for R&D and sharing lessons across Europe, much more can be achieved than by an individual member state acting alone. The private sector is also more likely to invest in developing technologies if there is a clear European market emerging.

To develop a CCS industry, there needs to be a move away from the competition approach, which is very resource intensive and does not give long term market signals, towards an enduring policy instrument that creates a European market for CCS.

● **“If one is to believe the rhetoric, then energy efficiency is an absolutely essential part of the piece, so it’s odd that it was not made mandatory. The 2020 package showed that mandatory targets are the ones that count so we should have a mandatory efficiency target.”**  
**Dr Doug Parr, Greenpeace**

**“I really see a scope for a regional level of collaboration to help to develop some of these resources and also to develop some of the infrastructure plans to make sure that they work in practice.”**  
**Jonathan Gaventia, E3G**

**“The UK would have been unlikely to consider buying Irish wind if it hadn’t been subject to a legal renewables target.”**  
**Dr Robert Gross, Imperial College London**

**“We might want to have more discrimination between innovation policy, demonstration policy and deployment. The 2020 renewables target just muddles all of those in together.”**  
**Dr Doug Parr, Greenpeace**

● **“Our members tell us that there are certain sectors where it is, at the moment, very difficult to decarbonise. Some of the technology needed for decarbonisation doesn’t yet exist.”**  
**Steven Altmann-Richer, CBI**

# Conclusions

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## EU energy and climate policy has helped the UK

- Setting out a common ambition for greenhouse gas emissions reduction.
- Significantly increasing the proportion of energy coming from renewables across Europe.
- Creating a market for carbon.
- Driving cleaner power stations.
- Reducing emissions and energy use by vehicles and appliances.
- Giving the UK a louder voice in international negotiations.

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## The EU has not done so well in some areas

- Policy making is seen as top down, reducing acceptance by national governments and the public.
- Lobbying has watered down policy.
- The 2020 greenhouse gas emissions target was not ambitious enough.
- The EU Emissions Trading Scheme did not account for economic activity and was not adequately supported politically.
- There has been slow progress on building necessary infrastructure.
- There has been slow progress developing a common energy policy.
- Progress on energy efficiency has been disappointing and there have been issues with several European efficiency policies.
- The Renewable Energy Directive has flaws.
- Efforts to co-fund and commercialise new technologies have been mixed.

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### The UK has played a positive role and gone further and faster than other member states

- Setting carbon budgets.
- Setting up a carbon trading scheme.
- Introducing energy efficiency obligations on suppliers.
- Banning inefficient boilers.

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### The UK has slowed progress or watered down EU policy

- Adopting the renewables target reluctantly.
- Blocking legally binding efficiency targets.
- Watering down the Industrial Emissions Directive.

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### The consequences of the UK leaving the EU from an energy and climate perspective would be serious

- It would be harder and more expensive for the UK to achieve energy security.
- It would significantly reduce the UK's influence at global climate negotiations.
- It would make the UK subject to rules and regulations over which the country had no control.

# Endnotes

- 1 At the end of 2012, Europe had the most non-hydro renewable power capacity, with approximately 44 per cent of the global total. Source: REN21, *Renewables 2013 global status report*, [www.ren21.net/Portals/0/documents/Resources/GSR/2013/GSR2013\\_lowres.pdf](http://www.ren21.net/Portals/0/documents/Resources/GSR/2013/GSR2013_lowres.pdf)
- 2 F Faes-Cannito, G Gambini, R Istatkov, 2012, *External trade*, Eurostat, European Commission
- 3 In 2010 the EU-27 accounted for a 25.8 per cent share of the world's GDP in 2010, while the second largest economy, the United States, accounted for a 22.9 per cent share. Source: Eurostat, 2013, *The EU in the world*, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/The\\_EU\\_in\\_the\\_world\\_-\\_economy\\_and\\_finance](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/The_EU_in_the_world_-_economy_and_finance)
- 4 European Commission, 2013, *The Emissions Trading System (EU ETS)*, [http://ec.europa.eu/clima/policies/ets/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/index_en.htm)
- 5 Under the Large Combustion Plant Directive (LCPD) power plants have to opt in and meet the emissions' limits established by the LCPD fitting FGD (flue gas desulphurisation) equipment or opt out and reduce their operating time and life span. In the UK, approximately 20GW of coal power plants have opted in, whereas 12GW of coal and oil-fired generating plants have opted-out and will have to close by the end of 2015. Source: Ofgem, 2012, *Electricity capacity assessment*, [www.ofgem.gov.uk/ofgem-publications/40203/electricity-capacity-assessment-2012.pdf](http://www.ofgem.gov.uk/ofgem-publications/40203/electricity-capacity-assessment-2012.pdf)
- 6 From 1990 to 2010 the EU-27 recorded reductions in all ammonia (NH<sub>3</sub>), sulphur oxides (SO<sub>2</sub> and SO<sub>3</sub> as SO<sub>x</sub>), nitrogen oxides (NO and NO<sub>2</sub> as NO<sub>x</sub>), non-methane volatile organic compounds (NMVOCs), carbon monoxide (CO) and particulate matter. In the UK, emissions of sulphur dioxide fell by 89 per cent between 1990 and 2010. Emissions of nitrogen oxides fell by 62 per cent between 1990 and 2010. Source: Eurostat, European Commission, 2012, *Air pollution statistics*, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Air\\_pollution\\_statistics](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Air_pollution_statistics)
- 7 Originally, the date for the EU target to reduce average new car emissions to 120 g/km was set for 2005. However, the target was postponed or weakened four times before it became legally binding. In 1996, the first postponement occurred when the Environment Council introduced the term "by 2005, or 2010 at the latest". In 1998, the second postponement took place when the European Automobile Manufacturers Association (ACEA) committed to reduce the average CO<sub>2</sub> emissions from new cars sold in the EU to 140g/km by 2008 with the Commission agreeing to postpone the deadline for delivery of the '120' target to 2012. In 2007, the Commission moved the target for 2012 from 120 to 130g/km. Finally, it was weakened for a fourth time when the law in 2008 postponed compliance with '130' from 2012 to 2015. Source: European Federation for Transport and Environment, 2011, *How clean are Europe's cars?*, [www.transportenvironment.org/sites/te/files/media/2011\\_09\\_car\\_company\\_co2\\_report\\_final.pdf](http://www.transportenvironment.org/sites/te/files/media/2011_09_car_company_co2_report_final.pdf)
- 8 After submission of the commitment of the European automobile industry (European Automobile Manufacturers Association – ACEA) in 1998, equivalent commitments were made by the Japan Automobile Manufacturer Association (JAMA) and the Korea Automobile Manufacturers Association (KAMA). Source: Ibid.
- 9 Within the UK, the ban on incandescent light bulbs brought in via the ecodesign directive will mean net savings each year of 0.65 MtCO<sub>2</sub>e and 0.3 TWh by 2020. The average annual net benefit to the UK between 2010 and 2020 is predicted to be £108 million. Source: UK Parliament, 2012, *Incandescent light bulb*, [www.publications.parliament.uk/pa/cm201213/cmhansrd/cm120522/halltext/120522h0002.htm](http://www.publications.parliament.uk/pa/cm201213/cmhansrd/cm120522/halltext/120522h0002.htm)
- 10 Household bill estimate from DECC, 2011, 'Estimated impact of energy and climate change policies on average household energy bills in year 2020'. Overall, ecodesign regulations are expected to save £26 billion between 2009 – 30. Source: Defra, 2009, *Saving Energy Through Better Products and Appliances*, [www.defra.gov.uk/publications/files/pb13559-energy-products-101124.pdf](http://www.defra.gov.uk/publications/files/pb13559-energy-products-101124.pdf)
- 11 The Council makes its decision by either qualified majority voting or by unanimity. It is often easier to get decisions with qualified majority voting through where European law is adopted, as soon as a certain threshold of votes is reached (voting is weighted on the basis of a member state's population and corrected in favour of less populated



countries). However, a restricted number of policies judged to be sensitive, shall remain subject to unanimity voting, specifically taxation, membership of the Union, social security or social protection, the accession of new states to the European Union, foreign and common defence policy and operational police co-operation between the member states. Source: European Commission, 2013, Taxation and Customs Union, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/conference/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/conference/index_en.htm).

12 EU Allowances (EUA) is the official title of the carbon credits or pollution permits traded in the EU Emissions Trading Scheme (ETS). Each EUA represents one tonne of CO<sub>2</sub> that the holder is allowed to emit. Allowance units are freely allocated or auctioned to members of the EU ETS and can then be sold or purchased through the carbon market. Companies within the EU ETS must surrender EUAs equivalent to their emissions at the end of each compliance period. Businesses that emit more than their cap have to purchase extra EUAs whereas businesses that emitted below their cap, can sell excess EUAs. Source: *Business Green*, glossary, [www.businessgreen.com/bg/glossary/1805660/eu-allowance-eua](http://www.businessgreen.com/bg/glossary/1805660/eu-allowance-eua) Annual Emissions Allocations (AEAs) are the emissions allocations under the effort sharing decision and cover sectors that are not part of the EU ETS, such as transport (except aviation), buildings, agriculture, and waste.

13 IPPR, 2013, *Running on empty? Why the UK needs Europe for affordable and secure energy*, [www.ippr.org/images/media/files/publication/2013/06/running-on-empty\\_June2013\\_10937.pdf](http://www.ippr.org/images/media/files/publication/2013/06/running-on-empty_June2013_10937.pdf)

14 M Keay, 2013, *The EU 'Target Model' for electricity markets: fit for purpose?*, [www.oxfordenergy.org/wpcms/wp-content/uploads/2013/05/The-EU-Target-Model-for-electricity-markets-fit-for-purpose.pdf](http://www.oxfordenergy.org/wpcms/wp-content/uploads/2013/05/The-EU-Target-Model-for-electricity-markets-fit-for-purpose.pdf)

15 In 2011, only 9.56 per cent primary energy consumption savings have been made across EU28 with a target of 20 per cent energy savings. Source: Eurostat, 2013, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Energy\\_saving\\_statistics](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Energy_saving_statistics). An assessment of national energy efficiency targets created by the Coalition for Energy Savings shows that the eighteen targets available from member states do not reduce

the gap to the EU's 20 per cent energy savings target and if the remaining nine country targets are of similar ambition the EU would only realise 17 per cent energy savings, falling short of the target by 62Mtoe. Source: The Coalition for Energy Savings, 2013, *Indicative national energy efficiency targets fall short of 2020 target*, [http://energycoalition.eu/sites/default/files/20130528%20National%20efficiency%20targets%20%26%20Guidebook%20PR%20Final\\_o.pdf](http://energycoalition.eu/sites/default/files/20130528%20National%20efficiency%20targets%20%26%20Guidebook%20PR%20Final_o.pdf)

16 European Environment Agency, 2013, *EEA greenhouse gas – data viewer*, [www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer](http://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer)

17 Figure based on 2011 price for petrol (132.5 p/litre) and diesel (141.1p/litre) assuming a travel of 15,000km. Average new car fuel consumption for 1997 and 2011 taken from Department for Transport Statistics, 2013, [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/89643/envo103.xls](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/89643/envo103.xls). The EU's 2015 CO<sub>2</sub> emissions reduction target (for vehicles) is approximately equivalent to 5.6 litres per 100km (l/100km) of petrol or 4.9 l/100km of diesel. The 2020 target equates approximately to 4.1 l/100km of petrol or 3.6 l/100km of diesel.

18 Assumes an incandescent 60W lightbulb is replaced with an 11W compact fluorescent lamp (CFL), it is used for three hours a day and electricity costs 12p/kWh. We also assume a typical house has 13 incandescent lightbulbs as found in EST, 2012, *Powering the nation*, [www.energysavingtrust.org.uk/Publications2/Corporate/Research-and-insights/Powering-the-nation-household-electricity-using-habits-revealed](http://www.energysavingtrust.org.uk/Publications2/Corporate/Research-and-insights/Powering-the-nation-household-electricity-using-habits-revealed)

19 Eurostat, 2013, <http://epp.eurostat.ec.europa.eu/tgm/printTable.do?tab=table&plugin=1&language=en&pcode=tsdcc330&printPreview=true>

20 European Environment Agency, 2012, [www.eea.europa.eu/data-and-maps/figures/share-of-renewable-energy-to-4#tab-metadata](http://www.eea.europa.eu/data-and-maps/figures/share-of-renewable-energy-to-4#tab-metadata). Eurostat, 2013, <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdcc110>. Data 1990 – 2003 taken from EEA, 2012. Data from 2003 – 11 taken from Eurostat, 2013.

21 ICCT, 2012, *European vehicle market statistics pocketbook 2012*, [www.theicct.org/sites/default/files/publications/Pocketbook\\_2012\\_opt.pdf](http://www.theicct.org/sites/default/files/publications/Pocketbook_2012_opt.pdf)

22 D Benton and T Turnbull, *Cutting Britain's energy bill*, Green Alliance, September 2012, [www.green-alliance.org.uk/uploadedFiles/Publications/reports/Cutting\\_Britain%27s\\_energy\\_bill\\_web.pdf](http://www.green-alliance.org.uk/uploadedFiles/Publications/reports/Cutting_Britain%27s_energy_bill_web.pdf)

23 In Germany, for example, as the amount of renewable energy capacity has grown, the renewable energy surcharge has increased from 0.2 cents/kWh in 2000, at the introduction of the Renewable Energy Sources Act (EEG), to 3.59 cents/kWh in 2012. Overall, the surcharge is responsible for 28 per cent of the electricity price increase. The new government is planning to change the EEG but the changes may not be retroactive. Source: German Institute for Economic Research, 2011, *DIW Berlin Weekly Report No. 6*, [www.diw.de/sixcms/media.php/73/diw\\_wr\\_2011-06.pdf](http://www.diw.de/sixcms/media.php/73/diw_wr_2011-06.pdf)

Other countries are already implementing changes to renewable energy support schemes, with the Czech Republic implementing a retroactively levy tax on the revenue of solar power projects, Spain cutting its renewable energy support scheme and Romania reducing the number of green certificates issued to renewable energy projects.

24 The NER300 scheme was set up to use the proceeds of the sale of 300 million EU Allowances (EUAs) to support the development of CCS and innovative renewable energy technology. It is now in the second phase and will draw funds from the sale of 100 million EUAs and carry over €275 million unspent from the first round.

25 In 2012, London was the hub for 90 per cent of EU carbon trading and 80 per cent of global carbon trading: a £90 billion market. Source: DECC, 2012, [www.gov.uk/government/news/uk-confirms-position-as-leader-in-carbon-markets](http://www.gov.uk/government/news/uk-confirms-position-as-leader-in-carbon-markets)

26 J Rosenow, 2012, *Understanding policy change: energy savings obligations in the UK*, [http://eng.janrosenow.com/uploads/4/7/1/2/4712328/wsed\\_paper\\_jan\\_rosenow.pdf](http://eng.janrosenow.com/uploads/4/7/1/2/4712328/wsed_paper_jan_rosenow.pdf)

27 See, for example: Friends of the Earth, 2009, 'The government's renewable energy strategy – will it deliver?', [www.foe.co.uk/resource/briefings/renewable\\_energy\\_strategy.pdf](http://www.foe.co.uk/resource/briefings/renewable_energy_strategy.pdf)

28 The IED also includes the Waste Incineration Directive, the Solvent Emissions Directive and three titanium dioxide directives. Under the directive, new plants will have to comply with binding emission limit values (ELVs) from 2012 for NO<sub>x</sub>, SO<sub>2</sub>, dust and, in the case of gas turbines, carbon monoxide emissions. While binding limits are also to apply to some existing plants from 2016, a significant opt-out has been created that allows countries to implement a Transitional National Plan. Until June 2020, this allows for compliance across the whole of or part of the sector within the country and delays the application of ELVs for those existing plants taking this option. Source: AirClim, 2010, *Agreement on Industrial Emissions Directive*, [www.airclim.org/acidnews/2010/AN3-10/agreement-industrial-emissions-directive](http://www.airclim.org/acidnews/2010/AN3-10/agreement-industrial-emissions-directive)

29 See, for example: European Environmental Bureau, 2010, *EU puts industry interests first*, [www.eeb.org/index.cfm/news-events/news/eu-puts-industry-interests-first/](http://www.eeb.org/index.cfm/news-events/news/eu-puts-industry-interests-first/)

30 Companies already pay to pollute under the EU ETS by buying permits. However, the price of the ETS permits crashed to record lows, which gives almost no incentive for companies to cut down their emissions. The carbon price floor (CPF) is a tax on fossil fuels used to generate electricity and requires industries to pay a top up if the market price for carbon falls below a certain level. If the ETS price drops below this level companies pay the difference to the UK Treasury. It came into effect on 1 April 2013 and changes the existing Climate Change Levy (CCL) regime, by applying carbon price support (CPS) rates of CCL to gas, solid fuels and liquefied petroleum gas (LPG) used in electricity generation. Source: HM Revenue & Customs, 2013, *Carbon price floor*, [www.hmrc.gov.uk/climate-change-levy/carbon-pf.htm](http://www.hmrc.gov.uk/climate-change-levy/carbon-pf.htm)

31 Erna Solberg, Norway's prime minister, speaking at the London School of Economics (LSE), April 2013

32 In the UK, for example, the central delivery plan under EMR (which results in an electricity sector with 100gCO<sub>2</sub>/kWh compatible with the government's carbon plan) has more than 50 per cent renewable electricity, despite a ramp-up in nuclear and successful demonstration of CCS. DECC, 2013, *EMR delivery plan consultation*, [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/238867/Consultation\\_on\\_the\\_draft\\_Delivery\\_Plan\\_\\_amended\\_.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/238867/Consultation_on_the_draft_Delivery_Plan__amended_.pdf)

The ECF power sector perspectives 2030 also has a European power sector with 50 per cent renewables by 2030. See: [www.roadmap2050.eu/attachments/files/PowerPerspectives2030\\_FullReport.pdf](http://www.roadmap2050.eu/attachments/files/PowerPerspectives2030_FullReport.pdf)

The optimised pathways in a report by the gas industry have 37-39% of power from renewables in 2030. European Gas Advocacy Forum, 2011, *Making the green journey work, optimised pathways to reach 2050 abatement targets with lower costs and improved feasibility*, [www.centrica.com/files/pdf/making\\_the\\_green\\_journey\\_work.pdf](http://www.centrica.com/files/pdf/making_the_green_journey_work.pdf)



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