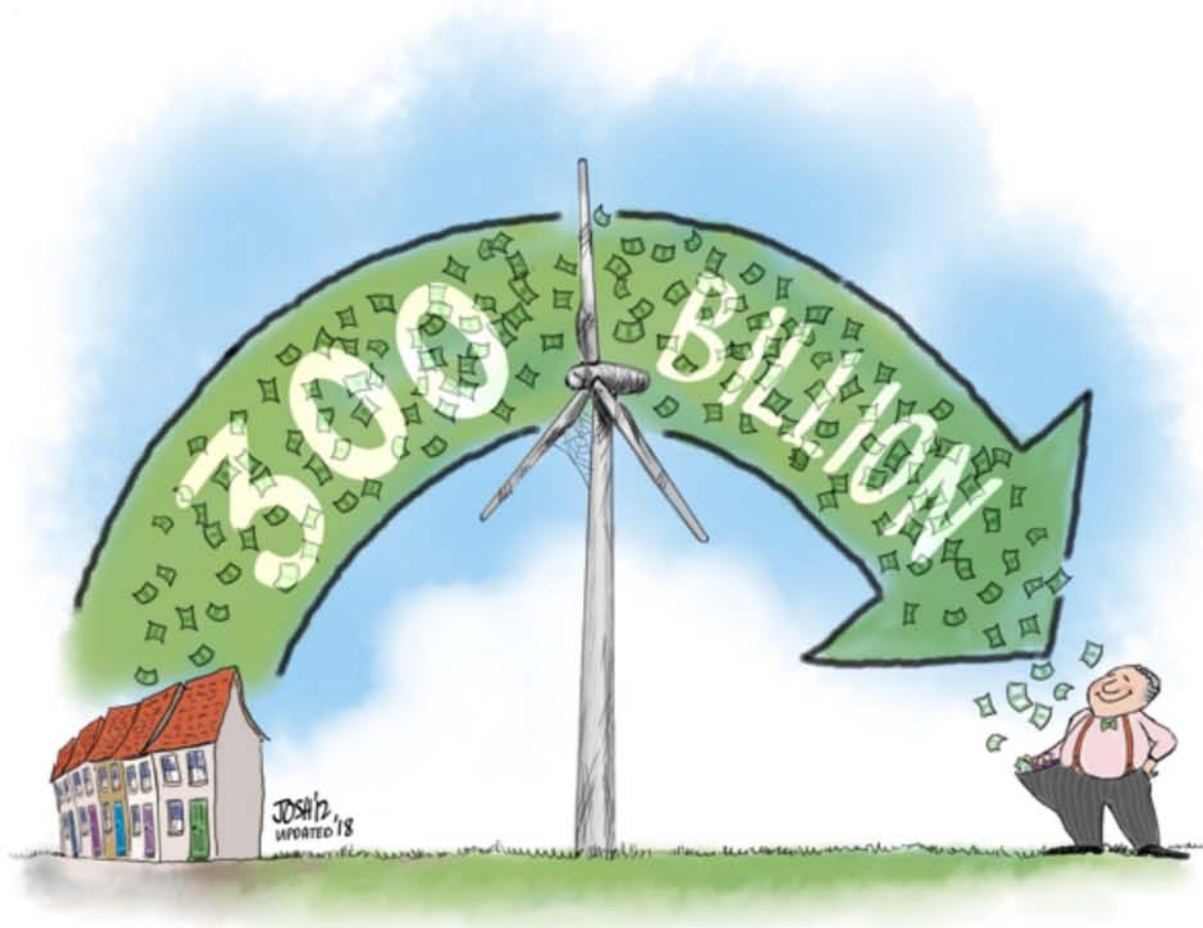


THE CLIMATE CHANGE ACT AT TEN

History's most expensive virtue signal

Rupert Darwall



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About the author

Rupert Darwall is a strategy consultant and policy analyst. After reading economics and history at Cambridge University, he worked in the City of London as an investment analyst and in corporate finance before becoming a special adviser to the then Chancellor of the Exchequer, Norman Lamont. He has written extensively for publications on both sides of the Atlantic, including the *Wall Street Journal*, *National Review*, the *Daily Telegraph* and *The Spectator* and is the author of the widely-praised *The Age of Global Warming: A History* (2013) and *Green Tyranny: Exposing the Totalitarian Roots of the Climate Industrial Complex* (2017). He has written reports on UK energy policy for Reform ('How to Run a Country: Energy Policy and the Return of the State', Nov 2014) and the Centre for Policy Studies ('Central Planning with Market Features: How renewable subsidies destroyed the UK electricity market', March 2015) as well as an analysis for the Centre for Policy Studies on reforming tax credits ('A Better Way to Help the Low Paid: US lessons for the UK tax credit system', 2006) and on energy and industrial policy for Civitas ('Going Through the Motions: The industrial strategy green paper'). This is his second paper for GWPF, the first being 'The Anti-Development Bank', on the World Bank's regressive energy policies.

Executive summary

The Climate Change Act (CCA) is ten years old. Parliament passed it overwhelmingly, only five MPs voting against it in the House of Commons (see Appendix I).

If truth is the first casualty of war, the poor are the biggest casualties of the CCA. By now, fuel poverty was to have been a thing of the past. Both the Labour and Coalition governments had a target to abolish it. Thanks to the CCA and other anti-fossil-fuel policies, it lives on and is worsening.

Fuel poverty is strongly influenced by energy prices, but decarbonisation policies drive up energy costs. Rather than be honest, in 2013 the Coalition government dropped the standard measure of fuel poverty for a new one less sensitive to energy costs, instantly halving the number of people officially defined as experiencing fuel poverty.

The government and official bodies have consistently understated the cost of forcibly phasing out hydrocarbons from Britain's energy mix. In advising the government on the draconian 80% emissions reduction target by 2050, the Committee on Climate Change (CCC) reckoned that it would only cost 1–2% of GDP – assuming rational policies. But, as last year's Helm review on energy costs shows, 'rational' is not a word that remotely describes the melange of current policies, which, Helm says, perpetuates 'the unnecessary high costs of the British energy system.'

Both the CCA and the CCC reinforce the disastrous tendency of politicians to pick winners, something the EU also does with its 2009 renewable energy targets. These were foisted on the EU by Germany, which was concerned that its renewable energy policies were disadvantaging Germany business.

Wind and solar create hidden costs within the system – and we still don't know how much they are. When the German *Energiewende* was launched, the Green energy minister said it would put the equivalent of a scoop of ice cream on monthly energy bills. Nine years later, his CDU successor was saying the *Energiewende* could cost up to one trillion euros.

After Tony Blair signed Britain up to a 15% renewable target, Department of Trade and Industry officials reckoned it would triple the cost of meeting the UK's emissions target and argued that the renewables commitment risked making the EU's Emissions Trading System (ETS) redundant. Similarly with the CCA, unless the quantity of ETS Emissions Allowances (EAs – essentially permits to emit carbon dioxide) is reduced, for every tonne of carbon dioxide not emitted in Britain, an extra tonne can be emitted elsewhere in the EU. In terms of cutting global emissions, the CCA doesn't do anything. Yet the economic case for the CCA rests on the fiction that it does.

The official impact assessment puts a price tag of £324–404bn on the CCA, which the government concedes is a lower bound estimate; it also excludes transition costs. But the claimed climate benefits are pure fiction. The upper bound of the £404–964bn range of climate benefits assumes effective global action. Even so, the UK will, apparently contribute 42% of the total global benefits. This makes the CCA a bargain for other countries and a lousy one for the UK, but also assumes away the existence of the ETS and the likelihood of 100% carbon leakage to the rest of the EU.

The impact assessment is correct in pointing out that any benefits from the CCA are global, not national. As yet, there has not been any credible official study on the overall costs and benefits of global warming to Britain, which, it is plausible to believe, could derive many advantages from some modest warming. This did not prevent Ed Miliband, the Energy

and Climate Change Secretary, from untruthfully claiming that the CCA's benefits to British society would outweigh its costs.

The impact assessment also makes the obvious point that, absent effective global action, any economic case for the CCA collapses. Short of repeal, the CCA locks the UK into unilateral decarbonisation irrespective of what other countries do – embedding blind unilateralism into the law of the land.

That blindness also affected the promoters of the CCA, who, almost to a man, were and remain fervent supporters of Britain's EU membership. Eight years before the Brexit referendum, they were afflicted by 'fog-in-the-Channel' syndrome: the CCA was conceived as if Britain wasn't in the EU and fully participating in the ETS. Thus the principal beneficiaries of the CCA are other EU countries who are getting a free ride courtesy of British business and households.

Indeed, the CCA's real purpose is not to cut global greenhouse gas emissions. Rather it is to demonstrate British climate leadership. While politicians flatter themselves as climate saviours, the costs are borne in worsened business competitiveness and squeezed household budgets that weigh most heavily on the poorest in society. In one regard though, the CCA has succeeded in its aim as a demonstration project. No other serious country will do anything quite so foolish in the name of saving the climate.

'If you're just managing, I want to address you directly. I know you're working around the clock, I know you're doing your best, and I know that sometimes life can be a struggle. The government I lead will be driven not by the interests of the privileged few, but by yours. We will do everything we can to give you more control over your lives. When we take the big calls, we'll think not of the powerful, but you. When we pass new laws, we'll listen not to the mighty but to you.'

Theresa May, 13 July 2013¹

'I want to provide for the country the cheapest energy possible, consistent with having it reliable, in other words as a steady supply, and consistent with us playing our part in an international effort to tackle climate change. But I don't want us to be the only people out there in front of the rest of the world. I certainly think we shouldn't be further ahead of our partners in Europe.'

George Osborne, 28 September 2013²

1 A poverty of ambition

'Our goal is to eliminate fuel poverty for vulnerable groups by 2010, and for all by 2015,' the Labour party pledged in its 2005 general election manifesto.³ Twelve years later the Conservatives omitted any mention of abolishing fuel poverty. Instead of abolishing it, they sought to mitigate some of its worst aspects by pushing some of its burden higher up the income scale. Means testing winter fuel payments would enable help to be focused on the least well-off pensioners; those 'most at risk' from fuel poverty.⁴

Fuel poverty used to be considered a disease that could be eradicated. Now, like an incurable condition, government policies mean it's here to stay. The most recent numbers for fuel poverty in England bear this out:

- at 11%, in 2015, there were a higher proportion of households in fuel poverty than ten years earlier;
- over the same period, the average fuel poverty gap⁵ – a measure of the depth of fuel poverty – has grown by over one third, to £353.

The irony is that in 2013, the Coalition government changed the definition of fuel poverty to make it less sensitive to energy costs. The previous target of households spending 10% or more of their income on energy has proved 'unhelpful,' the Department of Energy and Climate Change (DECC) said.

This is particularly the case because the indicator means that the number of people living in fuel poverty is highly sensitive to (and dominated by) changes in energy prices.⁶

The Coalition was in a fix. There was a target to abolish fuel poverty by 2016 but the target was being put out of reach by rising energy costs, in large part as a result of government policies. Ed Davey, the then Energy and Climate Change Secretary, was candid enough to admit that a new target was needed because of upward pressure on energy prices. The unfortunate implication was, he acknowledged, that fuel poverty was not something that 'can be eradicated in any meaningful way, certainly not by 2016, and not in any short time horizon'.⁷

Instead, the new Low Income, High Cost (LIHC) measure of fuel poverty was developed. This helped insulate the government from the impact on energy costs of its decarbonisation policies while picking a target that highlighted its favoured policy. 'I believe that saving energy, cutting carbon and helping the fuel poor can go hand in hand,' Mr Davey declared in 2013.⁸ 'Any new target should drive the right actions,' DECC explained. 'We therefore propose focusing our efforts primarily on ensuring that those households who are fuel poor (as defined by the LIHC indicator) attain a certain standard of energy efficiency in their homes.'⁹

Adoption of the new LIHC target was driven by the needs of policy, not the welfare of the poor. As Leeds University researcher Lucie Middlemiss argues,

The choice of the LIHC indicator represents a deliberate attempt to stabilise the number of households counted as fuel poor by excluding the effects of changing energy prices.¹⁰

At a stroke, the switch to the new LIHC measure approximately halved the number of households officially recognised as experiencing fuel poverty.¹¹

There's something even more morally sinister than fiddling the figures. Under the LIHC, households are only considered fuel poor if it is possible to reduce their fuel poverty by increasing the energy efficiency of their dwellings. In this way, the target of policy is switched from human beings to buildings and the focus of policy is on poorly insulated housing and

not poor people who can't afford high and rising energy prices. Poverty lost and the climate change lobby won.

Honesty has also been a casualty of ten years of the CCA. In a December 2008 report, the Committee on Climate Change (CCC) noted the 2016 target to eradicate fuel poverty in England, Scotland and Northern Ireland and by 2018 for Wales. 'Fuel poverty is driven by electricity, gas and other domestic (oil, coal) prices', the CCC said.¹² In addition to the market-driven effect of rising natural gas prices increasing residential electricity prices, the CCC conceded that 'current electricity and gas prices are already higher than they would otherwise be due to various policies aimed at reducing carbon emissions'.¹³

The CCC estimated that the impact of decarbonisation on electricity prices could increase the number of households in fuel poverty by 600,000 in 2022 and the impact on gas prices would pitch a further 1.1 million households into fuel poverty.¹⁴ There was scope, the CCC said, for improved energy efficiency to remove up to 400,000 households from energy poverty. Adding the cost of energy efficiency schemes to energy bills might increase the number of fuel poor households by over 400,000, leaving poor households *worse off* than before.¹⁵ In other words, financing energy efficiency schemes with social levies on energy bills – what David Cameron once called 'green crap' – is worse than useless in combatting fuel poverty.

Instead the CCC argued for 'social tariffs', whereby the cost per kilowatt hour of electricity and gas would increase the more energy a household consumes, the assumption being that fuel-poor households use less electricity than richer households.¹⁶ The proposal to suspend any semblance of market pricing and replace it with a graduated energy tax illustrates how efficient market functioning is sacrificed in what Ludwig von Mises called 'a spiral of interventions'. 'There is no other choice,' von Mises argued over a century ago:

government either abstains from limited interference with the market forces, or it assumes total control over production and distribution. Either capitalism or socialism; there is no middle of the road.¹⁷

2 How we got here

If decarbonisation and renewable energy were cheaper than gas and coal, there would be no need for government intervention. In 2008, the CCA unilaterally committed the UK to ensuring greenhouse gas emissions to 80% of 1990 levels by 2050. The year before, Tony Blair had signed Britain up to the EU's 2020 climate and energy package, which bound member countries to:

- achieving a 20% cut in greenhouse gas emissions;
- deriving 20% of energy from renewable sources;
- achieving a 20% improvement in energy efficiency.

Both commitments load costs onto businesses and households. At the same time, they under-cut existing decarbonisation policy, namely the EU's Emissions Trading System (ETS), which had been designed to use the market to find the lowest cost way of cutting emissions.

Because wind and solar are highly inefficient at reducing carbon dioxide emissions, the renewable energy target is more costly than the emissions target, especially as Tony Blair committed Britain to the most demanding target of any EU member state. According to Dieter Helm in his 2017 *Cost of Energy Review*, the renewables directive has been a major

contributor to raising energy costs above those necessary to reduce carbon emissions to the CCA targets.¹⁸ In its two-year investigation into the energy market, the Competition and Markets Authority found that for electricity,

the main drivers of domestic price increases from 2009 to 2013 were the costs of social and environmental obligations and network costs.¹⁹

In its 2017 report on the energy market, the House of Lords Economic Affairs Committee noted that government interventions to decarbonise have come

at a high cost to the consumer. These interventions have also meant there is no longer a competitive market for electricity generation, exemplified by the fact that no new power stations have been built without some form of government support since 2012.²⁰

Helm provides the most trenchant criticism of current policy, arguing that without root-and-branch reform, it would likely continue

the unnecessary high costs of the British energy system, and as a result perpetuate fuel poverty, weaken industrial competitiveness, and undermine public support for decarbonisation.²¹

Underlying the multiple policy failures analysed in the Helm Review (summarised in Appendix II) is a belief in – and that’s putting it mildly for what amounts to a chronic addiction to – quantitative targeting. For every big problem, the solution is to set a target, and often, more than one.

Targetry can be helpful to guide middle managers to focus on particular aspects of performance improvement. But target can be disastrous when turned into policy goals, especially when there are multiple overlapping targets. Trade-offs are buried and the costs involved become secondary, as the government machine bends everything to meeting the target and politicians hail incremental moves towards their achievement as unalloyed triumphs.

In the case of energy, there are two main targets:

- First came the obligation for the UK to derive 15% of its energy needs from renewable sources under the EU’s Renewable Energy Directive. This was agreed at the Spring 2007 European Council.
- The following year came the CCA decarbonisation targets, initially set at cutting greenhouse gas emissions to 60% below 1990 levels, a figure that was raised to 80% as the legislation went through Parliament.

These two targets overlay and undermine the EU’s pre-existing ETS, which was designed to be the single policy instrument to cut greenhouse gas emissions across the EU. Far from being mutually reinforcing, these targets raise the cost of decarbonisation while having minimal, if any, impact on overall emissions.

2.1 Renewable energy target

The EU renewables targets weren’t a solution to any objective economic or environmental problem, but originated in German green ideology. They were foisted on the EU because Germany feared its renewable energy policies would put German business at a competitive disadvantage.

Gerhard Schröder introduced Germany’s Renewable Energy Act in 2000 as a sop to the Green half of his Red–Green coalition. The Act provided a sliding scale of feed-in tariffs,

with the highest tariffs going to solar, the logic being that the least-economic generating technologies needed the most subsidy. This quickly set off a bonanza for renewable rent-seeking. Although hardly an ideal location for the technology, Germany soon had the most solar capacity in the world, though the promised solar jobs turned out not to be German but Chinese.

In 2004, the ex-Communist Green energy minister Jürgen Trittin claimed that the costs of supporting renewables would put the equivalent of the cost of a scoop of ice cream on monthly energy bills.²² Nine years later, his CDU successor Peter Altmaier was saying the German *Energiewende* could cost up to one trillion euros over the next two decades.²³ Though realistic about the destructive effect of renewable subsidies, Angela Merkel saw them a tool to squeeze the SPD between her own CDU and the Greens. With Merkel using Germany's EU presidency to push German renewable policies across the EU, more sceptical member states hoped Britain would see off the proposal. Instead, Tony Blair signed Britain up to the most expensive renewable target in the EU. The idea had been that Blair would commit Britain to derive 15% of its *electricity* from renewables. Instead he agreed that 15% of total *energy* consumption should come from renewables; in other words including home heating and transport.

Ministers and officials back in London were aghast. A 19-page paper prepared by the Department of Trade and Industry estimated the renewables target would triple the cost of meeting the UK's emissions target compared to the flexibility of emissions trading. It also noted that the renewables commitment risked making the EU's ETS redundant.²⁴

In a rational world, this should have been sufficient to have scuppered the renewables target. Under the ETS, in 2020, emissions from sectors covered by the system would be 21% lower than in 2005; sufficient EAs – each giving the holder the right to emit one tonne of carbon dioxide (or its equivalent greenhouse) in sectors covered by the ETS – were allocated to meet the 2020 target. Reductions in greenhouse gas emissions from the renewables target would not reduce the EAs calculated to meet the 2020 target, but free up EAs to be used by other countries' coal-fired power stations or in industrial sectors other than power generation. Even if renewables were efficient at cutting greenhouse gas emissions, their overall effect wouldn't be to cut emissions but merely shift them around.

2.2 Climate Change Act

A similar objection applies to the Climate Change Act. Unless the quantity of EAs is cut to reflect the CCA targets, it makes no difference to total EU emissions. For every tonne of carbon dioxide not emitted in Britain because of the CCA, an extra tonne is emitted elsewhere in the EU. In terms of cutting global emissions, it doesn't do anything. The CCA is superfluous (see Box 1).

The Act imposes a duty on the government to ensure that the UK's net carbon dioxide emissions in 2050 are at least 80% lower than in 1990. Section 2 enshrines unilateralism by limiting the scope for amending the target to 'significant developments' in either scientific knowledge or European/international law or policy, after taking into account advice from the Committee on Climate Change (CCC). This means the target can't be changed irrespective of what other countries do and global greenhouse gas emissions continue to rise.

The government must set five-year carbon budgets and ensure that emissions in each budget period do not exceed the carbon budget. The CCC, which was formally established by the Act, is given the role of advising the government on the level of each carbon budget

Box 1: What the CCA does

Purpose

The Act imposes a duty on the government to ensure that the UK's net carbon dioxide emissions in 2050 are at least 80% lower than in 1990. Section 2 enshrines unilateralism by limiting the scope for amending the target to 'significant developments' in either scientific knowledge or European/international law or policy, after taking into account advice from the Committee on Climate Change (CCC). This means the target can't be changed irrespective of what other countries do and global greenhouse gas emissions continue to rise.

Carbon budgets and the Committee on Climate Change

The government must set five-year carbon budgets and ensure that emissions in each budget period do not exceed the carbon budget. The CCC, which was formally established by the Act, is given the role of advising the government on the level of each carbon budget and the government is required to take its advice into account. Unlike the 2050 target, each carbon budget must take into account economic circumstances and the competitiveness of 'particular sectors of the economy' as well as 'circumstances at European and international level'(Section 10) – underlining the irrational blindness of Section 2's unilateralism.

Decarbonisation policies

The government is required to prepare 'proposals and policies' to enable the carbon budgets to be met (Section 13). These policies must contribute to 'sustainable development,' a term the legislation leaves undefined. The effect is to give statutory encouragement to government interventionism across the economy and politicians' perennial temptation to pick winners.

Limits on use of carbon credits

The existence of the ETS is tangentially acknowledged with a provision limiting the use of carbon credits to meet carbon budgets (Section 11). In deciding the limit, Section 15 requires the government 'to have regard to the need for UK domestic action on climate change,' which the Act defines as reductions in UK greenhouse gas emissions/increase in removal of such gases.

Single-use plastic bags

Eleven and a half pages of the Act are taken up with plastic bags. In addition to making the UK an example to the world of unilateral decarbonisation, Schedule 6 provides powers to Westminster and the devolved administrations to levy charges on carrier bags.

and the government is required to take its advice into account. Unlike the 2050 target, each carbon budget must take into account economic circumstances and the competitiveness of 'particular sectors of the economy' as well as 'circumstances at European and international level' (Section 10) – underlining the irrational blindness of Section 2's unilateralism.

After the legislation was passed, in March 2009 the Energy and Climate Change Secretary Ed Miliband signed off on an impact assessment prepared by the Department of Energy and Climate Change (DECC). Compared with the impact assessment presented to Parliament when the Bill was debated, it roughly doubled the likely cost but increased the theoretical benefits six-fold.

The revised assessment put a £324–404bn price tag on the Act, the range depending on future fossil-fuel prices. The estimates, based on modelling by the CCC, exclude short- and medium-term transition costs and are inherently speculative. Moreover, according to DECC, the model used by the CCC is (emphasis added):

somewhat limited in its ability to capture the obstacles that, in reality, can slow uptake of cost effective abatement or which makes it more expensive, such as information barriers and policy costs. *It may be expected to produce lower-bound estimates of the cost of carbon abatement in 2050.*²⁵

Even more important is what the assessment says are the CCA's policy objectives. In particular, it does *not* say that the objective is to cut Britain's contribution to global greenhouse gas emissions. Instead its aim is 'demonstrating the UK's leadership in tackling climate change.'²⁶

Government departments must assess an intervention against alternatives. In this respect, the CCA impact assessment borders on dishonesty. 'The previous system of non-statutory targets does not provide sufficient predictability', it says, omitting any mention that the 'previous system' is the EU's ETS.²⁷ Six pages later, the assessment refers to the December 2008 European Council meeting that agreed 'a package of legislation to achieve the unilateral 20% reduction in emissions by 2020'.²⁸ So the contention that the CCA was needed to put emissions targets on a statutory basis is false.

Neither does the assessment analyse the interaction of the CCA with the ETS. Ignoring this fundamental requirement was necessary because it would otherwise have led to an 'emperor's new clothes' answer – namely that the CCA would have no net effect on global emissions. The proponents of the Act simply pretended Britain wasn't in the EU and fully participating in the ETS.

The assessment also values CCA benefits on an unstated assumption of zero emissions leakage to other EU member states via the ETS, a position that is completely implausible, but necessary to hide the reality: a realistic leakage assumption would nullify any benefits. Using a value for the social cost of carbon – the damage done by a tonne of carbon dioxide – of £73.60 (2007 prices), the CCA impact assessment estimated monetised benefits of £404–964bn from reduced greenhouse gas emissions, the range depending on whether the UK acts alone or as part of co-ordinated global action.²⁹ If the impact analysis numbers are to be believed, in the happy scenario of the world acting together, the UK would contribute 42% of the total benefit – a great deal for the rest of the world and a lousy one for the UK.

Moreover, the assessment confirms that estimates of avoided damages from reduced UK emissions are global, not national: 'The benefits of UK action will be distributed across the globe.'³⁰ Actually, the benefits of UK action in excess of its EU obligations accrue to other EU

member states who can then Hoover up cheaper EAs. But the DECC assessment is correct that the climate benefits are not UK benefits.

That did not stop Ed Miliband, then Secretary of State for Energy and Climate Change, stating an outright falsehood in a letter to Peter Lilley, one of the five MPs who had voted against the legislation. 'The impact statement shows that the benefits to UK society of successful action on climate change will be far higher than the costs,' Miliband falsely claimed.³¹

In fact, there has not been any official study of the overall costs and benefits of climate change to the UK. The reason is political – an objective study could well show the UK as a net beneficiary from modestly rising temperatures. Until there is a credible study, politicians are not in a position to say whether the sign of climate benefits to the UK from reducing greenhouse gas emissions is positive or negative.

The impact assessment was also on target in its critique of the CCA's blind unilateralism:

Where the UK acts alone, though there would be a net benefit for the world as a whole the UK would bear all the cost of the action and would not experience any benefit from reciprocal reductions elsewhere. The economic case for the UK continuing to act alone where global action cannot be achieved would be weak.³²

If the UK acted but emissions continued to rise in a manner consistent with the 'Business as usual' scenario, the £404bn of benefits would be distributed across all nations,

but would show a very large net cost for the UK – close to all the costs of the UK's actions. This highlights the central importance of co-operative and co-ordinated international action on climate change.³³

As noted above, Section 2 of the CCA only permits changes in the 2050 target in the case of significant developments in scientific knowledge or European or international law or policy. Other than the discredited Kyoto Protocol, there was no settled international agreement to cut greenhouse gas emissions in 2008. Short of the formal collapse of the Paris Agreement, it is hard to envisage a situation where the Section 2 changes in international law provision would let Britain off the hook of unilateral decarbonisation. Thus the CCA locks Britain into a 42-year legally binding emissions cuts even though, according to the IEA, energy-related carbon dioxide emissions in 2017 were 40% higher than at the start of the century (Figure 1).³⁴

If Britons think they are making sacrifices to reduce global emissions, they are mistaken. The CCA is principally about using them as guinea pigs for a radical, unprecedented experiment in decarbonising a carbon-based economy which the rest of the world is meant to follow. It provides no get out of jail card if the world takes no notice.

3 The promise vs reality

During passage of the Climate Change Bill through Parliament, the CCC advised that the 2050 decarbonisation target should be increased by one third, from 60% below 1990 levels to 80%. In his advice to ministers, Adair Turner, CCC chair, called the 80% target 'challenging but feasible.' Lord Turner then went on to claim that this target would only cost 1–2% of GDP in 2050 or less than an average of 0.05% of GDP a year, an implausibly low figure given the scale of decarbonisation, and also one that assumed 'appropriate policies and trajectories.'³⁵ Policies highlighted in Lord Turner's letter include:

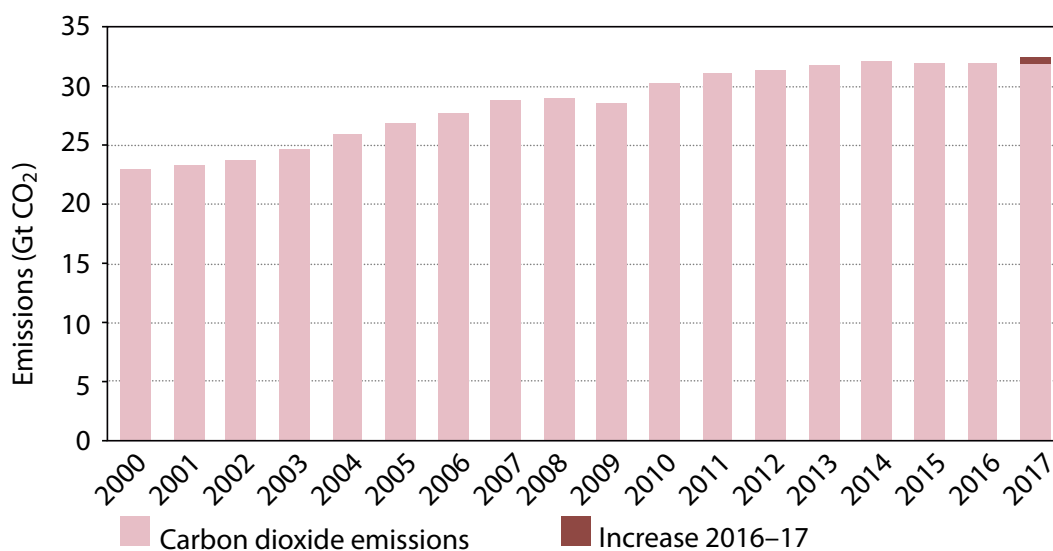


Figure 1: Global energy-related carbon dioxide emissions, 2000–17.

Source: IEA, *Global energy and carbon dioxide status report – 2017* (2018), p. 3

- decarbonisation of electricity generation based on replacing existing plant with wind and tidal capacity, new nuclear and new coal and gas power stations using carbon capture and storage (CCS) technologies;
- use of first-generation biofuels in the transportation sector;
- improved energy efficiency in buildings and industry (e.g. turning appliances off and using less air conditioning).³⁶

These ideas were little more than stabs in the dark. Tidal power has turned out to be so costly that not even strong local support could save the £1.3bn Swansea Bay tidal scheme; the business secretary Greg Clark said it represented poor value for money.³⁷ A 2017 report by the Royal Academy of Engineering for the Department for Transport described first-generation biofuels, manufactured from food crops such as corn, as controversial. ‘There have been concerns that increased demand for crops drives the conversion of land to agriculture, with the consequent risks of an increase in deforestation, drainage of peatlands, loss of biodiversity,’ the academy said.³⁸

By contrast, the CCC was unenthusiastic about solar power. Although expected to become increasingly cost competitive in sub-tropical, sunny regions, ‘low yields are likely to keep costs in the UK high.’³⁹ The Government overruled the CCC on solar, as it has done on CCS, which it described as ‘an essential technology’ for reducing global emissions. ‘It is now essential to invest in projects which demonstrate effectiveness of various CCS technologies,’ the CCC said.⁴⁰ In the November 2015 Autumn Statement, the then Chancellor George Osborne cancelled the £1bn CCS technology competition.

Although Lord Turner gave emphatic endorsement to wind power, the CCC’s technical review on security of supply was more qualified. Wind power is ‘inherently and significantly variable... hour by hour and day by day, wind output will not be correlated with the level of customer demand.’⁴¹ To compensate for this, significant fossil fuel back-up and balancing will be required. However, the extra costs of these were estimated at 1.3–1.7p per kWh.⁴² In 2015 the average wholesale cost of electricity generated by the Big Six energy compa-

nies was 6.2p per kWh, so the extra cost of back-up and balancing represents a 21–27% increase.⁴³

With combined cycle gas turbine (CCGT) capacity projected to account for around half of the 2022 de-rated capacity (in other words, capacity after accounting for the intermittency of wind), the CCC expressed confidence that

the rational investor response to best estimates of future prices and demand patterns would result in appropriate new investment over the next few years, most likely in the form of additional CCGT plant.⁴⁴

The reality was different, and the reason is straightforward. In the four years to 2016, the Big Six energy companies made operating losses of £2,096m on their gas and coal-fired assets (Figure 2). The scale of investor losses is even greater, once their cost of capital is included. Rational investors will need a lot of persuading that it makes sense to remain involved in a sector that has lost them hundreds of millions of pounds.

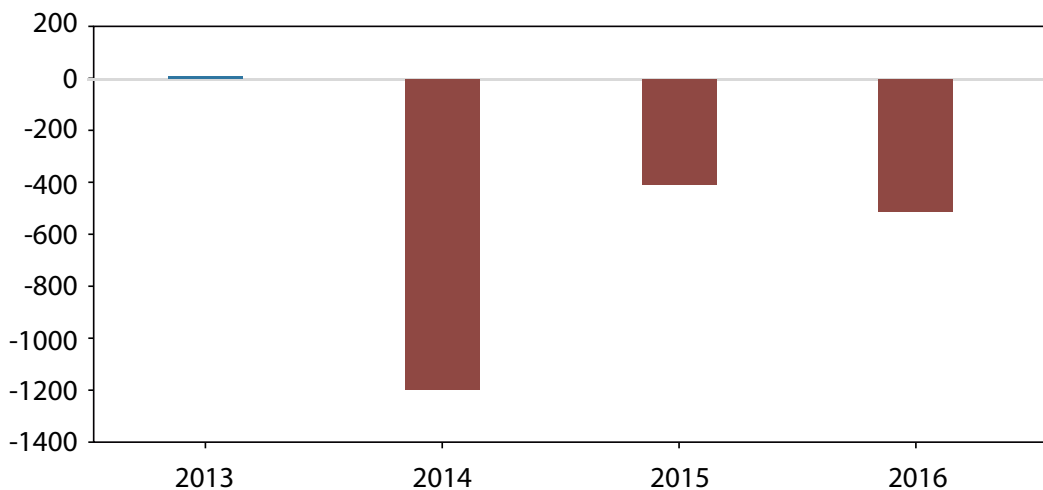


Figure 2: Big six earnings before interest and tax from coal and gas-fired generation.

Notes: (1) SSE year end is 31 March in the following calendar year. (2) In 2014, e:on took a £1,121m write-down on its thermal generating assets. Source: Company consolidated segmental statements as submitted to Ofgem https://www.ofgem.gov.uk/system/files/docs/2017/09/links_to_consolidated_segmental_statements.pdf

These are policy-induced losses. The effect of pro-renewable policies is to destroy the economics of investing in coal- and gas-fired power stations. As the CCC recognised in 2008, having more intermittent capacity on the grid increases the volatility of wholesale electricity prices.⁴⁵ When the wind blows and the sun shines, the wholesale market is flooded with zero-marginal-cost energy, pushing down wholesale prices and reducing power-station revenues. Overheads, such as maintenance and wear and tear, increase as gas and coal-fired power stations must ramp up and down in response to ever-varying wind and solar output.

At the same time, new thermal capacity needed to keep the lights on has been made uninvestable. The CCC reckoned that additional interventions might be required to ensure security of supply, such as inviting tenders for capacity, a suggestion later adopted by the Coalition Government in its Energy Market Reform (EMR), legislated in the Energy Act 2013. The possible need for these innovations, the CCC said, 'does not change the conclusion, however, that back-up generation can be provided at affordable cost.'⁴⁶ So far, the EMR's capacity

market mechanism has not brought forward the investment in CCGT capacity ministers say is needed. This means the full costs of providing the capacity to keep the lights on has yet to be discovered, but are almost certainly much higher than assumed by the CCC ten years ago.

Rather than setting a framework for market participants to discover the least-cost path to cutting emissions with a carbon tax or cap-and-trade, the CCC's technocratic approach is to identify more or less plausible technologies, which then become politically favoured solutions to decarbonising the economy. It thus reinforced the disastrous tendency of politicians and civil servants to pick winners.

This has created massive opportunities for rent-seeking vested interests, leading to energy costs that are much higher than necessary to meeting already aggressive decarbonisation targets. And the government has still to figure a way to keep the lights on and resolve the policy contradiction of subsidising wind and solar, which discourage investment in the conventional capacity required to maintain grid reliability, at the same time boosting investment in such capacity.

4 Policy design assessment

The CCA breaks every canon of good policy design. It was championed by politicians with little knowledge of what they were doing, and supported by civil servants and the CCC who fed ministers dud assessments, poorly designed policies and proposed a host of nonsensical regulations. The disaster was predictable. This section provides a theoretical overview, drawn from the economics literature, against which the CCA and current policy can be assessed.

With the exception of one paper published in 2016, itself a successor to one published in 1974, all the papers referred to here were available to the architects of the CCA. The fact that they were ignored in the conception and design of the CCA is evidence of gross incompetence: in ministers of the day, the civil servants who advised them and the Opposition front bench who whipped their MPs to support the bill as it went through Parliament.

Electricity generation in Britain faces obligations under three over-lapping decarbonisation regimes:

- the EU's ETS cap-and-trade system;
- targets under the EU's Renewable Energy Directive;
- decarbonisation targets under successive CCA carbon budgets.

In addition, there are several pages of policy interventions mentioned in the Helm Review, including the government's £18 per tonne carbon price floor (see Appendix II for a summary of the Helm review).

The starting point for this assessment is the preference of most economists to set prices rather than target quantities (see Section 4.1). Interventions designed to reduce greenhouse gas emissions cumulate on top of the structure of existing distortions caused by earlier government interventions, most importantly the structure of taxes. A key factor in determining whether environmental regulations are welfare-enhancing or not is their ability to partially offset the additional distortions by recycling revenue raised from environmental interventions (see Section 4.2).

The so-called 'Tinbergen rule' states that for each policy target, there should be at least one policy instrument. Trying to kill two birds with one stone risks missing one and probably both. But what about having multiple instruments for the same target – two stones to kill one bird? To avoid redundancy, stringent conditions must be met. However, the CCA has no such conditions (see Section 4.3). The potential interaction between the ETS and unilateral action by a single member state was not examined before Parliament passed the CCA. The analysis demonstrates why the CCA imposes extra costs on Britain for no climate gain (see Section 4.4).

4.1 Prices vs quantities

In a 1974 paper, American economist Martin Weitzman wrote that the typical non-economist leans toward the direct regulation of quantities whereas most economists have a preference for setting prices.⁴⁷

Ever since the 1988 Toronto climate conference, the top-line discussion has been about the quantum of emissions reductions. The theoretical rationale for targeting quantities is that it creates greater certainty about future emissions, therefore preventing dangerous anthropogenic interference with the climate system, the ultimate objective of the 1992 UN Framework Convention on Climate Change. However, this approach inevitably leads to uncertainty about costs.

By contrast, putting a price on carbon dioxide emissions, with, for example, a carbon tax, creates greater certainty about policy costs but less about future emissions. However, targeting emissions has not created certainty about emissions reductions. As we shall see, the exclusive focus on quantities is a key factor explaining the failure of three decades of international attempts to cut carbon dioxide emissions – and with it the rationale for the CCA.

In his 1974 paper, Weitzman argues that, generally speaking, it is neither easier nor harder to name the right prices than the right quantities because in principle exactly the same information is needed to correctly specify either. He concluded that quantities are better signals in situations demanding a high degree of co-operation, an example being a car factory depending on the availability of components to ensure the smooth running of a production line. In situations with more rather than fewer producers, he concluded there is greater relative advantage to setting prices.

By 2016, Weitzman's position had hardened in favour of prices:

With cap-and-trade, total emissions are known but the price or (marginal) cost is uncertain. With a carbon tax, the price or (marginal) cost of carbon emissions is known, but total emissions are uncertain. On the basis of economic models of climate change that include uncertainty, carbon taxes outperform tradeable permits, both theoretically and in numerical simulations.⁴⁸

He went on to argue that it is very difficult to resolve global warming by targeting emissions, as it requires assigning individual quantity targets to individual nations. 'Each national entity has a self-interested incentive to negotiate for itself a high cap on carbon emissions – much higher than socially optimal.'⁴⁹ Then, in a devastating sentence that could have been directed at the unilateralism of the CCA, Weitzman states: 'Volunteer altruism alone will not solve this international public-goods problem.'⁵⁰ A quantity-based international system fails

because no one has an incentive to internalise the externality and everyone has the self-interested incentive to free ride. What remains is essentially an erratic pattern of altruistic individual volunteerism.⁵¹

The Paris Agreement represents a further overt shift toward altruistic volunteerism. Unlike the Kyoto Protocol, where developed nations bargained with each other over emissions reductions, Paris lets parties come up with their own plans by tabling so-called 'Intended Nationally-Determined Contributions'. The name is highly significant, Weitzman writes:

It is hard for me to envision how the labels could more strongly emphasise the strictly voluntary nature of the entire exercise. This does not seem to me like a formula for overcoming the free riding problem associated with an international public good of great importance.⁵²

The UK making itself an example to the world to solve the free rider problem with the CCA does not solve free riding but encourages it. If Weitzman is correct – and the evidence of three decades of climate negotiations bears him out – then the CCA's aim of demonstrating climate leadership with unilateral emissions reductions is no more than an exercise in futile virtue-signalling, costing hundreds of billions of pounds.

4.2 Revenue vs non-revenue-raising interventions

Environmental regulations act as a disguised tax, driving up the price of goods that use polluting inputs relative to leisure. The higher the pre-existing tax rates, the larger the marginal tax-interaction effect for any given amount of carbon reduction. The assessment of the effectiveness of a proposed environmental regulation should therefore take into account the pre-existing structure of taxes and consider whether the disincentive effect can be partially offset by financing reductions in marginal tax rates. Thus a key consideration in identifying an optimal policy intervention is whether it raises revenue and, if so, what is done with it.

In a 1996 paper, economists Lawrence Goulder, Ian Parry and Dallas Burtraw pointed out that environmental taxes tend to compound distortions caused by taxes in labour markets.⁵³ Almost any government regulation that lowers the returns to labour by raising the price of consumer goods is likely to have higher cost than is suggested by its direct effect. These indirect costs are excluded in the 2009 CCA impact assessment.

Non-revenue-raising interventions produce costly tax interaction effects. These disadvantages might, the authors suggest, 'be large enough to make efficiency improvements impossible with these instruments no matter what the level of pollution reduction'.⁵⁴ The absence of revenue-recycling might dictate whether the welfare of such policies is positive. By contrast, revenue-raising environmental taxes have a revenue-recycling potential: the income can be used to reduce marginal tax rates, offsetting much of the tax-interaction effect.⁵⁵

Both the EU Renewables Target and the CCA are non-revenue raising interventions with respectively close to zero and zero effect on cutting global emissions. As a cap-and-trade scheme, the ETS has revenue-recycling potential, but for political reasons, EAs were grandfathered and handed out for free rather than auctioned. The exception is the Treasury's carbon-price floor, but its proceeds have not been used to cut marginal tax rates.

4.3 One vs multiple policy instruments

A major criticism of current policy levelled by Dieter Helm in his *Cost of Energy Review* is the multiplicity of interventions. Not only does this make policy incomprehensible and an open invitation for perpetual lobbying, it also runs contrary to the thrust in the economics literature, namely that, in the words of OECD economist Nick Johnstone, 'using "two stones to kill one bird" is not usually a sensible policy prescription'.⁵⁶ In a 2003 report, Johnstone concluded that:

in many cases the use of a mix of policies will be at best redundant and at worst counter-productive. If a particular instrument is an economically efficient and environmentally effective means of meeting a given environmental objective, there is little sense in introducing an additional instrument.⁵⁷

Where more than one instrument is necessary, Johnstone warns that:

- the objective of each instrument must be clearly defined, and the relationship between the two instruments must be properly understood.
- each must meet a legitimate policy objective which cannot be met more efficiently through a tradable permit system.⁵⁸

The CCA fails both tests, as does the Renewable Energy Target. At no point in its passage through Parliament was it explained how the CCA would interact with the ETS. If the objective was to accelerate decarbonisation there existed a straightforward tool – Parliament could have put its money where its mouth was and given the government billions of pounds to buy up EAs, thereby accelerating European-wide decarbonisation and forcibly multilateralising UK efforts. In reality, the CCA is all about empty virtue signalling, albeit at huge cost to the British economy.

4.4 ETS vs CCA

The CCA can be regarded as a highly inefficient carbon tax that doesn't raise any revenue. A 2007 paper in the *Journal of Regulatory Economics* by economists Christoph Böhringer, Henrike Koschlel and Ulf Moslener analyses what would happen if one state decided to impose a carbon tax. 'Inefficiencies will arise as the first-order condition of equalised marginal abatement cost no longer holds', the paper states.⁵⁹ In other words, a unilateral tax would mean forgoing lower-cost emissions reductions in ETS countries which didn't have a carbon tax, undermining one of the chief merits of cap-and-trade schemes.

The paper concludes with three points that, although made with reference to unilateral carbon taxes, are also germane to the CCA:

- unilateral taxes are environmentally ineffective and increase overall compliance costs of the ETS;
- any additional emissions tax will not affect the environmental effectiveness of the quantity based ETS;
- a unilateral carbon tax induces an excess burden on the country that introduces the tax.

It is extraordinary, indeed inexcusable, that the government of the day failed to examine the Act's likely interaction with the ETS. The CCA in combination with the ETS forces British households and businesses to incur more cost while letting other participants in the ETS off the hook from cutting theirs more cheaply. It could have been purpose-designed to make British families worse off and weaken the competitiveness of British business – for no environmental gain.

5 Concluding thoughts

The Climate Change Act represents a colossal, inexcusable blunder by Britain's governing class. The official impact assessment is that the CCA will cost hundreds of billions of pounds; if Germany's experience is anything to go by, the final price tag could easily cross the trillion-pound mark.

Whereas Germany, once Europe's climate leader, has seen sense and run up the white flag on aggressive decarbonisation, Britain is tied to the mast of climate unilateralism. George Osborne, chancellor for well over half the time the CCA has been in force, subsequently backtracked on his earlier support for climate unilateralism. In 2011, he told the Conservative party conference:

We're not going to save the planet by putting our country out of business. So let's at the very least resolve that we're going to cut our carbon emissions no slower but also no faster than our fellow countries in Europe.⁶⁰

Despite this pledge, the Cameron government did nothing to dilute the Act's unilateralism.

The CCA's cost is borne by energy-intensive businesses and manufacturers, their employees and by households, especially the less well off, who are forced to pay more for an essential commodity. The Prime Minister often refers to the words she spoke in Downing Street about her government promoting the interests of families who are 'just about managing'. When it comes to policies driving up energy costs, those words are mere rhetoric. Other than commission the Helm review, her government has done nothing – and it kicked Helm's excoriating critique into the long grass because its recommendations posed too much of a challenge to the status quo.

There is a final irony about the CCA. Its promoters – the 2008 Labour, Conservative, Liberal Democrat frontbenches – were all fervent supporters of Britain's membership of the EU. But when it came to the CCA, it was a case of 'fog in the channel, Europe cut off'. It was as if the EU's ETS didn't exist and Britain not fully participating in it. As regards climate policy, it was Brexit eight years before the EU referendum.

The aim of the CCA was to turn Britain into a climate leader and demonstrate Britain's green virtue to the rest of the world. It was a year before the 2009 Copenhagen climate conference – '50 days to set the course for the next 50 years', Gordon Brown declared in October that year.⁶¹ Copenhagen was going to remedy the glaring failure of the Kyoto Protocol, which exempted China, India and other developing countries from controlling their emissions. For the first time, all countries would be subject to emissions caps in one form or another.

Copenhagen is now a bad memory. Instead, the architecture of the Paris Agreement is based on weak-form voluntary altruism that, far from tackling the free rider problem, encourages it. As the CCA impact assessment points out, absent effective action globally, the economic case for the CCA disappears.

The burden of climate leadership is not borne by those who flatter themselves as planetary saviours, but in higher energy costs that hit business competitiveness, squeeze household budgets and fall most heavily on the poorest in society. Fiddling the measure of fuel poverty reveals the underlying morality of the CCA; to sacrifice the poor for the sake of climate theology. Perhaps there is only one positive thing that can be said for the Act. Ten years on, the CCA has achieved its purpose in making the UK an example to the rest of the world – no other serious country will do anything quite so stupid in the name of saving the climate.

Appendix I: Parliament's five climate change heroes

'The fact that an opinion has been widely held is no evidence whatever that it is not utterly absurd', Bertrand Russell wrote of Victorian morality; 'indeed in view of the silliness of the majority of mankind, a widespread belief is more likely to be foolish than sensible'. Passed overwhelmingly by the House of Commons, the Climate Change Bill's passage through Parliament fully bears out Russell's dictum. 346 MPs supported the Bill's second reading in June 2008 and 465 MPs supported its third reading four months later. Only five MPs – all Conservative – voted against it. Ten years on, what those five said during the parliamentary debates on the Bill and subsequently vindicates their stand. By contrast, the speeches in support of the Bill are slippery, dishonest and more often absurd and nonsensical.

Any measure should pass two tests, Peter Lilley said in the Bill's second reading debate. The benefits must be greater than the costs and the measure must be effective, rather than merely demonstrative. His concern was that the Bill's costs exceeded its benefits, but this observation had been dismissed by a government minister, Phil Woolas (later ejected from Parliament for knowingly making false statements during the 2010 election), as 'not a fundamental principle.'⁶² Lilley also criticized the Bill's unilateralism. 'There is, of course, merit in setting an example and taking a lead, but what if no one follows?' Lilley asked. 'We should at the very least ensure it has binding effect only if a sufficient number of developed countries follow us – and that, I think, is unlikely to happen.'⁶³ Noting he too had some fundamental disagreements with the Bill, Andrew Tyrie declared it 'a profound mistake to take the unilateralist route.' With the UK only responsible for 2% of global emissions, the Bill would raise industry's costs in Britain and enable China to take over Britain's industrial base. 'At least the EU approach to cutting carbon emissions contains some conditionality,' Tyrie noted.⁶⁴

The next MP to speak accused Tyrie and Lilley of membership of the Flat Earth Society: 'The issue is not counting beans but the survival of the species', Labour's Dr Desmond Turner said.⁶⁵ Intervening in a speech supporting the Bill by the Tory frontbencher, Peter Ainsworth, Christopher Chope focused on the Bill's impact on the costs faced by households and noted that higher fuel costs would increase the Bill's burden on the poor. Ainsworth was dismissive. Rising oil prices and depleting fossil fuel reserves were to blame for higher bills, he said: 'they are intimately related to our continuing dependence on unsustainable ways of living.'⁶⁶

Two years after the Bill became law, Philip Davies gave a brief but comprehensive demolition of it in a YouTube interview. Without a binding international agreement, he said, there is no net benefit from the UK spending £400bn when it accounts for only 2% of global emissions – just one year's growth of Chinese emissions. The Act was a pointless gesture politics. 'I don't want to see someone's energy bills go up and up just because somebody in government feels better about themselves when they go to bed at night.'⁶⁷

Writing on the Act's sixth anniversary, Ann Widdecombe explained that Conservative support for the then Labour Government's bill was all part of Cameron's campaign to 'modernise' the Tory Party. 'I am proud to have been one of those five MPs and I wonder how many others would join us if the vote were happening now.'⁶⁸ At the Bill's third reading, Peter Lilley intervened again to raise the issue of cost. During the intervening period, he said, the 2050 target reduction had been raised by one third to 80%, yet there were no updated cost estimates. Ed Miliband, the Energy and Climate Secretary, didn't want to know. 'With five members and the overwhelming majority of members voting as they did, the mood and sentiment of the House is pretty clear.'⁶⁹ It was feel-good politics at its worst.

Greg Clark, Miliband's Conservative opposite number, acknowledged that a few people

had doubts about the legislation. 'I am a multilateralist,' he declared. 'I do not believe that Britain should act alone, but this Bill provides for the Secretary of State to give leadership in our international negotiations and, at all time, to have the flexibility to ensure that other countries come with us.'⁷⁰ No such flexibility exists in the Act. The most charitable explanation of Clark's falsehood is that the current minister in the Theresa May's Cabinet with responsibility for climate and energy policy hadn't actually read the Bill.

Appendix II: The Helm Cost of Energy Review

High-cost energy is not popular with voters. In response to rising energy prices, the Conservative 2017 election manifesto pledged a cost of energy review. Two months after the election, Oxford energy economist Dieter Helm was appointed to carry it out. His terms of reference make clear that the Climate Change Act and the first five carbon budgets (to reduce greenhouse gas emissions by 57% by 2032) are to be taken as a given. Thus the focus of the Helm review is on how to minimise the compliance costs of the CCA.⁷¹ It does not attempt to estimate the minimum costs of complying with the Act and is silent on how high those costs might be or – given the UK's participation in the ETS – whether the CCA cuts overall EU emissions.

The review's starting point is that the cost of energy is profoundly influenced by the detail of energy policy. The review notes that the lowest-cost way of meeting the CCA targets is to set a universal carbon price on a common basis across the economy. However, rather than a straightforward carbon tax, a plethora of interventions now places the state as the central arbiter, picking preferred generating technologies, and unleashing a lobbyists' feeding frenzy.

The implication of the state determining all investments is that the state – and not the consumer – is now the major client. Energy policy has been partly captured, with the result that our decarbonisation is slower and more costly than it need be; our security of supply is weaker than it should be; and households and industry pay too much for their energy.⁷²

The sheer number of interventions is so great, Helm says, that hardly anyone who should – ministers, officials and regulators – can understand them all. The inability of market participants to grasp all these interventions in itself is likely to increase the cost of energy.

In practice, the complexity and inconsistency of current interventions that has built up as a result of a sequence of *ad hoc* policies is a major source of inefficiency and has created excessive costs.⁷³

Helm asked civil servants for a list of the main policy interventions. 'It runs to several pages, and is almost certainly incomplete', he later explained.⁷⁴ Then there are the seventeen government bodies and organisations overseeing the interventions on the list. Each requires a further list of policies and regulations, the details of which determine the returns accruing to market participants. 'It is tempting for governments and regulators to go beyond the generic and start predicting the future winners and creating scenarios', Helm writes, in what could also have been a critique of the CCC's approach.

It is something governments should avoid. Their track record is typically bad, and sometimes very bad, and they are always vulnerable to capture by vested interests trying to sell their technologies to government and capture subsidies and economic rents.⁷⁵

A classic feature of policy capture by vested interests holds:

the particular interested party would have superior information. Asymmetric information between the government and regulators on the one hand, and the vested interest on the other, is a bigger problem, the more complex the interventions.⁷⁶

The most significant of these interventions has the intention of massively increasing the amount of renewable energy on the grid. With passage of the 2009 Renewable Energy Directive, by which the European Commission put into EU law a decision of the Spring 2007 European Council, the UK embarked on a dash for renewable energy. As Helm notes, 'so far,

these have added quite a lot of capacity, but less energy'.⁷⁷ Perversely, the EU's adoption of renewables excluded ultra-low-carbon nuclear but included biomass, which now makes up a significant proportion of all renewables in the EU. As Helm noted, 'large-scale biomass can lead to significantly higher carbon pollution than nuclear.'⁷⁸

Not only does the renewable push make energy more expensive than it need be; it also undermines grid reliability. Unlike biomass, wind and solar are intermittent, their output fluctuating with the weather. Despite huge investment in generating capacity, capacity margins have fallen and, according to Helm, are lower than would be expected in a well-functioning market. 'The scale of these investment failures is masked by the fact that demand has been unexpectedly low and falling, notably since the financial crisis.'⁷⁹

The report notes that wholesale electricity prices are being depressed by the growth of zero-marginal-cost wind and solar generation. 'The experience of Germany, with periods of zero and even negative prices, is a sign of what may be coming here.'⁸⁰ When the wind blows and the sun shines, wind and solar displace conventional capacity. This raises costs, especially for gas generators, as they have to recover their fixed costs over less output and make their gas supplies interruptible too.

These conventional gas plants can no longer rely on an early stage high load factor. Intermittency raises the cost of conventional power, and its cost of capital.⁸¹

According to Helm, EMR left the prospects for investment in CCGT capacity exposed, with no obvious mechanism to ensure that sufficient new capacity would be built, noting that intermittent generation had 'undermined the economics of CCGTs in particular.'⁸² In other words, households and businesses suffer a double whammy from the renewable dash: first, the price supports, renewable obligations and all the other policy fixes to channel consumers' money to fund investment in renewables; second, the extra costs of financing the thermal capacity needed to keep the lights on when the weather isn't producing enough energy.

The outcome is that EMR sees the state reverting to the role it had before privatisation in the days of the Central Electricity Generating Board (CEGB): forecasting the future and, in particular, future fossil fuel prices. (Helm points out that forecasts of high future prices were used to justify preferred policies and were deployed at the Sizewell and Hinkley inquiries in the 1980s to justify investment in expensive nuclear capacity.) Investment decisions were also made at the CEGB, with captive customers and taxpayers being on the hook if those decisions turned out to be wrong. Privatisation saw these decisions pass to private investors. Now EMR, with the state acting as a central buyer, has seen the clock turn back to the days before privatisation: government is back in the business of second-guessing the market. As with the CEGB's policy-driven forecasts, these have not been good. According to Helm, the forecasts made between 2010 and 2015 have been 'particularly poor' and led to 'some unsatisfactory decisions.'

The beliefs held by DECC and its various ministers, particularly as regards peak oil and ever-rising oil, gas and coal prices, led to its 2014 prediction that by 2020 electricity prices would be 7% lower than they would have been without the renewables investments and other policy interventions.⁸³

There is likely to be a strong policy bias against forecasting low fossil-fuel prices. It would force the government to increase its estimate of the costs of its energy policies, as it would have increased the relative costs of renewables in the early period and raised estimates of renewable subsidies, Helm says.⁸⁴

Even this understates the cost of renewables. Weather-dependent generators do not face the full transmission, distribution and back-up capacity costs they impose on the system. These remain hidden. Initially, intermittency costs inflict large losses on coal- and gas-fired power stations (see Figure 2). As loss-making plant is scrapped, ultimately the costs wind up in higher prices charged to energy consumers and a less resilient grid. As Helm says,

These costs do not go away simply by being disguised within the system. In the current model, the intermittent generators have no incentive to minimise these costs. Indeed, they are so opaque that the exact size and impacts are matters of hypothesis rather than fact.⁸⁵

Even though Helm supports the objective of cutting greenhouse gas emissions, his overall verdict is one of the most damning to be found in any official report on any government policy in any field. Continuing with current policy would perpetuate 'the crisis mentality' of the energy sector, crises, he says, which are likely to worsen:

challenging the security of supply, undermining the transition to electric transport, and weakening delivery of carbon budgets. It will continue the unnecessary high costs of the British energy system, and as a result perpetuate fuel poverty, weaken industrial competitiveness, and undermine public support for decarbonisation.⁸⁶

The government's response to the Helm Review's grim warning? To date, it has been to do nothing.

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About the Global Warming Policy Foundation

The Global Warming Policy Foundation is an all-party and non-party think tank and a registered educational charity which, while openminded on the contested science of global warming, is deeply concerned about the costs and other implications of many of the policies currently being advocated.

Our main focus is to analyse global warming policies and their economic and other implications. Our aim is to provide the most robust and reliable economic analysis and advice. Above all we seek to inform the media, politicians and the public, in a newsworthy way, on the subject in general and on the misinformation to which they are all too frequently being subjected at the present time.

The key to the success of the GWPF is the trust and credibility that we have earned in the eyes of a growing number of policy makers, journalists and the interested public. The GWPF is funded overwhelmingly by voluntary donations from a number of private individuals and charitable trusts. In order to make clear its complete independence, it does not accept gifts from either energy companies or anyone with a significant interest in an energy company.

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