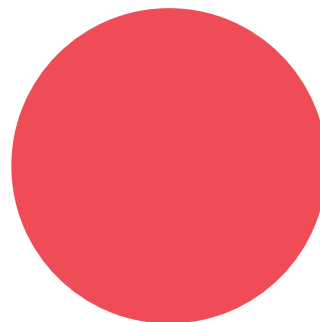


# 10 years of the UK Climate Change Act

Sam Fankhauser, Alina Averchenkova  
and Jared Finnegan



**The Centre for Climate Change Economics and Policy (CCCEP)** was established in 2008 to advance public and private action on climate change through rigorous, innovative research. The Centre is hosted jointly by the University of Leeds and the London School of Economics and Political Science. It is funded by the UK Economic and Social Research Council. More information about the ESRC Centre for Climate Change Economics and Policy can be found at: [www.cccep.ac.uk](http://www.cccep.ac.uk)

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## **About the authors and acknowledgements**

All of the authors work at the Grantham Research Institute on Climate Change and the Environment. Sam Fankhauser is Director of the Grantham Research Institute and Deputy Director of CCCEP. Alina Averchenkova is a Principal Research Fellow at the Grantham Research Institute and CCCEP. Jared Finnegan is a doctoral student in the Department of Government at the London School of Economics and Political Science.

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*This policy report is intended to inform decision-makers in the public, private and third sectors. It has been reviewed by at least two internal referees before publication. The views expressed in this paper represent those of the authors and do not necessarily represent those of the host institutions or funders.*

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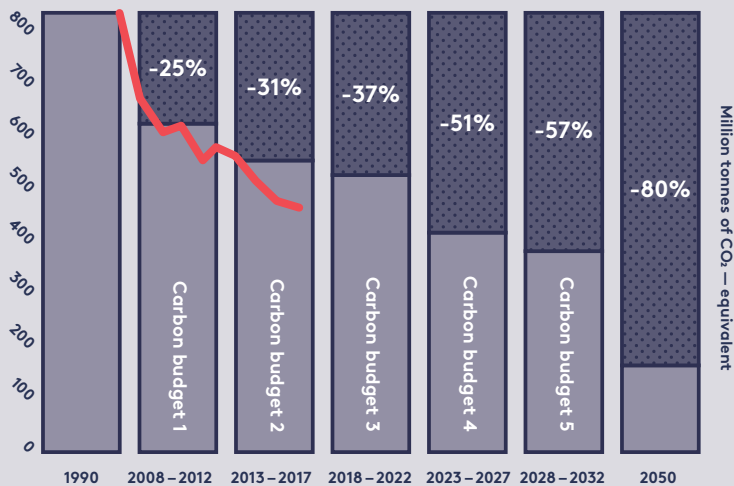
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# How does the UK Climate Change Act work?

## Carbon budgets

What and how?	Outcomes
Sequence of 5-year targets	Basis for concrete policy
Recommended by Committee on Climate Change (CCC)	Long-term target translated into near-term actions
Debated and legislated by Parliament	Flexibility built in
Set 12 years ahead	Progressive, ratcheted emissions cuts

Actual emissions



## Independent advisory body

What and how?	Outcomes
Committee on Climate Change: experts and secretariat	Independent, objective analysis
Recommends carbon budgets	Long-term consistency in approach across government
Monitors progress on emissions reduction and climate resilience	Transparency and legitimacy
	More informed decision-making



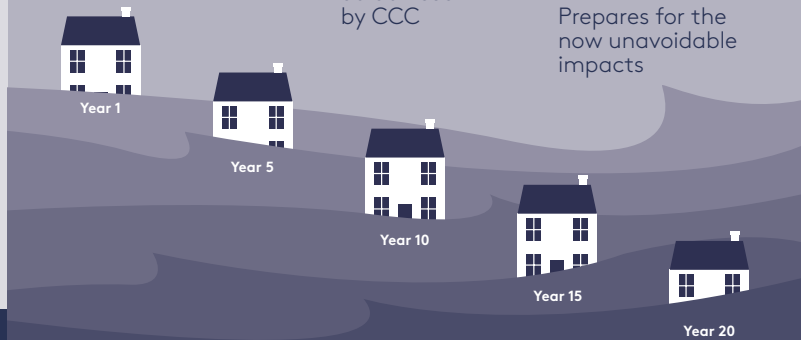
## Long-term target to 2050

What and how?	Outcomes
Reduce emissions by at least 80% on 1990 levels	Long-term direction of travel
Covers the whole economy and all greenhouse gases	Defines the UK's contribution to solving climate change



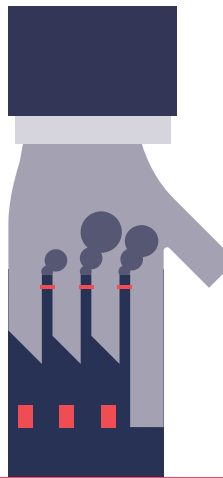
## Continual adaptation planning

What and how?	Outcomes
5-year cycles of adaptation programmes and risk assessments	Introduced climate change risk into public and private sector decision-making
Scrutinised by CCC	Prepares for the now unavoidable impacts



## Duties and powers to deliver

What and how?	Outcomes
Government is accountable to Parliament to deliver	Assigns clear responsibilities
Government obliged to produce plans to meet budgets	Holds government accountable
CCC provides annual progress reports to Parliament	Enables public scrutiny
Judicial review if non-compliant	Provides basis for policy implementation



## Differences made by the Act



1 A better political debate on climate change



2 The climate consensus has held



3 International leadership, inspiring others to act



4 Share of low-carbon power up from 20-45% by 2016

Sources for carbon budget data: Committee on Climate Change, 2017 (targets); Department for Business, Innovation & Skills, 2017 (actual emissions)

## Executive summary

### **The experience of the UK's Climate Change Act since 2008 provides lessons for climate law-making that apply internationally:**

- A comprehensive framework law is an essential tool to coordinate and advance climate action with respect to both reducing greenhouse gas emissions and climate resilience.
- A good climate law contains statutory targets, assigns clear duties and responsibilities and provides clarity about the long-term direction of travel.
- Economy-wide, multi-year targets, set well in advance, help to define a clear, yet flexible path towards the long-term climate objective.
- A strong independent body is critically important to ensure consistent policy delivery and evidence-based decision-making.

### **The Climate Change Act has been instrumental in advancing climate action over the past decade but reform will be needed if the UK is to meet its international climate obligations:**

- The introduction of the Act and its carbon budgets has helped to reduce emissions, particularly in the power sector, while the UK economy has continued to grow.
- Although the Act is technically consistent with the Paris Agreement, it will probably need supplementing by 2020, for instance by including a target for achieving 'net zero' emissions.
- New safeguards are needed to strengthen the ability to hold the government to account on the Climate Change Act. For instance, the Act should be amended to create a statutory response time for the government to publish its carbon plans, to avoid undue delays.
- The consensus for action on climate change in the UK has held but buy-in across government departments is too uneven. All parts of government must be fully committed to implementation of the Act as the UK moves into a more challenging phase of emissions reductions.

The UK Climate Change Act went through Parliament 10 years ago and became law in November 2008. The Act offers a number of lessons, for the UK and other countries, on how climate change legislation is best structured to be effective. These are summarised here, with a focus on the legal provisions in the Act and how they have been implemented.

The assessment is based on 33 semi-structured interviews with active or former civil servants, special advisers, government ministers, shadow ministers, backbench Members of Parliament, policy commentators and private sector representatives from different industries. Their responses are complemented with insights from the relevant literature, the authors' own experience in engaging with UK climate policy and several informal conversations with experts in UK policy and in climate change governance.

## Key components of the Climate Change Act

Five features stand out that make the Climate Change Act a particularly innovative framework law on climate change and a powerful guide for climate change policy following the Paris Agreement.

- **A statutory long-term emissions target:** The Act prescribes that economy-wide annual emissions of greenhouse gases in 2050 must be at least 80 per cent lower than 1990 levels. The purpose of this provision is to offer a clear legal signal about the long-term direction of policy travel. The target was informed by science, which is central to the credibility of the framework.
- **Statutory five-year carbon budgets:** The Act requires the adoption of a rolling set of medium-term targets called carbon budgets. Each carbon budget provides a statutory cap on economy-wide greenhouse gas emissions over a period of five years. The time span and the economy-wide scope provide the flexibility to accommodate fluctuations across time and space. Set 12 years in advance, sequential carbon budgets define a cost-effective but progressive path towards the 2050 objective.
- **Continual adaptation planning:** The Act prescribes a continuous approach to adaptation. There is a five-year cycle that begins with a comprehensive Climate Change Risk Assessment (CCRA), which is followed by a National Adaptation Programme (NAP), before the cycle starts again.
- **An independent advisory body:** A key feature of the Act is the creation of a powerful, independent advisory body, the Committee on Climate Change (CCC). The CCC effectively functions as the custodian of UK climate policy and the long-term objectives set in the Act. Like the Act itself, it covers both mitigation and adaptation, the latter through its Adaptation Sub-Committee.
- **Mandatory progress monitoring and accountability:** Regular government reporting to Parliament and the public keeps climate policy on the agenda and ensures transparency and accountability for progress. The Act also mandates the Committee on Climate Change to produce an annual progress report, in which it details the extent to which the government is on track to meet the carbon budgets. Adaptation progress is reported biannually. The reports are debated in Parliament and the government has a statutory obligation to respond.

## Fundamental choices in designing the Climate Change Act

The key components of the Climate Change Act described above create a coherent climate change framework. However, in designing the Act certain choices had to be made on the scope and legislative philosophy of this law. They are worth highlighting as legislators in other countries may come to different conclusions.

Four choices stand out:

- **The focus of the Act:** Law-makers can either focus narrowly on climate change or embed climate change into wider sustainable development objectives. The UK's Act, like most climate laws, does the former.
- **The scope of the Act:** Law-makers can choose between a predominantly domestic outlook and anchoring climate policy in the context of the Paris Agreement. The UK's Act predates Paris and all of its objectives are unilateral. However, the international context is crucial, and an explicit consideration when setting targets.
- **Policy design:** Broadly speaking, there is a choice between an approach to climate policy based on government planning and intervention and one that focuses on markets and individual choice. The UK's Act contains a mix of both approaches. Although the Act is heavily target-oriented, markets play an important role.

- **Devolution:** Law-makers have to decide the extent to which responsibility for climate policy is devolved to the sub-national level. The Paris Agreement explicitly recognises the important role played by sub-national actors. The UK is a fairly centralised country, but the Act recognises the role and collective responsibilities of the devolved administrations in Scotland, Wales and Northern Ireland, which contribute actively to the UK's overall decarbonisation target.

## Areas of success achieved by the Climate Change Act

There are a number of areas in which the Act has, on most measures, been a success. Its main achievements have been institutional and political. They relate to the way climate change policy is conducted and discussed in the UK. However, ultimately what counts is the impact of the Act on climate change outcomes.

Four achievements stand out:

- **The political debate on climate change has improved:** One of the main achievements of the Act is how it has transformed the way in which the political debate on climate change is conducted. The Act has created a routine of target setting, parliamentary scrutiny and reporting. Through the reports of the Committee on Climate Change it has established an agreed empirical evidence base.
- **The climate consensus has held:** The adoption of the Act was enabled by strong cross-party political consensus. Commitment to particular climate policies has waxed and waned over 10 years of political and economic turbulence. However, the Act has helped to preserve the political consensus on the need for climate action and the UK's long-term ambition.
- **The UK's international standing has grown:** The Act was one of the first comprehensive climate laws adopted globally and became the basis of a sustained international campaign on climate change by the Foreign Office. That engagement was one of the unexpected successes of the Act, helping the UK to play a leadership role in negotiating the Paris Agreement and inspiring other countries to take action.
- **The power sector has been transformed:** Over the past 10 years the UK power sector has changed radically and the transformation is ongoing. The Act was a major driver of this transformation, which has helped the UK to meet its first two carbon budgets and decouple greenhouse gas emissions from GDP.

## Aspects of the Climate Change Act that could be improved

There are some areas in which the high expectations of law-makers have not been fully met, although as with the successes, the disappointments are relative. There are no outright failures and often the problems are not with the Act itself, but with the way policymakers have acted under the framework it created.

Four issues are worth highlighting:

- **The Climate Change Act on its own is not sufficiently investible:** The Act was expected to provide long-term clarity about the UK's climate ambition and direction of travel. This has been achieved only in part. Investors make a distinction between certainty about carbon targets, which the Act provides, and certainty about carbon policies that stem from the Act, which it does to a much lesser extent.
- **There may be insufficient protection against backsliding:** While the consensus on climate change has broadly held, there is concern that without enforcement action the gap will continue to widen between the emissions targets set in law and the policies put in place to deliver those targets.

The coming years will test whether or not the Act is sufficiently strong to maintain the momentum in climate action as the focus shifts to sectors that will be more difficult to decarbonise.

- **Government buy-in is uneven across departments:** The Act was expected to put climate change on the agenda across government departments and to enable policymaking in the relevant sectors in line with the long-term climate objectives. This has happened only to a degree. The Act has informed many policy debates (for example, on airports, renewable energy, shale gas, flooding) but whether or not it changed their outcomes materially is less clear.
- **There has been more adaptation planning than adaptation action:** Compared with mitigation, the debate on adaptation has progressed more slowly and has received less attention. In part, this was dictated by the Act, but there have also been teething problems, for example with the first Climate Change Risk Assessment and National Adaptation Programme.

## Scope for reforming the Climate Change Act

The Act is widely viewed as still fit for purpose. However, being able to adapt to an evolving situation is an important feature of good climate governance. There are areas where the debate has moved on and lessons have been learned about effective climate governance. They suggest a need for targeted adjustments in the legal framework to make the Act compatible with the Paris Agreement, prepare for Brexit and strengthen the safeguards against political backsliding. For the most part these changes can probably be made without the need for new primary legislation or a formal revision of the Act.

In particular, the following six reforms should be considered:

- **Alignment with the Paris Agreement:** The 2050 emissions target in the Act is technically consistent with the Paris Agreement but it could be tightened and supplemented by 2020 by a target for 'net zero' emissions.
- **Refining the carbon accounting rules:** Brexit provides an opportunity to revise carbon accounting rules, moving from net emissions accounting (which reflects carbon trades in the EU emissions trading system) to gross emissions accounting (which measures the UK's actual emissions performance). International shipping, and in due course aviation, should be brought into the accounting framework.
- **A statutory response time for carbon plans:** This introduction would close a loophole that allows the government to delay the formulation of its plan for achieving emissions reductions once a carbon budget has been passed.
- **Financial independence for the Committee on Climate Change:** A financial budget that is independent of government would be consistent with international good practice for the funding of independent bodies.
- **Clearer criteria for assessing compliance:** Clearer criteria would make it easier to challenge non-compliance through judicial review.
- **Proactive communications:** A strong, proactive focus on engaging the general public on climate policy would help to strengthen the societal consensus on climate action.

## Political challenges for the next 10 years

The next 10 years are likely to be more difficult than the past 10. However, the key challenges are expected to be more political than legislative. Aside from the question of whether the Act should be reformed, the political task of making the Act work and deliver on its objectives remains.



We highlight three important issues for the future:

- **Reinvigorating the climate consensus:** A good framework law does not guarantee automatic policy delivery. Climate action requires strong leadership. A key challenge for the next decade will be to reinvigorate the political and societal consensus on accelerated climate action, in line with the objectives of both the Climate Change Act and the Paris Agreement.
- **Closing the policy gap after the mid-2020s:** The UK is not currently on track to meet its statutory carbon targets for the mid-2020s and early 2030s (4th and 5th carbon budgets). The government's ability and willingness to close the gap between emissions targets and policy delivery is perhaps the most tangible test of its commitment to climate change action.
- **A strong, trusted and independent Committee on Climate Change:** The CCC is the fulcrum of the UK climate change architecture. The stature and independence of the CCC has to be nurtured and supported in the same way as other essential independent institutions are, for example those that ensure macroeconomic stability.

## List of abbreviations

<b>ASC</b>	Adaptation Sub-Committee
<b>BEIS</b>	Department for Business, Energy & Industrial Strategy
<b>CCC</b>	Committee on Climate Change
<b>CCRA</b>	Climate Change Risk Assessment
<b>DECC</b>	Department of Energy and Climate Change
<b>Defra</b>	Department for Environment, Food and Rural Affairs
<b>EU</b>	European Union
<b>EU ETS</b>	European Union emissions trading system
<b>FCO</b>	Foreign and Commonwealth Office
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>NAP</b>	National Adaptation Programme
<b>NGO</b>	Non-governmental organisation
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change

# Introduction

This report assesses the content and impact of the UK Climate Change Act, which went through Parliament 10 years ago and was passed at the end of 2008. The UK is by no means the only country to have adopted a binding, long-term framework for climate governance (Averchenkova et al., 2017). However, the Act is widely seen as a particularly innovative piece of climate legislation, which has created an effective ‘overarching’ or whole-economy governance structure to guide progressive action against climate change. It is also one of the earliest comprehensive framework laws on climate change globally, and as such is an interesting law to study in more detail.

The objective of the report is to identify lessons, for the UK and other state and non-state actors, on how effective climate change governance is best structured. We ask what procedural, institutional and legislative arrangements have been successful. Where have expectations not been met? Our focus is on the legal provisions in the Act and how they have been interpreted. The socio-political context in which the Act was implemented is touched upon only where necessary for understanding the successes and failures of the Act.

## Why is this assessment important?

In 2018, the Parties to the Paris Agreement are reviewing their climate change commitments as part of the Talanoa Dialogue, with a view to ratcheting up their nationally determined contributions. In preparation for that dialogue, the distinctive role of overarching climate laws such as the Climate Change Act deserves attention as a powerful enabler of greater ambition and a necessary complement to sector policies and laws.

Action on the scale needed to implement the Paris Agreement requires a stable, long-term and overarching approach to climate governance, rooted in law, and which functions to ensure that specific sector targets, measures and policies remain consistent with the Paris objective. Within the family of possible legislative interventions, the ‘overarching’ long-term climate law represented by models such as the Climate Change Act plays a foundational and distinctive role in supporting effective climate governance. Overarching climate laws do not substitute for more specific sector interventions, but they function to ensure that targets, policies and laws adopted in relation to those sectors are sufficiently ambitious and well designed to deliver the longer term objective.

## Information sources

The assessment is derived from a series of anonymised interviews with parliamentarians, government advisers, senior officials, experts and stakeholders who were actively engaged in the UK climate change debate and policymaking over the past 10 years, and some of them much longer. Their views are complemented by academic studies on the Act (whose number remains relatively small) and our own experience in engaging with the UK climate change debate. The Appendix describes our method further.

## Structure of the report

**Part 1** is concerned with the content and structure of the Climate Change Act. We review its main building blocks, but also the legal philosophy choices that determined those building blocks: areas where other choices could have been made. **Part 2** reviews the main achievements of the Act over the past decade. We start with a brief history, highlighting some of the key policy events. This is followed by sections on the main areas of success and areas where not everything went to plan. **Part 3** asks if the Act is still fit for purpose and if it needs to be revised. A key consideration here is the compatibility of the Act with the Paris Agreement. Part 3 also looks at the political challenges that lie ahead, which are more pressing than the legal ones in many ways. We ask what is required to implement the objectives contained in the Paris Agreement and the Climate Change Act.

# Part 1: Architecture

## 1.1 The main components of the Climate Change Act

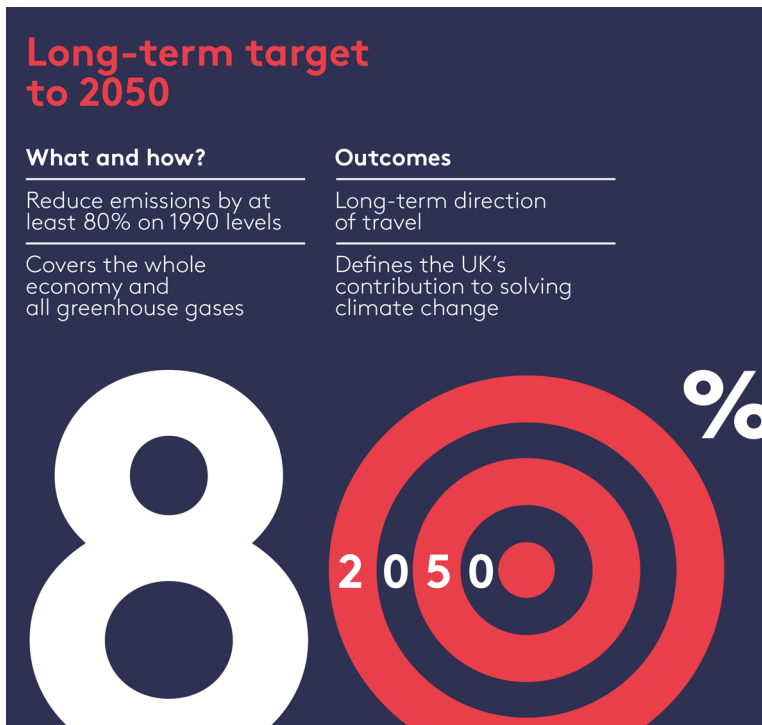
The Climate Change Act is an innovative, complex and comprehensive piece of legislation.<sup>1</sup> Even to critics of UK climate policy, such as Respondent 27,<sup>2</sup> the institutional structures created by the Act are 'head and shoulders' above those of other countries. This section describes five features that stand out and make the Act a particularly innovative framework law and a powerful guide of climate change policy in the UK:

- A statutory long-term emissions target
- Statutory five-year carbon budgets
- Continual adaptation planning
- An independent advisory body
- Mandatory progress monitoring and accountability

### A statutory long-term emissions target

The first key feature of the Climate Change Act is a statutory long-term target (Figure 1.1).

**Figure 1.1: The 2050 greenhouse gas target**



Source: Authors

The Act mandates that total, economy-wide greenhouse gas emissions in 2050 must be at least 80 per cent lower than they were in 1990.<sup>3</sup> The purpose of this provision is to offer a clear, unambiguous,

1 The full text of the Climate Change Act can be found at [https://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga\\_20080027\\_en.pdf](https://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf)

2 Throughout the report we paraphrase and quote directly from the interviews carried out to inform this study. For more details on the interviews and interviewees, see the Appendix.

3 The Act also contains an intermediate target for 2020. However, this has not had any noticeable influence on the debate and is now superseded by the 4th carbon budget, which covers the year 2020.

scientifically informed and legally binding signal on the long-term direction of travel. Climate change is a long-term problem, the solution to which requires structural change across the economy at an accelerating pace.

A scientifically informed, long-term and whole-economy approach to policymaking is therefore essential. Setting the long-term target in law signals a serious willingness to rise to the challenge and removes potential ambiguities as to the national commitment to effective climate action. For Respondent 16, who leads an influential think tank, the 2050 target has been crucial “in terms of making people look at the long-term impact of short-term decisions”. It has ensured time consistency much more than “the internal government machinery that existed beforehand”, including the aspirational targets contained in earlier government documents. The energy industry in particular appreciates the legal clarity in the long-term direction of travel, according to Respondent 1, who represents this industry.

“A scientifically informed, long-term and whole-economy approach to policymaking is essential”

The 2050 target was recommended by the Committee on Climate Change (then still operating in shadow form: see section 2.2 below) and calculated as the UK’s fair contribution to the international mitigation effort. It was based on careful modelling and the latest scientific information presented in the *Fourth Assessment Report* of the Intergovernmental Panel on Climate Change (IPCC, 2007). It was derived from an international climate objective of keeping the increase in global mean temperatures below 2°C with a 50 per cent chance (CCC, 2008). As such, the basis of the target when it was set is softer than the ‘well below 2°C’ objective that was included in the Paris Agreement in 2015, although the provision to reduce emissions by at least 80 per cent offers room to tighten the objective through a statutory order.

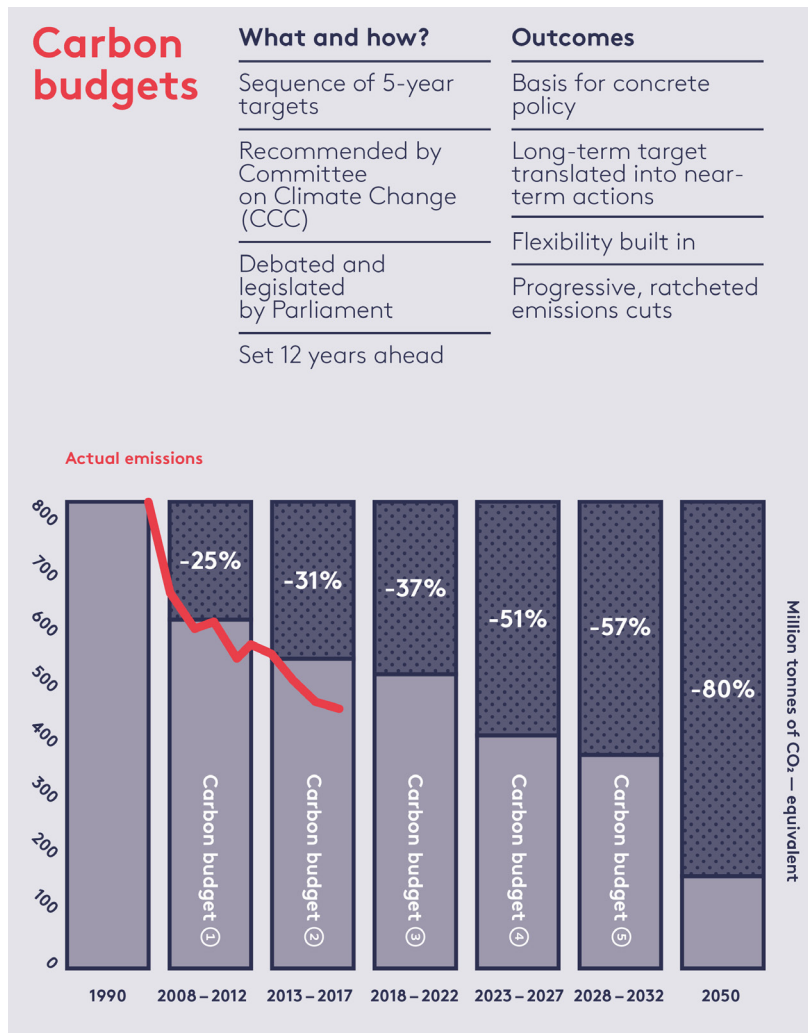
In accounting terms, the 2050 target concerns emissions of all the main greenhouse gases (carbon dioxide, methane, nitrous oxide and fluorinated gases) and from all domestic sources. Emissions from international aviation and shipping are excluded from the carbon account until reliable accounting methods become available. However, international aviation and shipping are included in the 2050 target and the carbon budgets factor in the headroom that will be needed to accommodate those emissions. Emissions are measured on a production basis, in accordance with international convention: that is, the target concerns greenhouse gases emitted in the UK, rather than the emissions embedded in the goods and services the UK consumes.

### **Statutory five-year carbon budgets**

The second key feature of the Act is a rolling set of medium-term targets called carbon budgets (Figure 1.2 below). Each carbon budget provides a five-year, statutory cap on economy-wide greenhouse gas emissions over that period. Taken together, sequential carbon budgets should define a cost-effective path towards the 2050 objective. For Respondent 15, a prominent academic, the “combination of long-term trajectory and shorter-term steps along the way” is essential to give a “sense of direction not only in the rather long future, but in the near term”.

The five-year length is thought to be commensurate with the implementation timescale for politicians and decision-makers in the private sector. It also provides the flexibility to accommodate short-term fluctuations in annual carbon emissions, which can occur for economic reasons (such as business cycle fluctuations), technical reasons (such as the temporary closure of a power station), and climate reasons (such as a severe winter). The carbon budgets concern overall emissions from all sectors. The relative contributions expected from different sectors are left to policy or the market, adding further flexibility.

**Figure 1.2: Five-year carbon budgets**



Source: Authors; carbon budget data from CCC, 2017a (targets) and BEIS, 2018b (actual emissions)

**Box 1.1: Wider socioeconomic considerations for setting carbon budgets**

- a) Scientific knowledge about climate change
- b) Technology relevant to climate change
- c) Economic circumstances, in particular the impact on the economy and the competitiveness of particular sectors
- d) Fiscal circumstances, in particular the impact on taxation, public spending and public borrowing
- e) Social circumstances, in particular the impact on fuel poverty
- f) Energy policy, in particular the impact on energy supplies and the carbon and energy intensity of the economy
- g) Differences in circumstances between England, Wales, Scotland and Northern Ireland
- h) Circumstances at EU and international level
- i) The estimated emissions from international aviation and international shipping in that budget period

Source: Climate Change Act

Carbon budgets are set 12 years ahead of time. They are adopted by Parliament through separate dedicated secondary legislation on the advice of the independent Committee on Climate Change. The 12-year lead time provides important long-term guidance to investors, but it also insulates the budget-setting process against short-term political calculations. According to Respondent 10, an experienced politician, Members of Parliament will worry less about the short-term effect on their constituents if they are forced to think ahead. The Act requests budgets to be set with regard to a number of wider socioeconomic considerations, including the latest evidence from climate science and relevant international developments (Box 1.1 above).

So far, five carbon budgets have been set in law, covering the period from 2008 to 2032. The latest, the 5th carbon budget, limits UK greenhouse gas emissions from all sources, excluding international aviation and shipping, to 1,725 million tonnes of carbon dioxide between 2028 and 2032. This is equivalent to a 57 per cent reduction in annual UK emissions over this period on average, relative to 1990 levels.

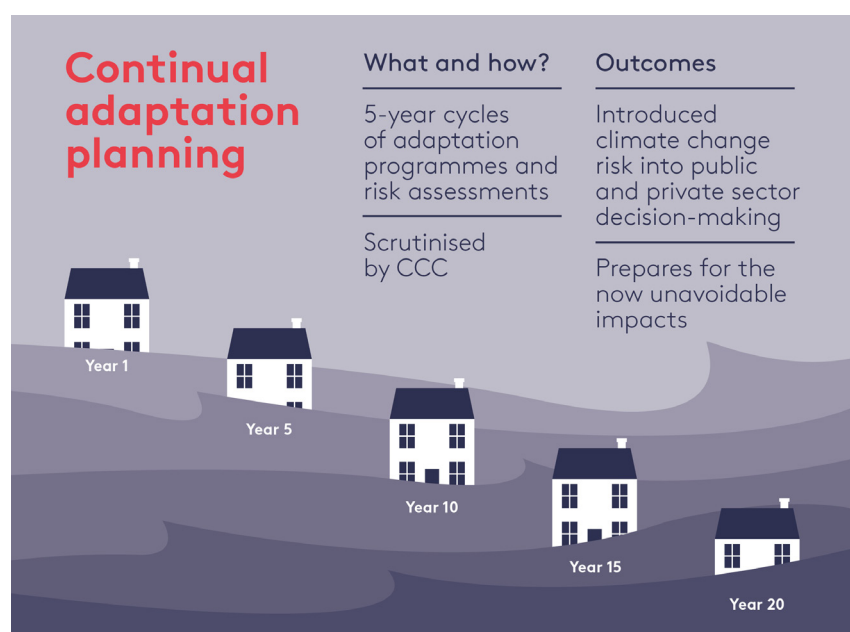
### Continual adaptation planning

The Climate Change Act addresses both emissions reduction (mitigation) and climate resilience (adaptation), with the latter provisions introduced into the Act at a relatively late stage. The third key feature of the Act is therefore its provisions on adaptation (Figure 1.3).

The Act prescribes an approach of continual adaptation planning. The impacts of climate change are likely to materialise gradually over time and the understanding of how they may unfold is partial. An iterative process is therefore sensible, where climate risks and adaptation responses are reviewed regularly and updated as better information becomes available. It also keeps adaptation on the agenda, according to Respondent 7, an adaptation expert.

Specifically, the Act mandates a five-year cycle that begins with a comprehensive Climate Change Risk Assessment (CCRA). This is followed a year later by a National Adaptation Programme (NAP), which responds to these risks. The cycle then starts again with a new risk assessment five years after the previous one, which reflects new scientific information but also the effect of adaptation action so far. The NAP is then also updated and the cycle moves into its next phase.

Figure 1.3: Continual adaptation planning



Source: Authors

Two CCRAAs have been produced so far, in 2012 and 2017. The first NAP was delivered in 2013 and the second one is due in 2018. In a reflection of devolved responsibilities on adaptation, the CCRAAs cover the entire UK, while the NAPs only concern England. Scotland, Wales and Northern Ireland each have their own arrangements on adaptation.

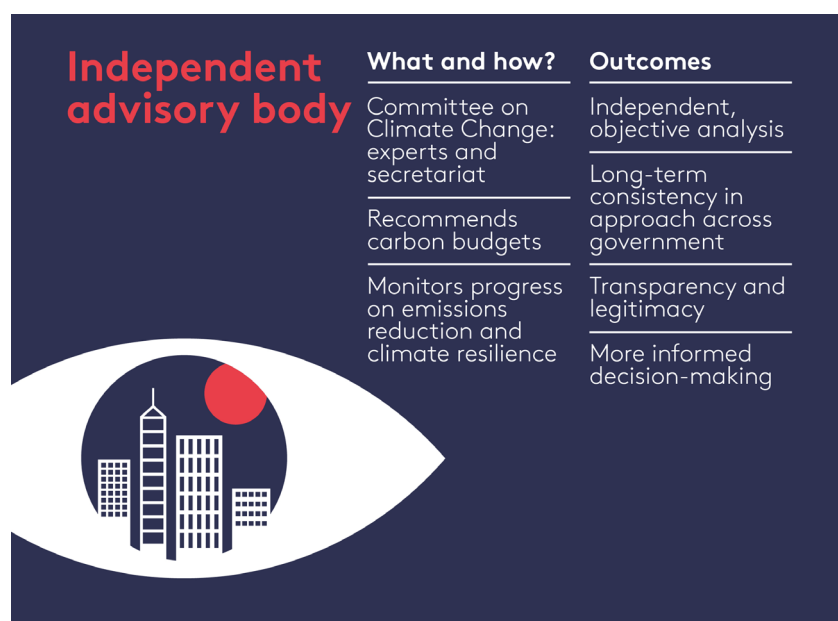
In addition to the planning cycle, the Act gives the government the right to demand updates on their adaptation actions from 'statutory undertakers' and 'bodies of a public nature' such as utility companies, in what are known as the 'adaptation reporting powers'. Two reporting rounds have so far taken place, in 2011 and 2015.

### An independent advisory body

The fourth key feature of the Climate Change Act is the creation of an independent advisory body, the Committee on Climate Change (CCC; Figure 1.4). Like the Act itself, the CCC covers both mitigation and adaptation, the latter through its Adaptation Sub-Committee (ASC).<sup>4</sup>

Formally, the CCC is tasked with recommending the carbon budgets and monitoring performance both with respect to mitigation and (through the ASC) adaptation. The CCC can also be asked to undertake bespoke analysis on particular questions, and indeed over the past 10 years this has happened on airport emissions and renewables, for example. The devolved administrations, which have their own additional climate change legislation, also have access to CCC expertise and make regular use of it. And under the Infrastructure Act 2015 the CCC now has a mandatory duty to advise the government on the carbon implications of shale gas and onshore petroleum.

Figure 1.4: Independent advisory body – the Committee on Climate Change



Source: Authors

The CCC was established as a mechanism to enhance the long-term credibility of climate action and to safeguard against political mood swings. The philosophy is similar to that which guides monetary policy (Kydland and Prescott, 1977; Barro and Gordon, 1983). Whether the concern is inflation targets or carbon targets, an independent institution, led by technical experts, is seen as better equipped to take a long-term view than politicians (Fankhauser, 2013).

<sup>4</sup> We wish to disclose that one of the authors of this report (Fankhauser) is a former member of the CCC and the ASC.



The CCC has a broad range of skills, both among its eight members and in its 30-person secretariat. There is strong in-house capacity on all relevant technical aspects of the climate change problem, including energy, transport, behaviour, climate science and economics, although there are perhaps knowledge gaps with respect to agriculture and land use change (according to Respondents 31 and 32, who represent that sector). Recommendations are derived from detailed economic, engineering and science modelling, long-term scenario planning and a deep understanding of the long-term technological, economic and behavioural transformations that are required. CCC members take an active and hands-on interest in the analysis, although detailed technical work is led by the secretariat. There is a constant and intensive dialogue with stakeholders and government counterparts.

Unlike the Monetary Policy Committee in the UK or the Federal Reserve in the United States, the CCC does not have formal decision-making powers. It is not a legal enforcer: it is an advisory body. However, the Climate Change Act makes it as difficult as possible for the government to deviate from the CCC’s advice by requiring a formal explanation if the government should do so. As such the CCC is an effective mechanism to protect climate policy against “the weakness of politicians” (Respondent 15). Respondents from all backgrounds see it as “an incredibly powerful voice” (Respondent 19, a business representative) and the ultimate provider of high quality information and analysis in the UK climate debate.

### Mandatory progress monitoring and accountability

The fifth key feature of the Climate Change Act concerns duties and responsibilities. It is a less frequently discussed aspect of the Act, but no less important. The Act assigns clear duties and reporting obligations on the government to ensure climate policy remains on track (Figure 1.5). Collectively they create a binding process to hold government to account not just to Parliament but also to third parties and, potentially, to the courts if the government were to fail to deliver the outcomes or deviate from the processes prescribed under the Act (ClientEarth, 2009).

Figure 1.5: Delivery and accountability through duties and powers

## Duties and powers to deliver

### What and how?

Government is accountable to Parliament to deliver

Government obliged to produce plans to meet budgets

CCC provides annual progress reports to Parliament

Judicial review if non-compliant

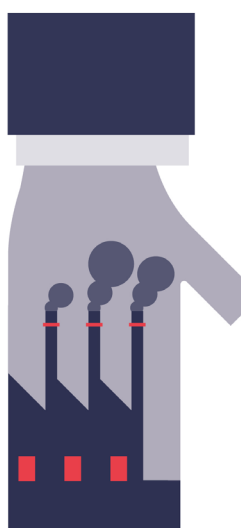
### Outcomes

Assigns clear responsibilities

Holds government accountable

Enables public scrutiny

Provides basis for policy implementation



Source: Authors

Once a carbon budget has been adopted, the Act mandates the responsible Secretary of State to bring forward proposals and policies to meet the legislated target. The Act further mandates the CCC to produce independent annual progress reports in which it details whether or not the government is on track to remain within its carbon budgets. The reports are debated in Parliament and the government

has a statutory obligation to respond. At the end of each carbon budget the CCC offers a detailed view on policy performance through the budget period. The Act sets explicit deadlines for these reports. The CCC's progress reports are due by the end of June each year and the government has until 15 October to respond.

The reporting requirements on adaptation are similar, although reporting is less frequent. The first formal report on adaptation was only due in 2015, two years after completion of the first National Adaptation Programme, and from then on reporting is biannual.

The clarity of these reporting requirements means they are taken seriously. The need to regularly reappraise progress ensures that climate change remains on the radar (ClientEarth, 2016). As Respondent 10 put it, "the Act has got dates, people have to deliver, the law is clear". The Act does not formally impose any sanctions should the government fail to deliver. Instead, it relies on the potential political embarrassment that this would cause and on the threat of a judicial review. Having clear milestones means it is easier to establish if the government is in breach of its obligations under the Act (Respondent 2, a former NGO representative).

**"Having clear milestones means it is easier to establish if the government is in breach of its obligations under the Act"**

## 1.2 Some fundamental choices

The key components of the Climate Change Act create a coherent and successful framework for climate change action. It is an inspired design. But in designing the Act certain choices had to be made on the legislative philosophy of this law. They are worth highlighting and explaining, as legislators in other countries may come to different conclusions on these matters.

### **Focus: Climate change or sustainable development?**

The UK's Act is almost entirely focused on climate change. While comprehensive in its treatment of climate change issues, the Act is not embedded into a wider environmental context. The Act requires that the government's adaptation and mitigation policies contribute to sustainable development, but beyond this short reference, and a section on waste management, there are no links to broader environmental objectives. In contrast, the Act is explicit about the need to account for wider social and economic considerations (see Box 1.1 above).

The same strategic choice is reflected by the decision to combine government responsibility for emission reductions with energy policy – initially in the Department of Energy and Climate Change (DECC) and since 2016 in the Department for Business, Energy & Industrial Strategy (BEIS), rather than in the Department for Environment, Food and Rural Affairs (Defra). The integration of emissions reductions with energy policy was seen as central, but not integration with environmental policy. Adaptation has remained the responsibility of Defra.

Instead, the UK has pursued its various environmental objectives through parallel processes. The Natural Capital Committee, set up to advise on the management of natural assets like forests and rivers, operates separately from the Committee on Climate Change. Major strategy documents, including the *Clean Growth Strategy* (BEIS, 2017), which is the government's plan for meeting the 4th and 5th carbon budgets, and the *25-year Environment Plan* (Defra, 2018), which was recommended by the Natural Capital Committee, were produced separately by BEIS and Defra, respectively.

It is difficult to judge whether a more holistic approach to climate governance would have resulted in different outcomes or not. The clear focus of the Act on climate governance was seen as a strength by most people we interviewed, and the close coordination with energy policy has driven the

transformation of a sector that, at the time the Act was passed, was viewed as virtually synonymous with an effective low-carbon transition. However, respondents from areas with strong environment linkages, such as land-use and agriculture, conceded that the Act does not work perfectly for their sectors (e.g. Respondent 32).

### **Scope: Domestic or international?**

For a law dealing with a global environmental problem, the Act is surprisingly domestic in its scope. The measures it contains reflect Britain's own approach and contribution to climate change policy. The objectives are unilateral and not conditional on international processes. There is no reference in the Act to the UK's membership of, or obligations under, the UN Framework Convention on Climate Change. The only explicit reference to the UNFCCC is with respect to international carbon accounting rules.

Similarly, the Act is silent about the UK's contribution to international climate finance. The provision of additional financial assistance to least-developed countries is a core building block of the international policy architecture on climate change and the UK is one of the leading providers of climate finance. Yet for Respondent 23, a former government adviser, climate finance is "hugely missing" in the Act. In his view, the UK should have approached climate finance in the same strategic, focused and targeted way as its domestic climate objectives.

Despite these omissions, the Act is an outward-looking law. The international effort against climate change is an important, if implicit, motivation for the Act. The 2050 emissions target is interpreted, not least by the CCC, as the UK's contribution to the international effort (CCC, 2008). The international context is one of the factors that must inform the carbon budgets and the UK's level of ambition. Alongside changes in climate science, changes in international or European policy are the only reasons that could justify a revision of the 2050 target.

**"The international effort against climate change is an important, if implicit, motivation for the Act"**

The Act has strong ties to European climate policy. Until the UK leaves the European Union, a significant part of the country's climate change ambitions and the policies to deliver them will continue to be set at EU level. The UK has, for example, signed up to the EU's 2020 climate change and energy package, which assigns an explicit share of the EU-wide emissions reduction burden to the UK. The country has adopted EU directives including those on renewable energy and energy efficiency and is a member of the EU emissions trading system (EU ETS), which covers about 40 per cent of UK emissions in sectors such as electricity generation, refining and heavy industry.

In part the strong domestic focus of UK climate policy is the result of how the Act was interpreted rather than formal prescriptions in the Act itself. The Act explicitly allows the use of international carbon credits to meet carbon budgets, for example, subject to the CCC's advice. However, it has been the consensus so far that carbon targets – beyond the EU ETS – should be met through domestic action. This is in contrast, for example, to Switzerland's CO<sub>2</sub> Act, which assigns a significant role to international carbon credits in meeting domestic targets.

### **Policy design: Government or market?**

The policy design of the Act is heavily driven by government planning and targets. Respondents on the right of the political spectrum, including supporters of the Act, commented that this focus on long-term scenario planning, economy-wide targets, government action and performance monitoring can jar with their political instincts. They would prefer a design with a stronger emphasis on markets and individual decision-making. There is no disagreement that addressing climate change requires government intervention: the issue is with the way such intervention is managed.

The rationale for emissions targets is derived from scientific logic. The carbon space in the atmosphere is finite for a given global temperature and this constrains the build-up of emissions. Among scientists, the notion of global carbon budgets that are consistent with particular temperature targets, such as 2°C, is now mainstream (e.g. Rogelj et al., 2016; Millar et al., 2017). Respondent 27, an academic, would have liked the Act to be more closely tied to this scientific imperative. However, other respondents were nervous about an emissions policy that is purely dictated by science. The way emissions are controlled entails deeply political choices. Even technical experts like Respondents 8 and 9 felt that these choices must be made democratically, albeit within clear constraints imposed by the science.

More market-oriented policy designs would let emitters rather than policymakers decide how to manage emissions within those scientifically determined constraints. Respondent 11, who was involved at the time, recalls that market-based structures, such as stronger reliance on emissions trading, were discussed and then discarded in the early debates on the Act, but the approach still has support (e.g. from Respondents 13 and 23, who are both on the political right). Advocates of a smaller role for government might similarly question the need for a centralised bureaucracy around climate change adaptation, if adaptation decisions can be taken equally well by private agents and the responsible line ministries (e.g. the Department of Health for health impacts).

“Some respondents were nervous about an emissions policy that is purely dictated by science. The way emissions are controlled entails deeply political choices.”

The depth of these disagreements should not be exaggerated, however. The Act does indeed differ from other flagship climate laws by not having a prominent emissions trading system or carbon tax at its core, e.g. California’s Global Warming Solutions Act (Assembly Bill 32). But markets and flexibility still feature prominently in the UK’s Act. The EU emissions trading system, which commenced in 2005, is explicitly incorporated into the Act’s architecture. Similarly, the Act holds governments to account on their progress with reducing emissions, but it takes a deliberately flexible approach to the ‘means’ of achieving the low-carbon transition. The government has considerable leeway in how it designs the policies to achieve the reductions.

### **Devolution: Centralised or decentralised policy delivery?**

The UK has a fairly centralised political system, recent attempts at decentralisation notwithstanding, which is reflected in the Climate Change Act. The targets it imposes are national, and the delivery machinery it set up is focused on Whitehall (government departments) and Westminster (Parliament). The devolved administrations of Scotland, Wales and Northern Ireland play an important and explicit role in the Act, but similar provisions for councils, cities and the English regions are missing. Some administrative rules, such as the National Indicator 188 on adaptation planning by councils, were abolished as part of a drive against bureaucracy.

The devolved administrations have been essential to the implementation of the Act, nevertheless. Scotland and Wales in particular have adopted their own climate change laws and policies, and their interplay with the Act has created a powerful dynamic. Respondent 9, who is close to the Scottish debate, observed: “People [in Scotland] are much more politically engaged than is probably the case down south. The annual reports of the CCC [which also advises the Scottish government] have a much higher profile and get a lot of publicity. The Scottish Climate Change Act has been a very useful part of that.” Respondent 28, a technology expert, agreed: “We are seeing some very interesting good practice happening in Scotland and Wales, which you can hold up to the government in Westminster.” Northern Ireland has played a much less prominent role.

The same dynamics play out elsewhere in the world, especially in countries with a strong federal tradition. In Canada and the United States, sub-national entities have been a key driver of climate action, often leading the way with significant framework laws, such as California's Global Warming Solutions Act. More generally, sub-national governments have important powers that relate to the implementation of climate action. Their responsibility often covers housing, local transport, energy, water and disaster risk management. Some sub-national governments, including in Brazil, Canada, China and Japan, have used their devolved powers to implement carbon pricing schemes (World Bank, 2017).

“The degree of decentralisation and the role of sub-national entities is an important strategic choice, with an opportunity to create regulatory competition and a race to the top”

The degree of decentralisation and the role of sub-national entities is therefore an important strategic choice when designing climate governance, with an opportunity to create regulatory competition and a race to the top. This is recognised at the international level, even though they are not Parties to the UNFCCC or the Paris Agreement (Galarraga et al., 2017).

## Part 2: Achievements

### 2.1 A brief history of the Climate Change Act

This section provides a brief history of the Act, including the dynamics that led to its creation. The purpose is not to provide a detailed account of UK climate policy over the past decade, but to highlight key milestones, which will help readers understand the assessments that follow.

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#### Box 2.1: Key features that enabled the passage of the Climate Change Act

##### Domestic momentum

Climate change had been a prominent political issue in the UK since the G8 summit in Gleneagles in 2005, where Prime Minister Tony Blair put it on the international agenda (as highlighted e.g. by Respondent 11). Research has shown that hosting an international summit on climate change often prepares the ground for subsequent domestic legislation (Fankhauser et al., 2015).

##### International momentum

The passage of climate change legislation peaked globally during 2008–09, a period when many industrialised countries were enacting initial laws in anticipation of the UN climate summit in Copenhagen at the end of 2009 (Averchenkova et al., 2017). Although the UK Act was world-leading, Britain was not acting alone.

##### A supportive opposition

In May 2005 the Conservatives launched an early-day motion with over 400 signatories calling for a Climate Change Act. David Cameron became leader of the Conservative Party in December 2005 and saw progressive environmental policy as a way to make his party more electable (a factor highlighted by Respondents 12, 14, 29, all political insiders). As the Climate Change Bill went through Parliament, this “competitive consensus” among the major parties (Carter, 2014) ensured that key provisions were strengthened rather than watered down (as remembered by Respondent 5, a journalist).

##### An ambitious Secretary of State

Work on the Act was spearheaded by an up-and-coming politician in his first senior ministerial role. The Labour government’s Environment Secretary, David Miliband, felt his department was not delivering on climate change (Respondent 20, at the time a civil servant) and was set on making his mark. He convinced his colleagues, including a reluctant (Respondent 10) Tony Blair, that the Government had to “support this thing” (Respondent 6). (By the time the Act received royal assent on 26 November 2008, Miliband’s brother Ed had become Secretary of State for Climate Change.)

##### Proactive stakeholders

Non-governmental organisations (NGOs) were instrumental in creating momentum for a climate change bill (Rutter et al., 2012). For example, the Big Ask campaign, orchestrated by Friends of the Earth, collected some 130,000 signatures in support of such a bill. Campaigners were actively engaged in shaping the law as it went through Parliament. Industry stakeholders, including Respondent 22, also lent their support, recognising the importance of the issue and appreciating the clarity that the Act would provide.

*Source: Authors, based on interviews*

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## Agreeing to the Act (2006–2008)

The Climate Change Act was the culmination of an intensive period of political engagement with climate change in the UK. Important earlier milestones include the G8 Summit in Gleneagles in July 2005, where the British hosts put climate change prominently on the agenda, and *The Economics of Climate Change: The Stern Review* (Stern, 2007), an influential report, published in October 2006, that had been commissioned by Prime Minister Tony Blair and Chancellor Gordon Brown. These milestones were highlighted by Respondents 6, 11, 20, 33, who were all involved in the gestation of the Act.

The creation of the Act has received some attention in the academic literature (Lorenzoni and Benson, 2014; Carter and Jacobs, 2014). Scholars and respondents who were engaged in the debate at the time agree that it was an exceptional time in UK climate policy. Several important factors came together that made it possible to pass a progressive, world-leading piece of environmental legislation with overwhelming political support (see Box 2.1). Perhaps the most significant of them is the strong degree in Parliament of cross-party consensus that something needed to be done about climate change (Carter, 2014; Clayton et al., 2006; ClientEarth, 2009). Only three Members of Parliament voted against the Climate Change Bill at the second and third readings. The environmental community took full advantage of this window of opportunity. The draft bill was strengthened in several respects, for example on adaptation and by tightening the long-term emissions reduction goal. It is unlikely that the same Act could have passed with the same level of unanimity at any other point in time over the past 10 years.

## Building the institutions (2008–2010)

The Act had a flying start (see Table 2.1 below). The bill received royal assent on 26 November 2008, and less than a year later the main institutional building blocks of the Act were in place. The newly established Committee on Climate Change, which had operated in shadow form since February 2008, made its first set of recommendations that December, less than a week after the Act came into force (CCC, 2008). In May 2009 Parliament enacted the first three carbon budgets, covering the period 2008 to 2022, as recommended by the CCC. In July 2009 the government published the *Low-Carbon Transition Plan*, its strategy for meeting those targets (DECC, 2009), and that October the CCC issued its first statutory progress report (CCC, 2009a).

Unconnected to the Act, but in the same spirit, a new Department of Energy and Climate Change (DECC) was created in October 2008, though responsibility for adaptation remained with Defra. DECC turned out to be short-lived and after the 2017 general election responsibility for energy and climate change was folded back into a new Department for Business, Energy and & Industrial Strategy. (See Tosun and Lang, 2017 for an academic review of such policy integration.)

Adaptation had received less attention than emissions reduction during the drafting of the Act, and work on climate resilience started much more tenuously. The Adaptation Sub-Committee (ASC) to the CCC was established in June 2009 and issued its first report in September 2010 (ASC, 2010). Public bodies such as infrastructure providers were asked to detail their preparedness for climate risks under new adaptation reporting powers and work started early on the first statutory Climate Change Risk Assessment. However, the results of these efforts were not published until January 2012 (Defra, 2012).

In the words of a close observer, the early years were about establishing “the bona fides” of the Act and of its institutions (Respondent 10). During this honeymoon period there was a high level of political consensus. The first chair of the CCC, Lord Turner, could work on the assumption that if the analysis was sound, the political process would concur with his judgement. Under his leadership the meetings and reports of the CCC were exceedingly technical affairs. The focus was on putting in place the analytical and institutional infrastructure that supports the Act. Processes were set up, analytical capacity was built and reputations were established.



**Table 2.1: Important milestones for the Climate Change Act**

Year	Milestone
2008	Committee on Climate Change (CCC) established (initially in shadow form) Climate Change Act comes into force First CCC report, recommending carbon budgets 1–3 (2008–22)
2009	Adaptation Sub-Committee (ASC) of the CCC established Carbon budgets 1–3 enacted by Parliament Government implementation plan for carbon budgets 1–3 ( <i>Low Carbon Transition Plan</i> ) First CCC progress report (annually thereafter)
2010	First ASC Report (annually thereafter, non-statutory) CCC recommendation for carbon budget 4 (2023–27)
2011	Carbon budget 4 enacted by Parliament (subject to review) Government implementation plan for carbon budget 4 ( <i>Carbon Plan</i> )
2012	First Climate Change Risk Assessment
2013	First National Adaptation Programme CCC publishes advice on carbon budget 4 review
2014	Carbon budget 4 confirmed by Parliament
2015	First ASC statutory assessment of adaptation progress (bi-annually thereafter) CCC recommendation for carbon budget 5 (2028–32)
2016	Carbon budget 5 enacted by Parliament
2017	Second Climate Change Risk Assessment Government implementation plan for carbon budget 5 ( <i>Clean Growth Strategy</i> )
<i>Source: Authors</i>	

### **Safeguarding climate ambition (2011–2017)**

Opposing views started to emerge around the discussion of the 4th carbon budget in 2011 (Carter, 2014; Gillard, 2016). The fiscal and economic environment remained stubbornly tough, and the Climate Change Act moved into a new phase, in which the challenge was to make the provisions of the Act “work politically” (Respondent 10).

It is important to make a distinction between political attitudes about climate policy and attitudes towards the Act itself. While climate policy – the best way to tackle climate change – became increasingly contentious, the Act and its architecture did not. The Act barely featured in the three general elections held since 2008. In fact, in 2015 the leaders of the main political parties jointly pledged to honour the Act, taking climate change off the table as an election issue. In contrast, there are fierce and ongoing debates about related policy issues, such as the approach to fracking for shale gas, the size of energy bills and the merit of renewable energy.



In June 2011, the 4th carbon budget (covering the period 2023–27) was enacted, as required under the Act, but its opponents won a compromise: its level was to be reviewed at a later stage when, ostensibly, there would be more information about the European and global context in which the budget would be implemented. The review took place in 2013/14, at which point the CCC concluded that its original recommendation remained valid. The government concurred.

The 5th carbon budget (2028–32) was passed with much less fanfare in the summer of 2016, at the height of the political turmoil that followed the Brexit referendum, which had taken place a few weeks before. But it then took the government 15 months, until October 2017, to publish its statutory implementation plan (BEIS, 2017).

The adaptation debate remained more sedate, although flooding had become a major political issue following severe winter floods in 2014 and 2015. A potential crisis point was the appointment of a climate sceptic, Owen Paterson, as Secretary of State for the Environment in 2012. The production of the first National Adaptation Programme (NAP) occurred during his tenure. The reticence of Paterson created “a lot more work” for his civil servants, according to Respondent 21, who was one of them at the time. However, because it was a statutory requirement resources had to be allocated to the task and the NAP was published as required under the Act in July 2013 (Defra, 2013).

By that time, the CCC was already chaired by a seasoned politician, Lord Deben, a former long-serving Environment Secretary. Under his leadership the CCC consolidated its reputation for independent analysis but also became more politically aware (a fact lamented by Respondent 27, an academic). Just being right in analytical terms was no longer enough.

## **2.2 Areas of success**

We now look at areas in which the Climate Change Act has, on most measures, been a success. The Act’s main achievements have been institutional and political. They relate to the ways in which climate change policy is conducted and discussed in the UK. These achievements are important, but what counts ultimately, of course, are the environmental outcomes. Have emissions declined and is the country more resilient to climate change impacts? While there have been environmental achievements, the contribution of the Act – that is, its additionality – is sometimes difficult to disentangle from the role played by other factors, such as economic trends and European Union regulation.

### **A better political debate on climate change**

One of the Act’s main achievements is how it has transformed the way in which the political debate on climate change is conducted. More research is needed on how the Act shaped day-to-day policymaking, for example in the relevant government departments and select committees. However, the impact of the Act on the institutional framing of climate policy is undeniable.

The first reason why the Act has transformed the political debate is the detailed reporting and monitoring process it has established. These reporting procedures provide a structure to the climate change debate, which is no longer ad hoc but has a sense of regularity and routine (Respondent 10). The annual progress reports by the CCC, and the five-yearly carbon budgets and risk assessments, provide focal points around which the climate change debate can be structured. They are set pieces that demand a slot on the agendas of ministers, government officials and select committees, thus ensuring that climate change remains on the political radar. A former DECC official remembers how the carbon budget debate would “galvanise activities” (Respondent 3). External stakeholders in the private and third sectors similarly have become accustomed to timing and tailoring their interventions to the process proscribed in the Act.

The second reason why the Act has changed the political debate is the Committee on Climate Change itself. The CCC has established itself as an authoritative custodian of analytical honesty and rigour. It has, in the words of Respondent 28, a culture of “absolutely ruthless interrogation”. Its reports provide an independent evidence base that is used on all sides of the debate and is trusted in a way that government information or NGO studies could not be (Respondent 16).

For Respondent 19 the CCC has been “the single greatest resource I have used as a policy analyst”. Shadow ministers and backbench MPs, who lack access to government resources, rely heavily on its analysis. In the words of Respondent 12, an opposition politician, the CCC has “provided information to MPs to actually have an intelligent debate”. Business stakeholders, such as Respondents 18, 21 and 22, use the CCC both in their interactions with policymakers and in internal discussions with their senior management. CCC staffers have become accustomed to having their own analysis quoted back at them (Respondent 7). Even the experts in government treat the CCC “with enormous amounts of respect” (Respondent 14, a former civil servant). Respondent 27 was one of the few critics, arguing that the CCC’s pragmatism makes the Committee a “part of the problem”.

There is an important difference between the political debate among specialists and the public debate in the media. The Act has had little discernible impact on the latter. Over the past 10 years the public debate on climate change has been ill-tempered and ill-informed, fuelled by a small but influential group of climate sceptics. The antagonism is felt on both sides of the debate, with one sceptical respondent sensing a growing infringement on free speech (Respondent 13).

“The Act has had little discernible impact on the public debate in the media”

The limited impact of the Act on the public debate should perhaps not be a surprise. The regular reporting provisions, which have transformed the Westminster discussion, were always meant “for policy wonks and the inside of government” (Respondent 9). An analytical body like the CCC has a less obvious role in the broader public debate, the high profile of the current chairman notwithstanding. More fundamentally, although the Act asks the CCC to “have regard to the desirability of involving the public” (section 39[4]), public engagement is not a key objective of the Act.

### **The climate consensus has held**

The overwhelming political consensus around the Climate Change Act is one of its main features and strengths. Our respondents agreed that, while specific climate change policies have been contested, political support for the ultimate objectives of the Act remains strong. Most respondents were firm that there is no majority either in Parliament or in the main political parties to repeal the Act. Even critical respondents thought that there were no more than perhaps 25 MPs (“probably more, but still a minority”, Respondent 13) who would vote against the Act today. The need for decarbonisation is still widely accepted. These findings appear to run contrary to arguments made in the academic literature (Lockwood, 2013; Carter, 2014; Gillard, 2016) that the cross-party consensus on climate action is fraying.

The Act is not only a beneficiary of this consensus: it is also one of its causes. The Act has helped to solidify agreement and has reduced (though not eliminated) the risk of political back-tracking. Two factors have combined to achieve this.

The first factor is the political capital that had been invested in the Act by the main parties. It has made the Act a “symbol of this country’s concern about climate change” (Respondent 6, a former political adviser) and “helped to bind the consensus together” (Respondent 4, an ex-civil servant). Respondent 5 explained further: “Every party and every MP had to say, ‘do you agree with this or do

you not?’, and they nearly all said, ‘we agree with it’. That made a foundation and is very difficult to go back upon.” It also helps that acts of parliament are much more difficult to repeal than plain policies.

The second factor is the institutional architecture created by the Act, especially around the carbon budgets and the CCC, which establishes strong guardrails against major deviations from the long-term path. Depending on one’s point of view, either this ensures clarity of purpose or it curtails the freedom of elected governments. For Respondent 32 the Act is “a roadmap that has a fairly high degree of confidence amongst society at large” and it “remains as a kind of lodestar of a signal that there’s cross-party support for action in the UK, and that all things being equal, we’re seeking to very seriously reduce our emissions”. But for Respondent 29, a critic of the Act, it has set up “an infrastructure that very deliberately made it very difficult to correct the path that we are on”.

As a consequence of these guardrails, the Act has been successful – but not perfect – in maintaining the UK’s commitments to climate action through some very turbulent times. The past decade has been dominated politically by the financial crisis, subsequent austerity politics and most recently the Brexit vote. Since 2008 the UK has had four governments, ranging from the centre-left (Labour, until 2010), to the centre (the Conservative–Liberal Democrat Coalition, 2010–15) and centre-right (Conservatives, since 2015). Climate policy has been spearheaded by responsible ministers from Labour, the Liberal Democrats and the Conservatives. Throughout this period governments of these different colours have adhered squarely to the formal requirements of the Act (although they did not always follow up with the requisite policies: see section 3.1 below).

However, the Act has been tested at times: over the past decade there have been periods when commitment wavered, or when politicians in key positions were sceptical about climate action. Respondents mentioned the tenures of Owen Patterson as Secretary of State for the Environment (2012–2014), Nick Timothy as a Special Adviser to the Prime Minister (2016/17) and John Hayes as an energy minister (2012/13). These individuals clearly complicated the implementation of the Act, suggesting it is only ever one political appointment away from difficulties. However, the Act also strengthens the hand of civil servants who are able to tell reluctant new ministers that “it’s the law in the country” to meet these targets (Respondent 4).

“Over the past decade there have been periods when commitment wavered, or when politicians in key positions were sceptical about climate action”

Arguably, the most significant crisis for the Act was the passage of the 4th carbon budget in 2011, to which there was opposition from across government, led by Her Majesty’s Treasury (Respondent 14, a government adviser at the time). Chancellor George Osborne told the Conservative Party Conference of that year: “we’re not going to save the planet by putting our country out of business” (see *The Telegraph* website, 2011, for full speech transcript). Ultimately, the battle was won by those in support of the budget recommended by the CCC, but the episode demonstrates both the necessity for, and the ability of, the Act to provide safeguards against short-term political thinking.

There has been less overt opposition from industry. Despite clear concern among energy-intensive industries about the speed of decarbonisation and the protections made available to them, one of their representatives observed: “the problems that have been perceived by industrial energy users are more about short-term measures than the Act itself” (Respondent 18). This may change over time. The same respondent wondered if “the 80 per cent reduction [in emissions by 2050] is going to prove economically and socially tolerable” as the UK begins to decarbonise difficult sectors such as heat, industry and agriculture.

## The UK's international standing has grown

In its outlook and scope the Climate Change Act is a predominantly domestic law (see section 1.2). Yet one of its unexpected successes has been the way in which it has enhanced Britain's standing as an international climate leader. The UK remains one of the world's largest carbon emitters. However, at about 1 per cent, its share of global emissions is now relatively small and falling. The UK's ability to effect change at the global level is therefore a significant achievement.

The UK is widely considered to have played a leadership role in the negotiations for the Paris Agreement. For Respondent 15, who is close to the international negotiations, the UK is a "key architect of the Paris Agreement". The Act is one of the factors – although clearly not the only one – that enabled the UK to play this role. Respondent 2 observed: "If you talk about the Climate Change Act on the international stage you'll get a round of applause". Respondent 5 agreed: "The Act comes up at every COP [UN climate summit] in one way or another."

Diplomatic skills and a proactive approach to the international climate change debate are of course also important. Following the passage of the Act, the Foreign and Commonwealth Office (FCO) embarked on a sustained engagement campaign on climate change. The fact that David Miliband, one of the architects of the Act, had by then become the Labour government's Foreign Secretary clearly helped, but the campaign was maintained under Miliband's successors, including in particular the Conservative William Hague (Respondents 10, 14). Respondent 6 recalled: "Every country that was thinking about climate change was aware the British had put their Climate Change Act targets into statute; we did a lot of proselytising about it."

The FCO campaign was complemented by the actions of backbench MPs, who engaged with other parliamentarians through networks such as Globe, the global legislators' organisation, and used the Act as "a template to talk to other countries" (Respondent 12). Even private companies draw on the Act when they engage internationally on climate legislation. Respondents who have engaged internationally highlighted in particular their interactions with China and Mexico, the latter of which passed its own climate framework law, the General Law on Climate Change, in 2012 (Respondents 6, 12, 21).

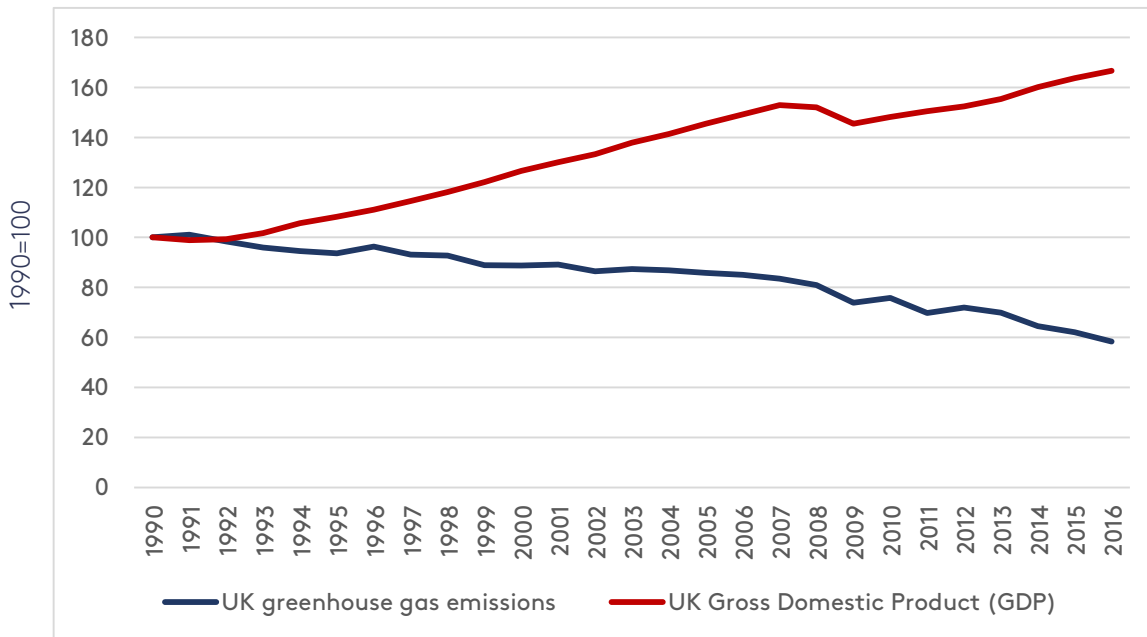
## The power sector has been transformed

The first two carbon budgets, for the period 2008 to 2017, have been met with relative ease. The UK has been successful in decoupling greenhouse gas emissions from gross domestic product. Since 1990, UK GDP has grown by more than 65 per cent while total annual greenhouse gas emissions fell by 41 per cent to the end of 2016, the latest year for which official figures are available (Figure 2.1 below). This is a striking statistic, although critics will point out that emissions are measured on a production basis and consumption emissions have continued to rise (CCC, 2013).

A fall in emissions is the ultimate yardstick of success. However, it is difficult to ascertain to what extent the Climate Change Act has contributed to lower emissions. For Respondent 16 the Act is "the only reason the UK has maintained its climate trajectory". But the downward trend in emissions started well before the Act came into force. Much of the reduction is related to wider energy-economic factors, such as the 'dash for gas' at the expense of coal in the 1990s, the ongoing structural shift away from heavy industry, and the aftermath of the financial crisis (Bowen and Rydge, 2011).

Emissions reductions since 1990 have been concentrated disproportionately in one sector, electric power, and here it is easier to pinpoint the impact of the Act. Over the past 10 years the UK power sector has changed radically and the transformation is ongoing. The share of low-carbon generation increased from 20 per cent in 2008 to 45 per cent in 2016. The emission intensity of the sector has fallen from over 500 grams per kilowatt hour (g/kWh) of electricity generated to well below 300 g/kWh (CCC, 2017a).

Figure 2.1: UK-wide greenhouse gas emissions and GDP



Note: Series indexed to start at 100 in 1990. In 2016 UK GDP was £1.9 tn and greenhouse gas emissions were 466 m tonnes of carbon dioxide-equivalent. Source: BEIS (2018b).

In the summer months it can approach 200 g/kWh.<sup>5</sup> The 2030 target recommended by the CCC of less than 100 g/kWh thus appears within reach.

Respondents agreed that the Act was a major driver of this transformation. There was disagreement on the extent of the complementary role played by the EU Renewables Directive, but on the Act respondents were unequivocal that without it the power sector would look very different today: there would be much more coal and gas in the mix. For Respondent 23 the power sector transformation is “100 per cent” due to the Act and the thinking around it. Other respondents were more willing to acknowledge the interplay between the Act and the EU renewables target (e.g. Respondents 1, 8, 9). The two laws are considered to be mutually reinforcing, although particularly among Conservatives, the renewables target is seen as an expensive way of promoting the clean energy transition (Respondents 13, 23). In terms of actual emissions reduction, the transformation of the power sector is the Act’s most tangible success.

### 2.3 Areas for improvement

Not everything has gone to plan. There were some expectations that law-makers might have had, or requirements that successful climate policy imply, that were not fully met. As with the successes, the disappointments are relative. There are no outright failures, but there are areas where the glass is only half full. Most of the problems are not with the Act itself but with the way policymakers have functioned under the framework it created.

#### The Climate Change Act by itself is not sufficiently investible

Through its 2050 target and carbon budgets that are set 12 years ahead, the Act was expected to provide long-term clarity about the UK’s climate ambition and direction of travel. This has been achieved only in part.

Most respondents appreciated the long-term signal sent by the Act. Some felt it has provided sufficient clarity for investment decisions to be made but these are the exceptions. In the view of Respondent 28,

<sup>5</sup> See [www.mygridgb.co.uk](http://www.mygridgb.co.uk) for real-time emissions statistics.

“You can point, certainly in the offshore wind and the automotive sectors, to a clear direction set by the Act. ... The long-term signal and the development of supporting policy has been hugely influential in making the UK a place [in which] people feel they are confident to invest in green projects.” Respondent 21, a former civil servant now working in the private sector, felt that the Act “helped to make a lot of the upfront, big capital investments”. Respondent 1 from the renewables industry agreed: “From the perspective of the company I represent, the UK was seen as very investible as a result of the Act.”

Most other respondents thought that the Act does not provide enough certainty to investors (e.g. Respondents 4 and 16, though neither is an investor). They made a distinction between certainty about carbon targets, which the Act clearly provides, and certainty about carbon policies, which the Act offers much less (see also Lockwood, 2013). Investment decisions are made against policies and the past decade has seen a fair amount of policy changes, for example on solar subsidies and carbon capture and storage. Respondent 3 from the energy sector explained: “Our commercial decisions are more shaped by actual government action than a very long-term legal framework.”

Yet, when pressed, few respondents thought that the Act should be more policy prescriptive, for example by incorporating clearer sector targets. Decarbonisation is a dynamic process that involves discovery, learning and innovation. The flexibility of the Act to respond to trends (e.g. cheaper than expected renewables), but also to accommodate different political philosophies (e.g. attitudes to onshore wind), is therefore an important strength (Respondent 8). That this comes at the cost of less predictability is a price worth paying.

“When pressed, few respondents thought that the Act should be more policy prescriptive, for example by incorporating clearer sector targets”

However, there is support for ways of being “predictably flexible” (Respondent 15): that is of clarifying upfront the rules of how policies might be revised. This respondent explained: “If you’re putting subsidies in on solar or wind ... you should be able to say that as, say, solar reaches X per cent of the market, or as the costs of solar come down by Y per cent, those will be reasons to review the subsidies and lower them.” The current system of renewable energy auctions potentially allows for this.

### **There may be insufficient protection against backsliding**

While the consensus about climate change has broadly held, there is concern among many respondents that the gap is widening between the emissions targets set in law and the policies put in place to deliver them. Tougher tests were to be expected: “Once you’ve got through the low-hanging fruit bit, you’re into some pretty tough arguments” (Respondent 10). Nevertheless, it is a concern that progress on reducing emissions outside the power sector (section 2.3 above), seems to have stalled (CCC, 2017a).

The Committee on Climate Change has repeatedly highlighted this problem in its progress reports. However, as Respondent 8, a carbon policy expert, observed, “It’s been recognised ... year after year without the gap actually being filled.” Respondent 6 put it more bluntly: the government may support the Act, “but they got rid of almost all the policies designed to implement it”. The slow pace with which the government produced its implementation strategy for the 5th carbon budget is another sign that it may not share the sense of urgency that is increasingly felt by NGOs and the science community.

The Act has proven to be strong enough for the carbon budgets to be passed into law and to overcome the reluctance of individual ministers or officials (see section 2.3). However, the Act is untested when



it comes to forcing a reluctant government to accelerate its policy delivery. However, the way the Act was written leaves the prospects of a judicial review unclear (see section 2.1). This could become the biggest test for the Act yet.

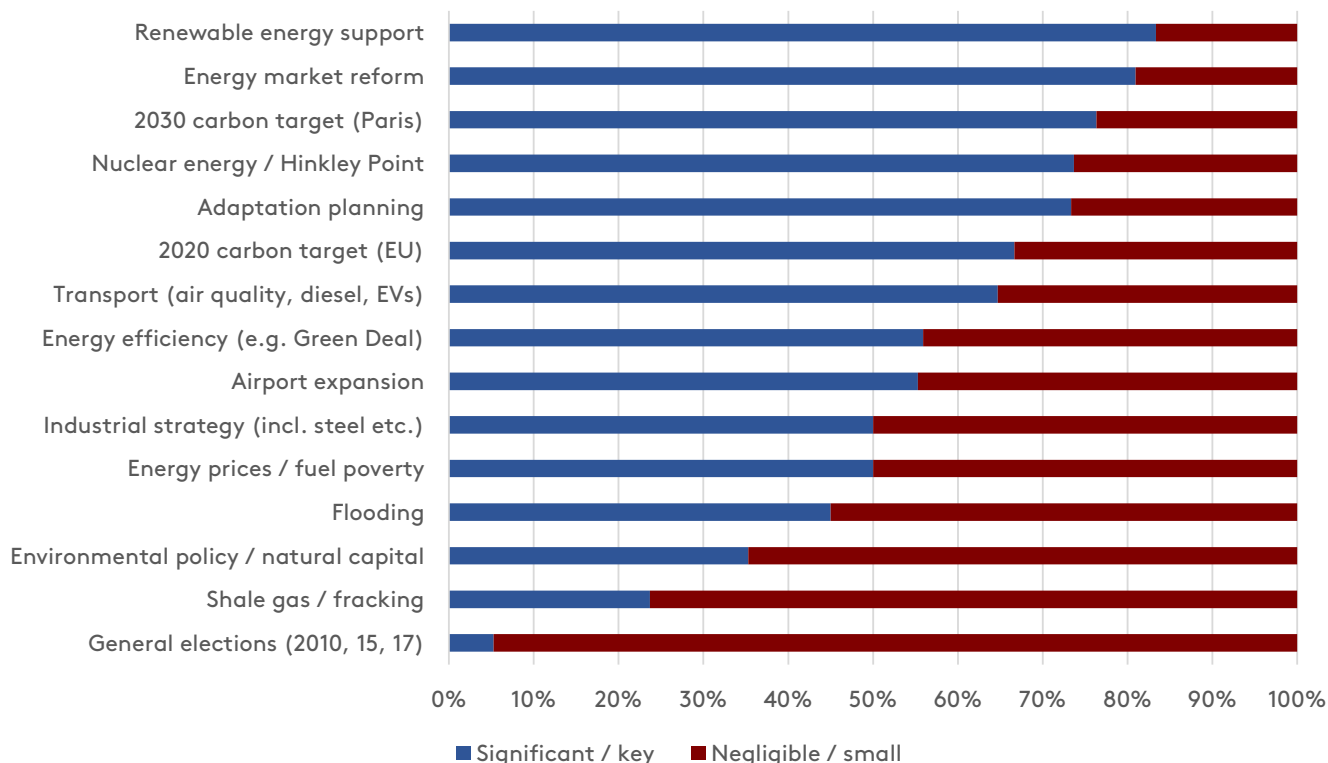
### Government buy-in is uneven across departments

One of the expectations of the Act was that it would put climate change on the agenda across government departments, introducing climate change concerns to other policy areas whenever relevant. This has happened, but only to a degree. Respondents 8 and 10 felt that the Act has had little influence on the thinking in Whitehall departments such as the Ministry of Housing, Communities & Local Government, which is responsible for planning and housing. Buy-in to the Act remains uneven across government departments.

Respondents varied in their assessment of whether or not the Act has influenced debates on issues including airport expansion, shale gas, air quality, energy bills and industrial strategy. Climate change has played a role in all of these debates, but it is less clear if it was the Act that forced it on the agenda and if the Act changed the outcome or just the nature of the debate.

There was some consensus among respondents that the Act played a significant role, and with a positive influence, in areas that are core to climate policy, such as the EU climate targets, electricity market reform, renewable energy support, nuclear energy, and adaptation planning, although there were some dissenting voices (see Figure 2.2).

**Figure 2.2: Influence of the Climate Change Act on current major policy debates, according to study respondents**



Source: Authors, based on interviews

The Act played a formal role in the debates on shale gas and airport expansion. Climate change concerns in both cases were expressed as an issue of consistency with the Act. The CCC was formally invited to advise on the compatibility of the plans with carbon targets, and issued two important reports (CCC, 2009b; 2016). Ultimately, the emissions targets of the Act will apply to both airport and shale gas decisions. If the result is higher emissions, additional cuts will have to be made elsewhere. However, there is a sense that both debates, and in particular that on shale gas, are dominated by local issues, such as jobs, noise, intrusion and residential quality of life, and it is these issues that will have the most influence on the outcomes.

In other policy areas the impact of the Act is even more ambiguous. In transport, climate change objectives combined with the air quality debate – and, in the case of diesel, sometimes conflicted with it. The debate on energy prices and fuel poverty arguably turned into a proxy argument about climate ambition. “Politically [the fuel poverty debate] caused a huge headache,” Respondent 24, a politician, recalled. “It gave a *raison d’être* to [critics of the Act] to be able to point to something, [but] in no way is climate change policy the cause of high energy prices; ... anyone who rationally approaches it knows that’s the case.”

One perhaps surprising area in which coordination occasionally has been lacking is between the adaptation and mitigation agendas. Institutionally this was not helped by the creation of the Department of Energy and Climate Change (DECC), which split the responsibilities for adaptation and mitigation. In many ways the creation of DECC was an inspired move, as it brought together energy and mitigation policy, but the adaptation–mitigation coordination may have suffered as a result. In areas such as agriculture and the natural environment, and also buildings, the distinction between adaptation and mitigation is increasingly blurred, as respondents from the former sector noted (Respondents 31, 32).

“One perhaps surprising area in which coordination occasionally has been lacking is between the adaptation and mitigation agendas”

### **Adaptation planning is not the same as adaptation action**

The debate on adaptation has progressed more slowly and has received less attention than the debate on mitigation. In part, this is dictated by the Act. The Act did not require a mandatory deliverable – the first Climate Change Risk Assessment (CCRA) – until 2012. The name of the independent advisory body, the Adaptation Sub-Committee, introduces a clear hierarchy relative to the main Committee, which focuses on mitigation. The operating budget of the ASC is three times lower than that of the main Committee (CCC, 2017b).

There were also teething problems. The process for the first CCRA (led by an independent contractor) was criticised for relying on too narrow a set of experts. The first National Adaptation Programme (NAP) was viewed, including by the ASC, as lacking strategic focus (ASC, 2015). There was discontinuity at Defra, the lead department for adaptation, where an initially bloated adaptation team suffered severe budget cuts. The original membership of the ASC was also curtailed for a mixture of budget and performance reasons. Last but not least, it took “rather a long time to get mitigation and adaptation together” (Respondent 28).

Arguably, the adaptation provisions of the Act were designed in anticipation of such problems. It is the purpose of an iterative planning programme that lessons can be learned and initial mistakes corrected. This has happened. The second CCRA was led by the ASC rather than an independent contractor, and was based on a broad, expert-led programme of analysis. There is evidence that the adaptation reporting powers have created risk awareness in the majority of responding firms (Judd et



al., 2017). Like the CCC, the ASC has established a reputation for careful, independent analysis. There is now more collaboration between the ASC and the CCC (Respondent 28). Since 2015 joint CCC/ASC progress reports every other year have become the statutory norm. There is a sense that the adaptation planning machinery is now in place.

However, planning for adaptation is not the same as taking adaptation action. As Respondent 7 put it, “The Act focuses on processes being completed, reports being produced, assessments being published, but there is no requirement in the Act for risks to actually be reduced.” Respondents struggled to identify concrete areas of adaptation action that have been driven by the Act.

A telling example is flooding. Most respondents did not believe that the Act has materially influenced the flooding debate (see Figure 2.2 above). This is perhaps a harsh judgement, particularly on the ASC, which has become a respected commentator on flood policy, including on flood defence spending. For Respondent 12 the ASC’s reports were essential to the debate, because “that was your data; that was your evidence”. The ASC also managed to inject into the debate a recognition that planning ahead is important, “because [flooding] is going to be more frequent” (Respondent 10).

## Part 3: Looking ahead

This final section looks at the future. It explores to what extent the Climate Change Act is still adequate to guide UK climate policy through the next 10 years. The challenges ahead may be both legislative – related to a need to review and revise the Act, and political – related to the implementation of the Act and its objectives.

### 3.1 Should the Climate Change Act be revised?

Most experts consider the Act still to be fit for purpose. But climate change policy is fast-moving. There are areas where the debate has moved on and where lessons have been learned. The Paris Agreement has highlighted the scale of the governance challenge and the importance of adopting a long-term approach. As Respondent 31 put it, the Act is “a child of its time”. It is therefore reasonable to ask if the Act may have to be revised in due course, and if so, how. Adaptability is an important feature of effective climate governance (Ecologic, 2017). Other countries, such as Germany and Switzerland, regularly refresh their framework regimes to recognise the dynamic nature of the climate change debate.

Our analysis suggests six potential areas for reform. Most were suggested directly by respondents, others follow from the observations they made. Not all of them would require new primary legislation or a formal revision of the Act. The most likely need for revision will be to align the Act with the Paris Agreement. Brexit may require changes to the carbon accounting rules. Other potential adjustments are small and mostly technical – but they would significantly strengthen existing safeguards against political backsliding.

“The Act is ‘a child of its time’; it is therefore reasonable to ask if the Act may have to be revised in due course, and if so, how”

#### Alignment with the Paris Agreement

The most obvious area for reform concerns the consistency of UK climate legislation with the Paris Agreement. The Paris Agreement shares with the Climate Change Act the emphasis on a scientifically informed target, which is used to inform a long-term, overarching and dynamic governance framework, but without proscribing specific sectoral policies.

However, the long-term ambitions of the Paris Agreement and the Act are not the same. The basis of the UK’s 2050 target when it was set related to a global objective of maintaining around a 50:50 chance of keeping global mean temperatures below 2°C (CCC, 2008). This is less ambitious than the Paris objective of a temperature rise “well below” 2°C. Nor does the Act contain any provisions that match the Paris objective of ‘net zero’ emissions before the end of this century: the Act stops in 2050.

The Committee on Climate Change has recommended that more information, including about global 1.5°C trajectories, should be gathered before the UK’s long-term carbon target is reviewed (CCC, 2016). The CCC felt that the evidence base for an informed decision was still evolving, with a key report by the Intergovernmental Panel on Climate Change not expected before autumn 2018. It argued that in the meantime the existing carbon budgets and the provision that 2050 emissions must be at least 80 per cent below 1990 levels keep the Paris objectives in play. But not everybody agrees. For Respondent 27 the CCC judgement has “almost no scientific integrity”, although it is “politically astute”. For many respondents it is evident that the mismatch in long-term objectives will have to be remedied at some point, as the UK has signed up to the Paris objectives (Respondents 15, 16, 17).

The 2050 objective could be adjusted. The Act allows for this to happen if there are significant developments in international law or policy (among other potential triggers). The Act sets out a process, which includes advice on any new target from the CCC. In contrast, a new 'net zero' target, that is, an objective to balance emissions into the atmosphere and their removal into carbon sinks, would probably require new legislation. One way of achieving this would be to complement the Act with a new long-term target for net zero emissions at a future date, as recommended by the CCC and based on the latest scientific findings.

Action to ensure that the UK's domestic climate legislation is more closely aligned with the Paris Agreement probably needs to take place by 2020 to coincide with the submission of revised 'nationally determined contributions' to the Agreement and the CCC's advice on the 6th carbon budget.

### Refined carbon accounting rules

The UK follows international carbon reporting practice to ensure its data are consistent with and comparable to those of other countries. Measurement methods are constantly refined to overcome inaccuracies, for example with respect to agricultural and land-use emissions. These are primarily technical matters. However, through the interviews and in informal conversations we have identified several more strategic areas where accounting rules should be reviewed.

“When the UK leaves the EU a case can be made for moving from net accounting to gross accounting rules”

The first area concerns the treatment of emissions trading within the EU emissions trading system (ETS). Installations covered by the EU ETS, power stations and industrial plants, are free to buy and sell EU Allowances across the EU without limits. The current accounting practice is that actual (gross) emissions are adjusted for any cross-border trades. What enters the carbon budgets is the UK's net trading position. In practice, this means that the traded part of the carbon budgets (the emissions covered by the EU ETS) corresponds exactly to the UK's allocated share of EU Allowances. This arrangement affords the UK extra flexibility, as ETS trading can be used to meet carbon budgets. However, the net emission rule is also a source of confusion and can confound experts, even (as noted by Respondent 9, an un-perplexed expert). It further means that important developments, such as the progress made in decarbonising electricity generation, are not directly reflected in the budgets.

Therefore, when the UK leaves the European Union, a case can be made for moving from net accounting to gross accounting: that is, for expressing carbon budgets in terms of actual domestic emissions. The result would be tighter carbon budgets, since gross emissions are expected to be lower than the UK's share of EU Allowances.

A second area of accounting reform concerns international aviation and shipping. Few respondents picked up on this point, but it is one of the few instances where a recommendation by the Committee on Climate Change has been ignored. The clear ambition of the Climate Change Act is to cover all emissions from all sectors. However, international aviation and shipping were excluded initially, as there was concern about the ability to measure these emissions accurately. In its 5th carbon budget advice the CCC recommended that the time had come to include international shipping (but not yet aviation) emissions in the budget (CCC, 2015). This advice was not followed. Including international aviation and shipping would result in larger carbon budgets, to reflect the extra emissions, but the effort required in the other sectors would remain the same. The existing budgets already factor in the headroom required for international aviation and shipping.

The third area of reform concerns consumption emissions. The international convention is to assign emissions to the country in which they occur, in a practice known as measuring production emissions.

Production emissions are distinct from consumption emissions, which measure the amount of carbon embedded in the goods and services UK citizens consume. As a heavily service-based economy, the UK is a substantial net importer of embedded emissions, so there is a substantial discrepancy between production and consumption emissions. While the former have fallen, the latter have continued to rise.

There is little appetite to move from production to consumption accounting. It would go against international reporting conventions, which focus on production emissions. It would raise questions about accuracy, since it is hard to measure precisely the amount of carbon embedded in imported goods. And it would complicate the task of delivering the budgets, since most attempts to reduce imported emissions require controversial trade measures such as border tax adjustments. However, there is a case for complementing the regular, statutory production emission accounts with a periodic assessment of consumption emissions (highlighted by Respondent 31, for instance). The CCC has already started doing this (CCC, 2013).

### **A statutory response time for carbon plans**

A striking feature of the Act is the clear timetable it mandates for key milestones and processes. There are specific dates, for example, for setting and agreeing the carbon budgets, for the annual progress reports and for the Climate Change Risk Assessments.

**“A striking feature of the Act is the clear timetable it mandates for key milestones and processes”**

However, there is one important exception. Under the Act, the government must respond to the passage of a carbon budget by presenting to Parliament a strategy for meeting that budget. On this, no specific deadline is set. The plan may be produced ‘as soon as is reasonably practicable’.

For some respondents, this formulation is unnecessarily vague and allows the government to delay its delivery strategy. The specific concern is the implementation strategy for the 5th carbon budget, which took 15 months to produce (e.g. Respondent 8). In contrast, the carbon plan that followed the passage of the 1st to 3rd carbon budgets was issued within two months. A future revision of the Act should introduce a specific timeframe for the production of implementation strategies that would prevent the loss of momentum that was witnessed after the 5th carbon budget was passed.

### **Financial independence for the Committee on Climate Change**

The independence and objectivity of the Committee on Climate Change are widely praised and seen as key to the success of the Climate Change Act. Yet the CCC has one potential Achilles heel, according to Respondent 10: its lack of financial independence. The CCC is classified as a non-departmental public body, which means the financial resources at its disposal are determined by the same government the CCC is tasked to scrutinise. It is easy to imagine a scenario in which a government unhappy with an overly critical CCC responds by cutting its budgets.

So far this has not happened and no other respondents raised it as an urgent concern. The CCC assumed its share of budget cuts during the period of fiscal austerity that followed the 2008 financial crisis. The cuts were in line with those suffered by the CCC’s host departments – DECC in the case of mitigation and Defra for adaptation – and they did not impinge on its ability to carry out its statutory duties. Indeed, the ability of the CCC to function as envisaged under the Act was a principle shared by all parties in the budget negotiations. Nevertheless, the CCC’s lack of budgetary independence is a weakness of the Act. Financial autonomy from the government is a key determinant of an institution’s de facto independence and good practice among regulatory agencies (Gilardi, 2009; OECD, 2017). Respondent 10 makes the case for “a mechanism outside government” to determine what the CCC’s financial settlement should be.

## Clearer criteria for assessing compliance

The main lever to ensure the government's adherence to the Act – other than political embarrassment – is the threat of a judicial review. As is the case with most UK laws, there are no direct provisions in the Act for penalties in case of non-compliance. The absence of such a “penalty regime” (Respondent 4) is seen as a weakness of the Act. The prospect of a judicial review, in contrast, is real and taken seriously. As one NGO respondent noted, “We used to threaten to judicial-review them the whole time and that really alarmed civil servants” (Respondent 2). According to the same respondent, three or four potential judicial reviews were drafted in the past 10 years.

However, while the threat of a judicial review is keeping the pressure on government, NGOs have realised that mounting a successful court case would be hard (Respondents 2, 30) and potentially expensive. This is in part because the Act does not encourage the judiciary to look at the UK's policy choices and evaluate whether they are sufficiently ambitious. Not everybody sees this as a problem (e.g. Respondent 30), and indeed it is possible that the Act will soon be tested in court. Respondent 11 believes firmly that the government will be taken to court in the coming years. A group called Plan B has recently applied to court for permission to seek a judicial review of the UK's failure to bring its 2050 target in line with the Paris Agreement.

“While the threat of a judicial review is keeping the pressure on government, NGOs have realised that mounting a successful court case would be hard”

In other jurisdictions it is common to build into legislation clear legal criteria and remedies, which guide the judiciary and make the prospects for judicial review more predictable and the outcomes more tangible (Prue Taylor, personal communications; see also Feldman, 2015 for a broader discussion). How such provisions would look and how they might work in a UK context is an issue that could be explored further.

## Proactive communication

The Climate Change Act is a law devised by policy experts for policy experts. It does not contain any provisions on broader communication, and it pays scant, if any, attention to communication with the wider public. Tellingly, no government department has been given formal responsibility by the Act for communicating climate change (Ward, 2015).

The Act is not unusual in this respect. Most climate change laws are primarily technical in nature. But it is a potentially important omission. It is worth remembering that the Act grew from a broad civil society movement that leveraged and was leveraged by the political leaders at the time. The role of civil society in implementing the Act is thus essential. Behavioural research has shown that the careful communication of climate policy is essential to make it publicly acceptable (Carattini et al., 2017).

Better communication may be particularly important in the case in the UK, which is home to a small but highly visible group of climate sceptics and where large swathes of the press remain ambivalent about climate change. Provisions for a more proactive approach to communication may therefore be a worthwhile reform, should the Act be revised.

## 3.2 The political challenges

Aside from the question of whether the Climate Change Act needs to be revised, there is the political task of making the Act work and deliver on its objectives. Most respondents expect the next 10 years to be more demanding for UK climate policy than the past 10. The pace of emissions reductions will

have to accelerate significantly and the attention will shift to sectors like transport, land use and heat, where emissions remain stubbornly high. Climate change objectives will have to compete (and combine) with other policy priorities, such as Britain's industrial strategy and its future outside the European Union.

We identify three important challenges for policymakers that follow directly from the interviews we conducted.

### **Reinvigorating the climate consensus**

A good framework law does not guarantee automatic policy delivery. Climate change action is driven by a shared understanding of its importance, and maintaining this consensus requires strong political leadership. The political consensus for climate action in the UK is still strong, but there is a sense it has weakened in the decade since the Act was passed (Lockwood, 2013; Carter, 2014; Gillard, 2016). A key challenge for the next decade will be to reinvigorate the climate consensus in the country. Unless this happens, there is a concern that implementation of the Act could fail (ClientEarth, 2016).

**“A key challenge for the next decade will be to reinvigorate the climate consensus in the country”**

This is a process that must start with the personal commitment of political leaders. As past episodes have shown, one bad appointment to a key position can be enough to slow down progress (see section 2.2). The political consensus then has to be extended to stakeholders and the electorate. The instigation of the Act 10 years ago demonstrates how grassroots pressure can galvanise political processes, but the reverse dynamics are also important.

Politicians have to take the argument to the public more assertively than they have in the past. One seasoned politician (Respondent 24) bemoaned the fact that climate change did not feature in the election campaigns of 2010, 2015 or 2017 (see Figure 2.2). It may have reflected a strong consensus, but it also meant the issue was not debated. The mandate for climate action was not fought for and renewed through the democratic process. The absence of climate change from the wider national political conversation is, from that perspective, disappointing (as expressed by Respondent 19, for example).

### **Closing the policy gap beyond the mid-2020s**

The UK is currently not on track to meet its statutory carbon targets for the mid-2020s and early 2030s (4th and 5th carbon budgets). This is manifest both from the analysis of the Committee on Climate Change (CCC, 2018) and the government's own projections (BEIS, 2018a). The growing gap was identified as a key concern particularly by respondents from environmental NGOs, academics and respondents associated with the CCC.

The government argues that over-performance under carbon budgets 1 to 3 can compensate for the deficit in budgets 4 and 5. The Act allows the possibility of “banking” over-delivery from one budget period to the next, but only after seeking advice from the CCC. The CCC has made it clear that it is unlikely to recommend such a course of action. It would not represent a cost-effective path to meet the 2050 target and may put future emission reduction progress at risk.

Encouragingly, the government is formulating its future climate change strategy in terms of clean growth (BEIS 2017). Recognising and pursuing the economic opportunities that arise from the global low-carbon transition is the only way to accelerate the pace of emission reduction. Nevertheless, the policy framework to deliver future carbon budgets needs to be strengthened.

While the UK has a leading legislative framework in the Climate Change Act, it is not necessarily a leader in policy delivery. The UK is behind countries like Norway on measures to decarbonise surface transport. Policymakers could learn from British Columbia on how to implement a successful carbon tax beyond electricity generation and from France on how to report carbon risks in the financial sector. South Korea offers lessons on promoting green growth. Successful examples of energy efficiency, renewable heat and land use interventions are harder to pinpoint but these areas will be crucial over the coming decade. The UK government's ability and willingness to close the gap between targets and delivery is perhaps the most tangible test of its commitment to climate change (CCC, 2018).

### **A strong, trusted and independent Committee on Climate Change**

The Committee on Climate Change is the fulcrum of the UK climate change architecture. The legislative provisions on long-term targets, carbon budgets and adaptation provide statutory processes and guidelines, but it is the CCC that embodies the spirit of the Climate Change Act and monitors adherence to its objectives on an ongoing basis. A strong, trusted and independent CCC will be essential for the successful implementation of the Act over the next decade.

The CCC has, for a public body, enjoyed unprecedented stability. It has had just two chairs in 10 years. The secretariat is highly experienced, with some core members already past their 10-year anniversary. The majority of the inaugural members who were appointed in 2008 were still there to advise on the 5th carbon budget in 2016.

But in 2016 a process of renewal started. The chair and vice chair provide continuity but around them the team is changing, including with a new chief executive officer. This renewal is welcome and perhaps overdue. It provides opportunities to refresh the committee and bring in new skills. But it needs to be handled thoughtfully and with care. The stature and independence of the CCC has to be nurtured and supported in the same way as other key independent institutions are, for example those that ensure macroeconomic stability. The delivery of the UK's climate objectives depends on it.



## References

- Adaptation Sub-Committee [ASC] (2015) *Progress in preparing for climate change*. 2015 Report to Parliament. London: Adaptation Sub-Committee
- ASC (2010) *How well prepared is the UK for climate change?* London: Adaptation Sub-Committee
- Averchenkova, A, Fankhauser S and Nachmany M (eds) (2017) *Trends in Climate Change Legislation*. Cheltenham: Edward Elgar
- Barro RJ, Gordon DB (1983) Rules, discretion and reputation in a model of monetary policy. *Journal of Monetary Economics* 12: 101-121
- Department for Business, Energy & Industrial Strategy [BEIS] (2018a) *Updated Energy and Emissions Projections 2017*. London: BEIS
- BEIS (2018b) *Final UK greenhouse gas emissions national statistics: 1990–2016*. London: BEIS
- BEIS (2017) *The Clean Growth Strategy*. London: BEIS
- Bowen A, Rydge J (2011) *Climate-change policy in the United Kingdom*. OECD Economic Department Working Paper 886. Paris: Organization for Economic Co-operation and Development
- Carattini S, Carvalho M, Fankhauser S (2017) *How to make carbon taxes more acceptable*. Policy Brief. London: Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science
- Carter N (2014) The Politics of Climate Change in the UK. *Wiley Interdisciplinary Reviews: Climate Change* 5 (3): 423–33
- Carter N, Jacobs M (2014) Explaining Radical Policy Change: The Case of Climate Change and Energy Policy Under the British Labour Government 2006–10. *Public Administration* 92 (1): 125–41
- Committee on Climate Change [CCC] (2018) *An independent assessment of the UK's Clean Growth Strategy*. London: CCC
- CCC (2017a) *2017 Report to parliament – Meeting carbon budgets: Closing the policy gap*. London: CCC
- CCC (2017b) *Annual report and accounts. 1 April 2016 to 31 March 2017*. London: CCC
- CCC (2016) *The compatibility of onshore petroleum with meeting the UK's carbon budgets*. London: CCC
- CCC (2015) *The Fifth carbon budget. The next step towards a low-carbon economy*. London: CCC
- CCC (2013) *Reducing the UK's carbon footprint and managing competitiveness risks*. London: CCC
- CCC (2009a) *Meeting carbon budgets – the need for a step change. Progress report to Parliament*. London: CCC
- CCC (2009b) *Meeting the UK aviation target – options for reducing emissions to 2050*. London: CCC
- CCC (2008) *Building a low-carbon economy. The UK's contribution to tackling climate change*. London: CCC
- Clayton H, Pidgeon N, Whitby M (2006) *All Party Parliamentary Climate Change Group. Is a cross-party consensus on climate change possible – or desirable?* London: All-Party Parliamentary Climate Change Group
- ClientEarth (2016) *Mind the Gap. Reviewing the Climate Change Act*. London: ClientEarth
- ClientEarth (2009) *The UK Climate Change Act 2008 – Lessons for national climate laws*. London: ClientEarth
- Department of Energy and Climate Change [DECC] (2009) *The UK Low-Carbon Transition Plan. National strategy for climate and energy*. London: DECC
- Department for the Environment, Food and Rural Affairs [Defra] (2018) *A Green Future: Our 25 Year plan to improve the environment*. London: Defra
- Defra (2013) *The National Adaptation Programme. Making the Country Resilient to a Changing Climate*. London: Defra
- Defra (2012) *UK Climate Change Risk Assessment. Government Report*. London: Defra
- Ecologic (2017) *'Paris compatible' governance: long-term policy frameworks to drive transformational change*. Berlin: Ecologic Institute
- Fankhauser S (2013) A Practitioner's guide to a low-carbon economy: Lessons from the UK. *Climate Policy* 13(3): 345-362
- Fankhauser S, Gennaioli C, Collins M (2015) Do international factors influence the passage of climate change legislation? *Climate Policy* 16(3): 318-331
- Feldman D (2015) Legislation Which Bears No Law. *Statute Law Review* 37(3): 212-224
- Galarraga I, Sainz de Murieta E, França J (2017) Climate policy at the sub-national level. In Averchenkova A, Fankhauser S, Nachmany M (eds.) *Trends in Climate Change Legislation*. Cheltenham: Edward Elgar

- Gilardi F (2009) *Delegation in the regulatory state: independent regulatory agencies in Western Europe*. Cheltenham: Edward Elgar
- Gillard R (2016) Unravelling the United Kingdom's climate policy consensus: The power of ideas, discourse and institutions. *Global Environmental Change* 40: 26–36
- Intergovernmental Panel on Climate Change [IPCC] (2007) *4th Assessment Report*. Geneva: IPCC
- Jude SR, Drew GH, Pollard SJ, Rocks SA, Jenkinson K, Lamb R (2017) Delivering organisational adaptation through legislative mechanisms: evidence from the adaptation reporting power (climate change act 2008). *Science of the Total Environment*, 574: 858-871
- Kydland FE, Prescott EC (1977) Rules rather than discretion: the inconsistency of optimal plans, *Journal of Political Economy*, 85: 473-491
- Lockwood M (2013) The Political Sustainability of Climate Policy: The Case of the UK Climate Change Act. *Global Environmental Change* 23 (5): 1339–48
- Lorenzoni I, Benson D (2014) Radical institutional change in environmental governance: Explaining the origins of the UK Climate Change Act 2008 through discursive and streams perspectives. *Global Environmental Change* 29: 10-21
- Millar RJ, Fuglestedt JS, Friedlingstein P, Rogelj J, Grubb MJ, Matthews HD, Skeie RB, Forster PM, Frame DJ, Allen MR (2017) Emission budgets and pathways consistent with limiting warming to 1.5 C. *Nature Geoscience* 10(10): 741
- Organization for Economic Co-operation and Development [OECD] (2017) *Creating a culture of independence. Practical guidance against undue influence*. Paris: OECD
- Rogelj J, Den Elzen M, Höhne N, Fransen T, Fekete H, Winkler H, Schaeffer R, Sha F, Riahi K, Meinshausen M (2016) Paris Agreement climate proposals need a boost to keep warming well below 2°C. *Nature* 534(7609): 631-639
- Rutter J, Marshall E, Simms S (2012) *The S-Factor. Lessons from IFG's policy success reunions*. London: Institute for Government
- Stern N (2007) *The Economics of Climate Change. The Stern Review*. Cambridge: Cambridge University Press.
- Tosun J, Lang A (2017) Policy integration: mapping the different concepts. *Policy Studies*: 1-18
- The Telegraph (2011) Conservative Party Conference 2011: George Osborne speech in full. *The Telegraph*, 3 October
- Ward RE (2015) UK government failing to lead on climate change communication. *Huffington Post*, 22 October
- World Bank (2017) *State and trends in carbon pricing 2017*. Washington, DC: The World Bank Group

## Appendix: Interview respondents

Most of our information was gained through a series of 33 semi-structured interviews with active or former civil servants, special advisers, government ministers, shadow ministers, backbench Members of Parliament, policy commentators and private sector representatives from both carbon-intensive and low-carbon industries (see Table A1 below). We have complemented their responses with insights from the relevant literature and our own experiences in engaging with UK climate policy. We further benefited from several more informal conversations with UK policy experts and experts in climate change governance.

In the course of the past 10 years many respondents held more than one position, enabling them to comment on the Act from several perspectives. Politicians moved in and out of government. Civil servants moved into the private sector or joined the Committee on Climate Change. A few went the other way. Some respondents were engaged with the Act for only a short period of time, others held relevant positions for the full 10 years or more. In total the 33 respondents offer 51 different perspectives (see Table A1, next page).

Respondents were selected so that all relevant perspectives could be represented in an even manner. We interviewed approximately equal numbers of politicians, government officials/CCC members, private sector representatives and 'other' stakeholders. Within each of these categories we ensured a balance between different political parties, economic sectors and points of view.

We were interested in people who were engaged in the debate hands-on, on mitigation or adaptation or sometimes both. We made sure the entire 10-year period since 2008 was covered evenly. The overwhelming majority of respondents, including many representatives from high-carbon sectors, were broadly supportive of climate change action. However, we also interviewed two people who could be described as climate sceptics, several who thought the UK may be moving too fast, and at least one person who did not think the Act goes far enough.

Only six of the 33 respondents were women (18 per cent). Women played an important part in devising and implementing the Act, even though the UK climate change landscape is largely dominated by men. Unfortunately, several planned interviews with key female experts did not materialise.

**Table A1: Perspectives represented by the 33 respondents**

Perspective	No. of respondents
<b>Politicians, by party:</b>	<b>12</b>
Conservative	4
Labour	4
Liberal Democrat	2
Cross-bench peers	2
<b>by function:</b>	
Parliamentarians	6
Minister/secretary of state	1
Special advisers to ministers	5
<b>Government officials, including:</b>	<b>10</b>
Department for Environment, Food and Rural Affairs	4
Department of Energy and Climate Change/Department of Business, Energy & Industrial Strategy	3
Other	3
<b>Committee on Climate Change, including:</b>	<b>5</b>
Members	3
Secretariat	2
<b>Private sector, including:</b>	<b>13</b>
High-carbon/energy-intensive	5
Low-carbon (e.g. renewables)	3
Other (e.g. services, agriculture)	5
<b>Other stakeholders, including:</b>	<b>11</b>
NGOs/think tanks	6
Academics	4
Journalists	1