

Stepping stones to Paris and beyond
Climate change, progress, and predictability

July 2017



Parliamentary Commissioner
for the **Environment**

Te Kaitiaki Taiao a Te Whare Pāremata

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1

Introduction

“We need our reason to teach us today that we are not, that we must not try to be, the lords of all we survey. We are not the lords, we are the Lord’s creatures, the trustees of this planet, charged today with preserving life itself – preserving life with all its mystery and all its wonder.”

Margaret Thatcher speaking to the United Nations General Assembly in 1989

It is fitting that my last report as Commissioner is concerned with what is by far the most serious environmental issue of all – climate change.

We live on a planet separated from deep dark space by a layer of gases – a layer of gases so thin that if the Earth is compared with an apple, the atmosphere would be about as thick as its skin. In 1895, the Swedish chemist Svante Arrhenius predicted that burning coal and increasing the carbon dioxide in this thin layer of gases would heat the planet. Doubtless influenced by the Swedish weather, he thought that a warming planet was nothing to worry about. Today we know differently.

International climate change talks had been ongoing for decades, but the conference in Paris at the end of 2015 was a major turning point. Nearly two hundred countries acknowledged the need to take collective action to reduce greenhouse gases. At Paris, debating about what is fair changed to each country saying what it could do.

After the Paris conference, the newly appointed Climate Change Minister, Hon Paula Bennett, wasted no time in travelling to New York to sign the Paris Agreement, committing New Zealand to a 2030 greenhouse gas target. Since then, she has tightened some features of the Emissions Trading Scheme, set up working groups, and together with the Ministers of Finance and Economic Development initiated an inquiry by the Productivity Commission.

The Minister often speaks of the need to bend the greenhouse gas curve downward, of working to put in place a plan for dealing with climate change, and of providing predictability for business.

Many have criticised our 2030 target as being not ambitious enough. For me, the bigger issue is how we chart a pathway to that target and beyond. How do we change the direction in which we are travelling and make large and lasting reductions in our greenhouse gas emissions?

The United Kingdom (UK) began to chart such a pathway in 2008 when it passed the Climate Change Act with overwhelming cross-party support in the House of Commons. One of the key features of this Act is that it puts emissions targets in legislation and sets up a process for reaching them. One of these features is the creation of stepping stones called carbon budgets.

At least nine other countries have passed similar climate change laws, as have a number of states in the United States, Canada, and Australia.¹

Between 1990 and 2015, New Zealand's net emissions have risen by 64%, while the UK's net emissions have fallen by 38%. Not all of this difference is due to differences in legislation and policies. Nevertheless, the UK's greenhouse gas curve has bent downward, whereas ours has not.

The question addressed in this report is whether New Zealand should follow the UK and enact a similar climate change law.

My answer is yes, but I would not want such a law to scrape through in Parliament. Support across political parties is vital. Climate change is the ultimate intergenerational issue, and governments change.

For the private sector, climate change is increasingly seen as a material financial risk. Companies last longer than governments. An apolitical long-term approach built on objective analysis will provide the measure of predictability that many New Zealand businesses are seeking. This would help companies to take up the opportunities and manage the risks that will arise in a low-carbon world.

In the UK, the creation of carbon budgets provides businesses with adequate lead times for making investment decisions. Consequently, climate change policy sits squarely in economic policy.

It is not surprising that support for a climate change law modelled after the UK Climate Change Act is growing, particularly from young people.

In 2014, Generation Zero – a youth-led organisation in New Zealand – issued its 'Big Ask', calling for a new climate change law that would "*hold the Government to its promises to reduce carbon emissions*".² In April this year, Generation Zero proposed an outline for a 'Zero Carbon Act' based on the UK model.

On Facebook, the Young Nats have now posted:

"The Young Nats are proud to support the Zero Carbon Act: Our membership overwhelmingly supports the 'apolitical approach' to climate change solutions being advocated by Generation Zero. SHARE if you agree that climate change shouldn't be a political football."

As Tony Blair said in a speech quoted later in this report, climate change is an issue on which parents should listen to their children.

A long-term intergenerational approach is innate to tangata whenua. Kaumātua often make decisions based on a "*mokopuna's mokopuna*" time scale – thinking of the impact on their grandchildren's grandchildren.³

The interest in a UK-style Climate Change Act in New Zealand is not confined to young people. This investigation has been prompted in part by the visit earlier this year of Lord Deben, Chair of the Committee on Climate Change – an independent committee created under the UK law. Lord Deben served in the cabinets of Margaret Thatcher and John Major, and is certainly not young. But he travels around the world arguing persuasively for dealing with climate change in a way that is largely apolitical and therefore stable over time.

Lord Deben is also involved in Globe International – an organisation that brings together parliamentarians from more than 50 countries to show leadership on climate change. A New Zealand chapter has now been established and has already commissioned a report that was presented to the House in April this year.

Climate change transcends governments and our approach must do the same. This is the focus of what follows.



Source: Generation Zero

Figure 1.1 Generation Zero launching their Zero Carbon Act outside Parliament in April. *“Climate change is the challenge of our generation, and young people are the inheritors of humanity’s response to climate change.”⁴*



Source: Blue Greens

Figure 1.2 Lord Deben addressing the BlueGreens Forum in February this year. Lord Deben chairs the UK Committee on Climate Change.

1.1 What comes next

The remainder of this report is structured as follows.

The second chapter is a high level description of climate change policies and legislation in New Zealand. The focus here, and in the report as a whole, is on the reduction of greenhouse gas emissions (mitigation), rather than adaptation to a changing climate.

The third chapter is a description of the different approach that has been taken in the UK as a result of the passage of the Climate Change Act in 2008. During this investigation, staff from my office spent several days in London meeting with people from the UK Committee on Climate Change, the Bank of England, a major insurance company, key government departments, and others. This was invaluable in understanding how the UK approach to climate change works in practice.

The fourth chapter is a comparison of the New Zealand and UK approaches to climate change. It reveals that the main features of the UK approach are largely absent in New Zealand. The very different trajectories of greenhouse gases in the two countries are shown, and some of the reasons for the difference are discussed.

The fifth chapter transplants the UK approach to climate change into a New Zealand setting. For instance, what kind of institution might be created to provide objective advice on carbon budgets and review progress towards them?

The sixth chapter contains five recommendations, covering how the main aspects of the UK legislation could be captured in a New Zealand law.

Finally, I wish to acknowledge the British High Commission, who assisted in setting up meetings in the UK.

2

How is NZ dealing with climate change?

In 1993, New Zealand signed up to the first international agreement on climate change – the ponderously named United Nations Framework Convention on Climate Change (UNFCCC). Under this agreement, signatory countries were required to record and report on greenhouse gases, and on actions taken to reduce them.

Nine years later, the passage of the Climate Change Response Act enabled New Zealand to ratify the Kyoto Protocol, thus committing to its first international greenhouse gas reduction target.

In 2008, the Act was amended to establish an emissions trading scheme – the Government's main policy for making a transition to a low-carbon economy.

2.1 Targets

Over recent years, New Zealand has set a succession of greenhouse gas targets. Three have been set following United Nations conferences – a 2012 target at Kyoto in 1997, a 2020 target at Copenhagen in 2009, and a 2030 target at Paris in 2015. A fourth target – the '50 by 50' target – was gazetted by the Government in 2011.

These targets are expressed in terms of *net* emissions relative to *gross* emissions in a baseline year.

Net emissions are gross emissions minus the carbon dioxide taken out of the atmosphere by trees each year.

In Table 2.1, 'net target emissions' are net emissions that comply with the accounting guidelines of the relevant target period.

Table 2.1 Greenhouse gas reduction targets set by New Zealand governments.⁵

	Target year	Target	
		As expressed	Net target emissions (million tonnes CO ₂ -eq per year)
Kyoto	2012	Net emissions equal to 1990 gross emissions	66
Copenhagen	2020	Net emissions 5% below 1990 gross emissions	64
Paris	2030	Net emissions 30% below 2005 gross emissions	59
New Zealand '50 by 50'	2050	Net emissions 50% below 1990 gross emissions	32

Data: NZ Greenhouse Gas Inventory

2.2 Climate policy

Currently, the primary means for reducing greenhouse gases in New Zealand is the Emissions Trading Scheme (ETS).

Both emissions trading schemes and carbon taxes are known as economic instruments because they involve putting a price on carbon. (This is shorthand for charging for the right to emit carbon dioxide.) As the price of carbon rises, reducing emissions becomes more economically attractive.

New Zealand's ETS was originally intended to be 'all sectors and all gases'. It is the only emissions trading scheme in the world that includes forestry. The biological greenhouse gases from agriculture – methane and nitrous oxide – have not yet been brought into the scheme.

An important difference between New Zealand's ETS and those in other countries is that no limit (cap) is put on the number of carbon units.

Also, the operation of the New Zealand scheme has allowed unrestricted purchase of carbon units from other countries.⁶ Looking ahead, there is no guarantee that New Zealand will continue to have access to other carbon markets. Nor is it certain that units that have been 'banked' will be considered valid for counting towards achieving the Paris target in 2030.

Outside the ETS, there are some other initiatives aimed at reducing greenhouse gases.

The Ministry for the Environment leads the development of climate policy, but a number of other government agencies are involved in specific policies and programmes. For instance, the Ministry of Transport encourages the purchase of electric cars through initiatives such as exemption from road user charges.

Since the Paris conference, new developments by the Government include:

- the formation of working groups on forestry, agriculture and adapting to the impacts of climate change
- an inquiry by the Productivity Commission into the opportunities and challenges of making a transition to a low-emissions economy
- funding for quantitative analysis of policy options to meet the Paris target
- the release of the 2017–2022 New Zealand Energy Efficiency and Conservation Strategy.⁷

Increasingly the private sector is starting to act. For instance, more than thirty of New Zealand's largest companies have committed to at least 30% of their corporate car fleets being electric by 2019. Z Energy has built a plant in Auckland that produces biodiesel from tallow. Westpac is encouraging its customers to invest in clean technology. And DairyNZ and Fonterra recently released the first steps of a joint plan to help reduce emissions from dairy farms.⁸

The Guardians of New Zealand Superannuation have recently announced their intent to reduce the fund's exposure to fossil fuel reserves and carbon emissions.⁹

2.3 How is New Zealand doing?

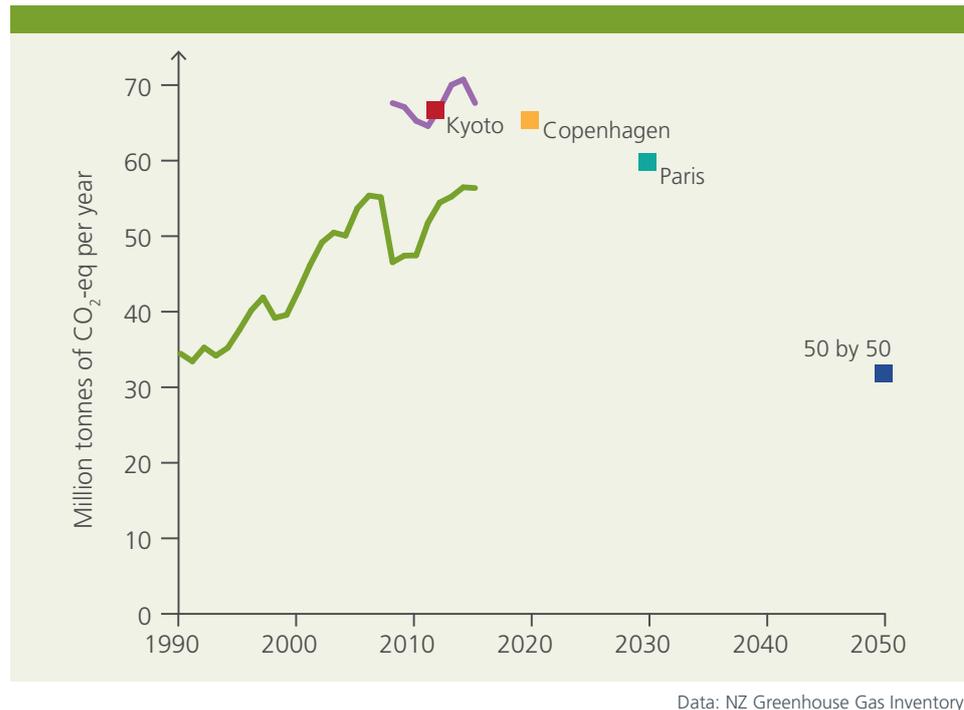


Figure 2.1 New Zealand’s actual net emissions of greenhouse gases from 1990 to 2015 are shown on the green line in this graph. The purple line shows the emissions between 2008 and 2015 based on the Kyoto accounting rules. Under those rules, some of the carbon dioxide removed from the atmosphere by trees cannot be counted towards targets.

New Zealand’s net greenhouse gas emissions from 1990 to 2015 (as recorded in the Greenhouse Gas Inventory) are shown in Figure 2.1. Since 1990, emissions have risen very significantly, but there has been considerable variation from year to year. Reasons for this include the Global Financial Crisis, lower cattle and sheep numbers during droughts, tree harvesting cycles, cold winters, and dry years.

The four emissions targets that New Zealand has committed to are also shown in Figure 2.1. The graph *appears* to indicate that New Zealand would meet its Paris target without reliance on offshore credits if net emissions levelled out. But it is not so simple.

First, when targets are set, they are accompanied by rules specifying how emissions are to be counted. The Kyoto Protocol set 1990 as the base year. Thus, under the Kyoto accounting rules, the carbon dioxide removed from the atmosphere by trees planted before 1990 cannot be counted because nothing additional has been done – the trees were already there. In Figure 2.1, trees planted before 1990 are the major reason for the difference between the green line and the purple line.

Second, in the 1990s, there was a spike in new forest planting. These trees, sometimes referred to as the ‘wall of wood’, will be harvested during the 2020s, and much of the carbon dioxide stored in the wood will begin to return to the atmosphere. This will make the Paris target much harder to achieve.¹⁰

Finally, there is no direct link between New Zealand climate policy and reaching the Paris target. There are no guarantees that the curve will begin to bend or that there will be access to international carbon credits.



Source: Parliamentary Commissioner for the Environment archives

Figure 2.2 An electric van making a delivery in Wellington. New World is one of the more than thirty companies committed to moving part of its fleet to electric. Electric cars hold great potential for reducing greenhouse gas emissions in New Zealand. Greenhouse gas emissions from road transport have increased by nearly 80% since 1990.¹¹

3.1 The genesis of the UK Climate Change Act

The way in which the UK has dealt with climate change is notable for the extraordinarily high level of cross-party support for the Climate Change Act in 2008. The Act passed in the House of Commons with 463 ayes and only 3 noes.

In large part, this can be attributed to the leadership of two Prime Ministers, one from the Conservative Party and one from the Labour Party.

In 1989, in a particularly eloquent and heartfelt speech to the United Nations General Assembly, Margaret Thatcher put climate change on the international agenda.

*“The most pressing task which faces us at the international level is to negotiate a framework convention on climate change – a sort of good conduct guide for all nations.”*¹²

In 2004, Tony Blair brought climate change to the top of the international political agenda at the G8 Summit in Gleneagles.

*“We have been warned. On most issues we ask children to listen to their parents. On climate change, it is parents who should listen to their children.”*¹³

Another factor was the release of the Stern review, *The Economics of Climate Change*, in 2006. Although aspects of this global benefit-cost analysis have been criticised by some economists, the Stern review put climate change into an economic frame, showing that there are costs to not acting as well as to acting.

When the UK Climate Change Act was passed in 2008, the Conservative Party spokesperson on Energy and Climate Change commented:

*“The Bill has attracted an unusual spirit of cross-party co-operation in both Houses ... the Bill must lay foundations that endure from one Parliament to the other and indeed, eventually, from one generation to another ... it is this generation that will be judged on what we did in response to the challenge of climate change.”*¹⁴

That cross-party cooperation is reflected in the law. The Act has been designed to provide for sustained action to reduce emissions that does not wax or wane with political will.



Source: Getty Images

Figure 3.1 As a chemist Margaret Thatcher readily understood the science of climate change and the need for urgent action.



Source: The Climate Group, flickr (CC BY-NC-SA)

Figure 3.2 After he was no longer Prime Minister, Tony Blair continued to work on climate change. He is shown here launching a report in Tokyo just before the G8 Summit in 2008.

3.2 Four key features of the UK Climate Change Act

The UK Climate Change Act contains four key features pertinent to the comparison of UK and New Zealand climate change policy and legislation in this report.

- Emissions targets in legislation
- Carbon budgets – the stepping stones to targets
- Policies set by Government to ensure carbon budgets are met
- An expert body to provide objective analysis and advice

Emissions targets in legislation

The Climate Change Act begins with the UK's target for 2050 – net greenhouse gas emissions in 2050 must be at least 80% lower than net emissions in 1990.

The Act also contains a second target for 2020 – the end of the second Kyoto period.¹⁵

Under sections 2 and 6, the Government can amend either of the targets if there are significant changes in either scientific knowledge or international law and policy.¹⁶

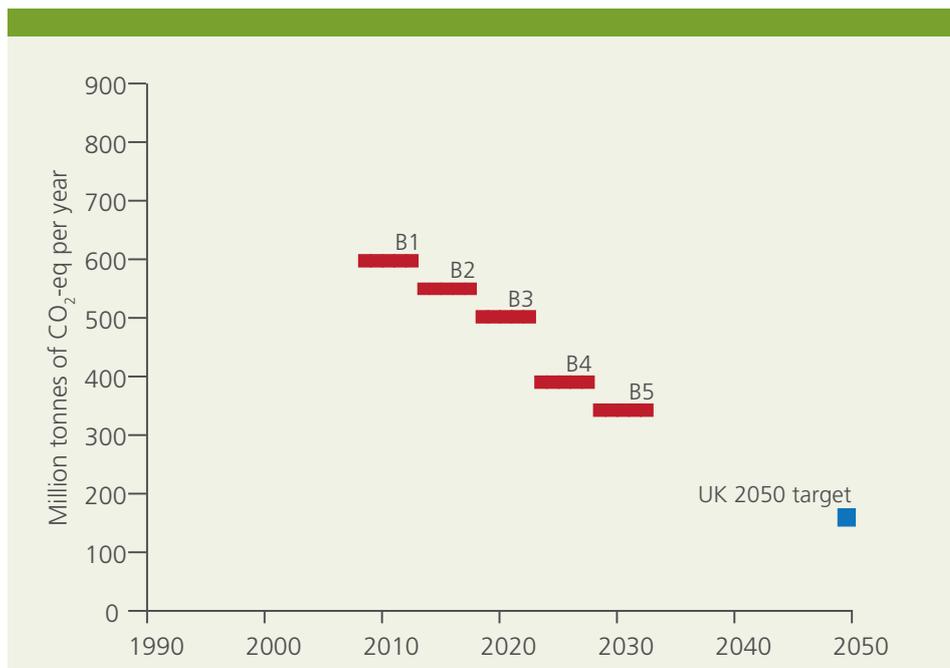
Carbon budgets as stepping stones to targets

Under sections 4 to 10 of the Act, UK governments must set out a series of carbon budgets that lay out a pathway to meeting the 2050 target.

A carbon budget is the total net amount of greenhouse gases that can be emitted over a five-year period. Setting budgets for five-year periods allows for some flexibility. Each budget is expressed in terms of millions of tonnes of CO₂-eq.

The first three budgets had to be set by 2009. These were for the periods 2008 to 2012, 2013 to 2017, and 2018 to 2022.

Subsequent budgets are to be set at least 12 years in advance. The fourth budget was set in 2011, and the fifth budget was set in 2016.



Data: UK Committee on Climate Change

Figure 3.3. The first five carbon budgets that have been set in the UK act as stepping stones taking emissions down towards the 2050 target.¹⁷

Policies set by Government to ensure carbon budgets are met

There are no policies in the Act itself. Rather, the Act requires the Government to develop proposals and policies that will enable emissions to be kept within carbon budgets.

Section 14 requires that a report setting out these proposals and policies be tabled in Parliament.

An expert body to provide objective analysis and advice

Section 32 of the Climate Change Act establishes an independent expert body – the Committee on Climate Change. The Committee’s functions are purely advisory – all actions are the prerogative of the Government.

The Committee is made up of a Chair and five to eight members. The current Committee includes people with expertise in economics, climate science, and technology. It is a committee of experts, not a committee of stakeholders. However, care is taken to ensure that, among the Committee members, there is deep understanding of buildings, transport, industry, electricity, agriculture, forestry, and so on.¹⁸

The Committee has two main functions.

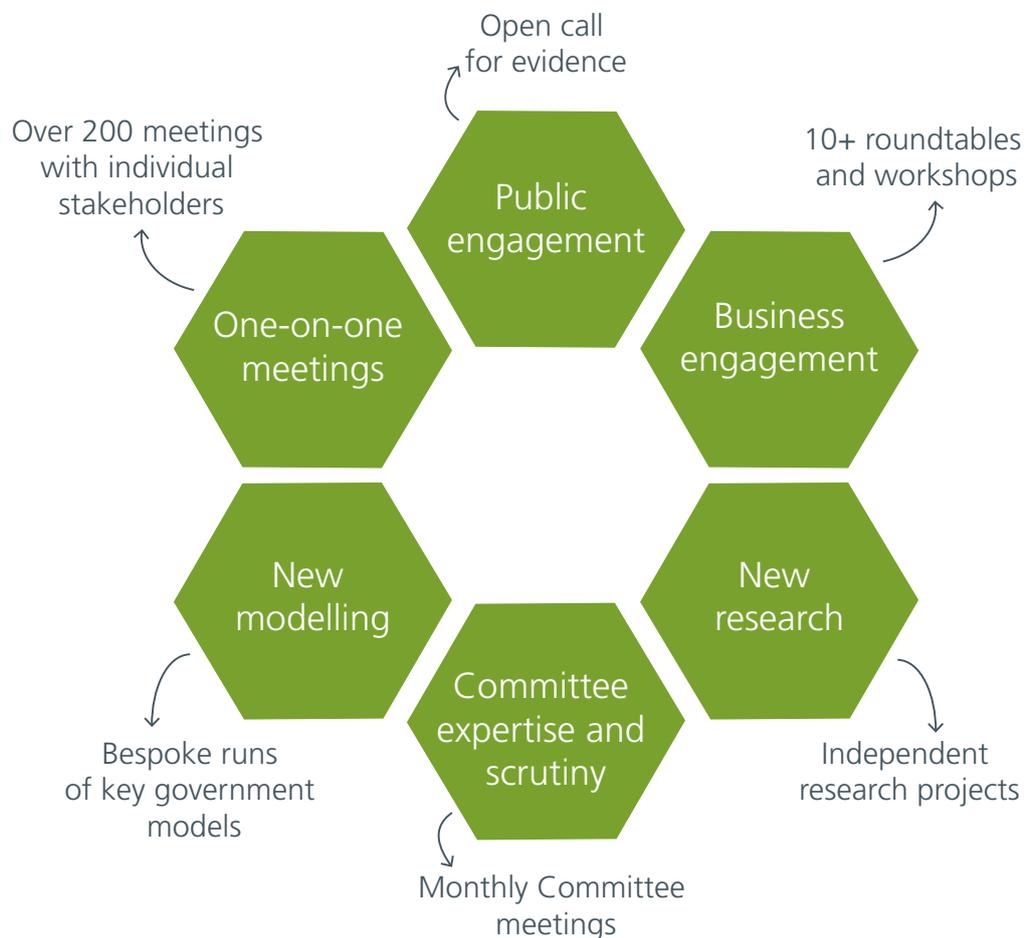
The first function is to provide advice on carbon budgets – on the level that a budget must be set at, the extent to which the budget should be met by purchasing international carbon credits, and the extent to which the budget should be met by sectors of the economy within carbon trading schemes.¹⁹

The second function is to report annually on progress towards meeting carbon budgets. These reports are laid before Parliament. While these progress reports do indicate areas where policies need to be developed or strengthened, they do not include specific policies. The Government is required to respond to the progress reports within a fixed period.

The Committee must also provide advice in response to particular requests. A recent example of such advice is a report on fracking.²⁰

The Committee is supported by a secretariat, currently with a staff of about 30 people, largely drawn from government agencies. Much of the work is highly technical – for instance, the preparation of scenarios to explore whether carbon budgets are achievable.²¹

A memorandum of understanding on sharing analysis and research has been set up between the Committee and relevant government departments.²² This enables the analysts in the secretariat to draw on the resources of the wider public sector.



Source: UK Committee on Climate Change (adapted)

Figure 3.4. The process for gathering and scrutinising evidence used by the Committee on Climate Change in preparing its advice on the fifth carbon budget.²³

One member of the Committee on Climate Change, Baroness Brown of Cambridge (Julia King), chairs a subcommittee that gives advice on adaptation to climate change (see Box 3.1).

Box 3.1 Adaptation to climate change in the UK Climate Change Act

The Climate Change Act requires the Government to periodically publish a report on the impact of climate change on the UK. These impact reports are assessments of the risks of both the current and the predicted impacts of climate change. To date, there have been two impact reports – one in 2012 and one in 2017.²⁴

The impact reports are prepared following advice from the Adaptation Subcommittee. The advice that informed the 2017 impact report covered risks in a number of areas including coastal flooding, health, water supply, soil, ecology, food production, and pests and disease.²⁵

After an impact report has been tabled in Parliament, the Government must prepare a programme for adaptation to climate change.²⁶

The Adaptation Subcommittee reports every year on how the current adaptation programme is being implemented.²⁷

The impacts of climate change are not just on the physical environment. In 2014, under a reporting power granted by the Act, the Government directed the Bank of England to report on the risk of climate change to the insurance industry.²⁸

Climate change is now increasingly viewed as a material financial risk. In a speech at Lloyds of London, the Governor of the Bank of England, Mark Carney, said:

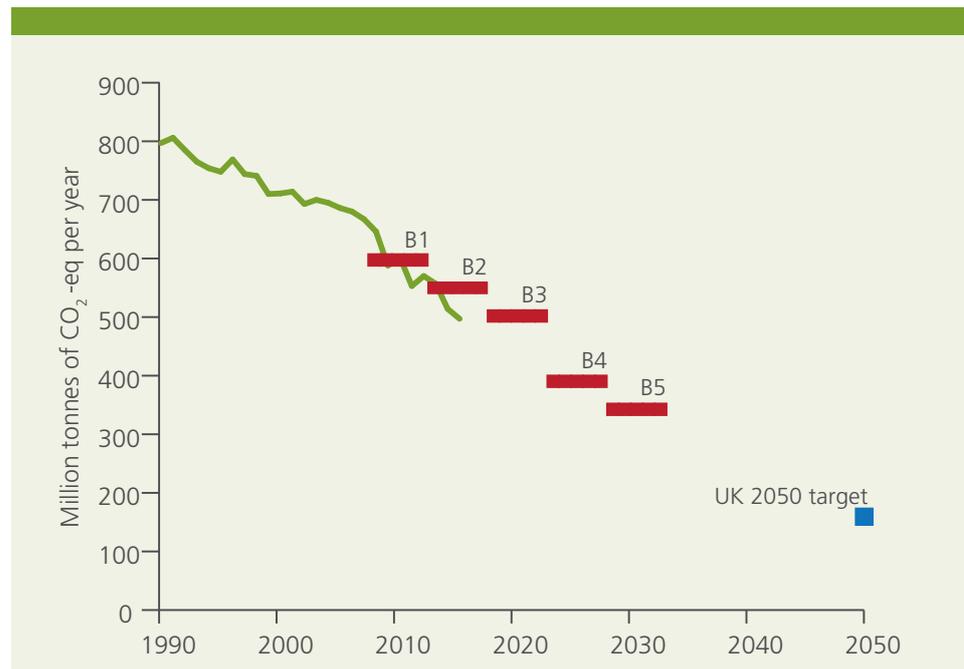
“...climate change will be felt beyond the traditional horizons of most actors – imposing a cost on future generations that the current generation has no direct incentive to fix.”²⁹

3.3 How is the UK doing?

Figure 3.5 shows the downward trajectory of greenhouse gas emissions in the UK since 1990.

Although greenhouse gas emissions in the UK were falling before the 2008 Climate Change Act, the setting of carbon budgets demonstrates a serious intent to continue this downward path.

The first two carbon budgets have been met, and the country is on track to meeting the third. But as discussed in the next chapter, meeting the fourth budget will really test the resolve of the UK.



Data: UK Greenhouse Gas Emissions National Statistics: 1990-2015

Figure 3.5. The United Kingdom's net emissions of greenhouse gases from 1990 to 2015. Five carbon budgets have now been set.

4

How does NZ compare with the UK?

There are three sections in this chapter.

In the first section, the four key features of the UK Climate Change Act are revisited, with the aim of seeing the extent to which they are reflected in New Zealand law and policy.

The second section begins with the great contrast between what has happened to emissions in the UK and what has happened to emissions in New Zealand. The UK has tracked downward and New Zealand has tracked upward.

In the third section, this contrast between what has happened to emissions in the two countries is explored. Intercountry comparisons are always fraught with 'apples and oranges', so how fair is the comparison? And is the difference in the greenhouse gas trajectories due to better law and policy in the UK?

4.1 The four key features

The first three key features of the UK Climate Change Act – emissions targets in legislation, setting carbon budgets, and the requirement for policy to be developed that meets the budgets – provide predictability and reduce the risk of abrupt transitions.

Ensuring a smooth transition to a low-carbon economy is not just the responsibility of the current Government, but also the Governments that succeed them into the future, whether they be blue, red, green, or any other colour.

The fourth key feature – the independent advisory body – adds expert evidence, and transparency.

Emissions targets in legislation

New Zealand has adopted four greenhouse gas targets over the last fifteen years – the 2012 Kyoto target, the 2020 Copenhagen target, the 2030 Paris target, and the 2050 '50 by 50' target.

The now historic Kyoto target was binding through international law, but the others are not. Nor have any been incorporated into domestic legislation.³⁰ In contrast, the UK 2050 target is the subject of the first section of the UK Climate Change Act.

Moreover, the UK 2050 target is expressed in 'net-net' terms with a base year of 1990 – the net emissions in 2050 are to be 80% below the net emissions in 1990. The New Zealand targets confusingly compare future net emissions with gross emissions in different base years.

When expressed in net-net terms, and with 1990 as a consistent base year, New Zealand's Paris target is 67% above 1990, and the 2050 target is 6% below 1990. Although these targets are not ambitious, given the increase in emissions since 1990, achieving them will not be 'business-as-usual'.

Carbon budgets as stepping stones to targets

Under the UK Climate Change Act, carbon budgets are to be set for five-year periods into the future. Each budget must be set well before it comes into effect.

A major reason for setting carbon budgets is to avoid the need for abrupt transitions. This is why assessing and modelling technology trends is vital.

In contrast to the UK, New Zealand has not yet set any carbon budgets, or any other kind of plan for reaching the targets. Setting some kind of declining cap on carbon credits in the ETS could be one approach, although the ETS is currently a cap-and-trade system without a cap.³¹

Policies set by Government to ensure carbon budgets are met

The UK Climate Change Act requires the Government to prepare carbon plans that lay out the policies and programmes expected to keep emissions within carbon budgets and on track to the 2050 target. If the country is not on track for meeting carbon budgets, then the Government must say why not and what they are going to do about it.

The carbon budgets are explicit about what is to be achieved domestically and what can be achieved by buying offshore carbon credits. They are also explicit about what the European Union ETS can be expected to deliver, thus showing how much must be dealt with through other mechanisms such as regulation. Both these dimensions of carbon budgets help to ‘tie down’ the carbon plans.

In New Zealand, the development of climate policy is distributed across different government agencies, and can be crowded out by other priorities.

Further, it is not shown how policies contribute to meeting targets. For instance, one of the priorities in the New Zealand Energy Efficiency and Conservation Strategy is that electric vehicles are to form 2% of the fleet by 2021. But how far will this go towards helping us achieve our Paris target?

Overall, there is no systematic quantification of reductions in greenhouse gases from climate change initiatives in New Zealand. A United Nations expert review has criticised New Zealand for this omission.³² The new funding for “*costed, tested and consulted policy options for reducing emissions domestically*” in the 2017 Budget should go some way to remedying this.

Expert body to provide objective analysis and advice

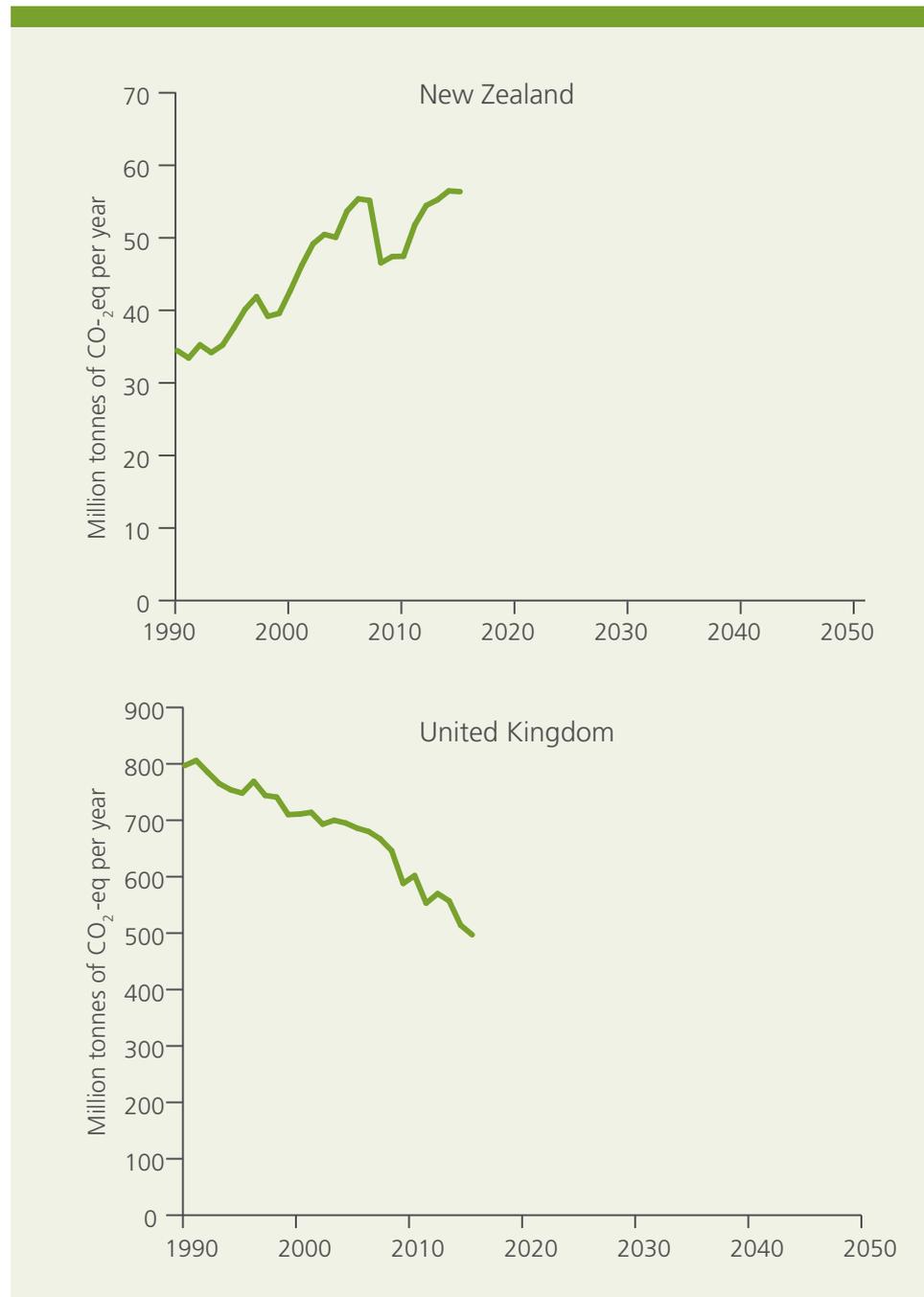
New Zealand does not have an independent advisory body of experts on climate change that is analogous to the UK Committee on Climate Change.

The Parliamentary Commissioner for the Environment can produce reports like this one, but is not a body of experts, and cannot focus only on climate change. Although the Productivity Commission is currently preparing a report on climate change, it exists to provide advice on economic productivity. Ministers have set up advisory groups on forestry, agriculture, and adaptation, but the members are a mix of officials and industry representatives.

4.2 Very different greenhouse gas trajectories

Figure 4.1 shows the very different trajectories of greenhouse gas emissions in New Zealand and the UK since 1990.

Over this period, New Zealand's net greenhouse gas emissions have **increased** by **64%**. This stands in stark contrast to the UK, where over the same period, net greenhouse gas emissions have **decreased** by **38%**.



Data: UK Greenhouse Gas Emissions National Statistics: 1990-2015 / NZ Greenhouse Gas Inventory

Figure 4.1. Net greenhouse gas emissions in CO₂-eq between 1990 and 2015 in New Zealand and in the United Kingdom.

4.3 Is the comparison fair?

On the surface, it appears that the UK's climate change legislation and policy has been vastly more effective than New Zealand's. But is this really the case? Are other factors at play?

New Zealand has had considerably faster population growth than the UK since 1990. This goes some way towards explaining the difference in total greenhouse gas emissions.³³

Another factor is the very different greenhouse gas profiles in the two countries, as shown in Figure 4.2.

About half of New Zealand's greenhouse gas emissions are the biological gases from agriculture – methane and nitrous oxide – whereas in the UK, these emissions are only 8% of the total.

Since 1990, these agricultural emissions have increased by about 15% in New Zealand, but improvements in productivity have decreased the intensity of these emissions by about 20%. More meat, milk, and wool is being produced but with lower emissions per kilogram.³⁴

In the UK, the progress reports to Parliament by the Committee on Climate Change do include data on both total agricultural emissions and on the greenhouse gas intensity of agricultural products.³⁵ But these emissions are not priced in the European Union ETS.

Another significant difference between the greenhouse gas profiles of the two countries is the carbon intensity of electricity generation. Only a small proportion of New Zealand's electricity is generated by burning coal and gas, whereas the reverse is true for the UK.

It is sometimes argued that this makes it harder for New Zealand to reduce its emissions because it is further down the decarbonisation path when it comes to electricity. But this misses the point. The point is how easily further gains can be made. New Zealand is rich in geothermal energy, and with the best wind in the world, we have a great opportunity for decarbonising transport.

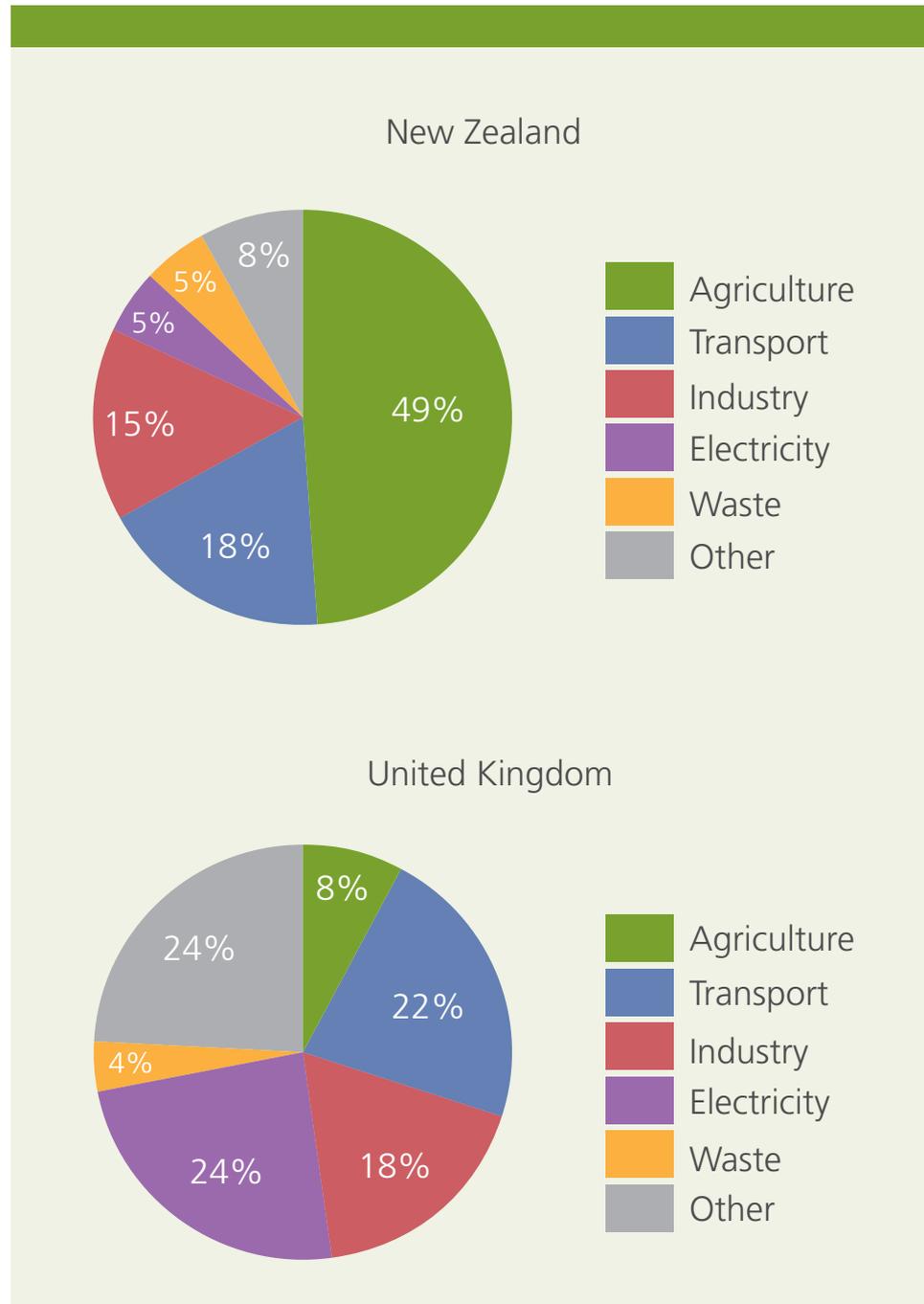
It is instructive to look at how the UK has made such a big reduction in its greenhouse gas emissions.

Prior to the introduction of the Act, emissions were already falling. The earliest reductions came from replacing coal with natural gas, in electricity generation and in other industries. When a coal-fired power station is converted to run on gas, its carbon footprint falls by a factor of two or three.

Since the passing of the Act, a major focus has been on reducing emissions through energy efficiency. Increasingly new wind farms are being built offshore. To help meet later budgets and the 2050 target, new technologies are being developed – these include wave and tidal energy, and carbon capture and storage.

In addition to its domestic policies, the UK's membership of the European Union has also helped in reducing emissions. The UK participates in the EU emissions trading scheme, and many of the regulations pertinent to climate change in the UK are the result of EU environmental directives.³⁶

While the UK is on track to meet its third carbon budget, meeting the fourth will be a lot harder. The lowest-hanging fruit have already been harvested.



Data: UK and NZ Greenhouse Gas Inventories 2016

Figure 4.2. The greenhouse gas profiles of New Zealand and the United Kingdom in 2014.³⁷

A high priority is being placed on preventing the creation of assets that will become stranded in the future. Such assets are not just physical and financial – the knowledge and training that has been built up in a workforce can also become stranded. Cognisant of this, former oil platform workers are now building and working on the offshore wind farms along the UK coastline.

One issue is uncertainty over Brexit. The UK may not be able to remain a member of the EU emissions trading scheme. If the UK is no longer subject to EU environmental directives, it will need to replicate many of them in domestic policy to continue reducing emissions. For instance, if the UK does not adopt energy efficiency standards (for appliances, vehicles, and so on), it could become a dumping ground for inefficient products with higher emissions and running costs.³⁸

Despite such challenges, the UK Climate Change Act remains in place, keeping the country moving towards its 2050 target. For instance, in 2015, the Government announced that all coal-fired power stations are to be closed by 2025.³⁹ This is truly significant given that in 2015 about 25% of the electricity in the UK was generated by burning coal.

What would a New Zealand version of the UK Climate Change Act be like?

There are some differences in both the way in which Governments operate, and in parliamentary rules and practices between the two countries.⁴⁰ But despite such differences, the key features of the UK system can be incorporated into New Zealand legislation.

Suppose New Zealand were to pass a new law that mirrored the UK Climate Change Act as much as possible. Let us call it the Climate Change Transition Act.

This could be done by amending the existing Climate Change Response Act, but in what follows I envisage a new Act because it seems less confusing. Note that this new legislation would sit above the Emissions Trading Scheme – it would not replace it.

Further, let us call the expert advisory body a Climate Change Commission, not a Committee on Climate Change. This is more in keeping with New Zealand conventions.

The purpose of the Act would be to set up a process that enables New Zealand to deliver on its climate change targets. Within this process, the Commission would provide independent advice to the Government, but the Government would choose how to respond to that advice.

5.1 Targets in legislation

Putting greenhouse gas targets into a Climate Change Transition Act would signal that a commitment to meeting them is a priority, now and into the future.

There has been much criticism of New Zealand's targets as being too weak. Generation Zero argues for a target of net zero by 2050. And at the time of writing, a young law student has taken the Government to court over the inadequacy of its targets.⁴¹

But targets can be tightened, and once put in legislation, can be amended. Indeed, reasons why they might be amended can be included in the law.⁴²

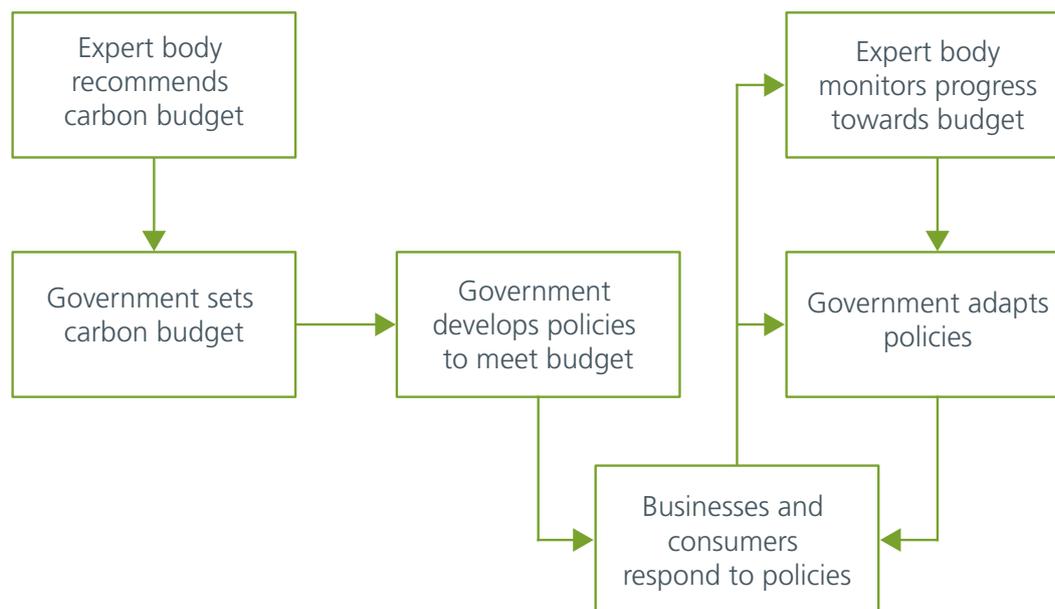
My chief concern in this report is not the level of our targets, but the lack of a process for achieving them.

5.2 The process for getting to targets

Once targets have been set in legislation, a process is needed that brings together the other three key features, namely:

- Carbon budgets as stepping stones to targets
- Policies set by Government to ensure carbon budgets are met
- An expert body to provide objective analysis and advice

Figure 5.1 shows the process in the UK Climate Change Act – a process that could be readily incorporated into New Zealand legislation.



Source: UK Committee on Climate Change (adapted)

Figure 5.1. The process of setting carbon budgets, developing policies to meet them, and monitoring progress. Within this process, the Government makes all the decisions and takes all the actions, but the Commission has a special advisory role.⁴³

In New Zealand as in the UK, the process would begin with the Commission recommending a carbon budget – a stepping stone to the target. This recommendation and all the supporting information would be made publicly available.

In response, the Government would adopt a carbon budget. Its budget could differ from that recommended, but if it did, the Government would have to say why.

The Government would then have to develop policies aimed at keeping emissions within the budget. Over time, businesses and consumers would respond to these policies.

Every year, the Commission would report on progress towards meeting the carbon budgets and targets. After each annual report, the Government would have to respond to the points raised, saying how greenhouse gas policies will be further developed.

Both the annual progress reports and the Government's response reports should be tabled in Parliament, so they would be freely available and unredacted.

5.3 The Climate Change Commission

The creation of an expert body to provide objective analysis and advice is a critical feature of the way in which the UK is dealing with climate change. An organisation of this kind, provided it is trusted and competent, can take much of the political heat out of climate change policy and provide long-term stability.

A Climate Change Commission in New Zealand would be best created as an independent Crown entity. The Productivity Commission and the Children's Commissioner are examples of independent Crown entities.⁴⁴

As in the UK, board members of a New Zealand Climate Change Commission should be appointed for their relevant expertise and knowledge, not because they represent certain sectors of the economy. That said, the board members would collectively need to have a deep understanding of the different sources of greenhouse gases in New Zealand – transport, industry, electricity, agriculture, and so on.

The board members of an independent Crown entity are appointed by the Governor General on the recommendation of the Minister. A requirement for the Minister (for Climate Change Issues) to consult the leaders of other political parties in making recommendations would reinforce the independence of a New Zealand Climate Change Commission.

The required expertise and knowledge of board members – business competitiveness, climate change science, economic forecasting, understanding of kaupapa Māori, and so on – should be explicitly spelt out in legislation. The Guardians of New Zealand Superannuation provides a model.

“The Minister must only recommend a person for appointment as a board member who ... has substantial experience, training, and expertise in the management of financial investments...”⁴⁵

The UK Committee on Climate Change is very highly regarded. This is due not just to the calibre of the Committee members, but also to the staff that support them. The first chair of the Committee, Lord Turner, describes the secretariat as a *“high-powered analytical machine”*, with capabilities that include assessing technology trends and quantitative economic modelling.

As in the UK, a New Zealand Climate Change Commission would only need a small number of staff, but the ability to draw on the resources of other government agencies through a memorandum of understanding would be vital. The staff of the Commission should not work in isolation from officials in other agencies.

Note that an expert advisory body would *not* do the following.

- Engage in international negotiations or set targets.
- Operate the greenhouse gas inventory.
- Operate the Emissions Trading Scheme.
- Develop policies in any detail, but would, in the annual progress reports, indicate areas where policies need to be developed or strengthened.

6

Recommendations

At the end of my reports, I typically make recommendations to the Ministers who hold relevant portfolios. But climate change is the ultimate intergenerational issue. Reaching the Paris target, and the targets that will no doubt follow, is not solely the responsibility of the current Government – it is a responsibility that stretches across many governments into the future.

The UK Climate Change Act is a remarkable law – remarkable for the overwhelming cross-party support which accompanied its birth in the House of Commons. Together the members of that Parliament committed themselves and those that will follow them to making an orderly transition to a low-carbon economy.

This law is not about prescribing policies and programmes. It does not detract from the role of governments in setting targets or in deciding how to meet them. Instead, the UK Climate Act lays out a process. It is a process that links actions to targets, grounds actions on objective expert advice, and provides a measure of predictability in the medium term.

I am recommending that the Minister for Climate Change Issues develop a Climate Change Transition Bill that contains the key features of the UK Climate Change Act. But although the Minister must lead, this recommendation is really to all members of Parliament. Being serious about climate change needs commitment, not just from the current Government, but from successive future governments.

6.1 Emissions targets

Currently, New Zealand has no greenhouse gas target in law. Putting climate change targets into legislation makes current and future governments accountable for actually reducing emissions.

Increasingly, other countries are putting targets into law. At the time of writing, Sweden's Riksdag has voted overwhelmingly for a new Climate Act that commits the country to reach net zero emissions by 2045.

Targets in legislation are not locked in forever – they can be amended by Parliament. Countries are likely to revise their targets when there have been significant developments in scientific knowledge about climate change, technology or international agreements. Indeed, the Paris Agreement contains provisions to increase ambition over time, through what has been dubbed the 'ratchet mechanism'.

- 1. I recommend that a Climate Change Transition Bill be developed that contains at least one greenhouse gas emissions target and a requirement for it to be met.**

6.2 Carbon budgets

Carbon budgets are the ‘stepping stones’ in the title of this report. They enable an economy to step its carbon emissions down towards a target in an orderly and predictable way. During this investigation, unpredictability has emerged as a major concern of New Zealand businesses. Carbon budgets reduce the risk of abrupt transitions.

A carbon budget is an amount of carbon dioxide that can be emitted in a particular period of time.

The UK sets five-year carbon budgets. The third carbon budget is for the period 2018 to 2022. Over these five years, the total amount of carbon dioxide equivalent is capped. Over the next five years, the total amount of carbon dioxide equivalent is capped at a lower level.

Carbon budgets are now set at least 12 years ahead of when they come into effect. This is considered to be enough time to plan and adjust, but close enough to have a good sense of what might be achieved with technology.

Each carbon budget contains a limit on the number of carbon credits that can be purchased offshore. This allows for striking a balance between making use of cost-effective mitigation offshore and ensuring that the UK is itself moving towards a low-carbon economy.

One of the main functions of the Committee on Climate Change is to give advice on carbon budgets. The Government does not have to take this advice, but if not, must say why in a publicly available written statement.

Certain matters must be taken into account when budgets are recommended and when they are set. These include scientific knowledge about climate change, relevant technology, economic circumstances (including business competitiveness), and social circumstances.

All of these aspects of the UK carbon budgets could readily be established in New Zealand law.

2. **I recommend that a Climate Change Transition Bill be developed that requires the Minister for Climate Change Issues to set and meet carbon budgets, and that:**
 - a. **the budgets be set for successive periods of five years (or similar period);**
 - b. **the level of the budgets be consistent with meeting the emissions target(s);**
 - c. **a limit on the number of carbon credits that can be purchased offshore be included in the budgets;**
 - d. **the budgets be set based on objective analysis by and advice from the Climate Change Commission, but where the advice is not taken, the Minister must give the reasons why; and**
 - e. **when the Commission recommends a budget and when the Minister sets a budget, both take the same matters into account, and that these matters be specified in legislation.**

6.3 Policies set by Government to ensure carbon budgets are met

In the UK, after a carbon budget is set, the Government must respond by preparing proposals and policies that will enable the budget to be met. In practice, this response – The Carbon Plan – is updated after each budget has been set.

The assessment of technology trends and the modelling of greenhouse gas scenarios are essential for developing a set of policies that will enable a budget to be met. If successive budgets are met, the target will be met.

In the UK, the Government must also respond to the progress reports the Committee on Climate Change prepares every year.

- 3. I recommend that a Climate Change Transition Bill be developed that requires the Minister for Climate Change Issues to:**
 - a. prepare proposals and policies in response to the setting of a carbon budget that will enable the budget to be met, and**
 - b. prepare responses to the annual progress reports of the Climate Change Commission.**

6.4 A Climate Change Commission

The Committee on Climate Change is a vital component of the UK approach to dealing with climate change over the long term. The Committee continues working independently and transparently, regardless of whether the Government is blue, red, green, or any other colour.

Importantly, the UK Committee is not a committee of stakeholders, but, collectively, must have “*experience in or knowledge of*” areas including economic analysis and forecasting, climate change science, business competitiveness, and technology development and diffusion. It is a committee of experts.

The UK Committee advises the Government on the setting of carbon budgets, and every year reports to Parliament on the progress towards carbon budgets. All of its reports – including the advice on carbon budgets – are made publicly available.

The core of the secretariat that supports the UK Committee on Climate Change is a group of experienced economists and other analysts that have been largely drawn from other government agencies.

- 4. I recommend that a Climate Change Transition Bill be developed that establishes a Climate Change Commission as an independent Crown entity, such that:**
 - a. the members and chair are appointed by the Minister for Climate Change Issues for fixed terms after consultation with the leaders of other political parties;**
 - b. the members collectively have experience in, or knowledge of, relevant areas such as economic forecasting and climate science, including the Treaty of Waitangi and tikanga Māori;**
 - c. the Commission advises the Minister on setting carbon budgets;**
 - d. the Commission prepares a report every year on the progress that has been made towards meeting the carbon budgets;**
 - e. at the request of the Minister, the Commission provides advice on any other matter relating to climate change; and**
 - f. all the reports and advice of the Commission are made publicly available.**

6.5 Adaptation to climate change

Under the UK Climate Change Act, the Government must publish a report every five years on the impact of climate change on the country. These risk assessments are prepared following advice from a subcommittee of the Committee on Climate Change. The Government must then develop an adaptation programme.

The impacts of climate change will be diverse and widespread. In New Zealand, there will be increasing coastal flooding and erosion, heavier rainfall and associated river flooding. Droughts and forest fires are expected to become more frequent. A warmer climate will result in many other impacts, including new pest incursions.

But the risks of a changing climate will not just be physical – they will be financial, economic, and social as well. Who will pay when those suffering loss or damage attributable to climate change seek compensation? What will happen to asset values if abrupt changes in policy occur? What will our responsibility be towards our neighbours who live on low-lying coral atolls?

5. I recommend that the Minister for Climate Change Issues:

- a. directs officials to prepare and publish five-yearly risk assessments of the impacts of climate change on New Zealand; and**
- b. directs the Adaptation Working Group to examine the way in which adaptation is dealt with in the UK Climate Change Act, and consider whether other elements of this model should be implemented in New Zealand.**

Notes

- 1 These nine countries include Denmark, Finland, France, Ireland, Mexico, Norway, Scotland, Sweden, and Switzerland.
- 2 Generation Zero, media release, 3 July 2014, 'Generation Zero issues "Big Ask" for next government'.
- 3 Kennedy Warne, 'Three feet high and rising', *New Zealand Geographic*, November–December 2015, p.55.
- 4 Generation Zero website, <http://www.generationzero.org/>, accessed 14 July 2017.
- 5 Carbon dioxide (CO₂) is the main greenhouse gas, but not the only one. Emissions of different greenhouse gases must be added together to set targets for greenhouse gas reductions, and to measure progress towards targets. Thus, other greenhouse gases, such as methane and nitrous oxide, are expressed in the equivalent amount of carbon dioxide – CO₂-eq.
- 6 Unfortunately, this led to the integrity of the ETS being undermined by the purchase of 'hot air' units from Russia and Ukraine – units that did not reflect real reductions in carbon dioxide emissions.
- 7 Ministry of Business, Innovation & Employment, 2017, 'Unlocking our energy productivity and renewable potential'.
- 8 AirNZ and Mercury, media release, 14 October 2016, 'Landmark commitment will boost New Zealand EV numbers by more than 75 percent'. Dairy NZ and Fonterra 14 June, 2107, 'Dairy Action for Climate Change 2017-2018'
- 9 Guardians of New Zealand Superannuation, media release, 19 October 2016, 'NZ Super Fund announces multi-faceted climate change strategy'.
- 10 At its peak, nearly 100,000 hectares of new pine forest was planted in 1994, whereas over the last decade new forest land has averaged about 5,000 hectares each year. Ministry for Primary Industries, 2016, 'National Exotic Forest Description: as at 1 April 2016', p.20.



- 11 Ministry for the Environment, 2017, 'New Zealand's Greenhouse Gas Inventory 1990–2015', p.xxviii.

- 12 Speech by Margaret Thatcher to the United Nations General Assembly, 8 November 1989.
- 13 HRH The Prince of Wales's Business & the Environment Programme 10th Anniversary Lecture, 14 September 2004, given by the Prime Minister, the Rt. Hon. Tony Blair.
- 14 House of Commons Debates: 28 October 2008', Greg Clark, Hansard, vol. 481, part no. 153, column 836.
- 15 UK Climate Change Act 2008, ss .1 and, 5.
- 16 Other countries with emissions targets incorporated into legislation include France, Finland, Denmark, Sweden, Scotland, and Mexico. In the United States, states with emissions targets incorporated into legislation include California, Connecticut, Hawaii, Massachusetts, Minnesota and Washington. In Australia, Australian Capital Territory, South Australia and Victoria have incorporated emissions targets into legislation. Victoria is currently considering passing a new Act with updated emissions targets. In Canada, emissions targets are incorporated into legislation in Alberta, British Columbia and Ontario.
- 17 The Kyoto targets and the Paris target are not shown in this graph because the UK's international commitments are as part of the European Union. The UK's 2050 target and budgets do not currently include emissions from international aviation and shipping.
- 18 The first Chair of the Committee on Climate Change was Lord Turner, who served in the role from 2008–2012. Lord Turner is a crossbench peer not aligned to any particular party. He is an economist, and has held various directorships, including serving as Chair of the UK Financial Services Authority from 2008–2013. The second and current Chair of the Committee on Climate Change is Lord Deben, who held various portfolios (including Environment and Agriculture) in the Cabinets of Margaret Thatcher and John Major. Among other roles, he chairs environmental consultancy Sancroft International and the Personal Investment Management & Financial Advice Association.
- 19 The Committee is also able to give advice on changing targets, and the Government must take this advice into account. Prior to the Act being passed the Committee advised on the level of the 2050 target, which was subsequently incorporated into the legislation.
- 20 UK Committee on Climate Change, 2016, 'Scottish unconventional oil and gas: Compatibility with Scottish greenhouse gas emissions targets'.
- 21 Members of the Committee work closely with secretariat analysts in developing advice in areas of which they have particular expertise. This means that when proposed advice is brought to the Committee, one member will have scrutinised it thoroughly, and be familiar with all the underlying detail.
- 22 UK Committee on Climate Change, April 2010, 'Framework Document', pp.14–16.
- 23 Adapted from Figure 1.1 in the UK Committee on Climate Change's report 'Approach to setting the fifth carbon budget'.
- 24 The 2017 impact report is HM Government, January 2017, 'UK Climate Change Risk Assessment 2017: Presented to Parliament pursuant to Section 56 of the Climate Change Act 2008'.

- 25 The 2016 advice report is UK Committee on Climate Change, July 2016, 'UK Climate Change Risk Assessment 2017 Synthesis Report: Priorities for the next five years'.
- 26 The adaptation programme report is HM Government, July 2013, 'The National Adaptation Programme: Making the country resilient to a changing climate'.
- 27 The most recent progress report is UK Committee on Climate Change, June 2017, 'Progress in preparing for climate change: 2017 Report to Parliament'.
- 28 This was done under reporting powers granted to the Government under the Climate Change Act, s 62.
- 29 'Breaking the Tragedy of the Horizon – climate change and financial stability'. Speech given by Mark Carney Governor of the Bank of England, and Chairman of the Financial Stability Board. Lloyds of London. 29 September 2015.
- 30 Zealand signed up to the 1st commitment period under the Kyoto Protocol ending in 2012, but did not sign up to the 2nd commitment period ending in 2020. Instead, New Zealand made a pledge to reduce emissions to 5% below 1990 levels by 2020.
- 31 Motu Economic and Public Policy Research has recommended introducing an annual cap on ETS emissions, set five years in advance, and declining over time. It is recommended also that the intended trajectory of the cap for a further ten years be made public, so that business always has a 15- year time horizon to guide planning. (Motu, 2017, 'An Effective NZ ETS: Clear Price Signals to Guide Low-Emission Investment').
- 32 UNFCCC, 8 July 2014, 'Report of the technical review of the sixth national communication of New Zealand'.
- 33 Between 1990 and 2015, annual per capita net emissions in New Zealand grew from 9.9 to 12.3 tonnes of CO₂-eq – a 24% increase. Over the same period, annual per capita net emissions in the UK fell from 14 to 8 tonnes of CO₂-eq – a 43% decrease.
- 34 See Parliamentary Commissioner for the Environment, 2016, 'Climate change and agriculture: Understanding the biological greenhouse gases', pp.26–27.
- 35 See Chapter 6 in UK Committee on Climate Change, June 2017, '2017 Report to Parliament – Meeting Carbon Budgets', page 133.
- 36 Key domestic policies that have contributed to emissions reductions include boiler regulations, and landfill tax and regulations.
- 37 'Industry' includes carbon dioxide from burning gas and coal, carbon dioxide from using coal in chemical processes, (e.g. steel manufacture), and the greenhouse gases used as working fluids in refrigerators and air conditioners (e.g. hydrofluorocarbons). 'Other' includes carbon dioxide from burning gas and coal to heat buildings.
- 38 UK Committee on Climate Change, October 2016, 'Meeting Carbon Budgets – Implications of Brexit for UK climate policy'.
- 39 UK Department of Energy & Climate Change, 18 November 2015, 'Government announces plans to close coal power stations by 2025'.

- 40 One such difference is the use of the affirmative resolution procedure for enacting secondary legislation. This procedure is commonly used in the UK Parliament, but in New Zealand is generally reserved for decisions about Offices of Parliament and parliamentary agencies. (See Regulations Review Committee, May 2007, 'Inquiry into the Affirmative Resolution Procedure', and the Government Response). In the UK Climate Change Act, the affirmative resolution procedure is used for amending targets and baseline years, setting and altering carbon budgets, adding new targeted greenhouse gases, and setting regulations on international aviation and shipping.
- 41 Some have called for separate targets for short-lived and long-lived greenhouse gases. This is of particular interest in New Zealand because short-lived methane comprises about 40% of our greenhouse gas total. There is no 'right' way of adding up gases with different atmospheric lifetimes – a degree of arbitrariness is inevitable. The current way in which it is done has been set by the International Panel on Climate Change. For a detailed discussion of this issue, see Chapter 3 in Parliamentary Commissioner for the Environment, 2016, 'Climate change and agriculture: Understanding the biological greenhouse gases'.
- 42 Section 2 of the UK Climate Change Act gives such reasons.
- 43 Adapted from Figure 1.3 in the UK Committee on Climate Change's report 'Approach to setting the fifth carbon budget'.
- 44 Generation Zero has proposed that a Climate Change Commission be created as an Office of Parliament. This is a possibility but not a necessity.
- 45 New Zealand Superannuation and Retirement Income Act 2001, s .55.