

CHAIR'S SUMMARY REPORT OF THE INTERNATIONAL ADVISORY GROUP TO THE COMMITTEE ON CLIMATE CHANGE IN RELATION TO ITS WORK ON THE UK'S LONG-TERM EMISSIONS GOAL

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Disclaimer: *This report is written by the chair of the Advisory Group convened by the Committee on Climate Change to provide expert advice in relation to the international aspects of its review of the UK's long-term emissions target. It endeavours to provide a summary of some of the key issues discussed during the review, but does not claim any consensus from board members in relation to particular issues.*

Summary

1. The International Advisory Group (IAG) has reviewed the international case for the UK setting a net zero emissions target, and when this should be.
2. The case for setting a net zero target is overwhelming. The science is clear that the world will need to get to net zero CO₂ emissions (and to near net zero greenhouse gas emissions (GHGs) if we are to arrest climate change. The UK can be no exception from this. This scientific requirement (achieving a balance of sources and sinks) is written into our international legal obligations.
3. The key question is by when should the UK aim to achieve such a target? Global pathways that keep warming to 1.5°C reach global net zero GHGs (aggregated using the GWP100 metric values from the IPCC 4th Assessment Report) around 2070 for 1.5°C, and to net zero or very close to it by some time in the second half of the century for 2°C. Given the UK's historical emissions, its relative wealth, and its huge depth of capability, we believe there is a strong case for the UK setting a target of no later than 2050. This will be compatible (if also followed by the rest of the world) with achieving the goal of keeping the temperature goal well below 2°C and pursuing efforts towards 1.5°C.
4. A timely Net Zero announcement from the UK would send a powerful signal that could help unlock ambition globally. The costs of low carbon and climate resilient development are much lower than they used to be thanks to technological and industrial innovation in areas like renewable energy. But adopting a new and different development path represents a massive organisational and capacity challenge, especially for developing countries. It will be a powerful signal to others that the UK - with its proven record of delivery in tackling emissions - believes this is deliverable.
5. A Net Zero announcement would also provide the private sector with the certainty it needs to move beyond sector specific strides towards a much more ambitious, transformative low carbon approach across the whole economy.
6. Finally, as the UK re-calibrates its position in the world it would re-confirm its determination to be a global player on a defining issue of the decades to come.
7. We have given careful consideration to the practicality of setting such an ambitious target, and have also been guided by the work of the other expert groups of the CCC. We believe that the UK's existing institutional framework and deep capacity across the economy in innovation, policy and delivery should give us confidence that we can manage the significant

costs and benefits of this 30-year journey. Experience has shown that innovation cycles repeatedly deliver deployment costs well below those first envisaged.

8. We further recommend that consideration should be given to:
 - a. **Setting an even earlier target year than 2050**, perhaps as early as 2045, or at least communicating parallel indicative targets, to increase the international signalling impact;
 - b. Keeping open the option of the **limited use of negative emission offsets to bridge temporary or structural challenges**. These could be possibly supplied through international credit markets. The UK, with its rich experience of creating robust institutional frameworks should play a leading role in creating the **rules-based system for the use of offsets**.
9. The IAG were also asked about wider ways the UK could exert influence. The report sets out a range of possible actions organised under four headings:
 - a. **Leadership by example**. The UK should urgently consider introducing policies to get the country on track for the 4th and 5th Carbon Budgets; revisit the UK's targets for 2030 in light of the new Long Term Goal and in the context of the first "ambition round" under the Paris Agreement in 2020; ensure climate risks are reflected in public and private investments and decision making; phase out support for fossil fuels; continue to champion innovation; and build on the UK Industrial Strategy to make us a world leader in low carbon and climate resilience innovation and markets.
 - b. **UK Diplomacy and Influencing**. The UK should press others to raise their ambition in 2020; work with China and others to green the Belt and Road Initiative and to encourage others to reduce and phase out coal usage; champion open markets; mainstream climate considerations and risks into foreign and security policy; and make a success of the possible hosting of COP26.
 - c. The UK should continue to target **UK climate aid** on transformational interventions which will nudge developing countries onto different, sustainable, development paths (whilst aiming for a greater emphasis on use of UK staff and delivery bodies), and on helping the world's poorest nations adapt to inevitable climate change; and should mainstream climate considerations into wider UK aid, and the work of international institutions like the Multilateral Development Banks.
 - d. The UK should continue to play a prominent role in **International Negotiations**, securing a strong outcome at COP 26, working closely with the EU and other key allies; as well as at International Civil Aviation Organisation (ICAO) and the International Maritime Organisation (IMO).

The International Advisory Group

10. The IAG is a group of independent external experts¹, acting in their personal capacities, whose role has been to support and critically evaluate the development of the CCC's assessment on the international background to UK domestic action under the Paris Agreement; and to inform the CCC's 2019 "*Net Zero: The UK's contribution to stopping global warming*" report.
11. The specific objective of the Advisory Group has been to help the CCC answer the following question: "How can additional UK action best support the global effort to implement the Paris Agreement?"

¹ The members of the group were Pete Betts (independent expert and chair of the IAG), Mike Barry (Marks and Spencer), Bernice Lee (Chatham House), Nick Mabey (Chief Executive E3G), Professor Jim Skea (Imperial College London) and Professor Julia Steinberger (University of Leeds)

12. The terms of reference for the group were:
- a. Provide critical input on and review a number of specific issues, including:
 - i. The signalling/leadership effect of setting a UK net-zero target, particularly when backed-up by credible plans to achieve it.
 - ii. What role may the purchase of credits or 'internationally transferred mitigation outcomes' play, in addition to domestic action, as part of a UK contribution to the global mitigation effort?
 - iii. What synergies and/or trade-offs exist between the incorporation of international credits within a UK long-term emissions target and the wider use of public finance, lobbying and influencing, and innovation policy to stimulate climate action around the world?
 - iv. What international actions should the UK be undertaking regardless of the level of the long-term target?
 - b. Provide advice on and review as requested the CCC's methodology for assessing an appropriate UK contribution to the global mitigation effort.
 - c. Provide advice on risks and uncertainties associated with the future development of credit markets (e.g. mechanisms under Article 6 of the Paris Agreement) and how these risks can be mitigated when considering the possible inclusion of credit mechanisms within a UK long-term target which will be set over the next few years.
 - d. Provide critical review and advice on emerging CCC analysis/recommendations related to the international effort.

Introduction

13. Globally 2020 is a critical year: the start of a decade that will be decisive for the chances of delivering a well below 2°C world, let alone a 1.5°C one.
14. For the UK too, it's an important year, one where we can look back with pride at a couple of decades of climate achievement, both in terms of creating an institutional foundation for tackling climate change, as well as at a material reduction in our territorial emissions. But it is also a year where we must look forward too, clear about how we maintain our position as a global climate leader at a time when our global role is being redefined.
15. The current global politics for acting on climate change are challenging; there is scepticism in many quarters about collective solutions to global problems. And the decision of President Trump to withdraw from the Paris Agreement represents a challenge, albeit no country has followed the USA.
16. Moreover, although much has been achieved and global emissions will - as a result of commitments made by countries - particularly those made in the context of the Paris Agreement - be much lower than they would otherwise have been, we are not as a world on track to limit warming to below 2°C, let alone 1.5°C.
17. At the same time, the scientific and economic case for acting to prevent dangerous climate change is even more overwhelming than it was five years ago; and we now know much more about how to reduce emissions in a way that is compatible with prosperity and fairness.
18. As the evidence of the risks continues to mount, and the costs of tackling it fall, acceptance of the need to factor climate change into economic decision making is increasingly mainstream in industry and in finance. Indeed, it is now so deeply embedded it appears

irreversible. The main question is how fast action to reduce emissions will proceed, and whether it will be fast enough to meet the temperature goal the world set in the Paris Agreement.

19. The UK - both governments of different hues and more broadly - has been a global leader in tackling climate change. We have reduced our emissions further and faster than others; been institutional innovators through the Climate Change Act and embedding climate change in foreign policy; we have been a thought leader in how to tackle the problem from the Stern report in 2006 to the New Climate Economy report in 2014 to the Carney Task Force on disclosure in 2018; we have been an influential voice in the UN negotiations through our prominent position in the EU; and we have been innovators in helping developing countries tackle their climate challenges.
20. There has however been in recent years some faltering in domestic progress, and we are not on track for the 4th and 5th Carbon Budgets.
21. But the case for UK leadership on climate change remains strong. Tackling climate change remains a fundamental UK interest. Our global perspectives and capabilities mean we can make a difference. A position as a visible and credible champion of global action on climate change will strengthen UK standing in the world, not least in the context of the UK's exit from the European Union, and by helping UK companies seize the opportunities in the transition.

The question for the IAG

22. The question asked of the CCC, and on the international aspects of which the CCC has asked the AG for its views, is whether the UK should set a target for reducing its GHG emissions to net zero and if so when. The thinking behind looking at the international impact of a net zero target by the UK is clear. The UK is responsible for around 1% of global GHG emissions. Only global action will tackle climate change. The key question therefore is how we can lever action by the UK to have most impact on the global stage.
23. This report
 - a. first looks at the impact globally of the UK's setting a new zero target, including at options for its formulation and its date; and
 - b. second at wider options for the UK to influence global progress

SECTION 1: The Impact of Setting a Net Zero Target in the UK

24. **The UK should set a clear and ambitious net zero emissions target to reflect its policy commitments and legal obligations, and in order to catalyse action from others.** This is because:
 - a. The entire world needs to move to net zero emissions
 - i. This is an unavoidable scientific requirement for CO₂ if the global community and the UK are to meet our overarching policy goal of avoiding dangerous climate change.
 - ii. We also have a legal obligation under the Paris Agreement to achieve a balance between emissions sources and sinks ², with the goal of keeping the

² "In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing

temperature increase well below 2°C whilst pursuing efforts to keep it below 1.5°C³ We interpret this as a requirement to reach net-zero aggregated GHGs.

- b. To protect the UK from dangerous levels of climate risks requires unprecedented action from all major economies. Setting a clear and ambitious UK target is one of the strongest influencing tools the UK has to shape action by others given the largely “bottom-up” nature of national target setting in the Paris Climate Agreement. We recommend that the formulation of the UK target should be strongly informed by the impact it has on international ambition as this is potentially a greater benefit to UK interests than additional domestic costs incurred.
- c. A net zero goal would be a powerful signal to UK and international business helping to drive down the cost of the transition through technological innovation and lower capital costs, and would advantage the UK in building and attracting the growth industries of the future.

25. The UK should set an earlier date for its net zero target than will be needed by the world as a whole. The IAG is aware that many cost optimisation models tend to suggest the UK (and many other developed countries) should do similar or less than the average globally. This is because the bulk of infrastructure in the developing world is not built yet, so it appears cheaper for them to build sustainably from scratch than for developed countries to retrofit. The IAG is sceptical that these models can accurately model costs over such a long-term scale, or that they reflect the practical costs and difficulties of emerging and developing economies building advanced zero carbon energy and industrial economic systems from scratch. But more than this, cost optimisation ignores considerations of:

- a. Historic emissions - the UK emitted much more than others in the past and therefore has more responsibilities than those who have yet to develop.
- b. Capability - the UK is much richer than the average in terms of per capita GDP; but more than this it has a powerful and deep blend of capabilities in organisation and innovation which enables us to make this transition efficiently and effectively. The UK has already demonstrated that it can successfully reduce emissions quickly and affordably.
- c. Leadership – the UK is only responsible for 1% of global emissions, and we need to persuade the rest of the world to act if we are to protect ourselves against climate risk. Although, the costs of taking a different, sustainable growth path have fallen dramatically, this is a massive political economy and technical lift for all countries. We need to demonstrate that the transition is doable whilst maintaining economic growth and social justice. A clear goal set by the UK - with its strong record of successful delivery against stretching targets – will build confidence globally. Failure to set a net zero target on the other hand, or setting one at a date or level perceived as weak, would impact on the UK’s hard-fought leadership position, and even more seriously would undermine the global transition.

country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.”

³ “Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels”

- d. Politics – in light of the considerations above, it is not remotely sellable to the developing world that they should act if the UK and others do not lead the way. Doing so would undermine the UK's long-term alliances on climate diplomacy with key groups of vulnerable countries in Africa, the Caribbean, Latin America, South Asia and the Pacific.

26. **The latest date for the UK's net zero target which would be internationally credible and maintain the UK's leadership position would be 2050.** Given the international expectation that the UK along with a few key allies will continue to lead, and that the world needs to get to net zero GHGs around the 2070s for 1.5°C, and to net zero or very close to it by some time in the second half of the century for 2°C, any later than 2050 for the UK would risk being seen as not keeping “well below 2°C” within reach, nor as pursuing efforts towards 1.5°C. Other like-minded jurisdictions are proposing 2050 (eg the EU; France) or even earlier (Sweden; California), though with varying conditions. The IAG recognises that getting to net zero will require a huge effort and that the target needs to be deliverable and credible.
27. The IAG agrees with the CCC that there is a strong argument for including international aviation and shipping emissions attributable to the UK in the target. They are likely to be an increasing share of global and UK emissions as we progressively tackle less challenging sectors. This will ensure they receive proper political and policy focus
28. It might be argued that there would be a negative impact on UK competitiveness of a new zero GHG target by 2050. The IAG is sceptical of this because:
- a. Energy costs are a low proportion of costs for the vast bulk of industries. For energy intensive industries, there will continue to be a case for transitional and innovation support;
 - b. Industry and business in general are likely to benefit from a strong long-term signal, and from a more active industrial policy to ensure UK companies can benefit from the transition
 - c. There is a strong argument that it is countries who delay making the transition who will face the biggest risk to their competitiveness because they will lose out in the new growth industries, and be forced to decarbonise later in a rushed and inefficient way
29. **Setting an earlier date than 2050 would have even more impact internationally and might help drive ambition, especially in Europe. There may be options for credibly setting such an earlier date.** Clearly it is essential that any target the UK adopts is seen as credibly deliverable. The IAG notes that the CCC's advisory group on UK decarbonisation options consider that net zero GHGs by 2050 is doable, but any earlier than this might be extremely challenging. The IAG is conscious on the other hand that costs have historically been much lower than originally foreseen - including by the CCC - once clear policy has been set. Radical innovation is also extremely likely over such long-time scales especially given the rapid increase in public and private RD&D being seen in low carbon solutions; including in previously “hard to abate” sectors like heavy industry, maritime, aviation and agriculture. The EU will be discussing the Commission's proposal for setting EU 2050 goal of net zero GHG emissions. The Brexit situation is unclear, but it seems likely that the UK will be part of this conversation. There might be pressure or expectations for richer European countries, like the UK, to move faster than poorer Eastern European countries. **The UK adopting a 2045 net zero GHG target could be influential in ensuring the EU adopts the ambitious climate neutrality goal proposed by the Commission.** If the CCC is minded not to move the headline

date to 2045, it should consider the following options for communicating the seriousness of UK ambition with complementary indicative goals, alongside the headline GHG net zero target for 2050. For example:

- a. The UK could communicate a separate expected year for net zero CO₂, the emissions of which could be reduced to net zero earlier than GHGs as a whole.
- b. The UK could remove aviation and shipping emissions from such a separately communicated net zero CO₂ target (whilst retaining aviation and shipping in the headline 2050 GHG goal). The IAG accept the arguments for including international aviation and shipping in the UK's LTG. But others (eg Sweden) have not, allowing them to set an apparently more ambitious headline goal, and therefore arguably with the potential for greater international signalling impact.
- c. The UK could allow a limited use of international offsets/credits (see below).

The IAG recognizes the need to ensure clarity in international signalling, and that too many sub-targets may be confusing, but believes it is worth exploring the options above, perhaps in combination.

30. There is a strong case for the limited use of international offsets in the long term by the UK for negative emissions to complement ambitious domestic action. The benefits of keeping open the use of negative emissions offsets are that:

- a. This would enable the UK to set an ambitious net zero goal, but with comfort that alternative options to domestic action would be available in the trickiest sectors if expected innovation and cost reductions did not materialise; and that this would be at reasonably predictable cost (which could already be at c.£200 per tonne for some key negative emission technologies and likely to fall in real terms). It would potentially even allow us to bring the date of that the net zero GHG target forward.
- b. We will definitely need negative emissions as a world to get to 1.5/2°C. The first option for negative emissions is to halt and reverse global deforestation, and to increase afforestation, which could bring many other benefits in terms of biodiversity and human welfare. But action on forests alone is likely not be sufficient to get global emissions to net zero. We will need specific technologies to achieve this such as direct air capture or weathering. It may be that such technologies could achieve emission reductions much more cheaply in other parts of the world than in the UK.
- c. There are risks in using offsets, in terms of quality/additionality; and of a possible political perception that the UK is exporting its challenges. The UK should therefore take a precautionary approach to relying on negative emissions when setting its 2050 trajectory; planning on territorial reductions until the feasibility of certified and permanent tradable negative emissions options has been proved. The UK should, in parallel, explore options for mitigating these risks by:
 - i. setting strict standards. The UK should set out what the long-term rules for negative emissions offsets might look like and begin to shape international consensus around them as a diplomatic priority.
 - ii. capping the number of offsets. A possible approach to setting the level of such a cap might be the emissions attributable to hard to abate sectors like agriculture and aviation. Focussing any negative emission offsets on hard to abate sectors might suggest the level of a cap being set at say 5 or 10 % of 1990 UK emissions. One option that has been proposed and could be

explored is combining this with a “two for one” rule where the UK buys two tonnes of negative emissions for every one tonne of remaining territorial emissions.

31. In the short and medium term, the IAG shares the CCC’s view that domestic action should broadly be prioritised over international offsets. This is not a doctrinaire position. Emissions trading has been and will remain a valuable transitional mechanism at domestic and European level for industry and the power sector. There are also circumstances where offsets could be valuable, in particular:
 - a. To deal with situations where there is a temporary gap in the impact of longer-term domestic emission reduction policies meaning that meeting targets at home would otherwise need short term and expensive policy options.
 - b. Some industries, international aviation and shipping in particular, are separately internationally regulated. Aviation currently lacks the technical means to meet international targets agreed under ICAO without a very large use of the global biomass resource for aviation biofuels. Carbon markets are a practical solution, and international arrangements are being developed for aviation already through “CORSIA”. Shipping may be in a more favourable position to develop technical solutions, depending on governance and incentives.
32. In the long run however, there are strong arguments to focus UK abatement at home. The cost of conventional credits is likely to rise over time. It is almost impossible to model this with any confidence whatsoever. The IPCC Special Report on Global Warming of 1.5°C suggested a huge range of price per tonne in 2050 of between \$245 and \$14,000. But we can say with confidence that there is very unlikely to be a huge pool of cheap abatement through conventional offsets as opposed to negative emissions technologies as we get closer to net zero carbon, not least because there are clear signs that developing countries are very sensitive about selling “their” emissions rights.

SECTION 2: Wider options for the UK to influence global progress on Climate Change

33. Globally, we are not on track for 2°C, let alone 1.5°C. Commitments made in the run up to the Paris Agreement in 2015 would mean global emissions would be around 53 or 54 Gt in 2030. This is much better than the 64 Gt we would otherwise be headed for. But the recent IPCC report on 1.5-degree pathways had 39.6 Gt as the median of well below 2°C pathways, and 27.4 Gt for low/no overshoot 1.5°C pathways.
34. So, whilst much has been done, much more urgent action is needed. The first of the 5-yearly global ambition cycles established by the Paris Agreement (in which countries are expected to raise their ambition) is due to be completed next year. We need countries to increase their ambition as part of this to narrow the gap by 2030 from the trajectory we are currently on (towards 3°C or more), on to a trajectory consistent with 2/1.5°C; and to demonstrate the world is still making progress. But it is already clear that any such increases announced in 2020 will not yet be enough to put us on track
35. The good news however is that we have learned a great deal over the last 10 or 20 years about how we can reduce emissions globally whilst growing economically and tackling poverty. Developed country emissions are falling significantly in most of Europe and especially the UK as a result of effective policy interventions and of moving to advanced service economies. But even elsewhere in the developed world emissions are plateauing and often falling, as a result of economic restructuring and new cheaper energy sources.
36. The majority of existing global emissions, and virtually all the expected growth in global emissions, are now coming from countries classified in the UNFCCC as “developing”. Even

here, whilst emissions are still generally rising, they are doing so by less than might have been expected. For example:

- a. China committed before Paris to peak its CO₂ emissions by 2030. Most observers now believe Chinese emissions will peak by 2025 or even earlier. Coal use appears to have broadly peaked in 2013, although there have been some recent signs of upward blips and that coal use is plateauing rather than yet falling.
 - b. India committed to a target of 100GW of solar energy in 2015. Many observers viewed this as utterly unrealistic, but they are making very strong progress.
37. Most of this progress, particularly in China and India, has been driven not by concern about climate change or policies primarily designed to address it. Rather, this progress has been driven by domestic self-interest: renewable energy is increasingly cheaper than coal in many places; brings greater energy security and less import dependence; and has huge health and air quality benefits over coal. Both China and India have now set targets for electric vehicles, again driven by the sort of consideration set out above, but also by a desire to be at the forefront of emerging technologies and to derive the industrial benefits from developing them.
38. We need to build on these developments. As these countries grow richer, we should expect them to take on an increased share of the burden. But developing countries will remain reluctant to cut their carbon emissions purely to solve a global problem: they will give priority to economic growth and the wellbeing of their own populations. Nor can we simply pay developing countries to reduce their emissions. It would be unfeasibly expensive, and politically unsustainable in developed countries. But even more fundamentally, it would not work. Our public climate finance budget is a substantial investment of UK taxpayers' money. But it is tiny compared to the scale of investment we are seeking to influence. The vast bulk of developing country emissions come from emerging economies which are growing fast economically (of course a very welcome development as it will help them to continue to move their populations out of poverty). These economies are spending trillions a year *in any case* developing their economies, building infrastructure and so on. It is this investment we must seek to influence. We need to use our international public finance to nudge this development onto a new, sustainable path, avoiding the mistakes made when today's developed countries were growing.
39. Of course, the emerging economies will only follow such a course if they believe it is compatible with their economic growth and lifting their populations out of poverty. The good news is that technological and other progress is increasingly making this realistic. The key question is how can the UK and its allies promote and encourage these trends?

How can the UK best accelerate this progress?

40. We see four broad ways the UK has successfully intervened in the past and on which it should expand in the future:
- a. Leadership by example
 - b. Diplomacy and shaping political conditions in key countries
 - c. Targeted financial support
 - d. Negotiating global agreements.
41. The next section looks at each of these in turn, briefly discussing what has been achieved so far, and suggesting some possible priorities going forward.

Leadership by Example

42. The UK's performance in reducing its emissions since 1990 by over 40% is arguably the best of any developed country. The UK has shown it is possible to do this whilst growing the economy (indeed the UK has grown by nearly 80% since 1990, more on a per capita basis than any other G7 economy).
43. We have also been leaders in developing the institutions and the machinery to deliver this reduction. The Climate Change Act with its Long-Term goal, its five-year reviews and process for ratcheting up ambition has been replicated to some degree by some 60 other countries, and is essentially the model set out in the Paris Agreement itself
44. Through our membership of the EU we have pressed for and secured ambitious EU-wide GHG targets. These targets, taken with other actions in the EU, have been globally important. For example, the huge growth in solar and wind power in Europe (driven by policy and subsidies) has driven the price of these technologies down globally through economies of scale and innovation, whilst progressively removing the need for ongoing subsidy at home.
45. The UK should consider the following further ways of leading by example for the future:
 - a. Urgently bring forward further policies and spending commitments to ensure the UK meets its ambitious 4th and 5th Carbon Budgets, building on the success in decarbonising power, to tackle the new challenges in transport and heat, whilst developing more effective policies to drive energy efficiency.
 - b. Consider raising its internationally notified target for 2030 in the upcoming first Paris ambition cycle (at the least from the 53% implied by our international commitments, to the 57% in the UK domestic carbon budget). A net zero GHG target for 2050 is also likely to have implications for 2030 targets.
 - c. Move to require mandatory disclosure of public and private sector climate risks, in particular in the financial sector, recognizing the leading role already played by the Bank of England and looking to build on this internationally. In light of this, scrutinise all public investments (including official development assistance, transport, and unabated fossil fuels) and fiscal policies in light of our carbon targets and climate policies. Emphasise the role of climate-stress testing, in particular by institutional investors, for UK and international financial stability.
 - d. Set out a compelling and analytically based road map on the role of oil and gas in the short, medium and long term. There are divergent views on how much oil and gas (investment, production and consumption) the world will need, and how quickly these must decline to be consistent with meeting climate targets. A high proportion of UK export finance in the energy sector is to support fossil fuel extraction and production. The UK should actively explore how to phase down export support for fossil fuels, and to increase its focus and effectiveness on the industries of the future, where the UK has huge strengths, especially in services.
 - e. Continue to invest in innovation, particularly around the likely key challenges and opportunities of the future, working with international partners where this will be effective. Technologies like Greenhouse Gas Removals and storage are likely to be huge in scale in future years. Given the Government has committed to invest 2.4% of GDP a year on R&D, low carbon/climate change should be a significant part of that.
 - f. The UK should actively seek to attract and champion the low carbon and resilience industries of the future. Such industrial policy considerations were not always as embedded as they might have been in UK climate policy. It is welcome that the Government's Industrial Strategy explicitly champions this.

Diplomacy and Shaping political conditions

46. It can be hard to communicate the effectiveness of diplomatic interventions. It is essential to understand that for a country to adopt a low carbon strategy is not necessarily more expensive and can even be cheaper. But it can be a massive political economy challenge, with incumbent forces often aligned against a climate friendly approach, and often with new and unfamiliar technical challenges. Targeted diplomacy and interventions to help overcome a technical barrier, or to better equip key groupings with analysis and arguments, can make a real difference.
47. The UK was the first country to realise that climate change is much more than an environmental issue: it goes to the heart of all that we do in our economies and societies. To tackle it successfully, climate considerations need to be embedded in core economic policy in every country. And we have a massive interest in ensuring that this happens, so it is also a foreign policy priority.
48. There was a massive expansion of resources engaged on climate change in the FCO network under Margaret Beckett when she was Foreign Secretary, continued by her successors of both major parties. At one stage it was suggested that the UK had more people working on this in the FCO than the rest of the world's foreign ministries put together. We were also the first country to have a Foreign Secretary envoy on climate – John Ashton. And we launched the first Security Council debate on climate.
49. It is in the nature of diplomatic activity and influencing that it is very hard to measure its impact with certainty, but there is evidence (including the testimony of the countries themselves) that this quiet diplomacy has had a major impact in many countries, for example in encouraging:
 - a. The introduction of the carbon market and pricing in China
 - b. Power sector reform in India
 - c. Energy planning in China, India, Latin America, S Africa.
50. This work has not been without controversy, with some senior figures in the FCO and elsewhere seeing climate change as not the business of the FCO; and a lack of recognition of the soft power benefits that climate leadership can bring. But there is clear evidence that the UK's work on climate has brought wider benefits to the UK. Ambassadors have testified that close cooperation on climate change has leveraged closer wider bilateral relationships with key countries eg. in Latin America.
51. The UK has also been at the heart of global thought leadership to address the key perceived barriers to addressing climate change:
 - a. The Stern report in 2006 showed that cost of reducing emissions may be an order of magnitude less than seeking to adapt to climate change.
 - b. The New Climate Economy report in 2014 showed that economic growth and tackling climate change go hand in hand: 50-90% of the action needed to get to 2°C makes sense in any case for wider economic reasons (eg because it is negative cost like energy efficiency; or because of co-benefits in terms of better health for one's population due to improved air quality).
 - c. The G20 Task Force on Climate-related Financial Disclosures (TCFD) in 2017 launched by Mark Carney and chaired by Michael Bloomberg showed the importance of incorporating climate risks in new investments.
52. The UK should consider the following further ways for diplomacy and political influencing for the future:

- a. Develop targeted campaigns, working closely with key EU players, to influence key economies to reduce their emissions, and raise the ambition of their NDCs, going with the grain of these countries' economic and social objectives.
- b. The Chinese Belt and Road Initiative should be a particular priority. Chinese Government sources suggest at least \$500 billion is being invested here. The aspiration is to develop \$6 trillion worth of infrastructure. It is globally significant, and a huge challenge for meeting global temperature goals. A recent study by WRI estimated that in the region of 90% of energy investments in the BRI by public Chinese banks were in fossil fuels. Together with key EU players, the UK should work closely with China to encourage them to build low carbon, climate resilient infrastructure in the BRI as they are increasingly doing in China, helping Chinese developers and financiers, as well as host countries, to better understand both the risks of stranded assets and the opportunities of low carbon. We should work with host countries to build understanding of the risks of stranded assets and the opportunities of low carbon and resilient alternatives.
- c. Private finance is an area of particular UK comparative advantage. Building on our green finance work at home, we should look to develop consistent and transparent application internationally of G20 TCFD principles on sustainable finance. Infrastructure should be an early priority, looking to ensure countries and other economic actors internalise into their decision making the risks of climate change (e.g. the risk of stranded assets from high carbon and non-resilient development). The UN Secretary General's Summit in September, where the UK and the Prime Minister are co-leading the resilience strand with Egypt, will be a particular opportunity.
- d. Work to maintain open markets and promote international trade and investment in low carbon and resilient solutions.
- e. Evolve the successful Powering Past Coal Alliance to a greater focus on persuading:
 - i. Big coal users to have a moratorium on new capacity and begin to burn less coal, rather than to stop all coal use immediately (which is clearly not yet realistic for countries like China and India which represent the vast bulk of global coal usage).
 - ii. Banks to withdraw from funding.
 - iii. Practical support to countries to deal with the social and economic transitions in coal dependent regions.
- f. Mainstream climate considerations into foreign and security policy by:
 - i. Recognising climate change as a core UK interest, and raise it with others accordingly; but also, better understand in the heart of Government its potential as a source of UK soft power and commercial opportunity.
 - ii. Embedding an analysis of climate impacts more into wider foreign policy and security assessments. As climate change impacts bite, they will increasingly have wider implications for example as more populous countries compete for scarcer water and other resources and as food production is affected. For example, a major cause of the Arab Spring was high wheat prices caused by crop failure in the Ukraine, due in turn to a drought consistent with climate change impacts.
 - iii. Maintaining the UK's best in class network of climate staff in FCO posts but ensure climate is also raised by Ministers and Ambassadors.

- g. Champion the UK hosting of COP26 and invest sufficient capacity to ensure this maximises global climate ambition through the review of Nationally Determined Contributions and the setting of long-term climate strategies. Use the COP to showcase domestically the UK's huge and globally influential leadership on climate change over the past 30 years and the potential for this to continue. This will be a politically sensitive and challenging COP, and the UK should use its assets to keep the global process on track.

Targeted Use of UK Climate finance

- 53. The UK is the only developed country to have written its commitment to spend 0.7% of GDP on Official Development Assistance (ODA) into domestic legislation. Like other donors, the UK has committed a proportion of that budget to climate change: helping developing countries reduce their emissions ("mitigation"), and to prepare for and respond to the impacts of climate change ("adaptation"). In the current Spending Review, the Government has committed £5.8bn of the ODA budget to spending on climate change.
- 54. The UK has much to be proud of in the way this budget has been spent. Ministers decided from the beginning that half the budget would be devoted to adaptation; unusual among donors who tend to focus on the more glamorous mitigation. That adaptation spend has rightly been targeted on the poorest countries (often though not always in the form of grants); whereas much of the mitigation spending has gone to middle income countries because that is where most of the emissions are which must be reduced. Support for these countries is mostly in the forms of loans.
- 55. The UK has also been amongst the leaders in giving priority to reducing deforestation, committing 20% of the budget to that purpose (helping both mitigation and adaptation).

Mitigation Spend

- 56. The UK has been acknowledged among other donors as having been thought leaders in how to mobilise private finance, for example for Renewable Energy (RE). This was recognized for example in a recent report by ICAI.
- 57. There have been prodigious reductions in the cost of solar and wind energy over recent years. On a levelised cost basis, solar is now cheaper than coal in many (not yet all) parts of the world. Studies suggest that it is likely to be cheaper everywhere in some years. And it brings huge co-benefits especially in terms of health compared to coal. Battery and storage costs are also now falling dramatically.
- 58. But even so there are often barriers to the introduction of renewable energy:
 - a. Even where RE is cheaper over its lifetime, it tends to have a higher upfront investment cost compared to coal. Once a solar plant or a wind farm is built, it is very low cost to operate. This makes these plants dependent on access to capital, and at a reasonable rate. Capital costs in developing countries are usually high, and often extremely high, especially for technologies which are unfamiliar and (partly for that reason) perceived as risky.
 - b. Existing grids and regulatory regimes are not always well adapted to intermittent and more dispersed solar.
- 59. UK climate finance has made many interventions seeking to overcome these barriers in different markets in Africa, Asia and Latin America. The goal of these interventions has been of course an immediate reduction in emissions from the project itself. But the real goal is to demonstrate to local banks and other lenders in that market that solar energy is a good

investment, so that RE will expand in these markets without subsidy and drive much bigger private finance flows.

60. Much international donor finance has been targeted at energy, partly because we now know how change can be driven in that sector. But an even bigger challenge is wider infrastructure build, in the developing world in particular. It has been estimated that \$90 tn of infrastructure will be built out to 2030. We need to make this low carbon and climate resilient. It is welcome that BEIS has launched a major new £187m programme targeting infrastructure in Latin America.
61. A strategic weakness in the UK has been the lack of a delivery body that can operate in middle income countries (comparable to AFD in France, or GIZ and KfW in Germany). Targeted interventions to help the low carbon/climate resilient transition needs staff in Government based in the UK and in delivery bodies on the ground. The UK aid model, with relatively very low numbers of staff per pound of spend, forces the UK into a much greater relative reliance than other donors on making big contributions to multilateral funds. There is a case for making use of the multilaterals; they can operate at scale, bringing different donors' money together around nationally significant programme, and they have expertise in mobilising private finance alongside this. But there are also disadvantages in terms of limited UK recognition and much less scope for commercial and wider UK benefit. There is a case for revisiting the balance.
62. There have been recent small steps to address this, for example the recent Africa strategy saw UK staff numbers increase, and there have been other modest steps elsewhere.

Adaptation Spend

63. The picture is rather different on adaptation spend, where DFID does lots of bilateral climate projects, and relatively little centralised programming. Given resilience is a global problem, there may be the case for some more centrally-conceived and multilateral projects focused on resilience and adaptation, that are either at scale, or are defined by sector/market barrier/technological solution, rather than by country. Resilience is an area where DFID has huge expertise, and in which there is huge UK strength in the private sector in areas like insurance and infrastructure development. The UK is co-leading on resilience for the UN Secretary General's Summit in September this year.
64. The UK should consider the following further ways for Targeted Use of UK Climate finance for the future:
 - a. Build on past success to develop further projects with *transformational* impacts going much wider than the project itself, in particular those which demonstrate that low carbon investments are viable without subsidy and can therefore be vastly scaled up. Much has been achieved on renewable energy; the new challenges are increasingly in efficiency, and in infrastructure and transport.
 - b. Continue the move to a greater relative emphasis on bilateral mitigation projects to secure greater effectiveness and secure enhanced UK visibility. A new UK delivery body should be considered. Of course, aid projects are risky, and Ministers will need to be prepared to speak publicly about the successes and failures which will be more visible. There will continue to be a strong case within a broad portfolio for a significant tranche of multilateral projects, and for UK projects which use the MDBs as delivery partners.
 - c. Consider the case for more cross-cutting resilience projects, and use the UK's role in the UN Summit to establish UK public and private sector thought leadership in this area.

- d. Mainstream climate considerations into the wider ODA budget.
 - e. Play a leadership role in the Multilateral Development Banks, encouraging them to mainstream climate considerations into all their lending and other activity and to play a proactive role in helping countries design and implement their climate transitions.
 - f. Consider a significant contribution to the replenishment of the Green Climate Fund this year, alongside other donors.
 - g. Future priorities for UK finance should also include intensified work on supply chains building on the excellent work done so far. Global efforts to halt tropical deforestation have been insufficient, in spite of some positive developments. The biggest driver of deforestation is agriculture for production of commodities like palm oil, soy, cocoa and beef. Many companies are concerned about the reputational impact of this, and the long-term viability of their supply chains, and are interested in securing sustainable and deforestation-free long-term supplies of these commodities. We need to work with the grain of these commercial pressures.
65. Finally, a word about carbon markets. From the point of view of how best to help developing countries (rather than as a tool to help the UK deliver its targets at least cost), the use of the carbon markets is usually not the best option, because:
- a. First, the sheer scale of developing country emissions c. 30Gt per annum today, are orders of magnitude larger than any conceivable purchases. If we assume the current carbon price of say \$15 per tonne, even a 1% reduction in developing country emissions might cost in the region of \$5bn. In practise, developing countries are very reluctant to sell their emission rights. So, a realistic purchase price might be at least double that. Yet we need developing countries to reduce their emissions dramatically against a BAU trajectory by 2050. For illustrative purposes, total global official development assistance is currently in the region of \$150bn.
 - b. Second, the way we will make most impact on developing countries' emissions as stated above is not to buy down emissions in developing countries through one-off projects. Rather, it is to nudge those countries onto different development paths, re-shaping the trillions of dollars they will spend anyway.
66. This might change in the next decade or two. As to some extent in the UK, there may in the future be fewer win-win policy options in developing countries and achieving global goals may make it necessary for developing countries to adopt policies which are relatively expensive in the short term, and which bring fewer co-benefits to them.

International Negotiations

67. The international negotiations have been hugely valuable in creating a global framework in which countries are expected to reduce their emissions and requiring them to report on their progress so that they can be held to account. Of course, current ambition is insufficient, but ultimately that is attributable to a lack of political will, not to the negotiations. One can never prove a counterfactual, but it is unlikely we would have had the progress we have achieved without the UN.
68. The UK has hitherto negotiated in the UNFCCC through the EU and has been very influential in shaping EU positions. The EU is of course one of the major forces in the negotiations, so this has amplified UK impact. Moreover, UK officials have had a prominent role in the team that represents the EU in the international negotiations, and the UNFCCC in particular. Unlike in trade (where the Commission represents the EU), individuals drawn from the

Member States and the Commission lead for the EU in climate, and UK officials have been disproportionately influential.

69. The UK has also been influential in ICAO (in aviation) and IMO (shipping) where it operates as the UK, rather than as part of the EU. Most countries are represented by their Transport Ministries, including the UK where work is led by DfT. Because the UK tends to have more internally coordinated positions than many other countries, we have been influential in ensuring that these organisations give sufficient weight to climate considerations.
70. Some argue that we no longer need the UN negotiations: either because the US are likely to withdraw from Paris; or - some say - because our work is done: the framework is in place they argue, and now we need to leave it to the private sector. This is plainly not correct. We continue to need the global negotiations to track progress; to provide a focal point for the regular 5-yearly global conversation about ambition raising; and to address future evolving challenges, for example around geoengineering. In any case, the US will need at some point to reengage with the global debate: and they have not stated that they will leave the UN Convention on Climate Change, only their intent to leave the Paris Agreement. Besides, fundamentally it is clear that Government action and interventions will be necessary to drive the private sector and create the conditions for further action.
71. The UK has also been influential in international innovation policy, for example playing a leading role in the establishment of Mission Innovation (MI) etc. It can be hard to make such cooperative endeavours work, because countries can be reluctant to share expertise and intellectual property. But efforts are continuing, through MI and other fora like the Clean Energy Ministerial.
72. The UK should consider the following further ways for Influencing through the International Negotiations for the future:
 - a. The UK has been highly influential in the UN negotiations on climate change where it has negotiated as part of the EU, and UK officials have often led for the EU. The UK should look to get more visibility as result of exiting the European Union, whilst retaining our influence over EU negotiating strategy and tactics. This could include negotiating explicit cooperation agreements on climate diplomacy with the EU, with regular ministerial level meetings and joint projects and programmes.
 - b. Depending on what kind of Brexit is agreed, the UK may be in the position of having to adopt EU legislation, for the short term or conceivably the longer term, without a seat around the table in drafting and implementing that legislation. The options for Brexit are way beyond the scope of this report. However, close working relationships internationally will help us be influential on other aspects of EU climate policy development.
 - c. It is occasionally suggested that international efforts to secure agreements to reduce emissions should shift from countries being responsible for emissions they produce directly, to their being responsible for emissions attributable to their consumption. This would mean service economies like the UK being held responsible for more emissions, because of their high net goods imports. The IAG would not support such a shift, since countries producing emissions are much better placed to control them directly (and would not welcome the degree of scrutiny that would follow from making other countries responsible for them). But tracking and publishing consumption related emissions makes sense.