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# PREPARING FOR CLIMATE CHANGE

ADAPTATION SUB-COMMITTEE  
WORK PROGRAMME

**December 2009**

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## FOREWORD

Climate change is already happening. We know that average global mean temperature is around 0.8°C above pre-industrial levels. Inertia in the climate system and the long-lived nature of some greenhouse gases means that even if there is a global agreement to curb greenhouse gas emissions, changes to our climate will continue for many decades to come. Keeping temperature increases to 2°C will still leave us with a world significantly different from anything else in human history.

Therefore, adapting to the inevitable changes in our climate over the decades ahead is just as important as making strenuous efforts to reduce our greenhouse gas emissions. Preparing for climate change will present new opportunities as well as challenges, and the scale of the impacts will depend on how we adapt.

So what do we need to prepare for? The future is uncertain, but the overall headline for the UK is that summers are likely to be hotter and drier, whilst winters may be warmer and wetter. Climate change is also likely to lead to increased risks of flooding, water shortages and drought.

The Adaptation Sub-Committee of the Committee on Climate Change was established under the 2008 Climate Change Act, with the following objectives:

- To advise on the development of a UK Climate Change Risk Assessment (CCRA).
- To assess the preparedness of the UK to meet the risks and opportunities arising from climate change.
- To promote effective actions to adapt to climate change by society as a whole.



The Sub-Committee has established its work programme and recently delivered its first advice on the Climate Change Risk Assessment to Government.

Businesses, public sector organisations and charities will need to prepare for the consequences of climate change. The Committee will therefore work with these groups both to understand how they are developing their ideas and also to share our emerging thinking on adaptation to climate change.

A handwritten signature in black ink, reading "John Krebs".

**Lord John Krebs**  
Chair of the Adaptation Sub-Committee

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## THE ADAPTATION SUB-COMMITTEE



### *Lord John Krebs*

Professor Lord Krebs Kt FRS, is Principal of Jesus College Oxford. He studied Zoology and population ecology of birds for his undergraduate and D Phil degrees at Oxford. He has held posts at the University of British Columbia, the University of Wales, and Oxford, where he was lecturer in Zoology, 1976-88, and Royal Society Research Professor, 1988-2005. From 1994-1999, he was Chief Executive of the Natural Environment Research Council and, from 2000-2005, Chairman of the Food Standards Agency. He has published more than 300 papers, books and reviews, has been awarded 14 honorary degrees and numerous prizes and medals.

He is a Fellow of the Royal Society and a Foreign Member of the U.S. National Academy of Sciences, American Philosophical Society and American Academy of Arts and Sciences. He is a cross-bencher and a member of the Science and Technology Select Committee in the House of Lords.



***Graham Wynne, CBE***

Graham Wynne is the Chief Executive of the RSPB, having spent 15 years as a city planner principally. He is a member of the Natural Environment PSA Delivery Board and the Foresight Land Use Futures High Level Group. He was a member of the Policy Commission on the Future of Farming and Food, the Delivery Group Sustainable Farming and Food Strategy and the Sustainable Development Commission.



***Professor Jim Hall***

Professor Jim Hall is Director of the Centre for Earth Systems Engineering Research in Newcastle University, the Deputy Director of the Tyndall Centre for Climate Change Research and, the coordinator of the Tyndall Centre's research programme on climate change and cities. He is a Fellow of the Institution of Civil Engineers and of the Royal Statistical Society.



*Dr Sam Fankhauser*

Dr. Samuel Fankhauser is a Principal Research Fellow at the Grantham Research Institute on Climate Change at the London School of Economics and serves as Chief Economist at Globe International. He is a former Deputy Chief Economist at the European Bank for Reconstruction and Development and former Managing Director at IDEACarbon Strategic.



*Dr. Andrew Dlugolecki*

Dr. Andrew Dlugolecki is a consultant on climate change and the insurance and finance sector. Prior to this he worked for the Aviva Group. He is currently an advisor to the Carbon Disclosure Project, the Munich Climate Insurance Initiative and the United Nations Environment Programme Finance Initiative. He is also a Visiting Research Fellow at the Climatic Research Unit, University of East Anglia.



***Professor Martin Parry***

Professor Parry is visiting professor at Imperial College, University of London. He was Co-Chair of Working of Group II of the Intergovernmental Panel on Climate Change 2007 Assessment and, a coordinating lead author for the first, second and third assessments. He has held positions as Professor of Geography at the Universities of Oxford, University College London, Birmingham and University of East Anglia.



***Baroness Barbara Young***

Baroness Young is currently Chair of the Care Quality Commission. She was Chief Executive of the RSPB, Chair of English Nature, Chief Executive of the Environment Agency and Deputy Chair of the BBC. She has served on the Sustainable Development Round Table, the Sustainable Procurement Task Force and the Water Resources Forum.



***Professor Anne Johnson***

Professor Anne Johnson trained as a Public Health doctor. She is now Professor of Infectious diseases epidemiology and Director of the Division of Population Health at the University College London. Anne's research has been used to inform public health policy for prevention and treatment of HIV and other infectious diseases and for sexual and reproductive health promotion. She is currently Chair of the Medical Research Council Population Health Sciences Group.



***Professor Tim Palmer***

Professor Tim Palmer is a world leader in physical climate science and climate modelling. He was lead author of the third assessment report of the Intergovernmental Panel on Climate Change and is Chair of the international scientific steering group of a key climate prediction project under the UN World Climate Research Programme. Tim is a Fellow of the Royal Society and has been appointed a Royal Society 2010 Anniversary Research Professor from January 2010, a position which he will hold at Oxford University.

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Or visit our website:

<http://www.theccc.org.uk/asc-home>



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## **WORK PROGRAMME OF THE ADAPTATION SUB-COMMITTEE, COMMITTEE ON CLIMATE CHANGE**

Under the 2008 Climate Change Act the Committee on Climate Change (CCC) is required through its Adaptation Sub Committee (ASC) to advise the Government on the UK's Climate Change Risk Assessment (CCRA), which will assess the risks and opportunities to the UK from climate change. The CCRA must be laid before Parliament by 26th January 2012.

According to the Climate Change Act, the Secretary of State also needs to lay the UK Government's Adapting to Climate Change programme before Parliament as soon as reasonably practicable after the completion of the CCRA. This programme must contribute to sustainable development.

The CCC is required to provide an assessment of progress towards implementing the objectives, proposals and policies of the Adapting to Climate Change programme. It is likely that the first programme will be laid before Parliament in 2012. The other national authorities will also set out their own adaptation programmes. In addition the Climate Change Act also specifies that the Climate Change Committee must, at the request of a national authority, provide advice on matters relating to climate change adaptation.

## *The Committee*

The Chair of the Adaptation Sub Committee, Professor Lord Krebs, was appointed at the end of May 2009 with the remaining board members appointed between June and October 2009. These are:

- Dr Sam Fankhauser,
- Professor Martin Parry,
- Professor Jim Hall,
- Dr Andrew Dlugolecki,
- Baroness Barbara Young,
- Mr Graham Wynne,
- Professor Tim Palmer, and
- Professor Anne Johnson.

The CCC established a Secretariat to support the ASC in April 2009.

## *The objectives of the Committee*

The Committee has three main objectives:

- To scrutinise the development of the first Climate Change Risk Assessment (CCRA), which will be produced during 2009-2011. The Climate Change Act requires that the Committee provide its advice by 26th July 2011 - six months before the final date for laying the CCRA before Parliament. The Committee have decided that rather than giving its advice at the end of the process when the CCRA is complete, the Committee will provide advice on an ongoing basis. This will allow the contractors and Defra to modify their approach to reflect the Committee's advice. In addition the Committee will advise upon the Adaptation Economic Assessment which, although not formally required by the Act, will be produced alongside the CCRA as the two will be analytically intertwined.
- To assess the preparedness of the UK to meet climate change risks and opportunities. Under the Act, the CCC is required to provide an assessment of the progress made towards implementing the objectives, proposals and policies set out in the UK Government's adaptation programmes laid before Parliament<sup>1</sup>. The first progress report is likely to be due in 2014, with subsequent reports every two years thereafter (i.e. 2016, 2018). In addition other national authorities may request the Committee's advice on their programmes. The Committee's work relating to the Reporting Powers Framework will also fall under this objective.

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<sup>1</sup> This programme will cover England and reserved matters affecting the whole of the UK.

- To promote effective adaptation actions by society as a whole. This objective covers Committee engagement with stakeholders and their assessment of how the evidence base could be improved to increase preparedness for climate change.

### ***Main tasks of the Committee***

To assess the risks and opportunities of climate change, and preparedness for meeting these, the Committee has identified several tasks. As the Committee engages in its work the specific details will need to be informed by, and inform, the work of the CCRA. The issues include:

- **What climate futures are possible? In particular the Committee needs to understand:**
  - » The range of possible future paths of global greenhouse gas emissions which depend upon rates of economic growth, energy efficiency improvement and the rate at which investors invest in low emissions technologies. These should include paths which assume strong mitigation efforts.
  - » The uncertainties in our current scientific knowledge of the global climate system which, for a given emissions scenario, result in different climate outcomes. It is important to understand the implications of other possible changes that are not included in models (e.g. collapse of ocean circulations, natural methane release, rapid melt of ice sheets).

- » Other specific challenges arise when global climate changes are downscaled to smaller scales, such as the UK. Quantitative projections of local climate change should be interpreted with care, as the method of downscaling introduces additional uncertainties.
- **The main impacts on the UK and overseas associated with these climate futures. The Committee needs to understand:**
  - » Whether and how the range of existing impact estimates, based on different methods and scenarios, can be aggregated into a common framework. This is especially relevant since the new UKCP09 projections have introduced a probabilistic approach which is not used in all impact models.
  - » What assumptions, and the uncertainties surrounding these, are used in models to translate changes in climate variables (such as precipitation) into impacts which concern policy makers (e.g. changes in flood risk or agricultural production). For example:
    - \* How does the UK's exposure to hazards or opportunities change? For example, is the risk of storm surges likely to increase?
    - \* The physical, social, environmental, institutional or economic factors that determine the potential scale of the impact, e.g. number of homes on the coast.
    - \* The assumptions that have been made about the UK's ability to adapt to the new threat or opportunity, such as the level of sea defence in place. And whether people could adapt to

the impact autonomously without any need for government intervention, or without causing difficulties for society or the environment.

- \* Whether estimates of impacts, both positive and negative, include the influence of other trends (population, economic growth, technology) often described as socio-economic factors, since even without climate change one would expect these trends to lead to changes in the impact overtime.
  
- » Whether the UK risks and opportunities that arise from climate change impacts in Continental Europe and countries further afield are likely to be significant. In particular risks may be related to food supplies, migration, supply chains and health.
  
- **The preparedness of the UK to adapt to impacts and exploit opportunities, what decisions could be made to improve these, when these decisions need to be made and by whom. In particular the Committee needs to understand:**
  - » How to make decisions when potential impacts are known, but where the precise probabilities and magnitudes of impacts are not known.
  
  - » The implications of uncertainty for decision making and the methods which decision makers might wish to adopt to minimise the possibility of making the most expensive errors.
  
  - » The current capacity of the UK to adapt to climate change impacts across a range of sectors or systems and what types of measure could be adopted, by

whom, to increase their preparedness. The Committee will draw upon existing adaptation plans in the UK and lessons learned from other countries.

- » When adaptations potentially lead to unanticipated and adverse consequences.
  - » How preparedness may develop autonomously in the future, to what extent government action is needed to stimulate adaptation, and, where necessary, ensure that it takes place in a sustainable way.
- **What are the costs and benefits associated with different adaptation responses? In particular the Committee needs to understand:**
    - » Whether responses are likely to be proportionate, where the cost of the response<sup>2</sup> is in proportion to the reduction in expected damage achieved by adapting to the impact.
    - » Understanding the economic and environmental costs and benefits of action sooner rather than later. Under what circumstances should decision makers delay investment in assets in order to gather new information, avoid disproportionate responses and ensure that future options are not limited by current actions.
    - » Or, if deferring decisions in long lived assets is not possible, whether these assets can be easily and more cost-effectively adapted at a later date.

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<sup>2</sup> Including any costs that the response may impose on other sectors of the economy e.g. costs to the environment.

- » The methodological issues that make judgements about costs and benefits difficult and how these might be overcome. For example: whether all benefits can be monetised; whether and how different types of impact can be aggregated over regions, sectors and time; how the distributional implications of any impacts should be taken into account. Where it is impossible to quantify benefits whether alternate approaches are more applicable such as cost effectiveness analysis, scoring, weighting and ranking or methods derived from precautionary approaches.
  - » Whether adaptation solutions deliver multiple objectives within and between sectors and/or bring benefits above and beyond those related to adaptation. Some may be no-regret options where the non-adaptation benefits exceed the costs. Related to this some adaptations may be justified because they reduce the costs from current climate extremes, as well as reducing our vulnerability to future climate change.
- **In addition, to promote effective adaptation actions by society as a whole, the Committee will develop a communications and stakeholder engagement strategy.<sup>3</sup> The main elements of which will include:**
    - » Contact with key stakeholders, including from the private and third sectors, to understand their views on adaptation related matters,

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<sup>3</sup> The ASC website is one stakeholder engagement tool - <http://www.theccc.org.uk/asc-home>. This will be the main vehicle for publishing ASC minutes, reports and research.

- » Analysis of other organisations calls for evidence on adaptation,
- » Stakeholder events and meetings,
- » Participation in other organisations conferences and workshops,

Armed with a very good understanding of the issues the Committee believes that it will be well placed to take a view on the nature and scale of the risks facing the UK and make judgements on the appropriateness of adaptation responses.

## ***Outputs of the Committee***

The Committee intends to produce the following outputs:

- Its assessment of the proposed CCRA methodology as soon as reasonably practicable after November 2009;
- Emerging ASC views during 2010 on the key climate risks drawing on emerging findings from the CCRA and other sources;
- During 2011, a preliminary view of current adaptation planning, including an assessment of what would characterise a well prepared society, drawing on a summary of responses provided under the Reporting Powers Framework and other sources;

- During 2012, a review of lessons learned during the first round of the CCRA to inform the development of subsequent CCRA's. This review will draw upon the experiences of the wide range of stakeholders involved in the CCRA process;
- The first progress report in 2014 which will set out our advice relating to the UK's preparedness for climate change.





