



Department  
for Environment  
Food & Rural Affairs

# Risks & Resilience Evidence Needs: A Defra Perspective

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# Paris Agreement shifted evidence focus

- Moved from proving that climate change is happening to understand the nature of this change
- Updated the government climate science requirements to reflect this:
  - 1) What are the current weather and climate risks in the UK and globally?
  - 2) What are the future risks we face from weather and climate under a range of possible scenarios?
  - 3) How can we avoid the most dangerous impacts of climate change?
  - 4) What are the impacts and opportunities of limiting warming to different temperature targets?



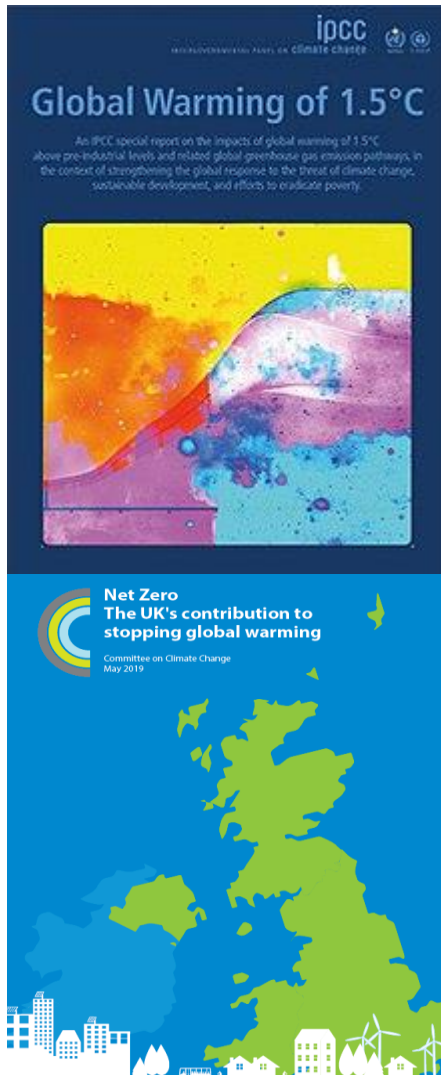
COP21 • CMP11  
**PARIS 2015**  
UN CLIMATE CHANGE CONFERENCE

# Defra's Climate Interests

- Defra is the UK Government lead for climate change adaptation
- Responsibilities under climate change mitigation for:
  - Agriculture, waste, F-gases, forestry, soils.
- Need to manage the trade-offs and exploit the synergies and co-benefits between climate mitigation and adaptation with areas such as:
  - Agriculture/food security
  - Land use, forestry
  - Natural environment and biodiversity
  - Marine
  - Air quality
  - Nature based solutions



# Recent developments



- Oct 2018 - IPCC Report on Global Warming of 1.5 Degrees C
- Nov 2018 – SPF Climate Resilience Programme Announced
- Nov 2018 – UKCP18 Launched; SoS speech on climate
- Dec 2018 – Resources & Waste Strategy
- May 2019 – CCC advice on net zero
- May 2019 – IPBES report on biodiversity
- May 2019 – 25 Year Environmental Plan – 1<sup>st</sup> Progress Report

# Upcoming



- Jul 2019 – ASC’s Biennial Progress Report on the National Adaptation Programme
- Aug 2019 – IPCC report on climate change and land
- Sept 2019 – IPCC report on oceans, cryosphere and climate change
- Sept 2019 – UN Climate Action Summit – UK Co-Champion of Resilience
- Autumn/Winter 2019 – UKCP18 (2.2km) projections
- Dec 2019 – UNFCCC COP 25
- Oct 2020 – CBD COP15
- Dec 2020 – UNFCCC COP 26

# 25 Year Environment Plan

## Our 25-year goals

### We will achieve:

- Clean air
- Clean and plentiful water
- Thriving plants and wildlife
- Reduced risk of harm from environmental hazards such as flooding and drought
- Using resources from nature more sustainably and efficiently
- Enhanced beauty, heritage and engagement with the natural environment

### We will manage pressures on the environment by:

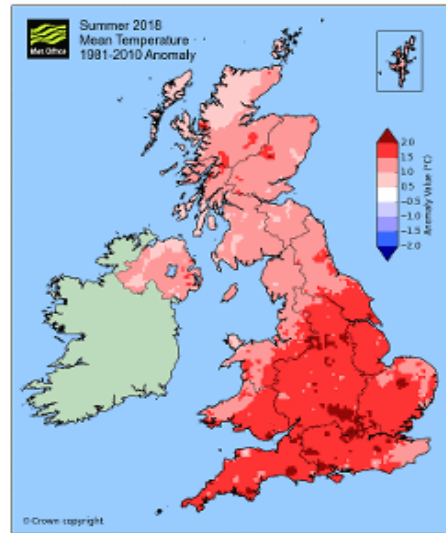
- Mitigating and adapting to climate change
- Minimising waste
- Managing exposure to chemicals
- Enhancing biosecurity

## Our policies will focus on:

- Using and managing land sustainably
- Recovering nature and enhancing the beauty of landscapes
- Connecting people with the environment to improve health and wellbeing
- Increasing resource efficiency, and reducing pollution and waste
- Securing clean, productive and biologically diverse seas and oceans
- Protecting and improving the global environment

# Already feeling weather and climate impacts

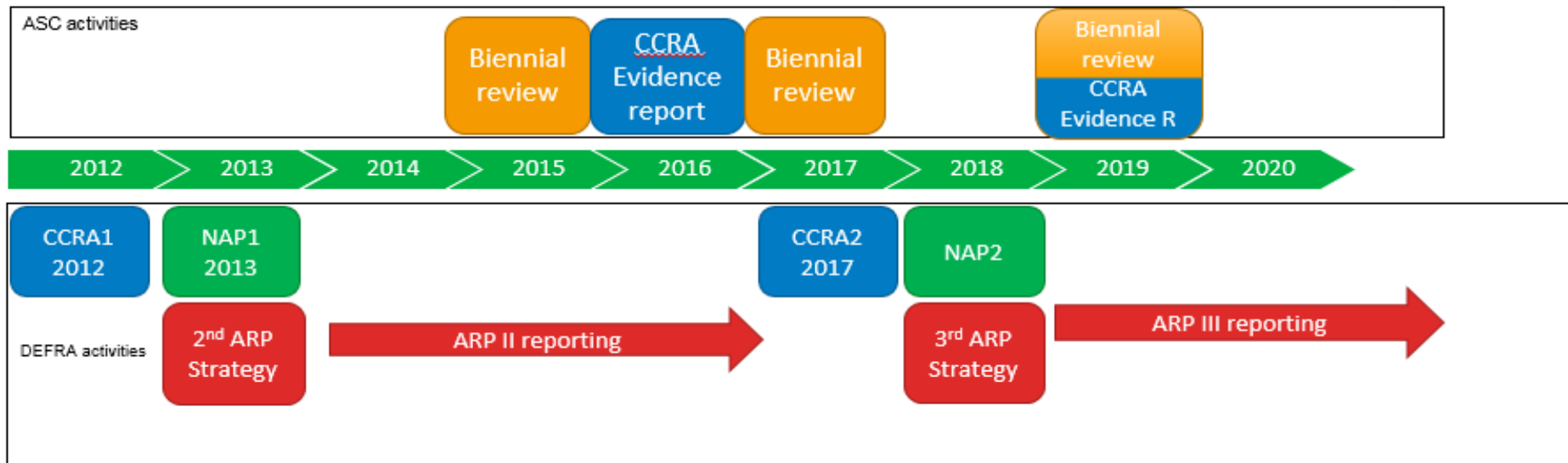
- Extreme weather events in UK have extensive impacts
- 2018 heatwave
  - Hottest in England
  - Increased wild fires
  - Buckled rail tracks
- 2015/16 Storms
  - Storm Desmond - £1.3Bn



# The Climate Change Act sets UK's adaptation framework

- The Climate Change Act 2008 requires a UK Climate Change Risk Assessment (CCRA) every 5 years followed by a National Adaptation Programme (NAP) to address the risks identified.
- The Act created an Independent Adaptation Sub-Committee (ASC) of the Committee on Climate Change to advise Government on adaptation and review progress on implementation of the NAP.
- The Act also created an adaptation reporting power (ARP) that enables Government to require infrastructure providers and public bodies to report on their preparedness for climate change.

Monitoring trends in climate risks and adaptation actions

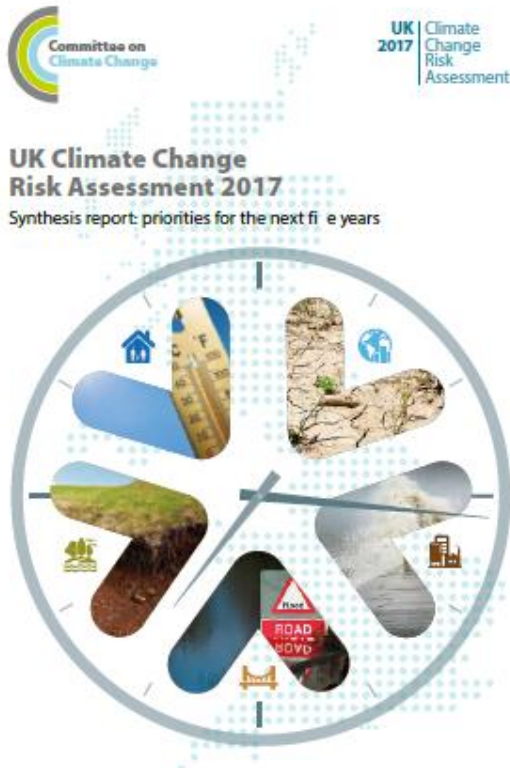


# Climate Change Risk Assessment 2

Top six of inter-related climate change risks for the United Kingdom

<b>Flooding and coastal change risks to communities, businesses and infrastructure (Ch3, Ch4 <b>Ch5</b>, Ch6)</b>	<b>MORE ACTION NEEDED</b>
<b>Risks to health, wellbeing and productivity from high temperatures (Ch5, Ch6)</b>	
<b>Risk of shortages in the public water supply, and for agriculture, energy generation and industry (Ch3, <b>Ch4</b>, Ch5, Ch6)</b>	
<b>Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity (Ch3)</b>	
<b>Risks to domestic and international food production and trade (Ch3, Ch6, <b>Ch7</b>)</b>	
<b>New and emerging pests and diseases, and invasive non-native species, affecting people, plants and animals (Ch3, <b>Ch5</b>, Ch7)</b>	<b>RESEARCH PRIORITY</b>
<b>NOW</b> -----> <b>RISK MAGNITUDE</b> -----> <b>FUTURE</b> <div>LOW</div> <div>MEDIUM</div> <div>HIGH</div>	

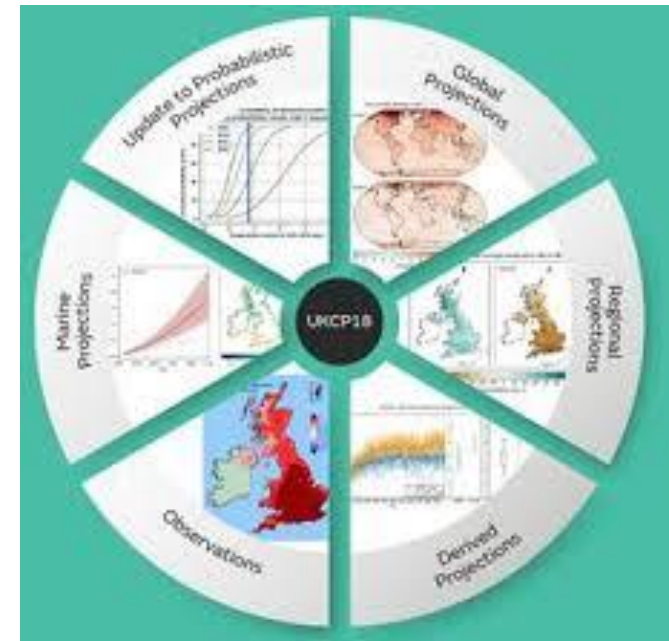
# Climate Change Risk Assessment 3



- The next CCRA is to be published in January 2022
- ASC preparing the evidence report for CCRA3
- Evolution of CCRAs
  - CCRA 1 – focus on the science
  - CCRA 2 – urgency framework looked at how policies, actions and socio-economic change are altering urgency
  - CCRA3 – similar in approach to CCRA2 but with more emphasis on place based systems and more accessible outputs
- Mostly a review of existing research but with 6 small research projects
- ASC did call for evidence in May 2019

# UK Climate Projections (UKCP18)

- Most up to date assessment of UK climate over 21<sup>st</sup> Century
- Major upgrade to the previous projections (UKCP09) and introduction of new products
- Provide the tools to inform adaptation decisions
- Why update now?
  - Paris Agreement – inclusion of mitigation scenarios
  - Improvements in science and capability
  - User demand e.g. greater resolution, global projections
  - Timely – to feed into the next Climate Change Risk Assessment due in 2022.



# Priority Evidence Gaps



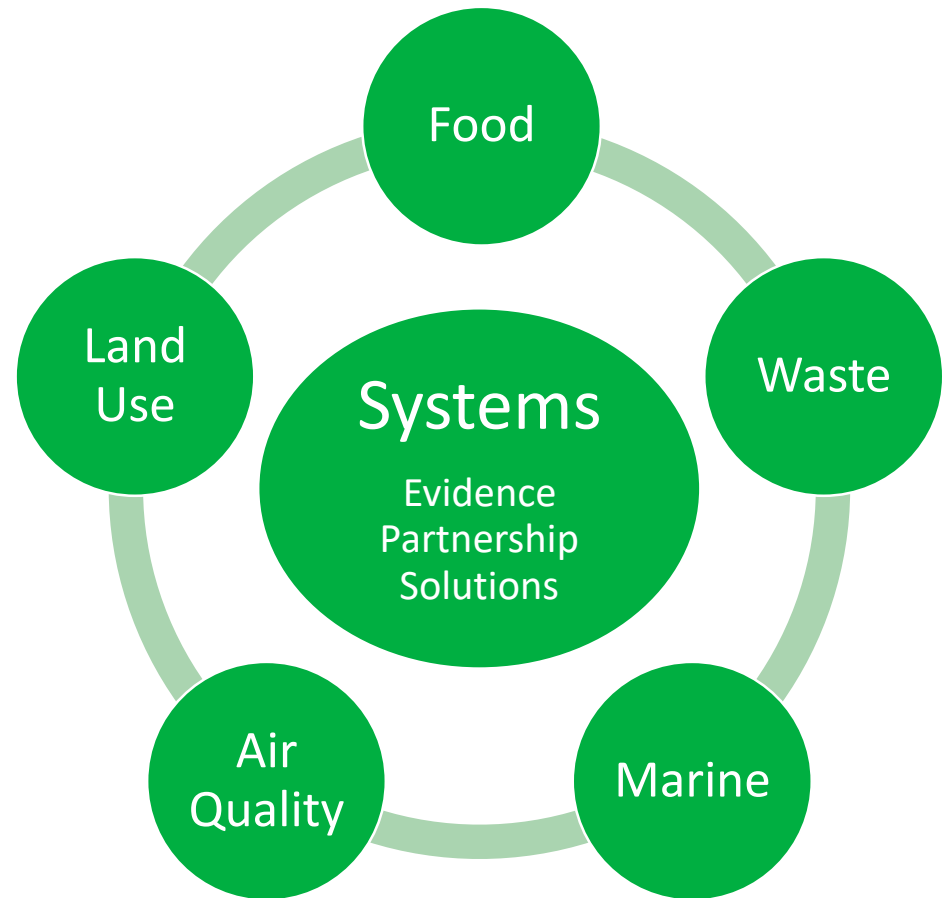
The ASC highlighted these priority evidence gaps:

1. Development of **UK spatial modelling capability** that is able to link different sectors together (e.g. natural environment, human health and infrastructure) and shows the geographical distribution of risks.
2. Development of a consistent set of **socio-economic scenarios** for the UK, including population and technological change.
3. Robust **decision support frameworks** to enable decision makers to assess risks and plan adaptation responses consistently.
4. Continued and enhanced investment in **monitoring** of observed changes in the natural environment, land use, population, the built environment and infrastructure.
5. Better understanding of **behaviour change** in relation to climate risks.
6. Better understanding of what **adaptation options** are available and what their effectiveness is in reducing risk.

# Systems Research Programme

At such a time that the UK exits the EU, Defra will be able to make new and multiple policy changes across the Defra group portfolio. Key objectives are:

- Bring together interdisciplinary evidence into systems frameworks (including models) that describe and identify interconnected issues;
- Identify knowledge gaps to define strategic research capability priorities to support policy decisions;
- Strengthen interdisciplinary links between the research community, Government policy, evidence and analysis communities to:
  - Drive interdisciplinary research with a focus on solutions thinking
  - Build relationships for science with impact,
  - Support robust, evidence-based policy;
- Enable robust, cross-cutting evaluation of the impacts of multiple policy decisions, whilst avoiding unintended consequences of policy-making;
- Build on existing work by Defra and partners, to ensure delivery of agreed project aims.



# Summary

- Paris Agreement shifted the evidence focus
- Defra lead on domestic climate change adaptation but also have wider climate interests
- The 5 yearly adaptation cycle is an iterative process based on best available science at the time
- Adaptation requires action by all - government, business, individuals
- UKCP18 is not the end – 2.2km released later this year, encourage wider uptake to consider impacts
- Need for more multidisciplinary research including systems based