SPF UK Climate Resilience Programme

Webinar Series 2022

Met Office

UK Research and Innovation

UK CLIMATE RESILIENCE PROGRAMME

Website: https://www.ukclimateresilience.org/

Timings

12:00	**UK Climate Resilience Programme news**	**Kate Lonsdale** *UK Climate Resilience Programme Champion, University of Leeds*
12.10	**The economic case for climate change adaptation**	**Paul Watkiss** *Paul Watkiss Associates*
12.35	**Response**	**Dr Nigel Miller** *Defra*
12.40	**Q&A**	**Panel**
13.00	**End**	

How to engage

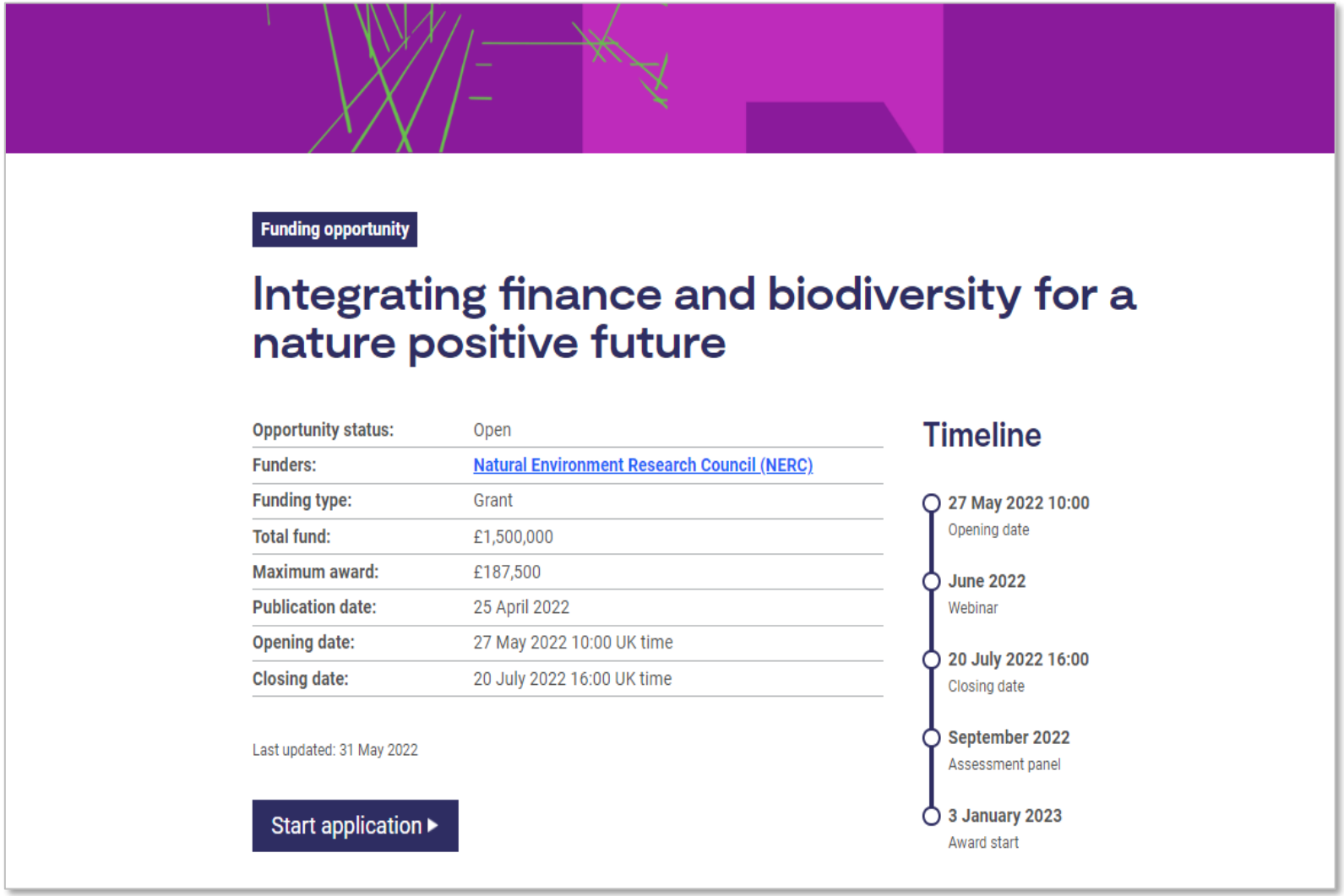
- Presentations first then Q&A and discussion
- Post questions in the Q&A box at any time
- Up-vote your favourites
- Attendees will remain muted unless enabled to speak by the host
- Webinar (audio and slides) will be shared after the event
- Technical problems – chat
- The webinar is being recorded

Twitter: @UKCRP_SPF #UKclimateResil
Website: https://www.ukclimateresilience.org/

UK CLIMATE RESILIENCE PROGRAMME

NERC Funding opportunity

- closing 20th July



Funding opportunity

Integrating finance and biodiversity for a nature positive future

Opportunity status:	Open
Funders:	Natural Environment Research Council (NERC)
Funding type:	Grant
Total fund:	£1,500,000
Maximum award:	£187,500
Publication date:	25 April 2022
Opening date:	27 May 2022 10:00 UK time
Closing date:	20 July 2022 16:00 UK time

Last updated: 31 May 2022

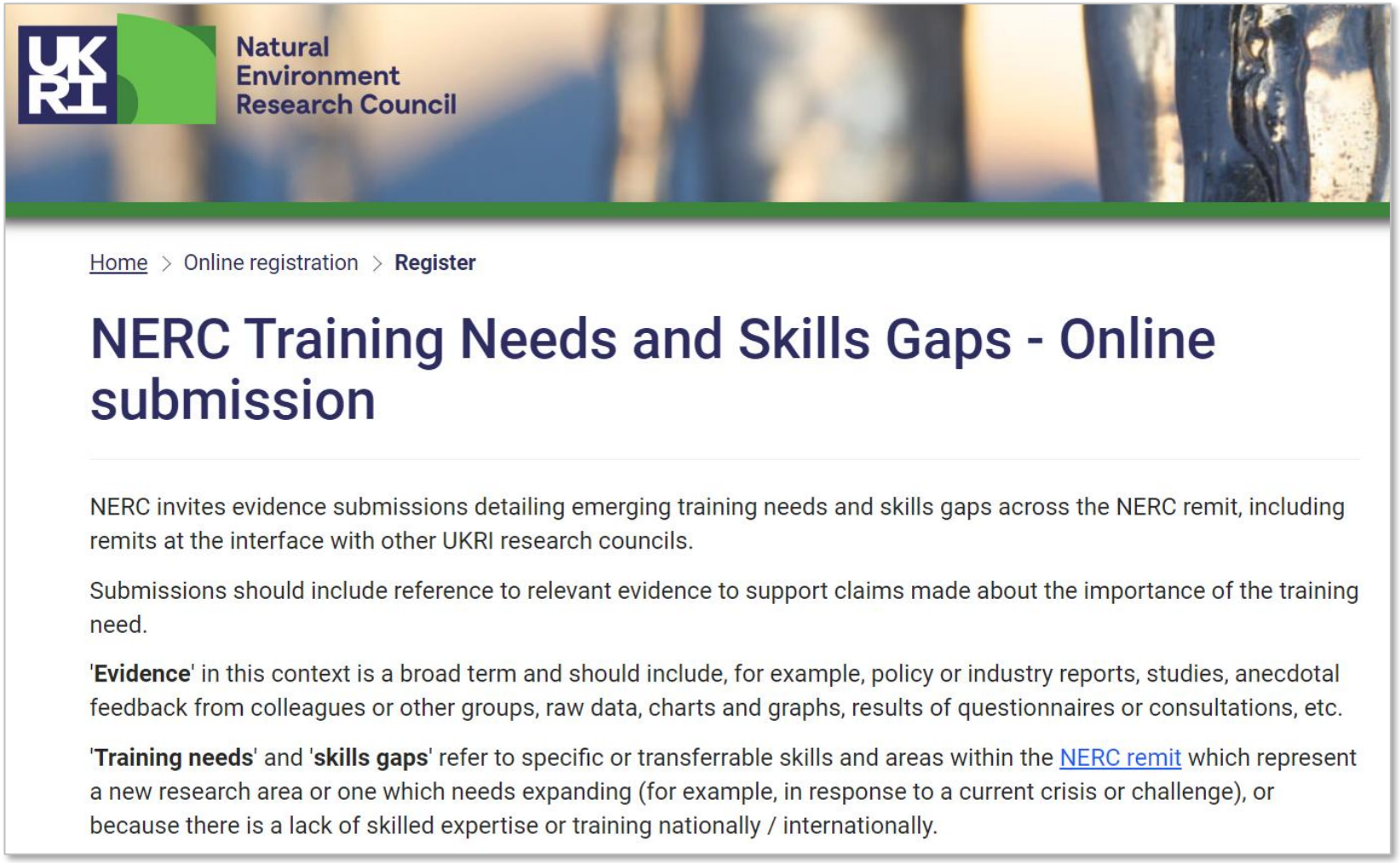
Start application ▸

Timeline

- **27 May 2022 10:00** Opening date
- **June 2022** Webinar
- **20 July 2022 16:00** Closing date
- **September 2022** Assessment panel
- **3 January 2023** Award start

NaturePositive@nerc.ukri.org

NERC Call for Evidence - deadline extended until 10 June 2022



Natural Environment Research Council

Home > Online registration > **Register**

NERC Training Needs and Skills Gaps - Online submission

NERC invites evidence submissions detailing emerging training needs and skills gaps across the NERC remit, including remits at the interface with other UKRI research councils.

Submissions should include reference to relevant evidence to support claims made about the importance of the training need.

'**Evidence**' in this context is a broad term and should include, for example, policy or industry reports, studies, anecdotal feedback from colleagues or other groups, raw data, charts and graphs, results of questionnaires or consultations, etc.

'**Training needs**' and '**skills gaps**' refer to specific or transferrable skills and areas within the NERC remit which represent a new research area or one which needs expanding (for example, in response to a current crisis or challenge), or because there is a lack of skilled expertise or training nationally / internationally.

https://reg.nerc.ac.uk/evidence/

UK CLIMATE RESILIENCE PROGRAMME

Special Issue: *Climate Risk Management*

ARTICLE IN PRESS

Climate Risk Management xxx (xxxx) xxx

Contents lists available at ScienceDirect

Climate Risk Management

journal homepage: www.elsevier.com/locate/crm

UK Climate Risk Assessment and Management

The concept of climate risk has become increasingly important and central to climate change research (Reisinger et al., 2020) and practice (Willows and Connell, 2003) over the last two decades. Climate risks result from the interactions of climate-related hazards with the vulnerability and exposure of human and natural systems, as well as human responses to climate change (such as adaptation).

Mandated by the 2008 Climate Change Act, the UK Government is required to publish a climate change risk assessment (CCRA) every five years, with the third CCRA being the most recent (HM Government, 2022). Since the publication of the second risk assessment in 2017, significant scientific advancements have occurred. This has been accompanied by the emergence of a UK community of researchers and practitioners working on climate science, impacts, adaptation, vulnerability and services who use climate risk as a central concept.

This Special Issue is the result of *Climate Risk Management*'s first Open Special issue (launched in 2020), which sought contributions of new and original research on UK climate risk assessment and management in order to support the evidence base for the UK's Third CCRA. The Special Issue includes twelve papers that span both the assessment and the management of climate risk in the UK. Several papers focus on water-associated risks, with analysis ranging from the national to the catchment scale. These papers include scientific and methodological innovations in the assessments of flooding in Great Britain (Kay et al., 2021), drought in Scotland (Visser-Quinn et al., 2021), river water temperatures in England (Wilby and Johnson, 2020), river ecosystem resilience in the Lee catchment

https://doi.org/10.1016/j.crm.2022.100440

The economic case for climate change adaptation

Paul Watkiss
Paul Watkiss Associates

Met Office

The Economic Case for Climate Change Adaptation

Paul Watkiss and Alistair Hunt

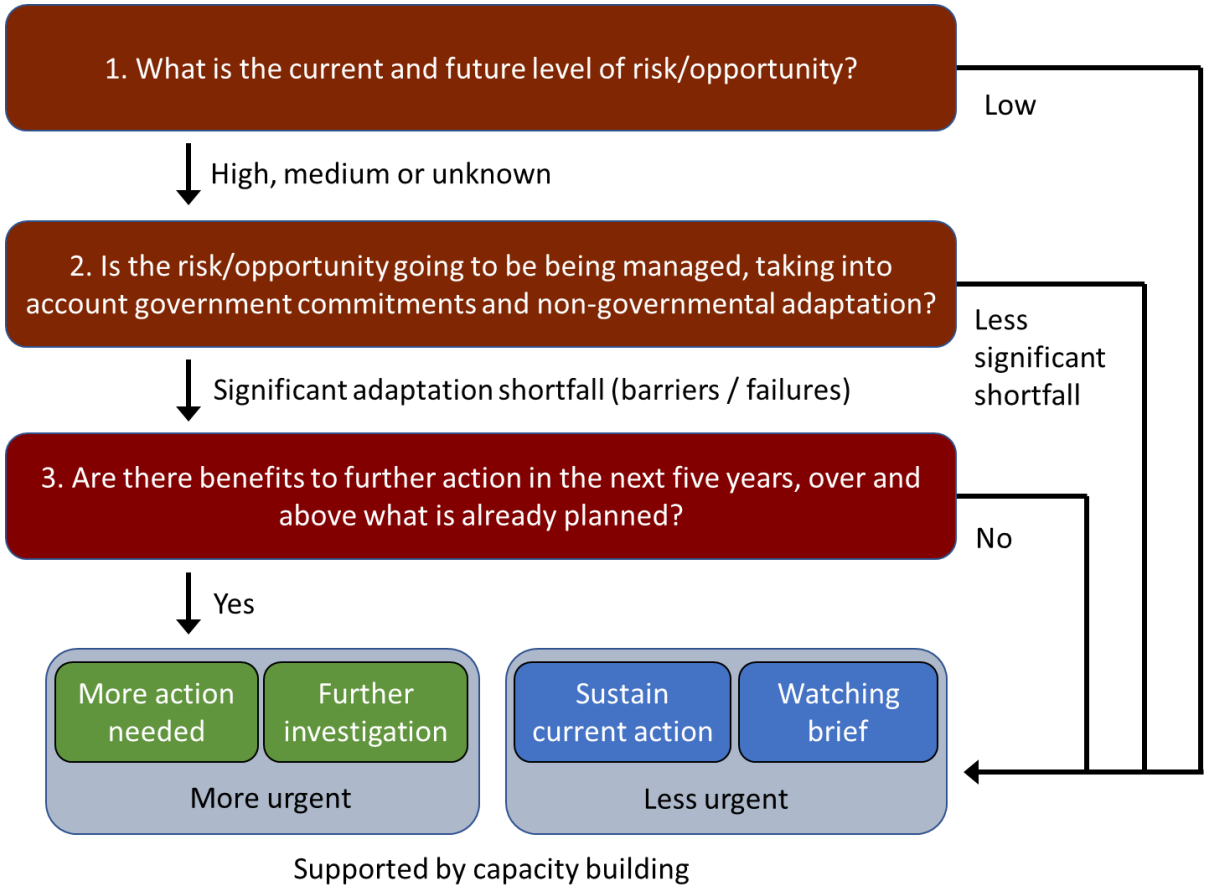
UK CR Presentation

Presentation

- Economics of climate change in the UK CCRA3
- Costs and benefits and the case for adaptation
- Mainstreaming adaptation economics
- Emerging issues

CCRA3

- Focused on ~60 priority risks and opportunities
- Step 1 - Included a study on the economic costs of climate change
- Economic costs as measured by government – societal impacts (market and non-market)
  - Updated a similar analysis undertaken for CCRA1
- Step 3 - analysis of economic benefits of adaptation interventions



Coverage

- Cover many more risks than most IA studies (>60)
- Valuation

Risks		Opportunities		
VH		+VH		£billions/year
H		+H		£hundreds of millions/year
M		+M		£tens of millions/year
L		+L		£<10 million/year

  - Some areas detailed costing,
  - Some value (based on impacts, indicative)
  - Some just not possible to value

- Risks, opportunities, gaps

Risk / Opportunity	2050s		2080s, 2°C		2080s, 4°C	
NE5. Risks to natural carbon stores and sequestration	VH		VH		VH	
I1. Risks to infrastructure networks from cascading failures	VH		VH		VH	
H1. Risks to health and wellbeing from high temperatures	VH		VH		VH	
H3a River and surface flooding	VH		VH		VH	
B1. Risks to business from flooding	VH		VH		VH	
B4. Risks to finance, investment and insurance	VH		VH		VH	
ID8: Risk finance sector	VH		VH		VH	
I2. Risks to infrastructure services from flooding	H – VH		H - VH		VH	
H5: Risks to building fabric	H		VH		VH	
H6b: Risks from increased summer household energy demand	H		VH		VH	
ID7: Risks international trade disruption	M		H		VH	
B5. Risks to business from reduced employee productivity	M		M		H - VH	
I12. Risks to transport (in addition to flooding)	M – H		M - H		M - H	
NE4. Risk to soils.	H		H		H	
NE6. Risks to and opportunities for: *Agriculture*	H	+H	VH	+VH	VH	+VH
ID1: Risks to UK food availability	VH	+VH	VH	+VH	VH	+VH
I10. Risks to energy (in addition to flooding)	H-VH	+H-VH	H-VH	+H-VH	H-VH	+H-VH
I11. Risks to offshore infrastructure from storms and high waves	H-VH	+H-VH	H-VH	+H-VH	H-VH	+H-VH
N11.Risks to freshwater species and habitats	H		H		H - VH	
I8. Risks to public water supplies from reduced water availability	H		H		H	
H3b Coastal flooding	H		H		H	
B3. Risks to businesses from water scarcity	H		H		H	
NE7. Risks to agriculture from pests, pathogens and invasive	M		H		H	
H10a: Risks to household water supplies	H		H		H	
I5. Risks to transport networks from slope / embankment failure	M – H		M - H		H	
NE8. Risks to forestry from pests, pathogens and invasive	M		M		H	
NE14. Risks to marine species, habitats and fisheries	M		M		H	
I13. Risks to digital	M		M		H	
ID4: Violent conflict	M		M		H	
NE16. Risks to marine from pests, pathogens and invasive	M		M		M	
NE17. Risks and opportunities to coastal species and habitats	M		M		M	
I3. Risks to infrastructure services from coastal flooding	M		M		M	
I4. Risks to bridges and pipelines from flooding and erosion	M		M		M	
I6. Risks to hydroelectric generation from low or high river flows	M	+M	M	+M	M	+M
I7. Risks to subterranean and surface infrastructure	M		M		M	
NE6. Risks to and opportunities for: Forestry	L - H		L - H		L - H	
B2. Risks to business and infrastructure from coastal change	M		M		M	
H8: Risks to health from vector-borne disease	L - M		M		M	
ID9 Public Health	L		M		M	
N12. Risks to freshwater from pests, pathogens and invasive	L		L		M	
H4: Risks to viability of coastal communities from sea level rise	L		L		M	
H9: Risks to food safety and food security	L-M		L-M		L-M	
H7a: Risks to health and wellbeing from changes in air pollution	L		L		L	
ID3: Human mobility	L		L		L	
NE1. Risks to terrestrial species and habitats	Unknown		Unknown		Unknown	
NE2. Risks to terrestrial from pests, pathogens and invasive	Unknown		Unknown		Unknown	
NE3. Opportunities from new species colonisations (terrestrial)	Unknown		Unknown		Unknown	
N10. Risks to aquifers and agricultural land from sea level rise	Unknown		Unknown		Unknown	
NE18. Risks and opportunities to landscape character	Unknown		Unknown		Unknown	
I9. Risks to energy generation from reduced water availability	Unknown		Unknown		Unknown	
H7b: Risks to health / wellbeing from changes in aeroallergens	Unknown		Unknown		Unknown	
H10b: Risks to water quality	Unknown		Unknown		Unknown	
H11: Risks to cultural heritage	Unknown		Unknown		Unknown	
H12: Risks to health and social care delivery	Unknown		Unknown		Unknown	
H13: Risks to education and prison services	Unknown		Unknown		Unknown	
ID5: Law and governance	Unknown		Unknown		Unknown	
ID10 Multiplication	Unknown		Unknown		Unknown	
B6. Risks to business from disruption to supply chains / dist	Unknown		Unknown		Unknown	
H2. Opportunities for health and wellbeing from high temp	+ VH		+ VH		+ VH	
B7. Opportunities for businesses from changes in demand	+VH		+VH		+VH	
H6a: Opportunities reduced winter household energy demand	+ VH		+ VH		+ VH	
NE9. Opportunities for agricultural and forestry productivity	+H		+H		+VH	
ID2: Opportunities for UK food availability	+H		+H		+H	
ID6: Opportunities international trade routes	+M		+H		+VH	
NE15. Opportunities to marine species, habitats and fisheries	+M		+M		+H	
N13. Opportunities to freshwater species and habitats	+L		+L		+M	

	2020s	2050s	2080s
Loss of staff hours due to high internal building temperatures	-H	-H - VH?	-H - VH?
Residential properties at significant risk of flooding	-H	-H	-VH
Non-residential properties at significant risk of flooding	-H	-H	-VH
Insufficient summer river flows to meet environmental targets	-H	-H	-H
Climate risks to investment funds	-H?	-H?	-H?
Energy demand for cooling	-M	-H	-H
Summer morbidity due to higher temperatures	-M	-H	-H
Hospitals and schools at significant risk of flooding	-M	-H	-H
Distribution of marine alien/invasive species	-M	-M	-H
Public water supply-demand deficits	+M	-H	-H
Risks to species and habitats due to coastal evolution	-M	-M	-H
Risks to coastal habitats due to flooding	-M	-M	-H
Overheating of buildings	-M	-M	-H
Power stations/sub-stations at significant risk of flooding	-M	-M	-M/H
Increased subsidence risk due to rainfall changes	-M	-M	-M
Agricultural land lost due to coastal erosion	-M	-M	-M
Energy transmission efficiency capacity losses due to heat - over ground	-M	-M	-M
A decrease in output for businesses due to supply chain disruption	-M	-M	-M
Extreme weather event (flooding and storms) mortality	-M	-M	-M
Extreme weather event (flooding and storms) injuries	-M	-M	-M
Heat related damage/disruption to energy infrastructure	-L/M	-L/M	-L/M
Increased ocean acidification	-L	-M	-M
Decline in marine water quality due to sewer overflows	-L	-M	-M
Risks of human illness due to marine pathogens	-L	-M	-M
Forest extent affected by red band needle blight	-L	-L/M	-M
Summer mortality due to higher temperatures	-L	-M	-M
Risk of pests to biodiversity	-L	-M	-M
Risk of diseases to biodiversity	-L	-M	-M
Species unable to track changing 'climate space'	-L	-M	-M
Changes in species migration patterns	-L	-M	-M
Biodiversity risks due to warmer rivers and lakes	-L	-L	-M
Generalist species more able to adapt than specialists	-L	-L	-M
Wildfires due to warmer and drier conditions	-L	-L	-M
Mortality due to summer air pollution (ozone)	-L	-L	-M
Disruption to road traffic due to flooding	-L	-L	-M
Flood risk for Scheduled Ancient Monument sites	-L	-L	-M
Changes in wheat yield (due to warmer conditions)	+H	+H	+H
Reduction in energy demand for heating	+H	+H	+VH
An expansion of tourist destinations in the UK	+H?	+H?	+H?
Decline in winter morbidity due to higher temperatures	+H	+H	+VH
An expansion of tourist destinations in the UK	+H?	+H?	+H?
Decline in winter mortality due to higher temperatures	+M	+M	+H
Changes in sugar beet yield (due to warmer conditions)	+M	+M	+M
Opening of Arctic shipping routes due to ice melt	+L	+M	+M

CCRA1

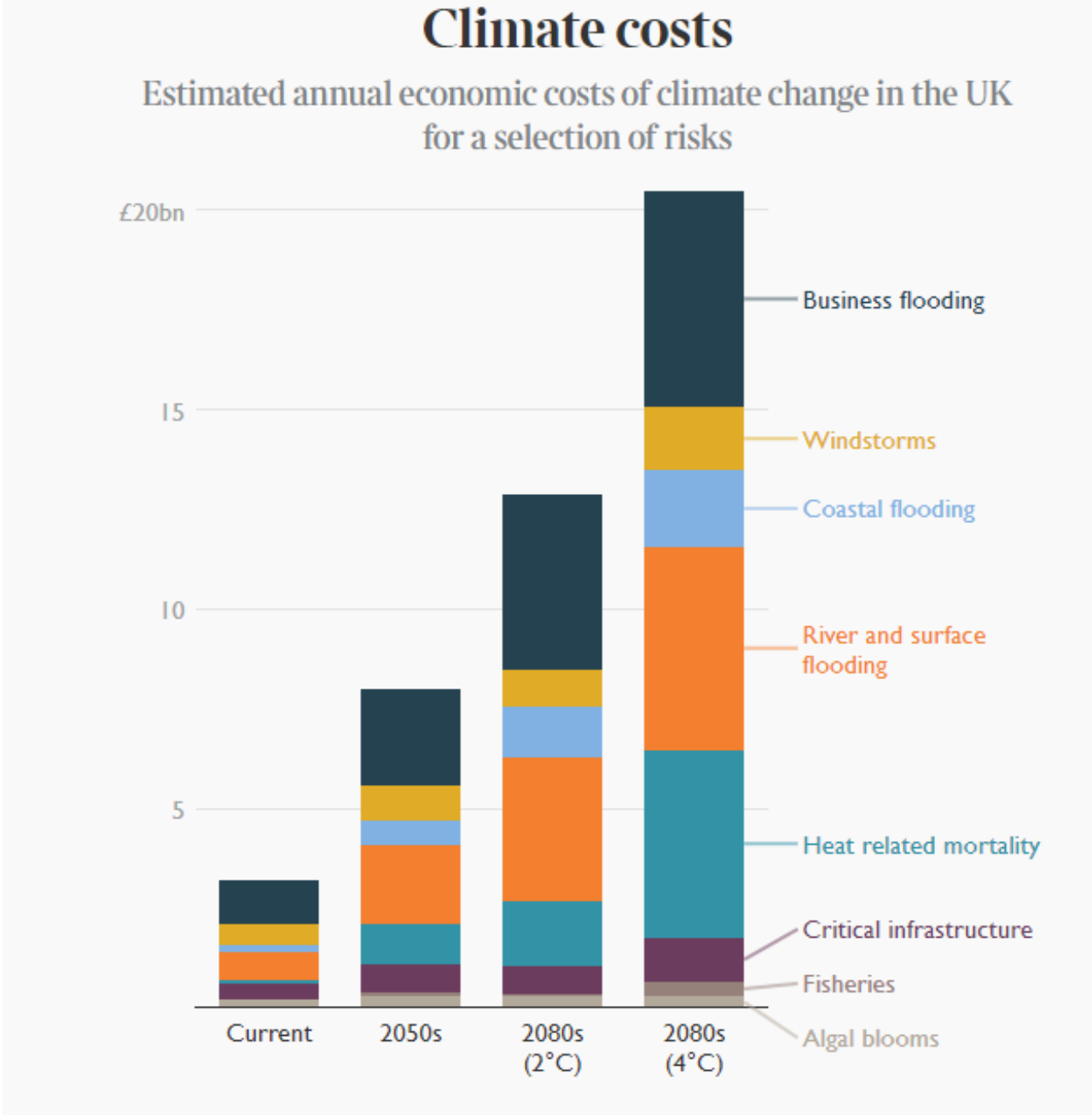
3 VH → 15 VH

CCRA3

Risk / Opportunity	2050s	2080s, 2°C	2080s, 4°C
NE5. Risks to natural carbon stores and sequestration	VH	VH	VH
I1. Risks to infrastructure networks from cascading failures	VH	VH	VH
H1. Risks to health and wellbeing from high temperatures	VH	VH	VH
H3a River and surface flooding	VH	VH	VH
B1. Risks to business from flooding	VH	VH	VH
B4. Risks to finance, investment and insurance	VH	VH	VH
ID8: Risk finance sector	VH	VH	VH
I2. Risks to infrastructure services from flooding	H – VH	H - VH	VH
H5: Risks to building fabric	H	VH	VH
H6b: Risks from increased summer household energy demand	H	VH	VH
ID7: Risks international trade disruption	M	H	VH
B5. Risks to business from reduced employee productivity	M	M	H - VH
I12. Risks to transport (in addition to flooding)	M – H	M - H	M - H
NE4. Risk to soils.	H	H	H
NE6. Risks to and opportunities for: *Agriculture*	H +H	VH +VH	VH +VH
ID1: Risks to UK food availability	VH +VH	VH +VH	VH +VH
I10. Risks to energy (in addition to flooding)	H-VH +H-VH	H-VH +H-VH	H-VH +H-VH
I11. Risks to offshore infrastructure from storms and high waves	H-VH +H-VH	H-VH +H-VH	H-VH +H-VH
N11.Risks to freshwater species and habitats	H	H	H - VH
I8. Risks to public water supplies from reduced water availability	H	H	H
H3b Coastal flooding	H	H	H
B3. Risks to businesses from water scarcity	H	H	H
NE7. Risks to agriculture from pests, pathogens and invasive	M	H	H
H10a: Risks to household water supplies	H	H	H
I5. Risks to transport networks from slope / embankment failure	M – H	M - H	H
NE8. Risks to forestry from pests, pathogens and invasive	M	M	H
NE14. Risks to marine species, habitats and fisheries	M	M	H
I13. Risks to digital	M	M	H
ID4: Violent conflict	M	M	H
NE16. Risks to marine from pests, pathogens and invasive	M	M	M
NE17. Risks and opportunities to coastal species and habitats	M	M	M
I3. Risks to infrastructure services from coastal flooding	M	M	M
I4. Risks to bridges and pipelines from flooding and erosion	M	M	M
I6. Risks to hydroelectric generation from low or high river flows	M +M	M +M	M +M
I7. Risks to subterranean and surface infrastructure	M	M	M
NE6. Risks to and opportunities for: Forestry	L - H	L - H	L - H
B2. Risks to business and infrastructure from coastal change	M	M	M
H8: Risks to health from vector-borne disease	L - M	M	M
ID9 Public Health	L	M	M
N12. Risks to freshwater from pests, pathogens and invasive	L	L	M
H4: Risks to viability of coastal communities from sea level rise	L	L	M
H9: Risks to food safety and food security	L-M	L-M	L-M
H7a: Risks to health and wellbeing from changes in air pollution	L	L	L
ID3: Human mobility	L	L	L
NE1. Risks to terrestrial species and habitats	Unknown	Unknown	Unknown
NE2. Risks to terrestrial from pests, pathogens and invasive	Unknown	Unknown	Unknown
NE3. Opportunities from new species colonisations (terrestrial)	Unknown	Unknown	Unknown
N10. Risks to aquifers and agricultural land from sea level rise	Unknown	Unknown	Unknown
NE18. Risks and opportunities to landscape character	Unknown	Unknown	Unknown
I9. Risks to energy generation from reduced water availability	Unknown	Unknown	Unknown
H7b: Risks to health / wellbeing from changes in aeroallergens	Unknown	Unknown	Unknown
H10b: Risks to water quality	Unknown	Unknown	Unknown
H11: Risks to cultural heritage	Unknown	Unknown	Unknown
H12: Risks to health and social care delivery	Unknown	Unknown	Unknown
H13: Risks to education and prison services	Unknown	Unknown	Unknown
ID5: Law and governance	Unknown	Unknown	Unknown
ID10 Multiplication	Unknown	Unknown	Unknown
B6. Risks to business from disruption to supply chains / dist	Unknown	Unknown	Unknown
H2. Opportunities for health and wellbeing from high temp	+ VH	+ VH	+ VH
B7. Opportunities for businesses from changes in demand	+VH	+VH	+VH
H6a: Opportunities reduced winter household energy demand	+ VH	+ VH	+ VH
NE9. Opportunities for agricultural and forestry productivity	+H	+H	+VH
ID2: Opportunities for UK food availability	+H	+H	+H
ID6: Opportunities international trade routes	+M	+H	+VH
NE15. Opportunities to marine species, habitats and fisheries	+M	+M	+H
N13. Opportunities to freshwater species and habitats	+L	+L	+M

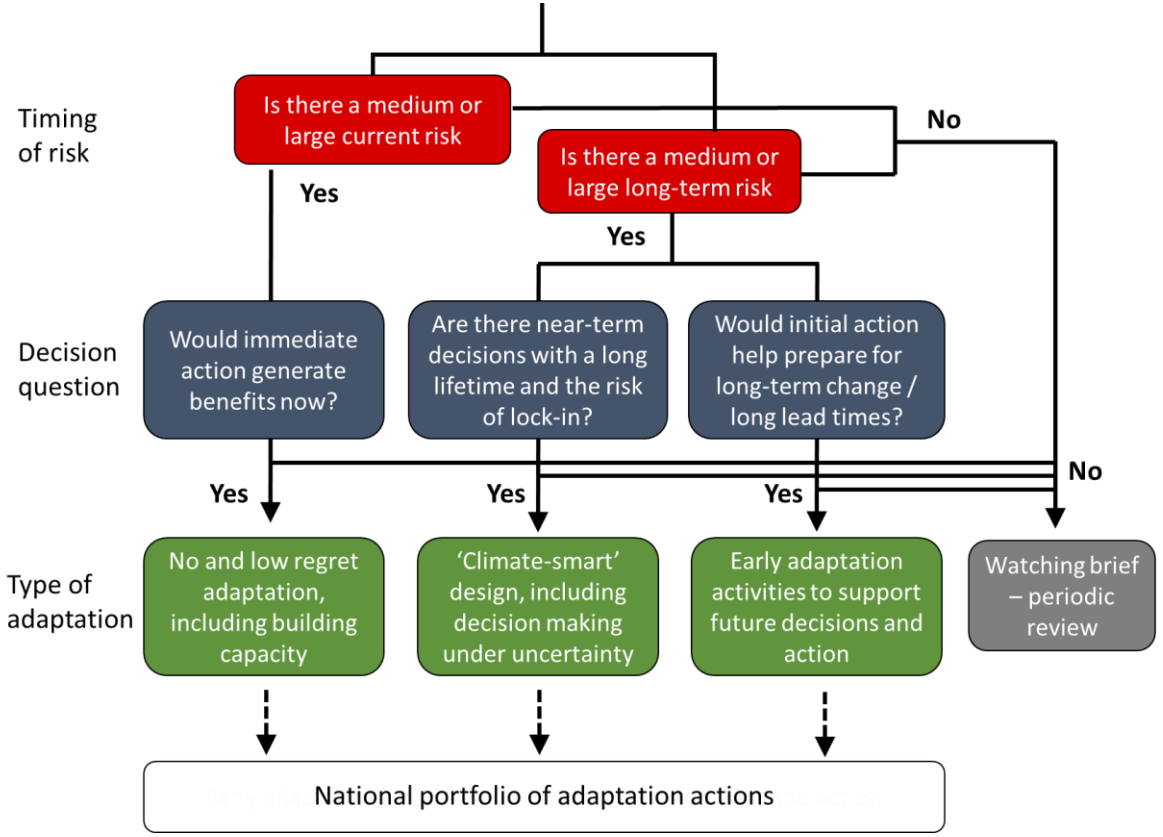
CCRA3 Magnitude

- Economic costs of CC are large
- But perceptions of values are different due to COVID
- Large differences in values 2 vs 4 but….

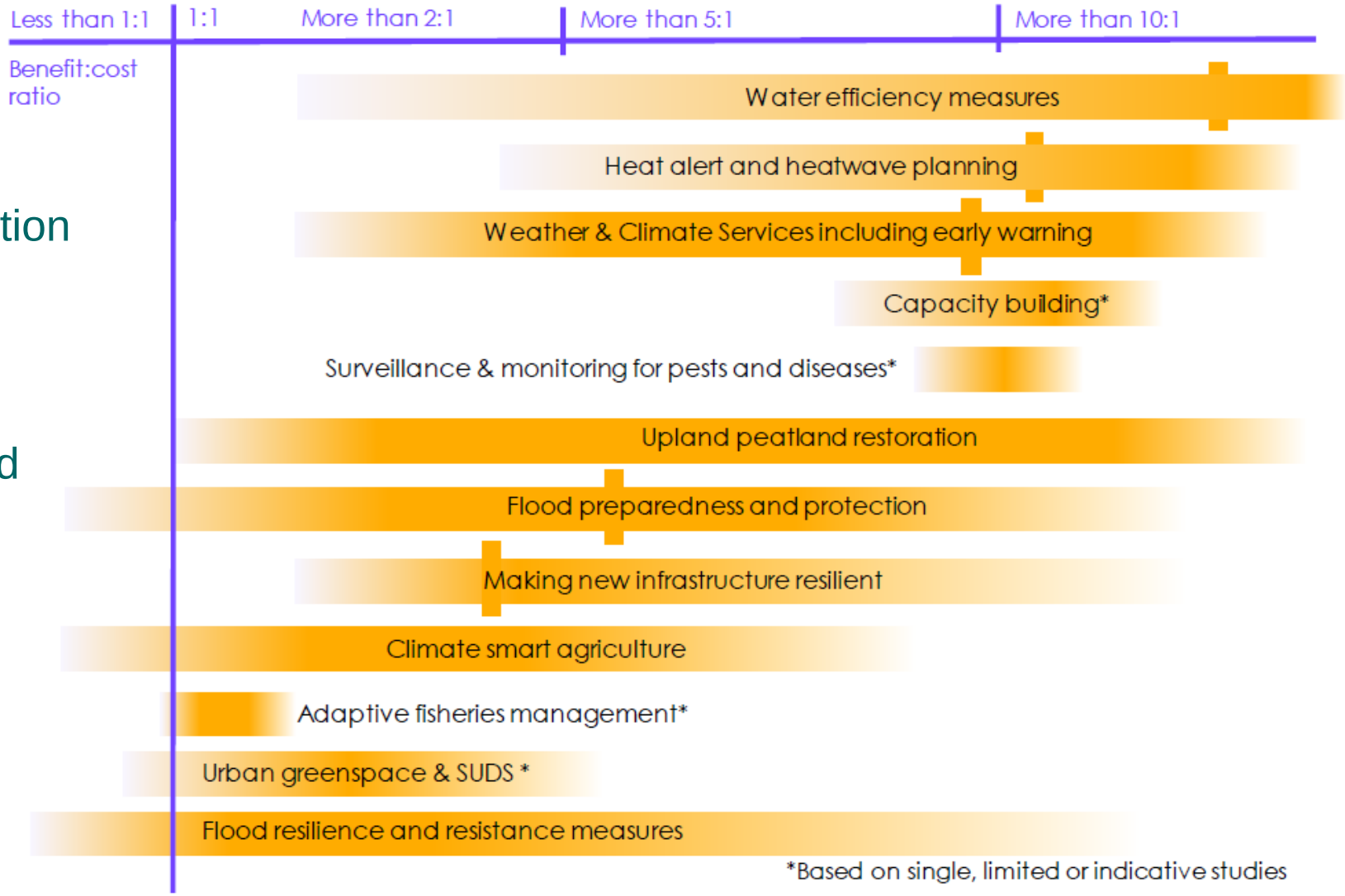


Adaptation Costs and Benefits

- CCRA3 step 3 – identify case for further action
- Economic case for adaptation made difficult by discounting and uncertainty
- And links between climate and socio-economic consequences, and adaptation effectiveness
- CCRA3 tried to identify areas where economic case for adaptation in NAP (next five years)
- 3 building blocks
- Reviewed literature to identify case for adaptation for all 60 risks and opportunities



- Benefit to cost ratios of adaptation
- BCR >1 positive case
- CCC case that adaptation good value for money
  - No and low regrets
  - But also some early action

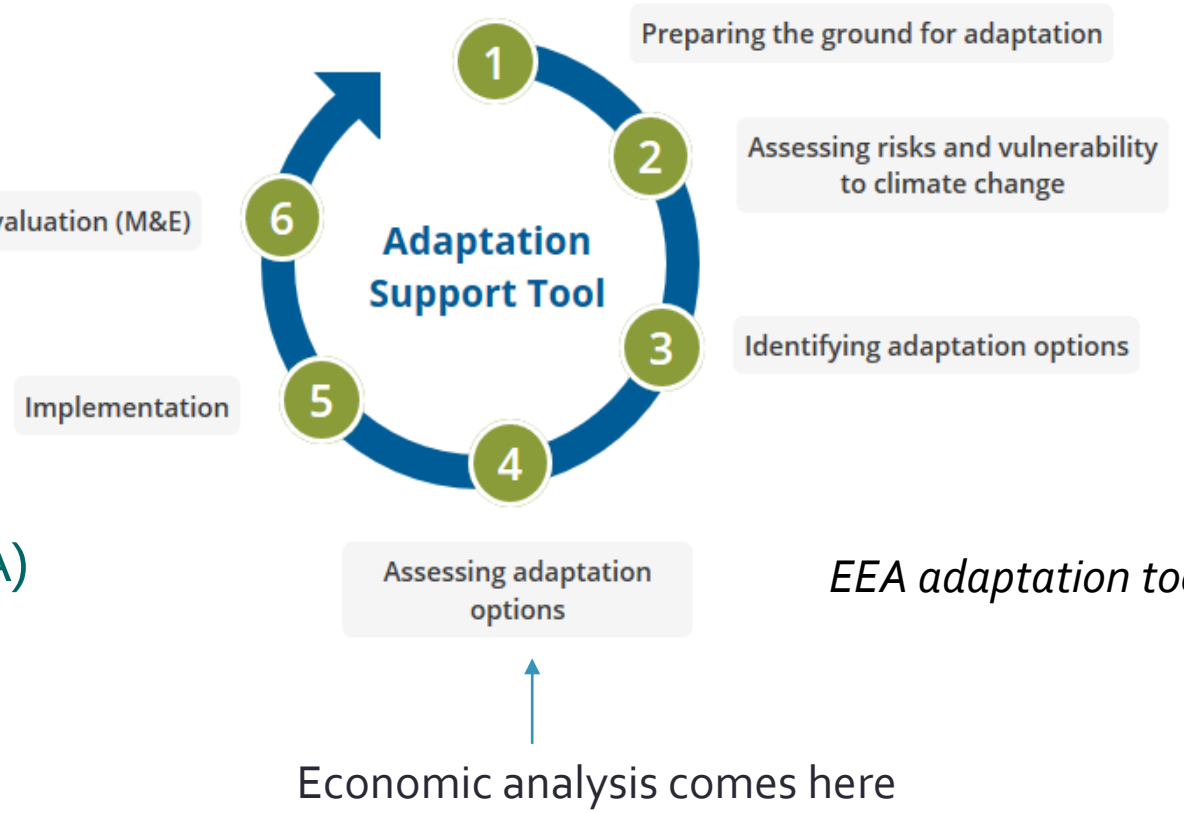


Source: Watkiss, P. and Brown, K.A (2021)

•(but didn't assess total costs of adaptation)

Mainstreaming adaptation economics

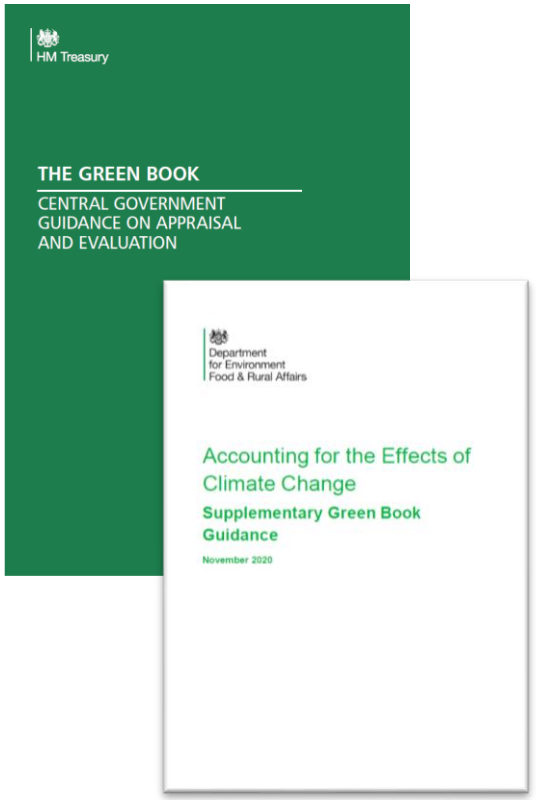
- Adaptation economics has developed as a tool as part of adaptation policy cycle
- Economics relegated to late in the cycle, as part of options analysis (appraisal)
- Reduction in impact (benefit) vs costs
  - Different options
  - To support preferred option
- Methods and options quite techno-economic (IA)



EEA adaptation tool

In UK policy making, economics is all

- In UK, climate adaptation follows a mainstreaming approach (integration)
- Standard public policy cycle in UK dominated by economics and Green Book thinking
- Economics is not step 4, it is step 1
- Establish economic rationale – why government need to act
  - Market failure, policy, governance failure?
- Once identified, how best to address, where/how to act
  - Regulate, enable the market, etc.
- Very different to classic science based approach



Economic Case for Adaptation

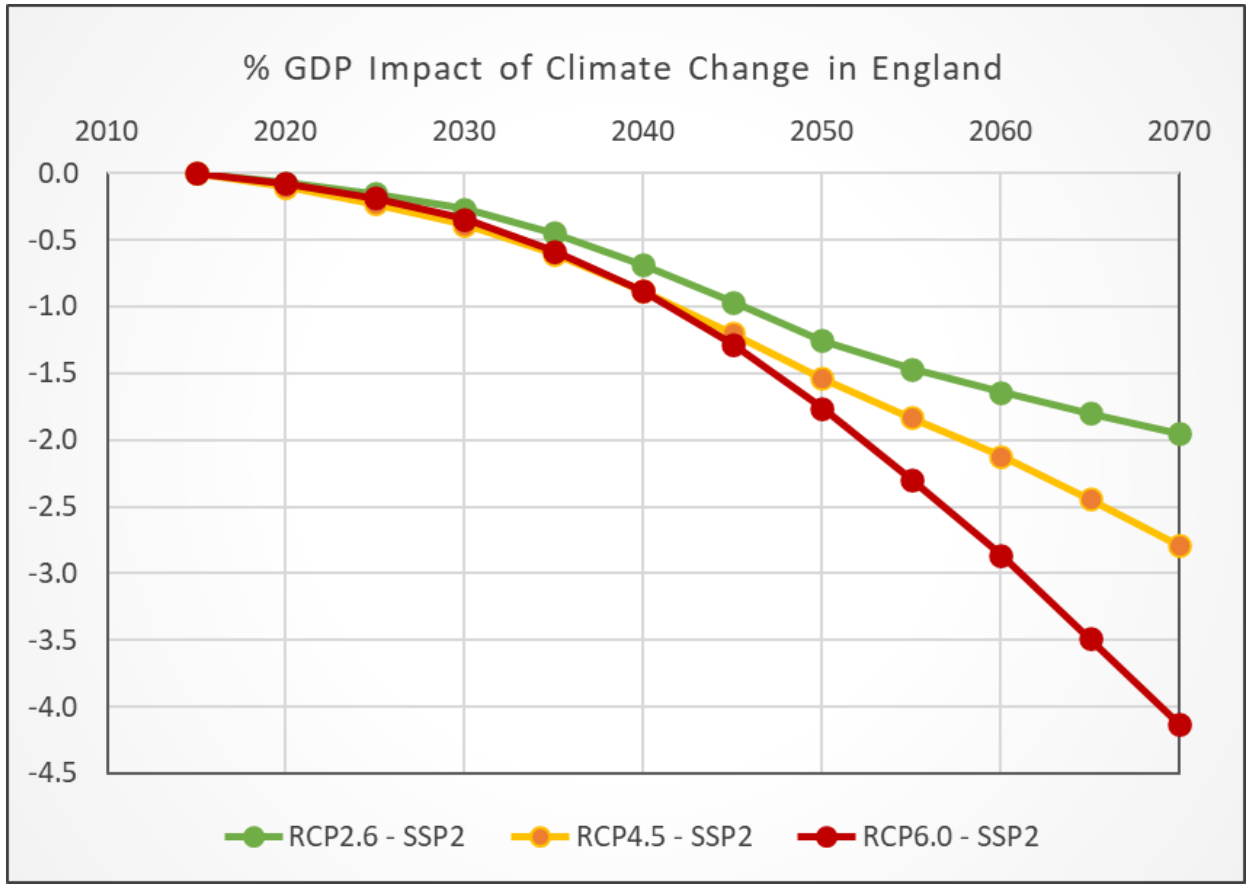
- Defra funded Economic Case for Adaptation 2020 – 2022
- Frontier economics and Paul Watkiss Associates
- Follow on from CCRA3 ‘Exam question’ - what should the priorities be for the next National Adaptation Programme and adaptation programmes of the devolved administrations?
- Second exam question – ‘What is the economic case for, and the costs and benefits, of priority adaptation for the next NAP and DA programmes’
- Focus on now and the pathway over future decades, rather than just the 2050s

ECR Evaluation

- Not the first time we have tried this……..
- After CCRA1 – Defra Economics of Climate Resilience (2013) – did use green book thinking
- But did not resonate – within government – or in terms of ambitions of NAP1
- First step – learn - evaluation of the ECR
- What prevented translation into ambitious adaptation policy in NAP1
  - Lack of numbers
  - Political economy – deregulation, austerity, politics
  - Governance, process, integration – drop off in capacity and action

Making the headline case

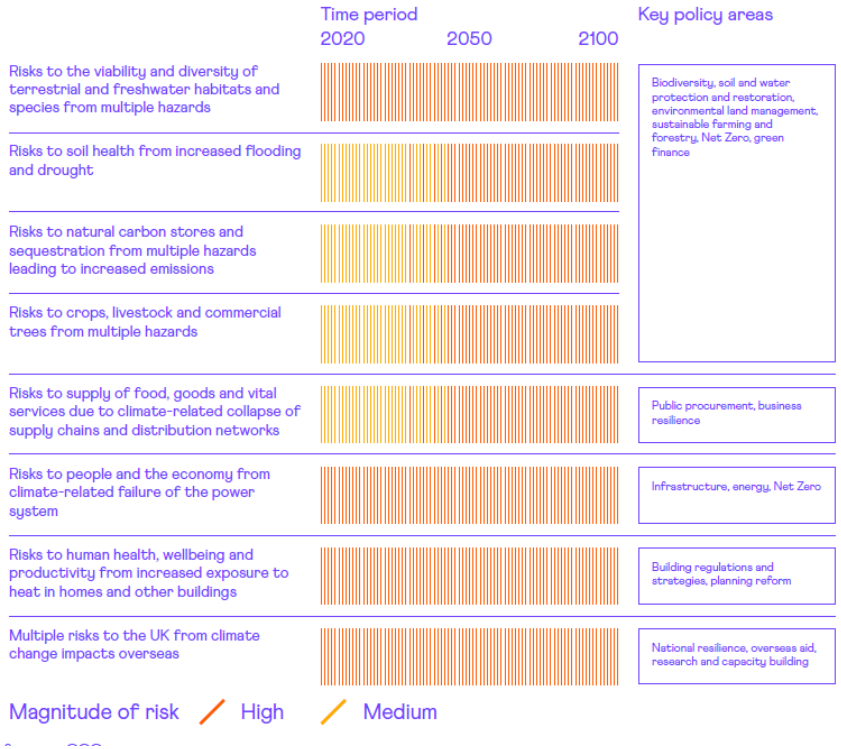
- Economic case – to support the Government CCRA3 report (Jan 2022)
- Macro-economic costs of climate change in England relatively high
- Next twenty years already locked-in
- Only adaptation can reduce impacts before 2040 - mitigation benefits come later
- Highlight that climate change will affect the public finances



Source COACCH

Economic Case for Adaptation

- Analysis on the top 8 risks identified in CCRA3
- Making the economic case
- Providing real-world adaptation economics support



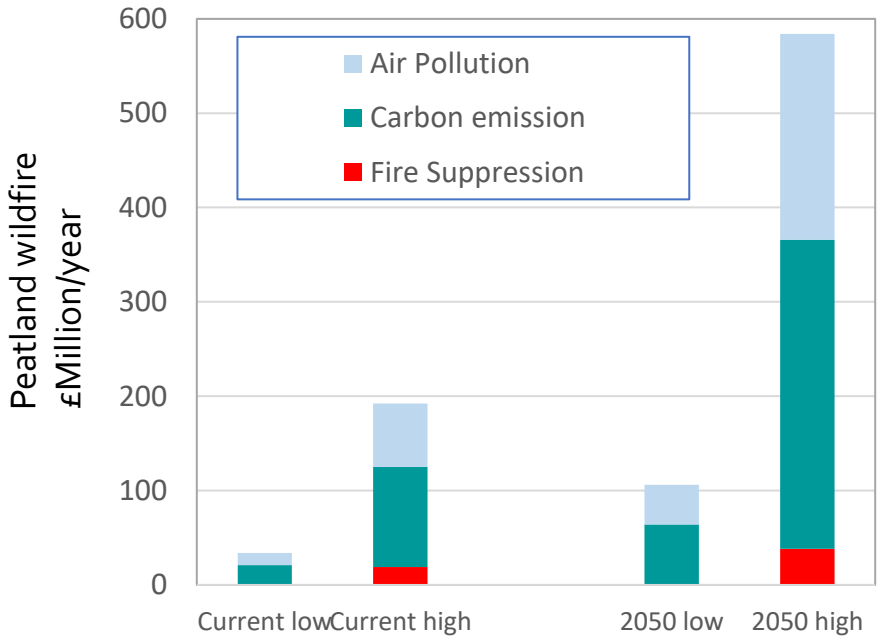
Specific risk examined
Risks to staff productivity from overheating in hospitals
Risks to new-build low carbon generation from water availability
Risks from increased storms to the operation of ports
Risks to the cost of achieving biodiversity targets from climate change
Risks to peatland from increased frequency and severity of wildfires
Risks to environmental land management schemes from climate change

Method


CCRA3 will be the main input for the first three steps
1. What is the case for action now, i.e. in the next NAP period?
Identify current and future risks in monetary terms (scale)
Identify economic decision perspective, i.e. i) current economic costs or policy risk, ii) lock-in risk, iii) opportunity for learning
Identify adaptation gap and assess the cost of inaction, i.e. from delaying
At the end of Step 1, the problem will be clearly identified, including the scale, to establish the counterfactual for policy analysis and what potential implications if climate change is left un-checked in the sector.
2. What is the case for Government intervention?
What are the market and policy failures/barriers?
What is the capacity of the sector to adapt? Is it adapting?
Is there a rationale to act?
At the end of Step 2, the policy question can then be formulated. This allows us to have greater focus on short-term policy priorities, that links up to the NAP.
3. Where are there opportunities to act?
How does this sit in the policy landscape and other objectives?
Where are the opportunities to integrate adaptation?
At the end of Step 3, we will have engaged with policy teams, and have identified a clear intervention case and potential policy window to develop this.
4. What are the costs and benefits of early action?
At the end of Step 4, we will have 'crowded-in' the best expertise and modelling to answer policy issues and help develop a robust analytical case to support potential action.

Example 1. Building the case

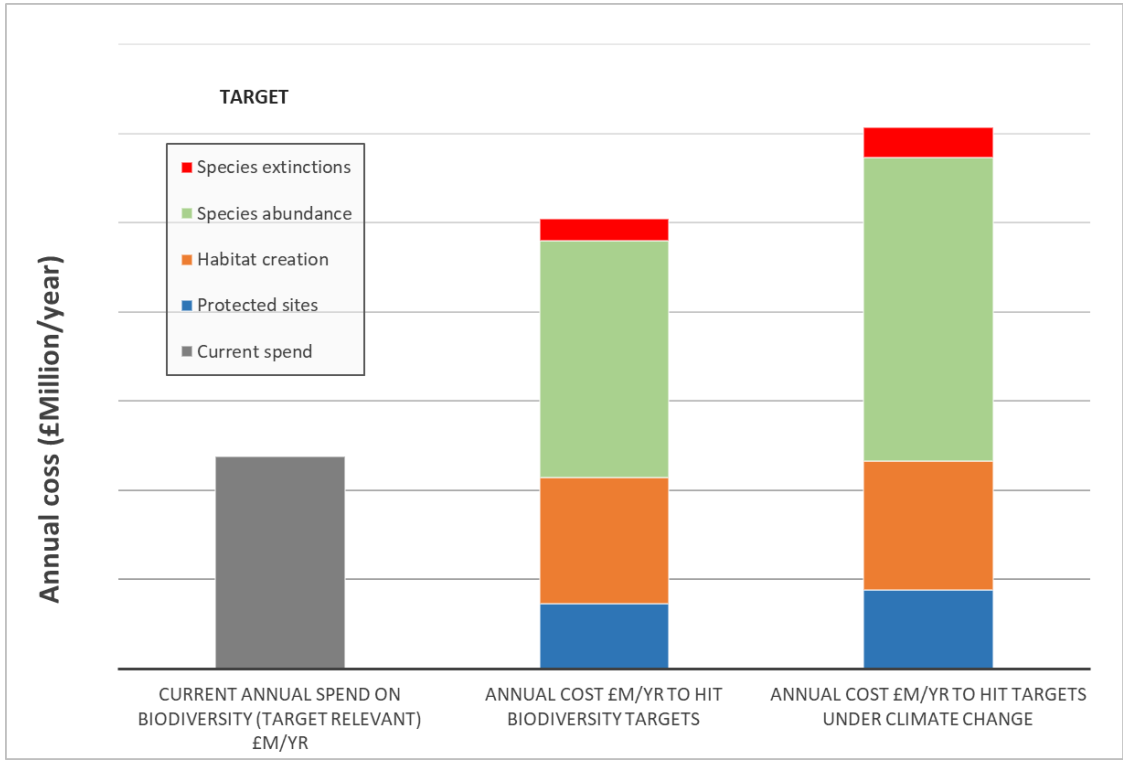
- Wildfires - risk that warrants further attention
- Focus on peatland 35% of all wildfires in UK by area (2200/ha/yr)
- Economic costs wildfires - high carbon emissions + AQ + ES loss
- Rising risks, and risk social costs (cost of carbon, net zero)
- Established economic rationale to act (externalities)
- Economic analysis of benefits of package of early options
  - Early warning, training, positive BCRs (but also gaps)
- Lesson – economics helps the government case to act



Example 2. Integration

- Case study on including climate change in policy analysis around Biodiversity target
- Integrate climate risks and adaptation into the policy process and Government impact assessment
- Climate change affects the costs of achieving policy outcomes or level of ambition can achieve
- Identified need for adaptation integration
- And potentially implications for options and actions

- Lessons
- Climate will affect policy delivery – integration key
- Challenging for Government - support valuable



Example 3. Influencing

- Case study on including climate adaptation in Environment Land Management Scheme (E.L.M.)
- E.L.M. replaces CAP and has a focus on payment for land managers for delivering public goods
- Includes mitigation and adaptation as key public goods
- Adaptation involves two aspects
  - Climate proofing E.L.M. delivery (e.g. create)
  - Delivering adaptation projects
- Economic case to highlight possible inclusion of an adaptation objective
- Analysis of what could mean in terms of payment for adaptation to incentivize land managers

Insights

- Economics has a key role upstream and earlier than currently applied in adaptation
- More focus on economic case – through traditional Green book lens – useful and needed
- But including adaptation (alongside everything else) challenging for Government
  - Benefits of central oversight to help encourage mainstreaming in policy
  - Benefits of support facilities (CMF) to help this
- Policy champions, cross government collaboration
- And possibly….. Objectives and Lead

Research gaps / new challenges

- What else …..
- Valuation - more work on gaps, less work on improving current (lost keys)
- Aggregate costs of adaptation in England and the DAs
- Adaptation objectives and goals (and indicators)
- Adaptation finance – especially moving from public to blended/private
- Economics of transformational adaptation

Response

Dr Nigel Miller
Defra

Contact details

Website: www.ukclimateresilience.org

Twitter: @UKCRP_SPF

YouTube: UK Climate Resilience programme

Met Office

UK Research and Innovation

UK CLIMATE RESILIENCE PROGRAMME

The UK Climate Resilience programme is supported by the UKRI Strategic Priorities Fund.
The programme is co-delivered by the Met Office and NERC on behalf of UKRI partners AHRC, EPSRC, ESRC.

Next webinars:

- **Tuesday 21st June 12.00-13.00**
  Speakers: Paul O'Hare (MMU)
  Putting resilience into Manchester Climate Change Agency

- **Wednesday 6th July 12.00-13.00**
  Speakers: Murray Dale (JBA)
  Choices for the future of UK climate information: project findings

***Register on our website*:**
https://www.ukclimateresilience.org/news-events/climate-resilience-webinar-series-2020-2021/