"The UK Climate Change Risk Assessment (CCRA), National Adaptation Programme (NAP) and Adaptation Reporting Powers (ARP) – An integrated approach"

John K. Pinnegar & Paul Buckley

1st June 2018

Workshop 1: Communicating and responding to climate change (Room Columbia 1)

Centre for Environment Fisheries & Aquaculture Science

CCSUS
Collaborative Centre for Sustainable Use of the Seas

Cefas

Outline…

1. The Climate Change Act (2008)
2. 2012 CCRA Methodology
3. CCRA Evidence Report
4. CCRA Marine & Fisheries Report
5. Monetisation
6. 2017 CCRA Report
7. The UK National Adaptation Programme
8. Government ‘objectives’ and ‘actions’
9. The ‘Adaptation Reporting Powers’ (ARP)

The UK Climate Change Act (2008)

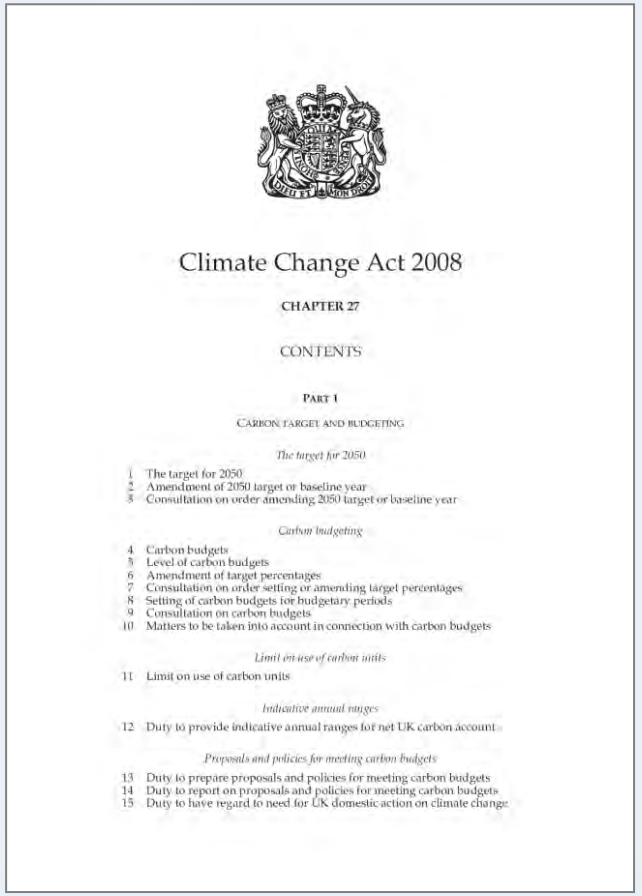
The **Climate Change Act 2008** made the UK the first country in the world to have a legally binding long-term framework to cut carbon emissions.

It also created a framework for building **the UK's ability to adapt to climate change**, including:

1. a UK wide **climate change risk assessment** that must take place every five years

2. a **national adaptation programme** which must be put in place every five years to address the most pressing climate change risks to England

3. Powers to direct **"reporting authorities"** (companies with functions of a public nature such as water and energy utilities) to prepare **reports on how they are assessing and acting on the risks and opportunities** from a changing climate.



Climate Change Act 2008

CHAPTER 27

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PART 1

CARBON TARGET AND BUDGETING

The target for 2050

1 The target for 2050
2 Amendment of 2050 target or baseline year
3 Consultation on order amending 2050 target or baseline year

Carbon budgeting

4 Carbon budgets
5 Level of carbon budgets
6 Amendment of target percentages
7 Consultation on order setting or amending target percentages
8 Setting of carbon budgets for budgetary periods
9 Consultation on carbon budgets
10 Matters to be taken into account in connection with carbon budgets

Limit on use of carbon units

11 Limit on use of carbon units

Indicative annual ranges

12 Duty to provide indicative annual ranges for net UK carbon account

Proposals and policies for meeting carbon budgets

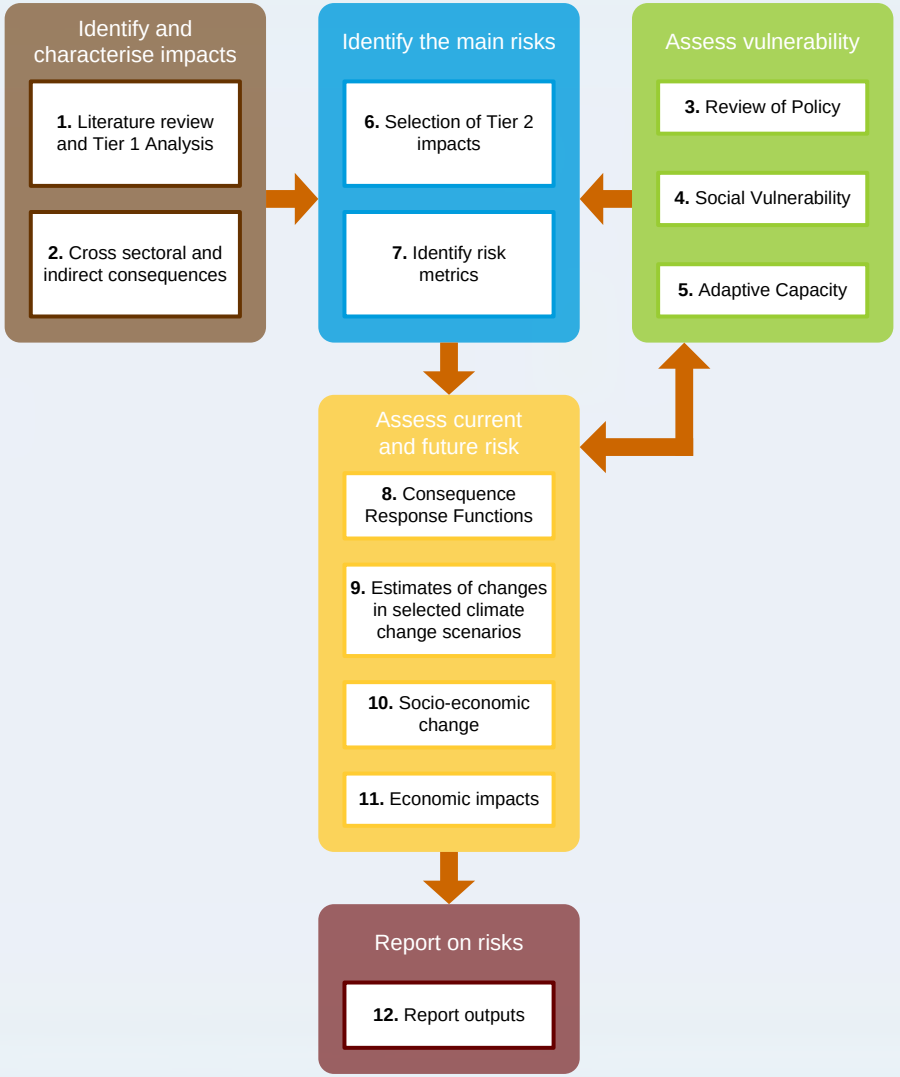
13 Duty to prepare proposals and policies for meeting carbon budgets
14 Duty to report on proposals and policies for meeting carbon budgets
15 Duty to have regard to need for UK domestic action on climate change

2012 CCRA Methodology:

The 2013 CCRA analysis was split into eleven sectors to mirror the general sectoral split of climate impacts research;

agriculture, biodiversity, business, built environment, energy, flooding, forestry, health, **marine**, transport and water.

The CCRA reviewed the evidence for over 700 potential impacts. Detailed analysis was undertaken for over 100 of these impacts across the 11 key sectors

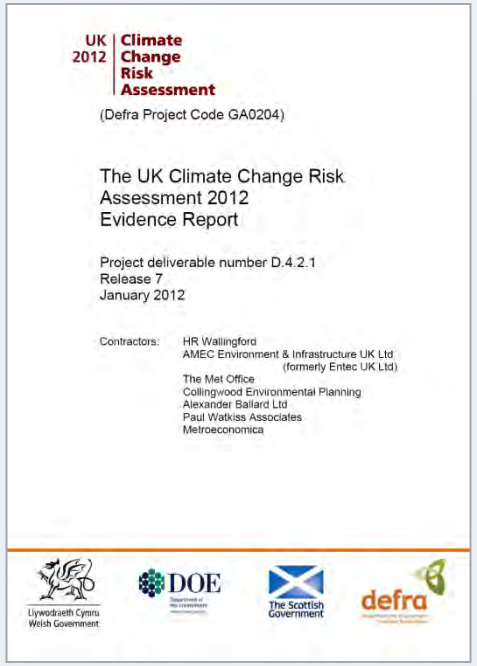


UK 2012 Climate Change Risk Assessment Evidence Report

The Evidence Report provides an overview of climate change risks and opportunities.

The Evidence Report has been extensively peer reviewed by scientific and economics experts, an independent international peer review panel, and have also been scrutinised by the Adaptation Sub-Committee of the Committee on Climate Change.

The Government published the UK Climate Change Risk Assessment (CCRA) on 25 January 2012, the first assessment of its kind for the UK and the first in a 5 year cycle.



The CCRA UK Government Commentary

This report sets out the main priorities for adaptation in the UK under 5 key themes identified in the CCRA 2012 Evidence Report

1. Agriculture and Forestry;
2. Business, industries and Services;
3. Health and Well-being;
4. Natural Environment and
5. Buildings and Infrastructure –

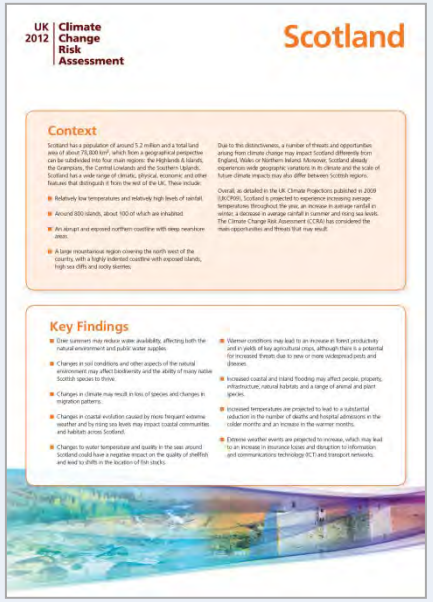
and describes the policy context, and action already in place to tackle some of the risks in each area.

It highlights the constraints of the CCRA analysis and provides advice on how to take account of the uncertainty within the analysis.

Devolved Administration Reports and Summaries

The reports for Devolved Governments were based on the UK-wide Sector Reports but take account of risks that are of particular concern in each country:

1. Scotland
2. Wales
3. Northern Ireland



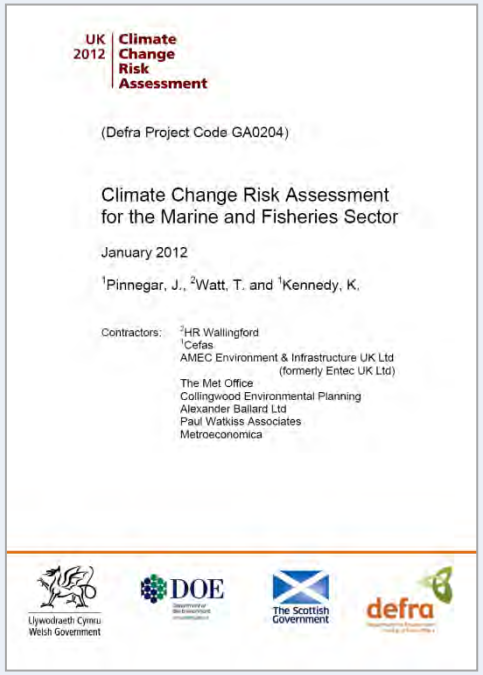
The Marine & Fisheries Sector Report

INCLUDED

- Maritime activities offshore (e.g. fishing, shipping, waste disposal etc.)
- Marine biodiversity (changes in distribution and productivity)
- Health risks associated with marine vectors (pathogens, harmful algae)
- Changes in ocean chemistry, currents and Arctic ice cover.

NOT INCLUDED (or covered elsewhere)

- Coastal flooding, inundation and erosion
- Saltwater intrusion (into water supplies and soils)
- Coastal tourism (except ecotourism)
- Offshore renewable energy (or oil and gas).


UK 2012 Climate Change Risk Assessment

(Defra Project Code GA0204)

Climate Change Risk Assessment for the Marine and Fisheries Sector

January 2012

[1]Pinnegar, J., [2]Watt, T. and [1]Kennedy, K.

Contractors: [2]HR Wallingford
[1]Cefas
AMEC Environment & Infrastructure UK Ltd (formerly Entec UK Ltd)
The Met Office
Collingwood Environmental Planning
Alexander Ballard Ltd
Paul Watkiss Associates
Metroeconomica

Llywodraeth Cymru Welsh Government · DOE · The Scottish Government · defra


UK 2012 Climate Change Risk Assessment

Marine and Fisheries

Sector Perspective

- UK territorial waters provide essential resources (e.g. fish, gas, oil, building materials) and are home to critical infrastructure assets. Direct marine-related activities contribute about £45 billion/year and 800,000 jobs to the UK economy, with 95% of imports and exports transported via a maritime route.[1] The Department for Environment, Food and Rural Affairs (Defra) has overall responsibility for marine and fisheries policy at UK Government level, with some relevant responsibilities devolved to the appropriate Government Departments in Scotland, Wales and Northern Ireland.
- The marine environment is becoming increasingly busy and is affected by many different social and economic factors. In particular, population growth and changes in patterns of consumer demand have a major impact on the seas around us, especially in terms of the consumption of fish and shellfish and the volume of goods transported by ship to and from the UK.
- The diversity of this sector means it is the subject of many national and international laws, regulations, policies and conventions covering, for instance, fisheries, biodiversity, maritime safety and bathing water quality. A key policy driver is the commitment to increase the development of marine renewable energy in order to help meet UK climate change mitigation targets.
- The marine environment is affected both directly and indirectly by changes in climatic conditions. The waters around the UK have warmed by around 1°C over the last 100 years.
- Many marine industries are used to dealing with uncertainty and variability in the weather. However, the potential impacts of climate change on this sector could be intensified in the future and there are strong interdependencies with other sectors (e.g. energy, health and business, industry and services).

[1] All 2007 figures

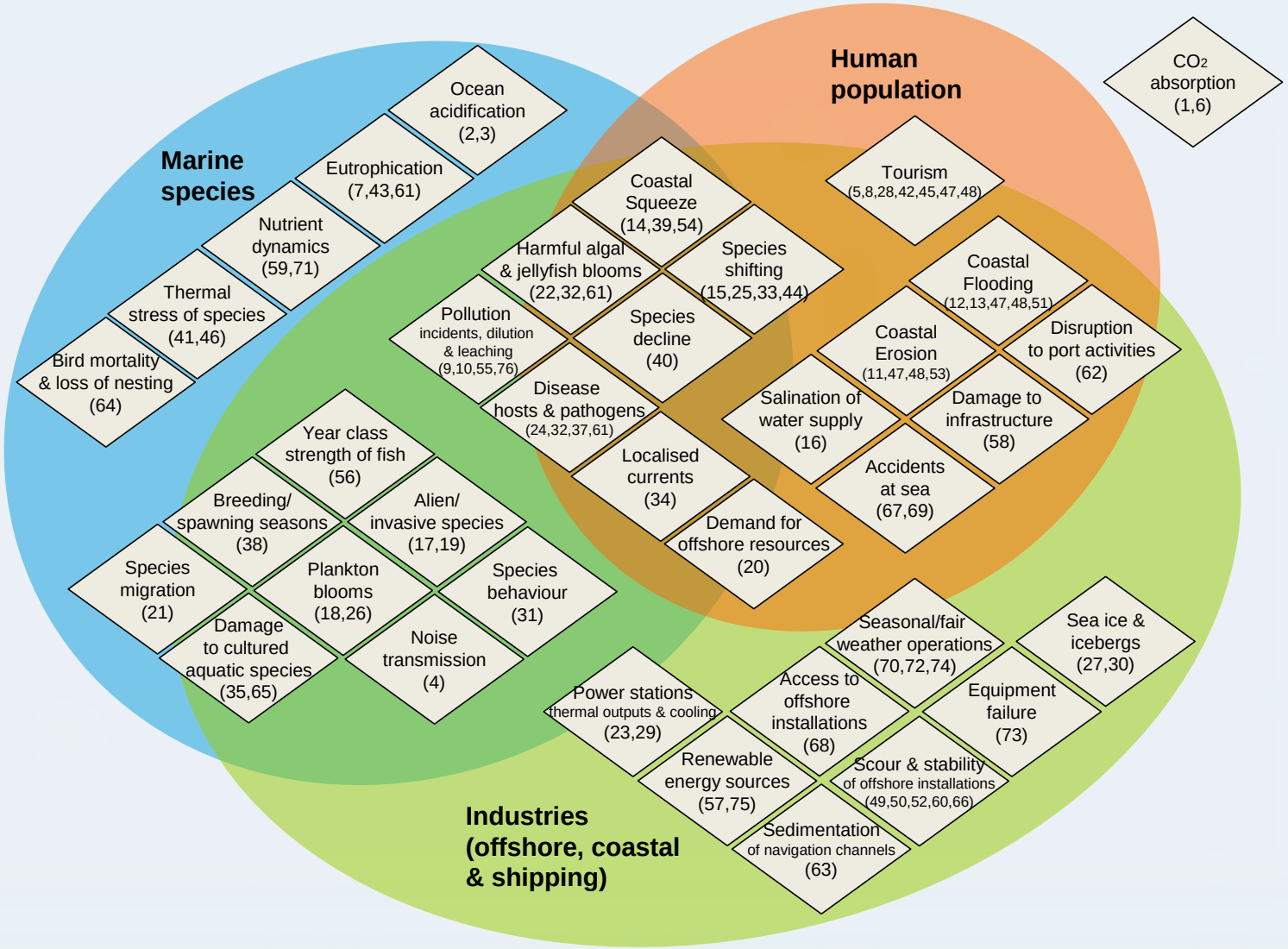
The National CCRA – Marine & Maritime Risks

We started with a list of 80 marine risks, and these were aggregated to 37 at a stakeholder workshop

11 were subsequently taken forward for quantitative assessment

Risks were ranked across all sectors – marine risks were generally assigned 'low priority' because of a lack of quantitative information

High ranking marine risks focussed on human health



Prioritised marine and maritime risks:

Name of 'rationalised' consequences	Economic Score	Environ. Score	Social Score	Likelihood Score	Urgency Score	Total Score	Taken to Tier 2
Coastal flooding (12,13,47,48,51)	3	2	3	3	2	59	Yes
Harmful algal blooms (22,32,61)	2	3	2	2	3	52	Yes
Coastal erosion (11,47,48,53)	2	2	3	3	2	52	Yes
Salinisation of water supply (16)	2	2	2	3	2	44	Yes
Disease hosts and pathogens (24,32,36,37,61)	1	2	3	2	3	44	Yes
Ocean acidification and dependent species (2,3)	1	3	2	2	3	44	Yes
Shifting commercial species distributions (15, 25)	2	3	1	3	2	44	Yes
Alien / invasive species (17,19)	2	2	1	3	2	37	Yes
Coastal squeeze (14,39,54)	1	3	1	3	2	37	Yes
Plankton blooms (18,26)[a]	1	2	2	2	3	37	Yes
Decreased tourism (5,8,47,48)	2	1	2	2	3	37	Yes
Increased tourism (42,45,47,48)	1	2	1	2	3	30	Yes
Protected habitat and species (33,64)	1	2	1	3	2	30	Yes
Damage to cultured aquatic Species (35,65)	2	2	1	2	2	25	
Species migration (21)[b]	1	1	1	3	2	22	Yes
Reduction in arctic sea ice (27,30)	2	1	1	2	2	20	Yes
Power stations thermal outputs and cooling (23,29)	2	1	1	2	2	20	Yes
CO_2 absorption (1,6)	1	2	1	2	2	20	
Demand for offshore aggregate resources (20)	1	2	1	2	2	20	
Damage to coastal infrastructure (13,58)	3	1	2	1	2	15	Yes
Eutrophication (7,43,61)	2	2	2	1	2	15	Yes
Pollution dilution and leaching (9,10,55,76)	1	2	2	1	2	12	Yes
Breeding / spawning seasons (38)[c]	1	2	2	2	1	12	Yes
Bird mortality and loss of Nesting sites (64)	1	2	1	1	2	10	Yes
Disruption to port activities (62)	2	1	1	1	2	10	Yes
Year class strength of fish (56)	1	2	1	1	2	10	Yes
Sedimentation of navigation channels (63)	2	1	1	1	2	10	
Scour and stability of offshore infrastructure	2	1	1	2	1	10	
Nutrient dynamics (59,71)	1	2	1	1	2	10	Yes
Localised currents (34)	1	1	1	2	1	7	
Species behaviour (31)	1	1	1	2	1	7	
Noise transmission (4)	1	1	1	2	1	7	
Renewable energy sources (57,75)	1	1	1	1	2	7	
Accidents/Incidents at sea (67,69)	2	2	2	1	1	7	
Species decline (40,44)	1	2	1	1	1	5	
Seasonal / fair weather operations (70,72,74)	2	1	1	1	1	5	
Thermal stress of species (41,46)	1	2	1	1	1	5	
Access to offshore installations (68)	1	1	1	1	1	4	
Equipment failure (73)	1	1	1	1	1	4	





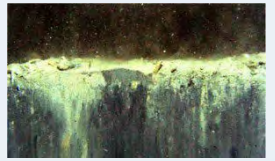

11 Response Metrics

The final list of 11 selected impacts/risks for which further analysis was undertaken are:

- Harmful algal blooms
- Sewer overflows and associated human health risks
- Water borne pathogens & warmer temperatures
- Ocean acidification and dependent species
- Shifting distribution of commercial fish species
- Melting arctic sea ice
- Spread of alien and invasive species
- Disruption to ferry services and shipping
- Impacts on marine biodiversity
- Year class strength in commercial fish and shellfish
- Nutrient cycling and ecosystem function.

Some marine ‘risks’ offered opportunities as well as posing risks



Monetisation

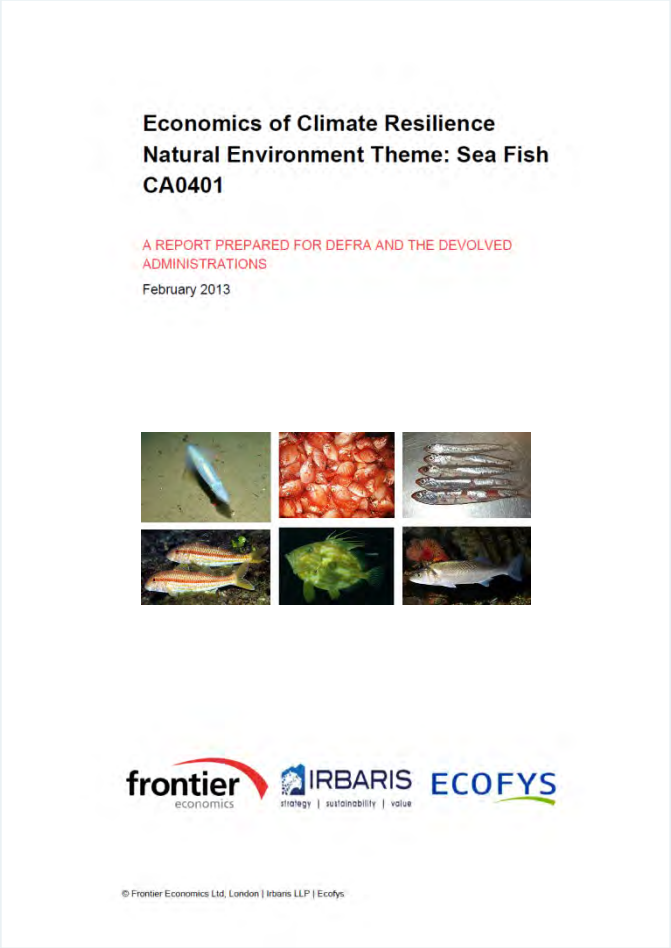
Marine risks are often overlooked in national or international assessments of climate change impacts and economics (e.g. the Stern Review).

The Economics of Climate Resilience (ECR) project developed an economic framework to assess the case for adaptation in the UK.

Consists of nine reports, plus an overarching document.

A specific report was written on threats and opportunities in the sea fisheries sector.

The ECR focussed on species increasing in the UK EEZ, such as anchovy, squid, seabass, scallops, boarfish, and hake.



The 2017 Climate Change Risk assessment (CCRA2)

- Evidence Report Published July 2016
- CCRA presented to parliament Jan 2017

The full CCRA2 Evidence Report comprises eight chapters written by leading academics, and experts in the public and private organisations across Great Britain and Northern Ireland.

Separate summaries of the Evidence Report have been published for England, Northern Ireland, Scotland and Wales to inform adaptation planning by the UK and devolved governments.

https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/

Chapter 3:
Natural environment

Natural Assets

Terrestrial (3.2)

Ne1: Risks to species and habitats due to inability to respond to changing climatic conditions

Ne2: Opportunities from new species colonisations

Soils and Land (3.3)

Ne3: Risks and opportunities from changes in agricultural and forestry productivity and land suitability

Ne 4: Risks to soils from seasonal aridity and wetness

Ne8: Risks of land management practices exacerbating flood risk

Ne10: Risks to agriculture, forestry, wildlife and heritage from change in frequency and/or magnitude of extreme weather and wildfire events

Freshwater (3.4)

Ne6: Risks to agriculture and wildlife from water scarcity and flooding

Ne7: Risks to freshwater species from higher water temperatures

Marine (3.6)

Ne13: Risks to, and opportunities for, marine species, fisheries and marine heritage from ocean acidification and higher water temperatures

Coasts (3.5)

Ne11: Risks to aquifers, agricultural land and habitats from salt water intrusion

Ne12: Risks to habitats and heritage in the coastal zone from sea-level rise; and loss of natural flood protection

Cross-cutting Issues (3.7)

Pests and Diseases (3.7.1)

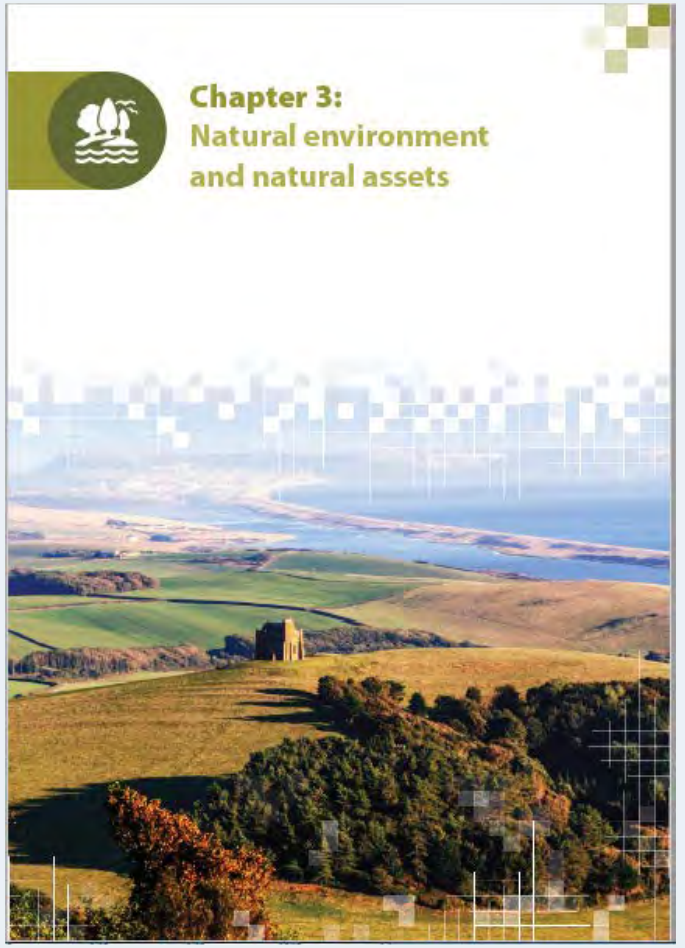
Ne9: Risks to agriculture, forestry, landscapes and wildlife from pests, pathogens and invasive species

Natural Carbon Stores (3.7.2)

Ne5: Risks to natural carbon stores and carbon sequestration

Landscape and Sense of Place (3.7.3)

Ne14: Risks and opportunities from changes in landscape character



Maine risks were largely ghettoised (a retrograde step)!!!

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Cefas

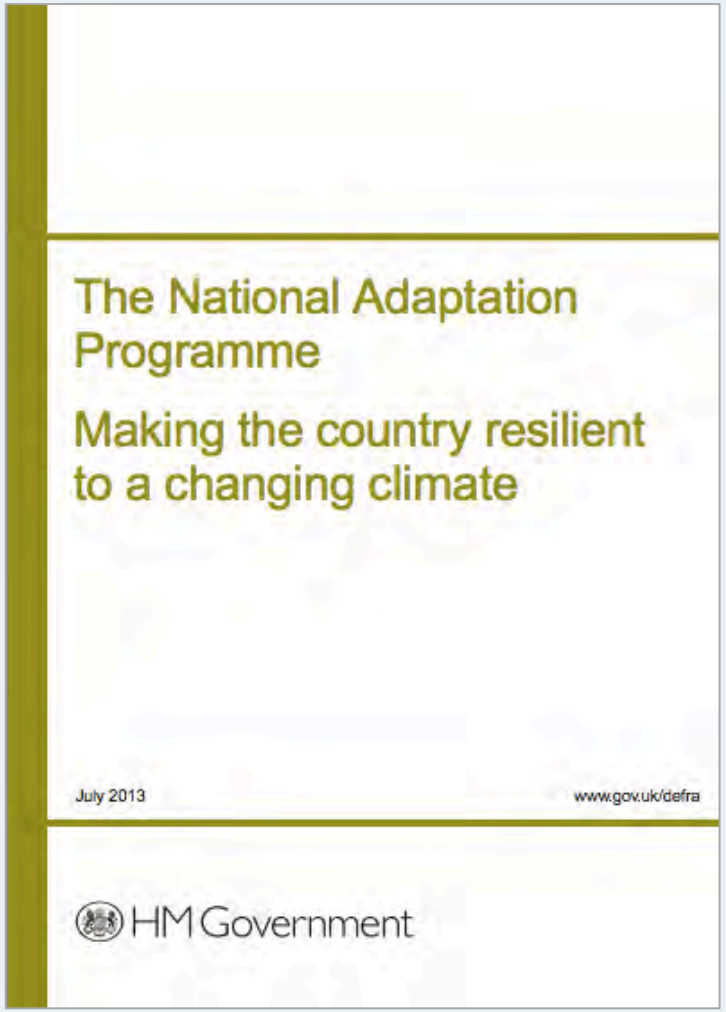
The marine parts of this report were written by Dr Pinnegar

Preparing for climate change – National Adaptation Programme

The National Adaptation Programme (NAP) sets out what government, businesses and society are doing to adapt better to the changing climate.

The NAP report was published on 1 July 2013 and will be reviewed every 5 years.

The Adaptation Sub Committee will assess how well the NAP report has been implemented



***Vision**: "A society which makes timely, far-sighted and well-informed decisions to address the risks and opportunities posed by a changing climate."*

As required under Paragraph 58, Part 4 of the Climate Change Act 2008 (c.27), the NAP document presents:

a) *the objectives of Her Majesty's Government in relation to adaptation to climate change;*

b) *the Government's proposals and policies for meeting those objectives; and*

c) *the time-scales for introducing those proposals and policies addressing the risks identified in the most recent climate change risk assessment, as at July 2013.*

NAP Objectives – Natural Environment

Natural Environment	**Objective 19**: To build the resilience of wildlife, habitats and ecosystems (terrestrial, freshwater, marine and coastal) to climate change, so as to put our natural environment in the strongest possible position to meet the challenges and changes ahead.
	Objective 20: To take action to help wildlife, habitats and ecosystems accommodate and smoothly transition through inevitable change.
	Objective 21: To promote and gain widespread uptake in other sectors of the use of adaptation measures that benefit and/or do not adversely affect the natural environment.
	Objective 22: To improve the evidence base, to enhance the knowledge and understanding of decision makers, land managers and others of the impacts of climate change on the natural environment and how best we can influence adaptation or accommodate change.

NAP Objectives – Infrastructure

Infrastructure	**Objective 7:** To ensure infrastructure is located, planned, designed and maintained to be resilient to climate change, including increasingly extreme weather events.
	Objective 8: To develop regulatory frameworks to support and promote a resilient and adaptive infrastructure sector.
	Objective 9: To better understand the particular vulnerabilities facing 'local' infrastructure (e.g. local highways) from extreme weather and long term climate change so as to determine actions to address the risks.
	Objective 10: To develop understanding and promote expertise in managing interconnected and interdependent services to minimise the risks of cascade failures which could be exacerbated by climate change; and identify how systems thinking can support this.

Register of Actions: Natural Environment - Marine

Climate Change Risk Assessment (CCRA) risks addressed by objective (highest order CCRA risks in bold)	Actions	CCRA risks tackled by action	Owner(s)	Timing
MA3 Increased ocean acidification **MA6 Northward spread of invasive non-native species** MA10 Disruption to marine ecosystems due to warmer waters FL14b Priority habitats lost due to coastal erosion MA8 Potential disruption to breeding of seabirds and intertidal invertebrates MA1 Risk of harmful algal blooms due to changes in ocean stratification WA9a Potential decline in summer water quality (point source pollution) WA9b Potential decline in water quality due to diffuse pollution MA9 Decline in productivity of 'cold water' fish and shellfish stocks MA4a Changes in fish catch latitude/ centre of gravity (cod, haddock) MA4b Changes in fish catch latitude/ centre of gravity (plaice, sole) BD6 Environmental effects of climate mitigation measures	Defra will establish Marine Conservation Zones to contribute to an ecologically coherent network of Marine Protected Areas (MPAs), with the first marine conservation zones designated in 2013. Defra has committed to designating at least 25% of English Waters as Marine Protected Areas by 2016. Completion of the network and, where appropriate, management measures are expected to take account of expected impacts of climate change.	MA1, **MA2a**, **MA3**, MA4a, MA4b, **MA6**, MA8, MA10	Defra	First zones designated in 2013
	'Seafish' organisation to work with those involved in the seafood supply chain to understand climate change risks and mitigating action.	MA4a, MA4b, **MA6**	Seafish	To initiate by end 2013
	The Marine Climate Change Impacts Partnership to publish a new report card summarising the latest evidence on impacts of climate change on the UK's marine environment. A mid-term review of the second programme will evaluate its effectiveness in improving understanding of climate impacts.	MA1, **MA3**, MA4a, MA4b, **MA6**, MA8, MA10, WA9b	Marine Climate Change Impacts Partnership	By end 2013
	Through its 'Climate Smart' working initiative, the Marine Climate Change Impacts Partnership to colaborate with selected marine sectors to develop adaptive capacity, using the best available evidence on climate impacts.	MA1, **MA3**, MA4a, MA4b, **MA6**, MA8, MA10, WA9b, BD6	Marine Climate Change Impacts Partnership	2013 onwards
	The Marine Management Organisation to publish a climate change adaptation report describing the steps they are taking to respond to climate change through their statutory functions.	MA1, **MA2a**, **MA3**, MA4a, MA4b, **MA6**, MA8, MA9	Marine Management Organisation	By 2014
	As the industry body with a remit to support the profitability and sustainability of the seafood industry, 'Seafish' to publish a climate change adaptation report describing the steps industry are taking to respond to climate change.	MA4a, MA4b, **MA6**	Seafish	By 2014
	Defra to consider the opportunities to the marine industry, as suggested in the Economics of Climate Resilience project.	MA4a, MA4b, MA7	Defra	2013
	The Environment Agency to identify those species and habitats that are most vulnerable by undertaking a vulnerability assessment (eg salmonids & other fish species).	MA1, MA4a, MA4b, **MA6**, MA8, MA10	Environment Agency	By 2015, but budget dependent





Register of Actions: Natural Environment - Coastal

Climate Change Risk Assessment (CCRA) risks addressed by objective (highest order CCRA risks in bold)	Actions	CCRA risks tackled by action	Owner(s)	Timing
COASTAL ECOSYSTEMS				
BD7 Risks to coastal habitats due to flooding **BD2 Risks to species and habitats due to coastal evolution** **BD14 Ecosystem risks due to low flows and increased water demand** **MA2a Decline in marine water quality due to sewer overflows** **MA3 Ocean acidification** MA8 Potential disruption to breeding of seabirds and intertidal invertebrates MA1 Risk of harmful algal blooms due to changes in ocean stratification FL14b Priority habitats lost due to coastal erosion	The Environment Agency to identify main areas of erosion through the National Coastal Erosion Risk Mapping project. This will allow identification of potential locations of important habitats that will help better accommodate changing species climate envelopes.	**BD2**	Environment Agency	Coastal erosion risk maps published 2011 to 2012
	Natural England to develop plans to compensate for losses at threatened coastal National Nature Reserves, taking into account land with potential 'future natural' status (eg Great Fen project).	**BD7, BD2,** FL14b	Natural England	Ongoing (as part of management planning cycle)
	The Environment Agency to identify areas suitable for restoration or creation of priority coastal habitats, as well as working with partners including local authorities to better align shoreline management plans and marine plans to ensure no net loss [or net gain] of priority habitats.	**BD2, BD7,** FL14b	Environment Agency	By 2020
	Environment Agency flood and coastal risk management activities to value the ecosystem benefits to the wider environment while meeting targets and legal duties.	**BD7, BD14,** MA1, **MA2a,** MA3, MA8, FL14b	Environment Agency	Ongoing
	As owner of nearly one tenth of the coast of England, Wales and Northern Ireland, the National Trust are to continue to run a programme of work as laid out in the 'Shifting Shores' publication, taking into account climate change.	**BD2, BD7**	National Trust	2013 onwards

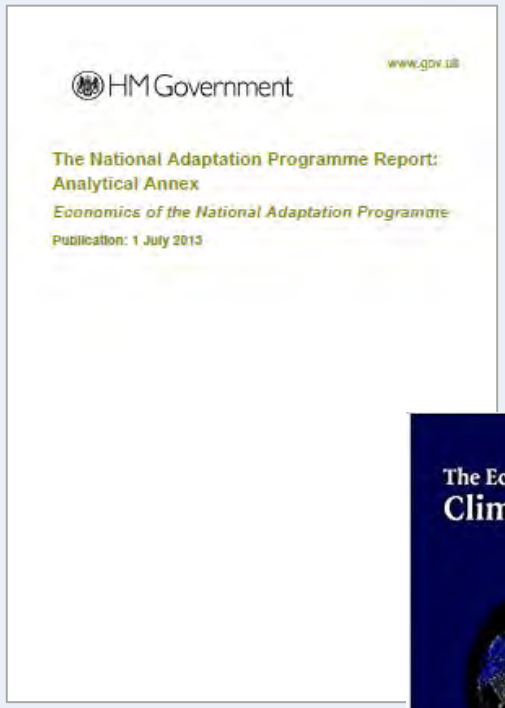
Economics of the National Adaptation Programme

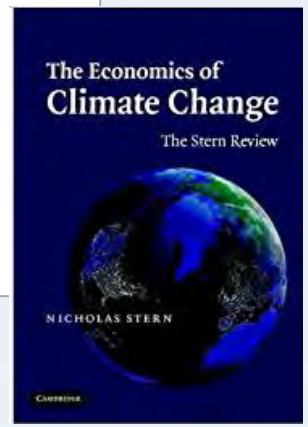
The NAP document is supported by an economic annex.

The ‘Economics of the NAP’ outlines the role of society in adaptation efforts, the challenges of uncertainty, the costs and benefits of climate change and the impacts of climate change on economic activity.

Effective national adaptation requires effort from the private sector, government and local communities.

Followed principles of the 2006 ‘Stern Review’ on the *Economics of Climate Change* published by the UK Treasury

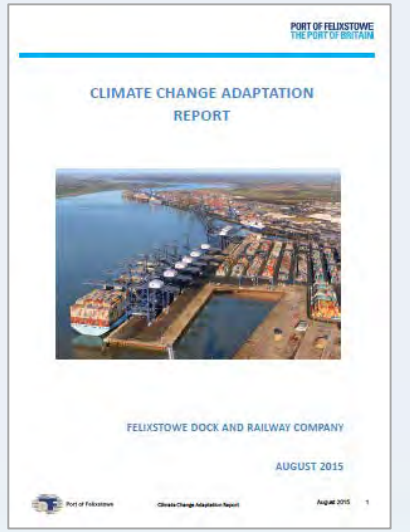


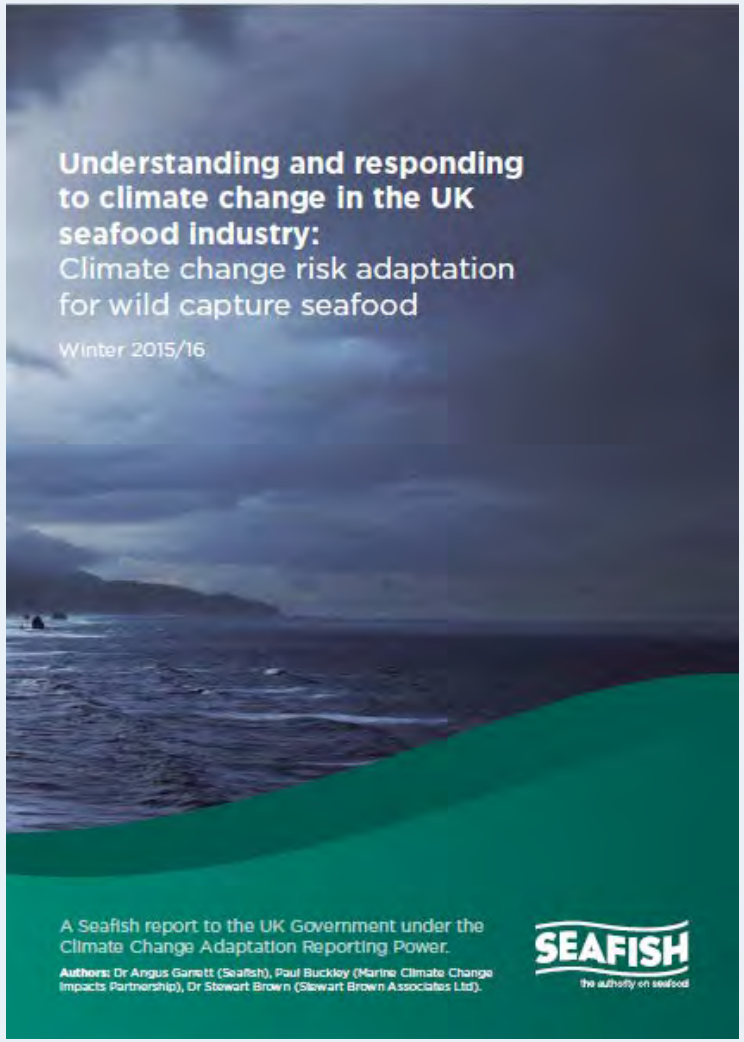


‘Adaptation Reporting Powers’ (ARP) Reports

The Adaptation Reporting Power was created as part of the Climate Change Act (2008). It **allows the Secretary of State to order key organisations to report** on the steps they are taking to prepare for climate change.

So far, **more than 100 companies and public authorities have published reports**, including most energy and water companies as well as several organisations in the maritime environment:





In December 2015, SeaFish, together with Cefas and the UK Marine Climate Change Impacts Partnership (MCCIP) published it's Adaptation Reporting Powers (ARP) report.

Aims to *"support the UK seafood industry to develop a managed adaptive approach to climate change"*

Comprised a literature review, substantive collaboration with the industry, 15 semi-structured interviews and 3 workshops

Considered all aspects of climate change (temperature, storminess, sea level rise, ocean acidification etc.)

Covered both domestic and international

Priority risks were identified in terms of: (1) confidence, (2) proximity, (3) severity, (4) possible adaptation actions

Centre for Environment Fisheries & Aquaculture Science

SEAFISH the authority on seafood

MCCIP Marine Climate Change Impacts Partnership

Cefas

Figure 2.2 Two major systems, the UK and the global context.

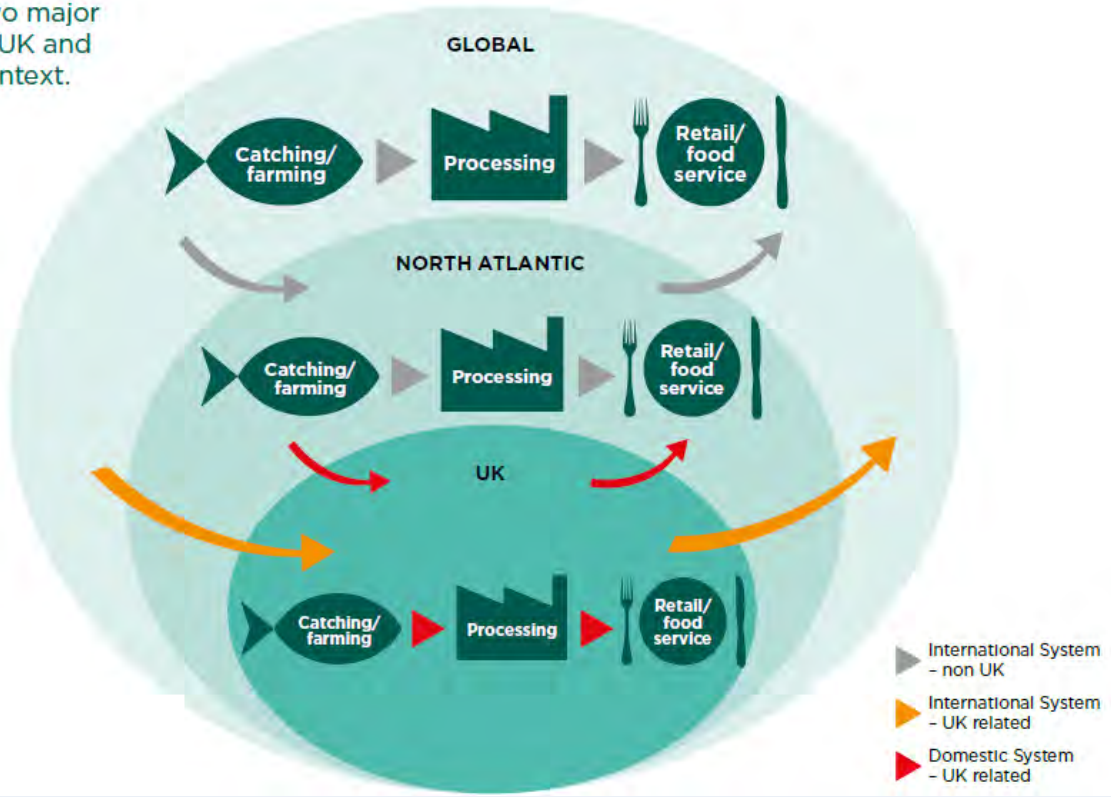


Table 4.1 Risk assessment matrix

		Importance* (range and scale of consequences to the industry, based on current levels of resource)			
		(1) Few, small scale impacts = some minor threats and / or opportunities	(2) Many, small scale impacts = moderate threats and / or opportunities	(3) Few, large scale impacts = some significant threats and / or opportunities	(4) Many, large scale impacts = major threats and / or opportunities
Proximity (time to consequence occurring)	(4) Now	5	6	7	8
	(3) Within next 20 years	4	5	6	7
	(2) Within next 50 years	3	4	5	6
	(1) Over 50 years	2	3	4	5

Five principal climate change drivers are relevant to seafood. These are:

- sea level rise;
- changes in storms and waves;
- temperature change;
- Ocean acidification;
- changes in terrestrial rainfall.

Some ‘lessons learnt’…

Climate change is considered ‘Low priority’: taking action to adapt to climate change is not presently a priority for the majority of industry contributors to this study.

Stakeholder… **…term events** – … …eterhead and in t… …ding of pr… …es for exam… …ntext.

See: **Nigel Sainsbury (Friday 10:40)** Unravelling the effect of storms on commercial fish landings in UK waters.

The connection between climate change and commercial significance for the industry was commonly (but not exclusively) **regarded as tenuous to date.**

This view is now changing as a result of ‘Brexit’.

Table 4.4 Adaptation responses – domestic system

Speed of response (inertia)	System	Adaptation response	Owner	Scale of resource: Minor	Moderate	Significant	Major
Underway	Fishery	Scientific advice and data collection through partnership working	Fisheries Science Partnerships				
	Fishery	Development of training and education modules for fishermen	Fishing into the Future (with Seafish)				
	Operations	Enhance operational safety (raised decks)	Industry				
	Operations	Enhance operational safety (Personal Flotation Devices)	The Fishing Industry Safety Group				
	Operations	Enhance operational safety (Safety at Sea training)	Seafish-approved training providers				
	Ports	Build port resilience	Port / harbour authorities / Department of Transport				
	Processing	Develop markets for available domestic seafood	Seafood Scotland				
Immediate (<2 years)	Ports	Ensure berth allocations for vulnerable vessels	Port / harbour authorities				
	Processing	Develop marketing strategies for seafood in rest of UK	Industry trade organisations				
Short term (2-5 years)	Fishery	Develop close science-industry collaboration and engaged research	Industry trade associations / scientists				
	Fishery	Ensure quota swaps / transfers	Industry				
	Operations	Keep a watching brief on climate change and potential responses	Industry trade associations				
	Ports	Improving port risk management	Port / harbour authorities				
	Transport	Assess vulnerability of freight ferries	Government				
	Processing	Establish specific seafood marketing organisations for rest of UK	Industry trade organisations (e.g. Fishmongers Hall)				
Medium term (5-15 years)	Fishery	Developing a more robust, strategic fisheries knowledge base.	Scientists / industry / Govt				
	Fishery	Review of domestic quota allocation	EU / UK Govt / Fisheries scientists / industry				
	Operations	Review of fishing seasons in response to disruptions	Industry / Government				
Long term (>15 years)	Fishery	Review ‘Relative stability’ (Governance) arrangements	EU / UK Govt / Fisheries scientists / industry				
	Operations	Assess vulnerability of fleets across the EU	EU research				
	Processing	Re-locate processing sites inland	Processors and planning inspectorate				

Thank you…

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