**Marine Climate Change
Impacts Partnership**

MCCIP Marine Climate Smart Working

Examples of adaptation for marine and coastal stakeholders

Introduction

The aim of this document is to provide a regularly updated overview of key pieces of adaptation work relevant to marine and coastal stakeholders. Whilst many of the examples cited are not specifically about marine or coastal issues, they provide useful guidance that is applicable to the marine and coastal environment.

The document starts by looking at the international scale, before focussing closer to home in Europe and then the UK, Devolved Administrations, Ireland and the Channel Islands. Finally we highlight work being undertaken by industry, particularly in the insurance sector which will have implications for a wide range of marine users.

International examples

Australian Marine Adaptation network
The Australian Marine Adaptation network works closely with the National Climate Change Adaptation Research Facility (NCCARF) to deliver on its vision to build adaptive capacity and adaptive response strategies for the effective management of marine biodiversity and living marine resources under climate change

Convention for the Protection of the Marine Environment of the North-East Atlantic ("OSPAR Convention")
OSPAR's Assessment of climate change mitigation and adaptation provides an overview of the main challenges for OSPAR to adapt current policies and objectives to protect the marine environment.

Intergovernmental Panel on Climate Change (IPCC)
Working group II, whose focus is on impacts, adaptation and vulnerability, has published a special report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX). The assessment concerns the interaction of climatic, environmental, and human factors that can lead to impacts and disasters, options for managing the risks posed by impacts and disasters, and the important role that non-climatic factors play in determining impacts.

In March 2014, the WGII report on 'Impacts, Adaptation and Vulnerability', which forms part of the IPCC 5th assessment, will be published.

Integrated coastal management review paper
A US report on Practicing Coastal Adaptation to Climate Change: Lessons from Integrated Coastal Management synthesizes the many global climate change and other anthropogenic threats to coastal ecosystems and draws on lessons and good practices from global experience in integrated coastal management (ICM) that can be transferred to coastal adaptation to these challenges.

United Nations Environment Programme
There is a section of the UNEP website, with links, to pages on climate change adaptation

The UNEP report on adapting for a green economy makes the business case for private sector adaptation to climate change in ways that build the resilience of vulnerable communities in developing countries. It then offers actions that companies and policymakers can pursue to catalyze and scale up private sector action on adaptation.

US Center for Climate and Energy Solutions
This NGO is working to address energy and climate change, and their website has a report on business climate change adaptation. The report provides a framework that businesses can use to determine their susceptibility to adverse financial effects. It considers internal business operations in addition to supplier and consumer factors. Case studies of firms that have undertaken programmes are provided: Entergy (engaged primarily in electric power generation and distribution); The Travelers Companies, Inc. (provider of personal and commercial property and casualty insurance); and Rio Tinto (an international mining group).

This NGO is the successor to the Pew Center on Global Climate Change.

Europe

CoastalAdaptation.EU
This learning portal provides an overview of the findings of the EU IMCORE (Innovative Management for Europe's Changing Coastal Resource) project and presents findings from 9 case studies around Europe, 7 of which are in the UK.

Climate ADAPT
Website and associated documents for information on impacts, vulnerability and adaptation to climate change in Europe. It has been developed by the European Commission for policy makers and practitioners to learn from the experience of others facing similar challenges that are already carrying out adaptation actions.

Climate Impact Research & Response Coordination for a Larger Europe
CIRCLE-2 is a European Network of 34 institutions from 23 countries committed to fund research and share knowledge on climate adaptation and the promotion of long-term cooperation among national and regional climate change programmes. Through the promotion of networking activities it aims to maximise the degree to which research outcomes address both national and European climate policy needs.

European Commission
There is a section of the website on adaptation to climate change and a white paper produced on Adapting to climate change: Towards a European framework for action.

UK

Adaptation Reporting Power

91 key infrastructure providers have been asked to submit adaptation plans in response to Directions to report under the Climate Change Act 2008 including major ports and the Maritime and Coastal Agency. MCCIP has reviewed all of the Adaptation Reporting Power reports to help show which organisations and bodies are considering coastal and marine climate change issues. A second, voluntary round, is due to get underway.

Climate Change Risk Assessment and National Adaptation Programme

The CCRA reviewed the evidence for over 700 potential impacts of climate change in a UK context. Detailed analysis was undertaken for over 100 of these impacts across 11 key sectors, on the basis of their likelihood, the scale of their potential consequences and the urgency with which action may be needed to address them. The reports provide an evidence base which will help us better understand the risks, and will inform the development of a National Adaptation Programme.'

The following summary reports provide a useful overview of key findings from the CCRA:

- CCRA Key findings report
- CCRA Evidence report
- CCRA Marine and Fisheries Sector report

The Evidence Report provides an overview of climate change risks and opportunities based on the analyses described in the sector Reports and other sources of information. A summary of Devolved Administration report, produced by MCCIP, can be found here.

In response to the CCRA, the National Adaptation Programme (NAP) sets out what government, businesses, and society are doing to become more climate ready. The NAP report 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. It also provides recommendations on where future work should focus attention.

Climate UK

Climate Partnership UK, trading as Climate UK, is a not-for-profit Community of Interest Company working with Climate Change Partnerships across England, Wales, Scotland and Northern Ireland to promote action on climate change.

Climate UK aims to investigate, inform and advise on risks and opportunities presented by climate change; and coordinate and support integrated, sustainable and effective responses.

Committee on Climate Change

Independent advisors to the UK Government on tackling and preparing for climate change. Reports include:
- Adapting to climate change in the UK – measuring progress
- How well is the UK prepared for climate change?
- How well is Scotland preparing for climate change

Joseph Rowntree Foundation

This foundation has explored a wide range of social justice issues linked to climate change. Most relevant to MCCIP is the study on impacts of climate change on disadvantaged local coastal communities.

The study explores the vulnerability to climate change of communities in disadvantaged coastal areas of the UK; combines four case studies with a literature review and analysis of likely impacts, interviews and a workshop; and provides recommendations for improving their resilience to climate change as part of national and local adaptation responses.

National Trust

The National Trust commissioned a piece of research called Shifting shores: living with a changing coastline to assess how the coastline is likely to change over the next 100 years. The results suggest that many of the Trust's important sites are at risk from coastal erosion and flooding.

Their policy now favours adaptation, to give us time and space to change with the coast and work with the forces of nature.

Royal Commission on Environmental Pollution

The Commission closed in 2011 but reports are still available. The report Adapting Institutions to climate change is about moving institutions towards anticipatory, planned but flexible adaptation responses. The report suggests the potential costs of ignoring adaptation have not been sufficiently considered, and the potential benefits of adaptation have not been sufficiently explored. If institutions at all levels now address the need to build adaptive capacity, there is still time for the UK to be well positioned to cope with a future climate which will be considerably more challenging and disruptive.

Tyndall Centre

The Tyndall Centre undertakes a wide range of applied research on climate change impacts and adaptation.

The document Scaling adaptation: climate change response and coastal management in the UK focuses on 'scale' dilemmas in environmental decision-making, particularly those dilemmas posed in space and time by the challenges of societal adaptation to climate change impacts. The analysis draws insights from a case study of strategic coastal management and decision-making at Christchurch Bay in southern England, where communities face long term threats of increased coastal erosion and coastal flooding.

The paper Observed adaptation to climate change: UK evidence of transition to a well-adapting society, investigates whether, and to what extent, a wide range of actors in the UK are adapting to climate change, and whether this is evidence of a social transition. The paper documents evidence of over 300 examples of early adopters of adaptation practice to climate change in the UK. These examples span a range of activities from small adjustments (or coping), to building adaptive capacity, to implementing actions and to creating deeper systemic change in public and private organisations in a range of sectors.

UK Climate Impacts Programme (UKCIP)

Since 1997, UKCIP has been providing resources, for free, to help organisations to understand what changes to the climate might mean for them (e.g. Felixstowe Port). It also provides many useful guidance documents on what an adapting organisation looks like, most notably through the report 'Attributes of well-adapting organisations'.

England and Wales

Environment Agency

From 1 October 2011, the Environment Agency (EA) took on a new role as the Government's delivery body for climate change adaptation in England. The Climate Ready Support Service will build on the work of UKCIP, based at Oxford University, and has been developed closely with the Government's first National Adaptation Programme.

This support service provides:

- A web-based information service will give you access to the latest climate science and provide tools and advice to help you plan for climate change.

- Tailored support to help key sectors build resilience to climate change, focussing on the following themes: business and services, infrastructure and built environment, health and wellbeing, natural environment and forestry and farming, local government.

The EA are also working in partnership with Climate UK and the Climate Change Partnerships in England to understand what action is needed locally to help business and the natural environment respond to the particular pressures faced in different parts of the country.

Wales

Welsh Government/ Llywodraeth Cymru

The Climate Change Strategy for Wales and Adaptation Delivery Plan describes the actions that will fulfill the objectives of the Adaptation Framework for Wales.

There are a range of relevant publications available on the climate change topic part of the website, including 'Preparing Wales for a changing climate', a five-part guide to identifying and addressing climate change risks for organisations.

Welsh Local Government Association

The Changing Climate; Changing Places report is a preliminary evaluation of climate change adaptation activity in Wales.

Scotland

Adaptation Scotland

Adaptation Scotland provides advice and support to help ensure that Scotland is prepared for, and resilient to the impacts of climate change. A section of the website is dedicated to Adaptation including Adaptation workbooks.

The report Adapting to climate change; a guide for businesses in Scotland provides guidance for the private sector gives an overview of what risk and opportunities climate change may pose for Scottish businesses; explains how to build the adaptive capacity to deal with these risks and provides a signpost to the various existing tools and resources that are available.

The report 'Towards a climate change adaptation action plan for the marine and fisheries sector in Scotland' is based on the event, *'New Climate Change Tools and information for decision makers in the marine and coastal sectors',* which was co-organised by MCCIP. The report focuses on 3 key questions:

1. What would you see as the key issues for Marine and Fisheries Sector Adaptation?
2. Are there marine climate change issues you are aware of which you already have adaptation plans in place to address?
3. Are there marine climate change issues you suspect exist and which a) you don't have enough information/research; and/or b) you would like to see something done?

Finally, a Climate Risk Management Plan template has recently been developed to help businesses answer 'How could climate change affect our business continuity and efficiency' and 'what can we do to increase resilience, enhance efficiency, add value and save money'.

Scottish Government/ Riaghaltas na h-Alba

Scotland's Climate Change Adaptation Framework sets the strategic direction for Scottish Government actions but, because many adaptation decisions are taken at a local level by individual organisations, action from across all sectors is needed.

The Framework has been developed with a series of accompanying Sector Action Plans, which outline the key issues and planned activity for adapting including a section on 'Marine and Fisheries'.

Scottish Natural Heritage (SNH)

Scottish Natural Heritage's commitment to supporting Scotland's response to climate change is detailed in their recent publication 'Climate change and nature in Scotland'

SNH's key contributions to Scotland's response to climate change will be:

- Helping to understand and publicise the effects and consequences of climate change for the natural heritage.
- Advising on infrastructure and land management practices which help to mitigate climate change.
- Guiding adaptation so that nature can, as far as possible, adapt to a changing climate and so that people can make best use of natural processes in preparing for climate change.

- Promoting action by organisations and individuals by setting an example in the management of SNH's own operations, and communicating our climate change messages clearly and effectively.

Northern Ireland

Climate Northern Ireland

The aim of Climate Northern Ireland is to widen the understanding and knowledge of the impacts of climate change within Northern Ireland and the adaptation actions necessary to deal with it.

The report Helping businesses adapt to climate change is a useful starting to point for considering climate change risks to business.

Department of the Environment for Northern Ireland (DOENI)

In order to better prepare Northern Ireland for its changing climate the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER), launched a report called 'Preparing for a Changing Climate in Northern Ireland'. It was published in 2007 on behalf of DOENI and the Northern Ireland Environment Agency (NIEA), this report examines the potential impacts of climate change in Northern Ireland across a broad range of sectors. It includes an executive summary document and more detailed report.

Republic of Ireland

Environment Protection Agency

The report A Summary of the State of Knowledge on Climate Change Impacts for Ireland presents an overview of the current state of knowledge on climate change and expected impacts for Ireland.

CLAD - Coastal Climate Adaptation and Development Tool was a 3-year project, launched in April 2009 and funded by the EPA, CLAD which aimed to provide methodological and informational support for decision-makers and stakeholders regarding sustainable adaptation to climate change in Irish coastal areas.

Channel Islands

Bailiwick of Guernsey

The booklet Planet Guernsey – Towards a Sustainable Future, puts climate change into a local context. It is happening on the island and the effects on our lives and the Bailiwick's environment can be seen all around us. We all live and cope with change in our lives and reacting to climate change will be a challenge. This publication shows how we can respond to that challenge.

Bailiwick of Jersey

The report Climate, Jersey: Effects on coastal defences summarises a study into the potential consequences for coastal defences in Jersey of climate change caused by global warming.

Industry

The CBI (confederation of British industry) has a section of its website relating to energy and climate change including business case studies.

Ports and Harbours

The World Association for Waterborne Transport Infrastructure, PIANC has various webpages on maritime navigation adaptation, including associated reports, as well as a detailed task team report on Climate change and navigation: Waterborne transport, ports and waterways: a review of climate change drivers, impacts, responses and mitigation.

The centre for Integrated Facility Engineering at Stanford University have produced a report on how port administrators around the world felt climate change might impact their operations, what sea level change would create operational problems, and how they planned to adapt to new environmental conditions. Most ports felt that sea level rise would not be an issue at their port this century, sea level rise was an issue of great concern.

The US Environmental Protection Agency has produced a white paper on planning for climate change impacts at US ports. This research shows that most ports do not appear to be thinking about the effects of climate change. The purpose of this paper was therefore to help raise awareness of the effects of climate change, so that ports can work with government, industry and communities to make more informed adaptation decisions.

The Green Blue
The Green Blue is the joint environment programme created by the British Marine Federation and Royal Yachting Association for anyone who enjoys getting out on the water or whose livelihood depends on it. They help boat users, boating businesses, sailing clubs and training centres to reduce their impact on coastal and inland waters.

Insurance

The first report produced by the Lloyd's 360 Risk Insight team looked into the growing debate around climate change. The report 'Adapt or bust' provides an overview of six main issues around climate change and examines how these might impact society and the business world and what action can be taken to mitigate their effects.

Following on from Lloyd's first report on climate change, "Adapt or Bust", the Rapid climate change report further examines the realities of climate change and the critical need for action within our lifetime to mitigate its effects. With insight from leading scientists, this report particularly focuses on four areas; sea level rise, melting icecaps, flood and drought. Climate change is not a gradual phenomenon. The latest scientific research shows that it is likely to bring increasingly dramatic and possibly rapid, effects at a local level.

Their latest report on Coastal communities and climate change; maintaining future insurability, looks at the impact of climate change at a number of coastal locations although the broad conclusions remain valid for all businesses in similar locations.