

3.5 Rapid Climate Change Research Programme

3.5.1 Introduction

One of the greatest challenges currently facing human populations in the 21st century is rapid climate change brought about by global warming. The change in Ireland's climate—both Ireland and Europe are now warmer than they were 20 years ago—is likely to continue into the next century. The potential large-scale impacts of global warming on the oceans include: increase in sea-level and sea-surface temperatures; decreases in sea ice cover; and changes in salinity, alkalinity, wave climate and ocean circulation. The consequences of these changes and in the marine environment include: increased storminess, coastal inundation and flooding, changes in species biogeography (including species of economic interest) and invasive species (including microbes and pathogens). Although there can be no certainty regarding the precise nature and rate of changes to Ireland's marine environment, it is clear that changes in the marine environment have the potential to have serious social, economic and environmental impacts.

3.5.2 2020 Scenario

2020 SCENARIO

By 2020:

- > Ireland will be a key player in European-North Atlantic climate change modelling, prediction and scenario development.
- > Ireland, as part of a pan-European-North Atlantic network, will be using sophisticated climate prediction models, drawing data from real-time *in-situ* ocean and coastal monitoring stations, to prepare reliable local climate impact predictions, including warnings on storm surges, coastal inundation and flooding, and species movements and migrations.
- > Climate change predictions and scenarios will be used routinely in all large-scale, medium-to long-term social, economic and environmental development strategies.
- > Knowledge-based adaptive strategies will enable Ireland to anticipate and benefit from climatic induced environmental changes, while avoiding the negative aspects of climate change.

3.5.3 2013 Objectives

2013 OBJECTIVES

- 1 Increase our understanding of the drivers and regulators of climate so as to improve the accuracy and reliability of predictive models.
- 2 Downscale global climate model predictions to the regional/local level in order to refine local impact scenarios.
- 3 Develop and use real (e.g. temperature/salinity) and proxy (e.g. biogeographic species shifts, phenology, etc) climate change indicators.
- 4 Include climate change scenarios in all major social, economic, environmental strategies.

3.5.4 RTDI Requirements/Key Outputs

Recommendations for marine climate change research requirements are contained in a report prepared by the Marine Institute as part of the development of this Strategy.³¹

The key programme outputs for marine climate research are:

- > A suite of usable and informative marine climate change indicators and assessment tools;
- > An ability to model/predict the impact of climate change on the Irish marine environment; and
- > The provision of informed, knowledge-based scenarios on climate change impacts on the various marine sectors.

Expertise in the area of marine climate change research is outlined under the Marine Environment Research Programme (Section 4.1).

³¹ Boelens, R, Minchin, D. and O'Sullivan, G. (2005). Climate Change: Implications for Ireland's Marine Environment and Resources. Marine Foresight Series, No. 2. Marine Institute.