

# Clyde Marine Region Topic Sheet Series

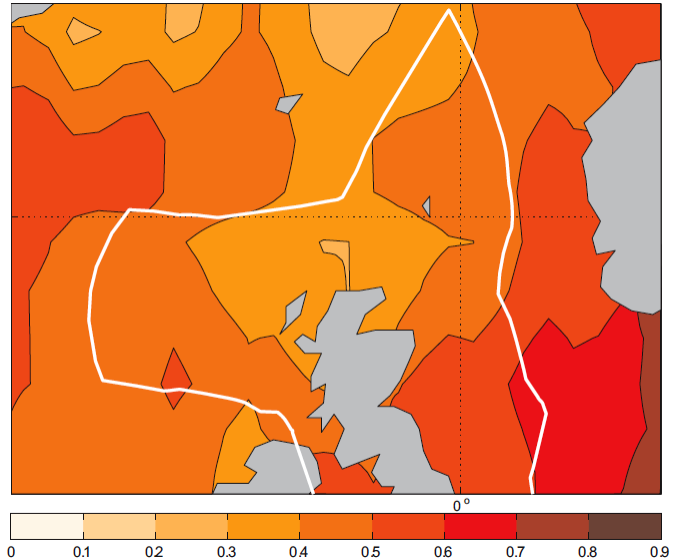
## Climate Change



**CONCERNS**  
SOME CONCERNS



**TREND**  
DETERIORATING



TWENTY FIVE YEAR TREND IN SEA SURFACE TEMPERATURE (°C PER DECADE), CALCULATED OVER THE PERIOD 1986-2009 © SCOTLAND'S MARINE ATLAS.

### Background

The Clyde Marine Planning Partnership (CMPP) has developed this set of Topic Sheets to help communicate the findings of the Clyde Marine Region Assessment which is available on our website [www.clydemarineplan.scot](http://www.clydemarineplan.scot). The Assessment is used to inform and prioritise the development of policies for the Clyde Marine Plan. If you would like to be kept up-to-date about the development of the marine plan please visit the website and sign up to receive our e-newsletter.

### What is climate change?

Many human activities release greenhouse gases into the air. The best known greenhouse gas is carbon dioxide (CO<sub>2</sub>) which is released by the use of fossil fuels, such as heating oil, petrol and diesel. Greenhouse gases trap heat and have a blanketing effect, which is causing a change to the climate around the world.

### What will happen?

The main impacts in the sea and along the coast are likely to be:

- An increase in sea and air temperatures,
- The sea becoming more acidic as it absorbs more CO<sub>2</sub>,
- Sea levels will rise as seawater expands and the ice caps and glaciers melt.

HIGH TIDE AT NEWSHOT ISLAND, JANUARY 2016 © NICK EVERETT





SSE TEST TURBINES AT HUNTERSTON © SINEAD SHERIDAN

- Protect and enhance habitats which provide carbon sinks, such as saltmarsh, seagrass meadows and kelp.
- Recycle as much as possible and avoid packaging.
- Adapt to the anticipated changes by, for example:
  - Plan for development to happen in the right place on the coast.
  - Implement Flood Risk Management Strategies and Plans. These are already in place across Scotland.
  - Identify sites suitable for managed realignment. This is where sea water is allowed to extend beyond current flood defences so that the coastline can provide natural protection from the sea. Additional benefits include the creation of areas for people to enjoy and where nature can thrive.
  - Align fishing and aquaculture activities with the types of fish and shellfish that are most suited to the changing climate.

## Why does this matter and what are the risks?

- Sea levels are predicted to rise by almost half a meter (0.47m) in the Clyde by 2080, leading to increased flooding and coastal erosion. This will have impacts on coastal communities and supporting infrastructure, such as roads, housing and historical buildings. It will also threaten coastal habitats.
- Weather may become more variable; it is likely to be wetter with more storms in winter, and warmer and drier in summer.
- There could be changes in the productivity of our seas and in the type of fish and shellfish that are found here.
- Ocean acidification means that some animals may not be able to form hard structures, such as shells.
- Nutrient cycles that plants and animals rely on may be altered. The change in availability of food has already meant that some seabird species have had to move northwards.
- More non-native species may become established and become invasive.
- Layering of seawater (stratification) i.e. different salinity or temperature layers may occur more. This can increase the development of harmful levels of algae.
- Warmer waters may encourage an increase in bacteria harmful to humans and to other marine life, including those we depend on for food.

## What can we do about it?

- Reduce the amount of CO<sub>2</sub> and other greenhouse gases we are emitting, particularly by cutting down on our use of fossil fuels e.g. in our cars and for heating our homes.
- Use renewable energy sources such as wind, wave and tidal energy.

## Where can I find out more?

Marine Climate Change Impacts Partnership  
[www.mccip.org.uk](http://www.mccip.org.uk)

Impacts of sea-level rise and storm surges in the Firth of Clyde – SNH Commissioned Report 891 [www.snh.gov.uk/publications-data-and-research/publications](http://www.snh.gov.uk/publications-data-and-research/publications)

SEPA Flood Risk Management Strategies  
<http://apps.sepa.org.uk/FRMStrategies>

Local Authority Flood Risk Management Plans [www.sepa.org.uk/environment/water/flooding/local-frm-plans](http://www.sepa.org.uk/environment/water/flooding/local-frm-plans)

SNIFFER [www.sniffer.org.uk](http://www.sniffer.org.uk)

Adaptation Scotland [www.adaptationscotland.org.uk](http://www.adaptationscotland.org.uk)



JUVENILE COD – SOME PREDICTIONS SHOW COD WILL MOVE NORTHWARDS OUT OF THE REGION BY 2100. © PAUL NAYLOR