

Charting Progress 2

The state of UK seas

Overview



United
Kingdom
Marine
Monitoring &
Assessment
Strategy

UKMMAS

Our seas

The UK seas are part of our natural heritage and we must protect their habitats and species for future generations. Our seas provide us with fish; resources such as oil and gas; renewable energy from offshore wind farms; and opportunities for recreation and tourism. All of these uses of our seas create jobs and make a significant contribution to the economy.

What is *Charting Progress 2*?

Charting Progress 2 is an assessment of the state of the UK seas. It is based on evidence collected by scientists from marine agencies, research institutes, universities, environmental organisations and industries around the UK. All of the evidence has been peer-reviewed by international scientists. It tells us the extent to which human uses, and also pressures, such as climate change, are having an impact on the habitats and the species in our seas. It indicates whether the environmental protection measures we have put in place over many years are working; and enables policy makers, planners and the public to see what progress we are making towards achieving the UK vision of clean, healthy, safe, productive and biologically diverse oceans and seas.

How are ocean processes changing?

The main changes to ocean processes over the past few decades probably come from increasing levels of greenhouse gases in the atmosphere which have contributed to the rise in sea surface temperature and to UK seawater becoming more acidic. The increased acidity is likely to have an impact on species and habitats sensitive to pH (the level of alkalinity or acidity) if current trends continue. Climate change has also led to the average sea level around the UK coast rising by about 14 cm since the start of the 20th century.

► **See the table on the back page for more information**

How healthy and biodiverse are our seas?

We have completed the first major UK-wide assessment of marine habitats and species which shows, with varying degrees of confidence, that human and natural pressures have impacts on many of our habitats and species. Against a historical decline, the diversity and overall abundance of bottom-dwelling fish have improved appreciably in most regions because of better fishing management practices, but many stocks are still being fished unsustainably. Many estuaries have become significantly cleaner which has led to an increase in both the diversity and numbers of fish. Waterbird populations, such as golden plover, are also increasing in most regions. Populations of seabirds, such as herring gulls, and harbour seals are declining in some regions, but we have not found clear reasons for this. Among industries, fishing has had the most significant impact, affecting large areas of the seabed. Climate change is also affecting species and habitats, for example the distributions of plankton species are changing due to the rise in sea temperature.

► **See the maps on pages 4 and 5 for more information**

How clean and safe are our seas?

We are generally making good progress with few or no problems for many of the components assessed (radioactivity, eutrophication and algal toxins in seafood on the market). Inputs of hazardous substances have been reduced in most regions and, while there are still some problems of contamination, the impacts are local – in some industrial estuaries and coastal areas – and do not affect the seas at a regional scale. However, a number of persistent chemicals, most which have already been phased out, or are subject to strict controls, are still detected in marine sediments and organisms in these areas. Litter, particularly plastics, is found on all the beaches that have been surveyed and more limited evidence shows it is also present in the sea and on the sea floor. We identified possible impacts of underwater noise, but need more research to understand the scale of the impacts.

► See the map on page 6 for more information

How productive are our seas and what are the main pressures from these uses?

There are strong policy drivers to increase the economic productivity of our seas. *Charting Progress 2* is the first UK-wide assessment linking economic productivity with the pressure footprints of marine industries. Oil and gas make the highest contribution to the economy (gross value added of £37 billion in 2008), followed by maritime transport, leisure and recreation, telecommunications, military defence, fisheries and aquaculture. Activity on renewable energy, and flood and coastal defence has increased significantly in recent years.

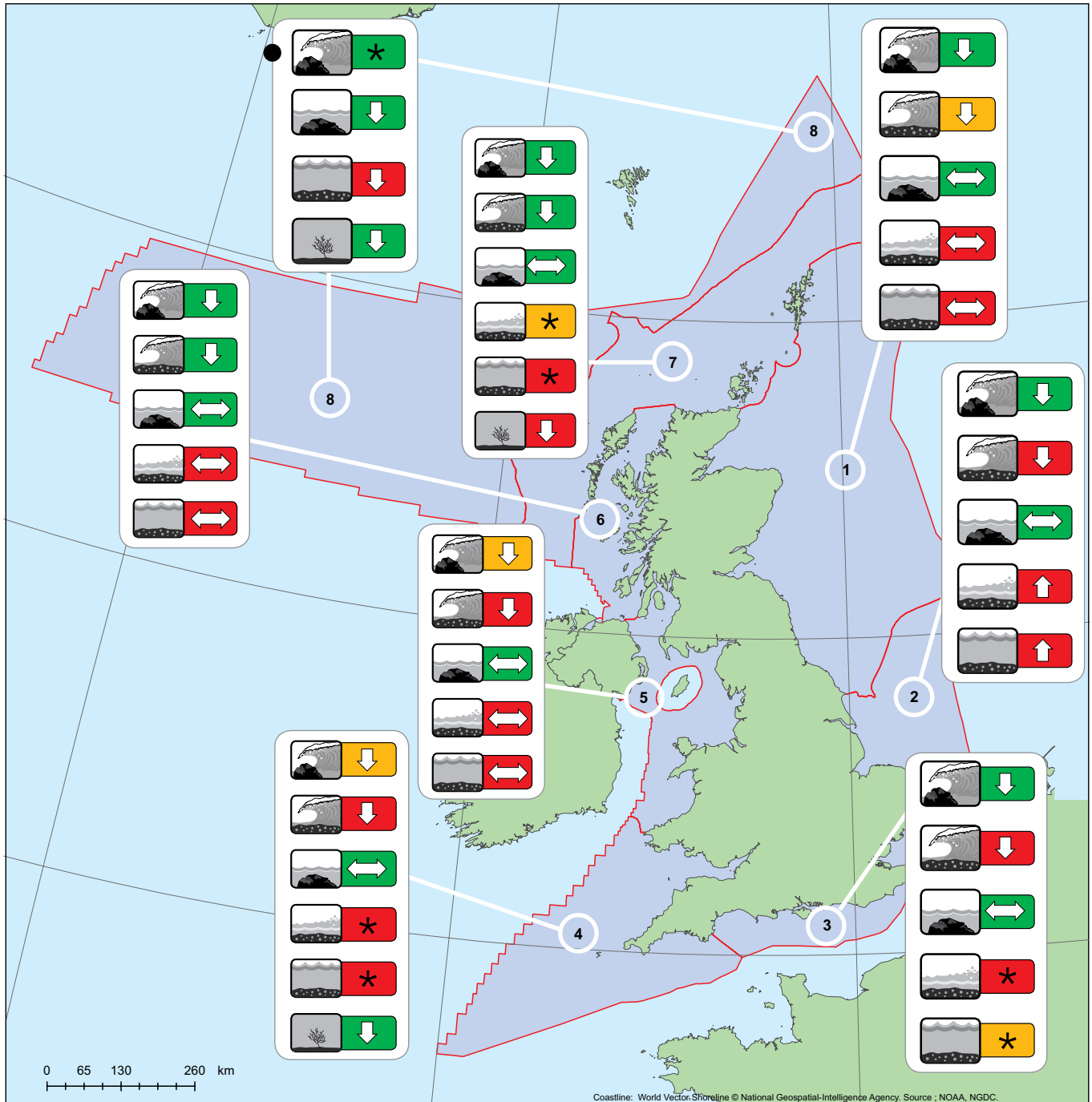
All the activities are regulated to reduce their pressures on the marine environment. The main pressures on the marine environment are damage to and loss of habitat on the seabed from fishing and the presence of physical structures. The other industries tend to have small and localised pressure footprints.

► See the map on page 7 for more information

What are the impacts of climate change on our seas?

The UK's marine environment is already experiencing the effects of a warming climate caused by human activity and natural variation. Key examples associated with the rise in sea temperature are the sudden shift in plankton species in waters around the UK in the 1980s; the northward movement of some fish species in the North Sea; and the increased length of the growing season of phytoplankton, which is food for many species of fish. The rise in sea level caused by climate change may also have an impact on low-lying coastal communities.

Healthy and Biologically Diverse Seas – Habitats



— Regional sea boundaries

1. Northern North Sea
2. Southern North Sea
3. Eastern Channel
4. Western Channel and Celtic Sea
5. Irish Sea
6. Minches and Western Scotland
7. Scottish Continental Shelf
8. Atlantic North-West Approaches



Intertidal rock



Intertidal sediments



Subtidal rock



Shallow subtidal sediments



Shelf subtidal sediments



Deep-sea habitats



Few or no problems



Some problems



Many problems



Stable



Improvement



Deterioration

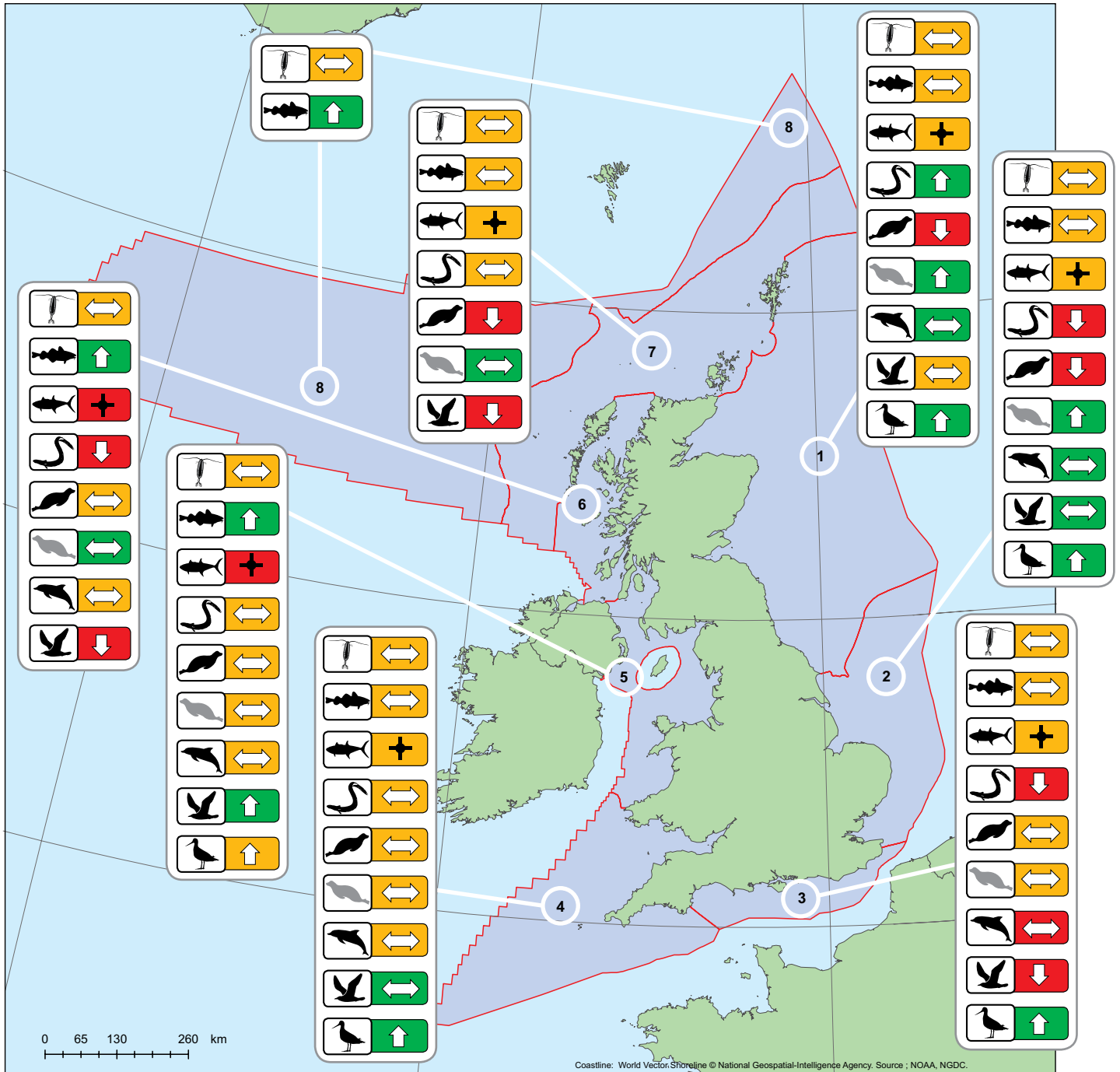


No trend information available



Rockall Island

Healthy and Biologically Diverse Seas – Species



- Regional sea boundaries**
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Plankton



Bottom-living marine fish



Commercial fish stocks



Estuarine fish



Harbour seals



Grey seals



Cetaceans



Seabirds



Waterbirds



Few or no problems



Some problems



Many problems



Stable



Improvement

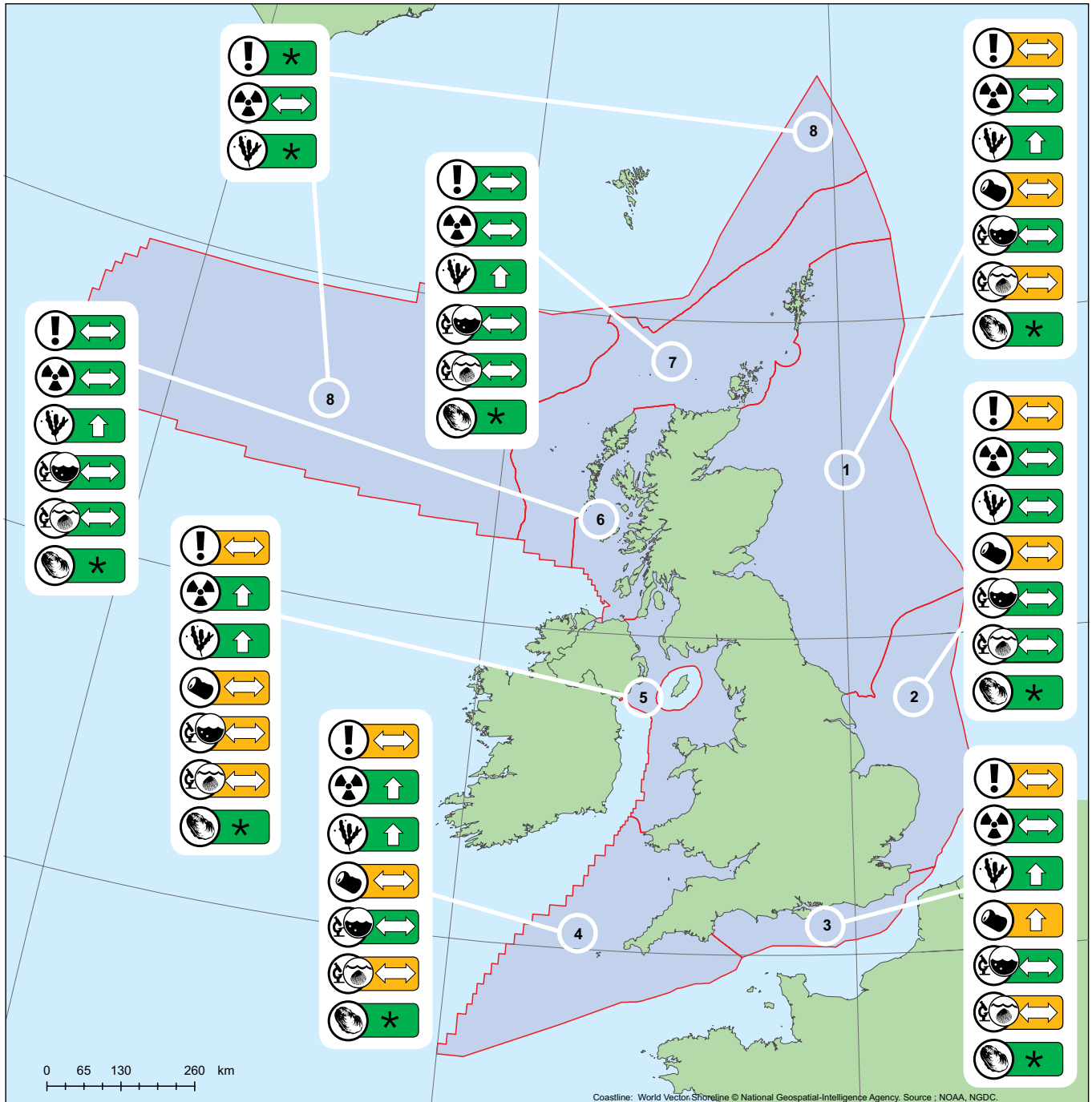


Deterioration



Trend for each region not assessed

Clean and Safe Seas



— Regional sea boundaries

1. Northern North Sea
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5. Irish Sea
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Hazardous substances



Radioactivity



Eutrophication



Beach litter



Microbiological quality of bathing waters



Microbiological quality of shellfish growing waters



Algal toxins



Few or no problems



Some problems



Many problems



No overall trend discernible



Improvement

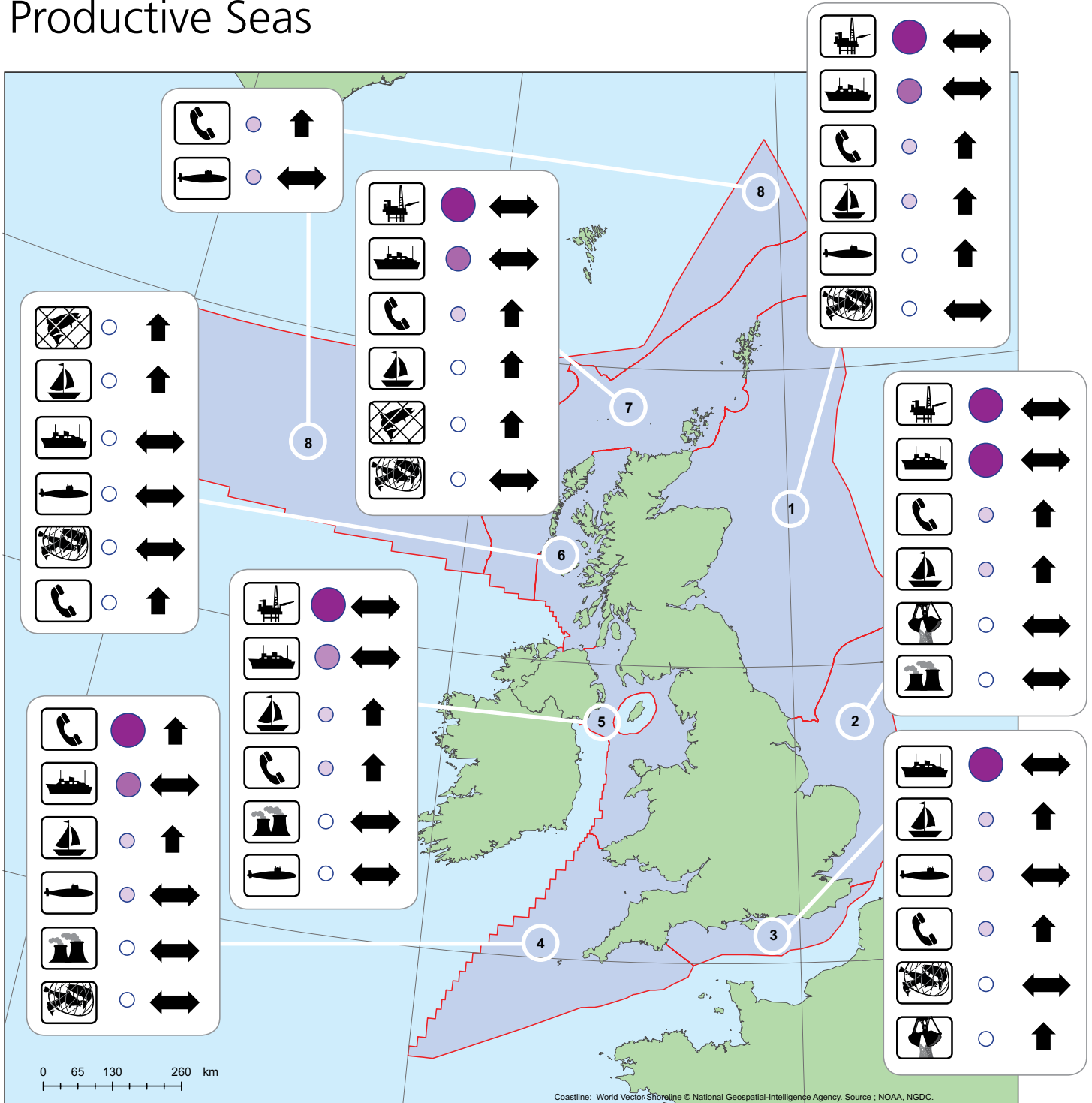


Deterioration



No trend information available

Productive Seas



— Regional sea boundaries

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Oil and gas



Maritime transport



Telecoms



Leisure and recreation



Fisheries



Defence



Water abstraction



Aquaculture



Mineral extraction

Gross Value Added (£)

- >1bn
- 500m - 1bn
- 100 - 500m
- 10 - 100m

Change in pressure since 2003

- ↑ Increase
- ↓ Decrease
- ↔ No change

Ocean Processes

Components assessed	State in UK seas	Influencing factors and significance for UK seas
Sea temperature	Sea surface temperature has risen by between 0.5 and 1°C since the 1870s. Warming since the mid-1980s has been more pronounced in the Southern North Sea, the Irish Sea and the Minches and Western Scotland.	Influencing factors: Air temperature. Significance: Reduces ability of oceans to soak up carbon dioxide, affects certain species, e.g. forcing them to move or adapt, and contributes to rising sea level. Shifts in plankton populations on which most marine animals feed are associated with rise in sea temperatures.
Sea level	The average sea level around the UK coast rose by about 14 cm during the 20th century.	Influencing factors: Temperature and melting of land-based ice. Significance: Intertidal habitats and groundwater regimes are affected, and increased flooding risk for vulnerable coastal populations if upward trends continue.
Ocean acidification	Ocean acidity is increasing (indicated by a fall in pH) as carbon dioxide is absorbed. In UK waters we have no baseline measurements of pH against which changes can be judged, and it will be some years before we can make accurate judgements about the rate of acidification relative to natural changes in acidity during each year and between years.	Influencing factors: Carbon dioxide which is present both naturally and released by human activities, such as through the burning of fossil fuel. Various climatic factors influence its concentration in the sea. Significance: Potential threats to marine species and ecosystems if acidification continues.
Circulation, suspended particulate matter, turbidity, salinity and waves	These processes vary on timescales ranging from a day to years but have shown no significant trend over the past decade, except for a slight increase in salinity in the northern area of our seas.	Influencing factors: <i>Circulation</i> : Tides and weather. <i>Salinity</i> : Rainfall and adjacent Atlantic salinity. Significance: <i>Suspended particles</i> : can reduce light availability and inhibit plant growth. <i>Waves</i> : damage to offshore and coastal structures.

For more information

You can read the full *Charting Progress 2* report and its technical Feeder Reports at <http://chartingprogress.defra.gov.uk>

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