

Impacts of climate change on disadvantaged UK coastal communities

Findings
Informing change

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This study explores the nature of the vulnerability of disadvantaged UK coastal communities to climate change and the implications for adaptation responses.

Key points

- Coastal areas are vulnerable to climate change because of rising sea levels and wave heights and accelerated coastal erosion – especially communities relying on the immediate coastal area for their residence, communications and economic and social activities.
- Many are also vulnerable to climate change because of socio-economic issues such as high proportions of older residents and transient populations, low employment levels and high seasonality of work, physical isolation and poor transport links.
- There was a lack of understanding in disadvantaged coastal communities of the range of possible climate change impacts they face and how to respond appropriately. They were more concerned about pressing day-to-day issues such as their income or employment. Residents who had experienced severe events (storms, flooding) had greater awareness of climate change.
- Actions needed for coastal communities to adapt to climate change include:
 - improved communication of risks and impacts;
 - more adaptive local and national institutions;
 - ensuring that new development and infrastructure planning takes climate change into account to avoid putting more people at risk;
 - increasing capacity to prepare for climate risks and recover from specific events;
 - developing better targeted support for those most vulnerable.
- The new localism agenda puts an onus on communities and local areas to lead on tackling issues affecting them. But the study found that disadvantaged coastal communities and their local authorities may not be well equipped to do so without considerable support, including funding, from central government.

The research

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Background

The UK's long coastline is relatively accessible to all of its population. The coast is the focus of important economic, environmental and social activities. Some of the country's most important natural habitats and heritage sites are located on the coast. The coast also concentrates important economic activities from fishing to ports to offshore energy generation.

This study explores the vulnerability to climate change of communities in disadvantaged UK coastal areas, through research comprising a literature review and analysis of likely impacts, interviews, four case studies and a workshop. It also provides recommendations for improving coastal communities' resilience as part of national and local adaptation responses to climate change.

Vulnerability of coastal communities

Coastal areas are likely to be highly vulnerable to climate change because, in addition to changes in temperature and precipitation and more frequent flooding, they will be affected by rises in sea level and wave heights and accelerated coastal erosion.

Many coastal communities also face socio-economic challenges that may affect their vulnerability to climate change and their ability to respond to gradual changes and specific severe events such as storms. These challenges include: youth outmigration and inward migration of older people, high proportions of retirees and benefit claimants, transitory populations, physical isolation, poor-quality housing, over-reliance on tourism, seasonal employment, low income and pressure on services during the summer months.

This study focused on the issues for disadvantaged coastal communities, defined in this context as those at risk of physical impacts of climate change and which face disadvantage because of socio-economic problems such as high levels of deprivation or geographic isolation.

Climate change impacts on the coast

Climate change and rising sea levels are likely to have a severe impact on the UK coast by 2080. The total rise in sea levels off the UK coast may exceed one metre and could potentially reach two metres. The frequency of intense storm events is expected to increase and, along with the rise in sea level, to lead to more coastal flooding. Temperatures are expected to rise, particularly in the south and east of the UK. Winter precipitation is likely to increase markedly on the northern and western UK coastline. Coastal erosion is also expected to increase, partly due to sea level rise. Low-lying and soft-sediment coasts will be most vulnerable (e.g. in the east of England) because they are most easily eroded. The most exposed locations and estuaries may be particularly vulnerable.

The study identified a range of areas where future sea level rise is expected to be particularly rapid or have the greatest impact because it will be combined with an increase in storminess and erosion. The five main vulnerable coastal areas are south Wales, north-west Scotland, Yorkshire and Lincolnshire, East Anglia and the Thames Estuary. However, it should be noted that climate and coastal change impacts will be felt along the whole of the UK coast. The particularly vulnerable areas were identified mainly to select case study areas that provided a range of coastal and climate situations – i.e. different types of impacts ranging from erosion to flooding, and in differing types of areas from estuaries to ports, and rural and urban areas.

The case study areas are Great Yarmouth (Norfolk, England), Skegness (Lincolnshire, England), Llanelli (Carmarthenshire, Wales) and Benbecula (Outer Hebrides, Scotland).

The impacts of sea level rise and storminess, together with terrestrial processes acting at the coast, present significant threats to coastal communities. These threats will be felt particularly keenly by communities that rely on the immediate coastal area for their residence, communications and economic and social activity.

Social impacts of coastal climate change

Very little research has been carried out to date on the potential social impacts of climate change on the UK coast. Existing literature suggests that climate change is likely to negatively affect people's health, particularly through a greater occurrence of extreme events such as flooding and heatwaves. Flooding already poses a risk to life and health in coastal areas, and this is expected to increase with climate change. Although mortality rates are fairly low, the repercussions of flooding can severely affect mental health.

Heatwaves will particularly affect those who have pre-existing health problems, are very elderly or live in poor-quality housing. Although heatwaves will not just affect the coast, coastal areas have a disproportionate number of older people and poor-quality homes, which may mean more severe impacts than in other areas.

The literature also suggests that climate change will impact on coastal livelihoods, particularly for those who depend on the coast for employment (e.g. in fishing and tourism). Agricultural land near the coast may also be affected by flooding and erosion, putting pressure on local farmers and potentially affecting food supplies elsewhere in the country.

Extreme events associated with climate change (such as storms and flooding) are likely to affect key public infrastructure such as health and emergency services and public transport along the coast. For coastal areas that are already isolated, including island communities, the impacts on transport and infrastructure could be particularly serious.

Climate change is also likely to have longer-term impacts on particular neighbourhoods. Areas that suffer from extreme flooding events or are considered to be at high risk may be affected by blight and a reduction in housing values, development and investment.

Perceptions of climate change

Focus groups and interviews with residents in the case-study areas explored perceptions of climate change. Participants were asked who they thought might be most affected by climate change in their community. All the focus groups identified older people as likely to be most significantly affected. In Skegness and Great Yarmouth, people with disabilities were mentioned as particularly vulnerable. Participants in Great Yarmouth were the only group to mention children. In Benbecula, participants did not highlight any particular demographic group, but predicted that those who depended on agriculture for a living would feel the worst impacts.

The research raised questions about people's awareness of climate change. Local authorities and other interviewees suggested that as well as being particularly vulnerable, older people were less likely to be aware of the impacts than other groups. This was thought to be linked to a perception that climate change will not happen in their lifetime. Residents more generally also suggested that day-to-day concerns such as low incomes, lack of jobs or the price of fuel were more pressing than dealing with climate change.

The case studies suggested that people's knowledge and awareness of climate change were increased by experience of severe events such as storms or flooding. Residents in Benbecula showed higher awareness of climate change than those in other case-study areas, linked to a recent severe storm that cost five lives on the island. Where no recent events had been experienced, residents were less likely to be aware of the risks of climate change. Even where there was awareness, people's perceptions of climate change risks were often limited to one manifestation (e.g. flooding), with a lack of understanding of the wider impacts and potential consequences.

The severe storm in Benbecula was also reported to have led to some improvements in preparedness in the local authority, but residents were concerned that not enough had been done to prepare for a future event.

Implications for adaptation

The research suggested that coastal communities are likely to experience various challenges in their ability to adapt to climate change. Individual residents may lack the resources to make structural changes to their homes (e.g. to make them flood resilient), or may not be able to afford or wish to move away.

Coastal local authorities with areas of high deprivation may also not prioritise or be able to afford adaptation activities. Some of the areas studied clearly had other issues needing attention, such as regeneration and housing demand. This may mean limited resources for climate change adaptation.

With central government policy encouraging a shift to localism, there is an ever-increasing onus on communities to help themselves to become more resilient. But the way climate change is communicated (e.g. as a future risk) and lack of awareness of impacts and what actions are needed may be causing apathy in some communities. This might be exacerbated by the challenges faced by more disadvantaged residents, for whom climate change – in their view and comparatively – is simply not a major issue.

Poor awareness and understanding of the risks, and lack of local preparedness, are in part due to lack of effective communication of climate change impacts. Paradoxically, however, increased understanding of the risk of flooding and erosion, which should aid preparedness, could lead to 'blighting'. Once an area is identified as being at risk of flooding or erosion, land values can fall dramatically, resulting in residents being unable to sell their homes. This could be a particular problem for areas where it may not be affordable to provide or maintain flood and coastal defences.

Conclusion

Coastal areas may be severely affected by climate change in the future. Some are already experiencing extreme storms or floods and the effects of sea level rise and coastal erosion. Climate change will pose risks and challenges for people, coastal economies and local industry. It may also affect access to, and quality of, basic goods and services. The costs of emergency action, prevention and recovery may pose a significant problem for coastal communities, burdening local authorities with already limited resources.

Some coastal communities will face significant challenges to adapt successfully. Some are already disadvantaged and may find it difficult to prepare for the risks or respond to specific events. Knock-on effects may include residents in areas at risk being less able to obtain insurance.

These challenges are likely to increase the vulnerability of disadvantaged coastal communities to climate change. Adaptation needs to be a key policy priority, along with better integration of policies, including regeneration, flood and coastal erosion management and emergency planning.

'Successful adaptation' requires a combination of:

- **consistent national and local policy priority** – so that local service providers and communities have an incentive to consider climate change impacts;
- **good communication** – clear messages are needed to raise awareness of the social impacts of climate change and what actions can be taken to respond;
- **adaptive local and national institutions** – authorities need to avoid actions (e.g. building on flood plains) that are inappropriate and instead embed adaptation in all their policies and activities;
- **long-term development and infrastructure planning** – it is essential to avoid putting more people at risk of climate change. Impacts need to be incorporated into local authorities' approaches to spatial planning and management of development;
- **increased capacity-building** – local authorities and other key stakeholders (e.g. voluntary services) need to increase their understanding of the range of climate risks and impacts and related uncertainties, and how to communicate these issues to communities and engage with them.
- **Support for disadvantaged groups and communities** – adaptation activities need to target these groups because they are likely to suffer the worst impacts.

Policy and practice for climate change adaptation needs to specifically aim to reduce disadvantaged coastal communities' vulnerability to climate change. This needs to be a policy priority and included in the Government's UK Climate Change Risk Assessment.

Devolution of responsibility under the localism agenda also needs to be undertaken with care in relation to climate change adaptation. Many vulnerable coastal communities and their local authorities (and possibly elsewhere) may need high levels of support, including funding, from central government if they are to successfully adapt to a changing climate and reduce the risks they face.

About the project

The research comprised a literature review and an analysis of the likely impacts of climate change on the UK coast; stakeholder interviews; four case studies with coastal communities in Great Yarmouth and Skegness (England), Llanelli (Wales) and Benbecula (Scotland); and a stakeholder workshop.

For further information

The full report, **Impacts of climate change on disadvantaged UK coastal communities** by Mary Zsomboky, Amalia Fernandez-Bilbao, David Smith, Jasper Knight and James Allan, is published by the Joseph Rowntree Foundation. It is available as a free download from www.jrf.org.uk

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