

Environment, Food and Rural Affairs Committee

Coastal flooding and adaptation to climate change inquiry

Written evidence by the Chartered Institution of Water and Environmental Management

Summary

1. CIWEM is the leading independent Chartered professional body for water and environmental professionals, promoting excellence within the sector. The Institution provides independent commentary on a wide range of issues related to water and environmental management, environmental resilience and sustainable development.
2. We welcome the opportunity to respond to the Environment, Food and Rural Affairs Committee on their inquiry on coastal flooding and adaptation to climate change. This response has been compiled with the assistance of our members.
3. The coastal zone is vital to the national economy of a small island nation. Climate change, associated sea level rise and storminess are projected to expose the coast to growing risk. Our management structures are currently sub-optimal for addressing this risk.
4. Strong pressure on local authorities, in the form of central government housing targets, to deliver new development in their areas too often conflicts directly with policies established in shoreline management plans. Local politics can trump long-term strategic policies and create a legacy of unsustainable development. There must be greater integration and reflection of plans in the coastal zone.
5. Investment in flood and coastal erosion risk management will need to increase, potentially significantly, if we are to maintain viable, prosperous coastal communities and infrastructure in the medium to long-term. This will need to come either from central government grants or partnership funding, or a combination of both. Partnership funding is increasingly challenging to secure. Thus, either grant in aid will need to increase or additional partnership funding levers will need to be created.
6. Coastal change will become increasingly prevalent as climate change bites. This change should be managed as planned adaptation to minimise disruption. Government must lead the development of strong policy and mechanisms to enable such adaptation and relocation.

Response to inquiry questions

What are the risks and consequences of coastal flooding?

7. **Coastal flood risk is second only to pandemic flu in the Government's assessment of civil riskⁱ. The potential speed and extent of coastal flooding makes it particularly dangerous and sea level rise, increasingly extreme weather plus isostatic rebound will exacerbate matters. This added to the density of population and economic activity, and the fact that coastal communities often have populations either poorer or older than the national averageⁱⁱ accounts for this scale of risk.**
8. The coastal zone is vital to the economy, wellbeing and social and commercial fabric of our nation. It may be thought of as an artery providing for essential food, commerce, transport, energy, housing, cultural and recreational functionality. The range of different pressures, interests, responsibilities and governance structures at play is extensive and complex.
9. The consequences of coastal flooding and erosion are also not always directly linked to the loss of life and damage to property and infrastructure. They are often far wider with disruption to business, education, travel, mental health, wellbeing and ultimately the local and national economy. This is much misunderstood and underappreciated. It is also inadequately reflected in how we value the benefits of the coastal zone thus too often we make poor, short-term decisions and underinvest in it, magnifying the risks and consequences of coastal flooding and erosion.

Legacy

10. After the 1953 East Coast and other subsequent floods, coastal defences were improved, and continued investment means the probability of flooding has been reduced.
11. Yet there is a counter legacy of this which is that protecting communities which may now frequently lie below sea level (e.g. on a monthly spring tide) has led to development in areas that strategically will ultimately need to be relocated (Canvey Island may be considered as such an example). Development behind sea defences, especially single-story dwellings and development for vulnerable people, plus critical infrastructure in coastal zones has increased the consequences should flooding occur.
12. Coastal narrowing and coastal squeeze are further contributing risk, with much of our coastal zone constrained in its ability to adapt to climate change by landward physical barriers; whether geological (coastal narrowing) or human development (coastal squeeze). This leads to a reduction in protective inter-tidal habitat in front of coastal defences, exposing those defences to greater hydraulic forces and increased risk of the defences being overtopped or breached.
13. Where we choose to 'hold the line' we create a risk profile that has a 'tipping point' where sea level rise and more aggressive wave climate can no longer be resisted. This raises the risk to human life and creates the potential for very large economic cost in the future.

Flood warnings and breach risk

14. Well-planned flood warnings are in place to reduce risk, but these rely on people taking the correct actions when warned. Coastal flood forecasting is much more complex than river flood forecasting and there can be a lot of uncertainty right up until the storm hits. In 2013, during the East Coast storm surge, the wind direction changed so the flooding was less severe. However, decisions had already been made to evacuate Great Yarmouth, Jaywick and other locations as it can take a long time to evacuate and even then, people were reluctant to leave. The Civil Contingencies Act 2004 improved powers relating to evacuation and clearly identifies responsibilities of the organisations involved.
15. Several times in the last 25 years, defences have been close to overtopping and as a nation, we have been lucky that sea and weather conditions have not combined to result in more serious breach or overtopping. The consequences of such could have been similar to those experienced with Storm Xynthia in France in 2010, where poorly controlled development, badly maintained coastal defences and inadequate warnings combined with coastal flooding to cause significant damage and loss of lifeⁱⁱⁱ.
16. The chance of a breach depends on factors including the susceptibility of different elements of a defence to failure (a defence is only as strong as its weakest point) as well as areas where wave energy could be focussed during a tidal surge. Any infrastructure asset (e.g. a flood defence) has a limited life span and its general condition will decline over time, leaving it more vulnerable to failure. Many sea defences are aging, and this compounds the increasing risk from sea level rise as it makes a breach more likely.
17. Although coastal erosion risk is much less than coastal flood risk in terms of the scale and number of assets at risk, its consequences are permanent (unlike coastal flooding) and potentially more significant i.e. permanent loss of homes with no insurance payable; loss of access roads etc, even if property is not affected; loss of roads between communities leading to increased travel times and less community cohesion.

What progress has been made to implement coastal erosion and flooding adaptation measures, and how much more still needs to be done?

- 18. There has been progress in delivering more sustainable coastal schemes. This has been informed largely by the Shoreline Management Planning (SMP) approach introducing planning across three epochs (0-20, 20-50 and 50-100 years) and more recently the development and introduction of Coastal Change Management Areas (CCMAs). However, there are challenges concerning the reach and influence of SMPs on wider land-use planning.**
19. Active adaptation on the coast has tended to occur in the form of managed realignment, to minimise or avoid the loss of designated habitats (such as at Steart and Medmerry).
20. Adaptation where there are also built environment interests is more complex and has occurred less frequently (such as at Dawlish Warren or Slapton Sands). Adaptation of the coast is difficult to achieve under the current system unless there is clear legal (environmental) or economic justification. As the impacts of climate change are increasingly experienced, coastal adaptation will need to be a more common response.

Managing Coastal Change

21. The introduction of CCMA's in planning policy is perhaps the most significant area of progress in recent years. CCMA's take SMP erosion lines and within them require any new development bands to undertake a coastal change vulnerability assessment.
22. Formal designation of CCMA's within local plans should help to facilitate longer-term adaptation planning to relocate infrastructure and make the raising of partnership funding to maintain defences in the shorter term more feasible (e.g. in areas such as the East Wash, Community Interest Companies have been set up to enable the provision of partnership funding contributions by local businesses).
23. Where CCMA's are placed, they are focussed on areas where SMP policy is "No Active Intervention" or "Managed Realignment" as per the National Planning Policy Framework definition (and recommended in the Coastal Change Adaptation Planning Guidance^{iv}). They do not acknowledge the increased risk to areas with a long-term policy of "Hold the Line" and the resulting need to make such areas more resilient (if it is not possible to keep raising defence levels). We consider that this is an important omission.
24. Defra Coastal Change Pathfinders (2009-2011) promised to test approaches to adaptation and lead to new guidance, but this was not forthcoming. CCMA's should be a key driver for new approaches, but it is too early to judge how well they are actually enabling this.

Development pressures and poor plan integration

25. Too often the pressure on local authorities to deliver new housing is compromising the policy direction set out in an SMP, such that unsustainable developments are being delivered. In some instances, local plans in coastal areas do not even refer to their relevant SMP and its policies or if they do, don't look beyond the first epoch^v.
26. There is a need for better integration and cognisance between plans in the coastal zone. Consideration should be given to whether there should be a stronger, perhaps mandatory requirement for local authorities to reflect SMPs in their plans and local planning policies. An example might be the way that local planning authorities consult with the Environment Agency on the development of strategic flood risk assessments. There is perhaps some lack of understanding within local authorities concerning what SMPs are and how they can be used.

Is the application and approvals process for coastal erosion and flooding adaptation measures working effectively? If not, how could it be improved?

27. **We do not consider that the process is working as it should. The prioritisation of schemes, whilst broadly appropriate, undervalues the contribution that coastal erosion management schemes can make to local economies where there may not be high risk to life or property, due to the way certain outcome measures (OMs) are weighted. Securing partnership funding is increasingly difficult and the approach requires attention to be effective in future. There is also a need to ensure that all management options including relocation are open to being funded, which is currently not the case.**

Balance between FDGiA and Partnership Funding

28. Broadly, government calculators prioritise the protection of life, property then agricultural land. There has been concern regarding the practical application of this from a range of parties including local authorities themselves, the Local Government Association and Regional Flood and Coastal Committees. This relates to the weighting placed on OM2 (Households at flood risk) and OM3 (Households at erosion risk) meaning that many schemes are now struggling to achieve sufficient Flood Defence Grant in Aid (FDGiA) funding to make them viable, despite their strong delivery against OM1 (Economic Benefits – whole life or broader benefits).
29. Since the introduction of partnership funding in 2011 there have been many projects delivered which would otherwise have not progressed without additional private contributions. This mechanism should be praised for this step forward and the resulting OMs delivered.
30. In the current economic climate however, partnership funding can be particularly hard to achieve, so making up any shortfall in FDGiA can be increasingly difficult (in effect, all the 'easy win' schemes and sources of funding have now been realised). Many schemes which achieve enough partnership funding to progress are simply using other sources of public money to FDGiA. Increasing flows of private investment e.g. through business rate reductions and strategic and targeted investment via local enterprise partnerships should be a major focus for government in coming years.
31. Natural capital accounting techniques are increasingly being used to value a wider range of costs and benefits associated with decisions where there are environmental components, and this should be the case with coastal erosion and flooding adaptation measures. For example, the wider carbon sequestration benefits of salt marsh creation and stabilisation should arguably be given greater consideration when planning the future of our coastal zone, and this factored into decision-making. It is hoped that the OM1 weighting will be updated at the end of this 6-year programme in order to afford greater consideration of the wider benefits that coastal erosion schemes can deliver.

Broadening the range of fundable measures

32. Where it may not be cost beneficial to hold the line to defend communities, mechanisms should be available to deliver other adaptation responses, from increasing awareness through to increased resilience of individual properties or communities and even strategic relocation. There is currently no 'priority score' driver in funding calculators, nor any associated funding to even consider strategic relocation as an option^{vi}.
33. We strongly suggest that to truly operate a risk management approach to coastal flooding and erosion, all the options must be available, including to remove the risk by relocating, rather than only having some options on the table as is currently the case.
34. The above circumstances are arguably a manifestation of funding policy driving investment, rather than strategy (established in SMPs) driving investment. If SMPs are not driving investment, then it should be questioned whether the SMPs were deliverable in

the first place i.e. was there too much 'hold the line' than is deliverable. FDGiA calculators do prioritise delivery of strategic aims but these are not always as defined by the SMP; local politics can be a significant factor.

35. In CCMA's, it is currently difficult to fund interim maintenance of defences while adaptation takes place. Whilst we consider that central funding should potentially be available for this, there is also scope for innovation. In Norfolk^{vii}, the East Wash Community Interest Company^{viii} has been established as a vehicle to drive partnership funding to maintain a shingle bank in the short to medium term.

Is adequate funding available to counter coastal erosion and build and maintain coastal defences?

36. We consider that there is adequate funding available to meet needs under the current 6-year settlement, but climate change and sea level rise will demand increased levels of investment in future. The impact of OM weightings on scheme qualification for FDGiA, allied to challenges accessing partnership funding risks that many schemes will not progress and FDGiA will be underspent in the current period. This requires attention by government, alongside the timing of financial settlements for maintenance, which will be increasingly critical on the coast. Long-term investment planning must start factoring in adaptation and relocation alongside defence.

37. Providing funding for flood and coastal erosion risk management is a highly complex process involving different government departments and organisations and a range of funding streams. Almost all decisions come down to economic criteria to achieve the best return on investment and incentivise action by those who are most able to take it.

38. The National Infrastructure Commission has made recommendations to government concerning average annual capital cost to deliver flooding from rivers and the sea under a 2°C climate change scenario^x. Depending on the level of resilience delivered across a range of locations, this varies from roughly the current funding allocation (to maintain resilience) up to triple the present levels of investment (to provide resilience to 0.1% annual probability of flooding everywhere). This indicates that funding demand will increase with climate change.

39. Long term planning for flood risk management investment is essential and the recent work by the Environment Agency to update its Long-Term Investment Scenarios (LTIS)^x is welcome. Greater certainty in future investment needs will allow better understanding of resource requirements, more efficient use of resources and the development of long-term and flexible solutions.

40. However, LTIS does not consider critical factors relevant to coastal flooding and response to climate change: Insurance, coastal realignment and property relocation are currently beyond its scope. We consider that such factors need to start being factored into scenario planning for the next LTIS update.

41. CIWEM supports the concept of partnership funding as it aims to increase the number of schemes being supported. The weighting between OMs discussed in para 28 above may result in many locally valuable coastal erosion schemes not progressing because of the difficulty in obtaining enough partnership funding to account for this weighting disparity. A full suite of benefits is available to local economies if such schemes are delivered, in the form of regeneration growth, environment, health, wellbeing, tourism and recreation, however too often they are not progressing. One positive example where a local authority has taken a positive lead to deliver renewal is Jaywick Sands, where resilient development is being encouraged in full cognisance of the flood risk^{xi}.
42. This situation was recently described by the House of Lords Select Committee on Regenerating Seaside Towns and Communities^{xii}, which recommended that Defra should revise the approach taken to coastal flood risk investment decisions to better protect non-residential properties and assets, including business and public infrastructure so as to deliver greater local economic and public realm benefit.

Funding maintenance

43. LTIS assumes that the performance of current assets and incident management service are maintained at current levels. However, climate change will mean that assets will be subject to quicker degradation in future, particularly around the coast. Current assets can be maintained or refurbished to cope with a certain amount of sea level rise (commonly around 0.6m)^{xiii}, but thereafter may require significant re-engineering. The point at which this situation occurs depends on climate change scenarios but may be expected between 2060 and 2110.
44. The balance between capital expenditure and operational, or resource expenditure used to pay for maintenance of defences and other resilience activities, is a common cause of debate around the ability to achieve efficiencies in delivery of capital schemes due to longer-term budget certainty and how that translates into planning works, and the lack of a similar approach for maintenance.
45. On the basis that maintenance costs are only likely to increase in future, the Government should consider confirming resource budgets under a long-term settlement, as it does for capital expenditure. It should also consider which RMAs would have access to this budget. Currently the EA fund their maintenance from FDGiA, however local authorities don't get access to this – an issue which is currently being debated nationally through the Fair Funding Review. In order to ensure a properly flood resilient nation, local authorities should have access to funding to understand the condition of, and maintain, their assets.
46. Funding must be coupled with adequate resourcing of delivery organisations. Without skilled staffing in client, consultant and contractor organisations the ability to deliver is compromised. Pressures faced by local authorities under austerity, have resulted in non-ringfenced funds which may otherwise be used for flood risk management purposes being diverted to more immediately pressing areas of expenditure.

Is there a transparent process, criteria and timeframe for determining when to support or withdraw from coastal erosion and flooding adaptation measures, and does the process inspire public confidence in decision-making?

- 47. We do not consider that the process is transparent. SMPs set a strategic policy direction which may not end up being funded, or for which (in the case of management retreat) there are no actual plans in place to facilitate relocating a community and supporting it to adapt. Public engagement around planning and scheme optioneering should be improved.**
48. Public confidence in decisions would be improved by clear information on the impacts of various options and SMPs should ultimately be the vehicle for this. There may be benefit in greater local engagement with plan development so SMPs are developed in partnership with communities and presented in a way people better understand.
49. This is far from easy however, as the issues involved are highly emotive. In practice politics has dominated, with 'no active intervention' often considered unacceptable and meeting great resistance, hence policies reverting to 'hold the line' in the short term, masking the scale of the issue and the need for adaptation.
50. We consider that the optioneering process is the right approach, but it is not very well understood by the public and often the perception is that decisions are made out of sight of those directly affected within a community. The process of initially assessing, optioneering and cost/benefit assessment is understood by those working on these projects. However, this together with the reasons why some projects do not progress when there is a perceived local need, does not appear to be well translated into public engagement. Stakeholder engagement on such issues should be improved.
51. The Coastal Change Adaptation Planning Guidance^{xiv} highlights this along with funding and organisational integration as being the 3 key elements that need to align to progress meaningful adaptation at the coast.
52. There is also a disconnect between the different authorities involved with flood risk management and how this relates to getting a scheme or mitigation in place. Local priorities are sometimes perceived to be missed or overlooked by the EA and Defra should they not rank highly nationally. The tensions on the coast are often likely to be predicated around the concept that defences have always been there and that they will continue indefinitely. It is a tough message if there is a pull back from this stance by any authority and the lack of transparency sometimes seen on justification does not support getting individuals on board with some of the more difficult decisions.

This year, the UK Government will publish its long-term policy statement on flooding and coastal erosion, and the Environment Agency will issue a new 50-year strategy – what should they each prioritise?

Both the policy statement and the strategy should establish clear policy and practice that improves resilience to a more aggressive climate. They should clearly define resilience and what a resilient UK in 2069 looks like.

The policy statement should:

Inform the Government's National Adaptation Programme, required under the Climate Change Act. This is a failure as an instrument for planning and directing climate change adaptation for the UK as it currently stands^{xv}.

Establish the Government's approach to ensuring that land use planning in the coastal zone takes full consideration of the implications for epochs 2 and 3 within the SMP process, including improved communication with a wide range of stakeholders including appropriate government departments, LEPs, critical infrastructure providers, community groups and land managers.

Set out how the Government proposes to manage an active coastline subject to up to a metre of sea level rise, as projected in the UKCP18 assessments, including adapting and relocating communities.

Ensure that FDGiA calculators and OMs are properly geared to deliver an adaptive, risk-based response to coastal change over the coming century, making the most of opportunities for growth and regeneration whilst ensuring that retreat is planned and enabled through funding in appropriate strategic areas.

To this end, establish the use of relocation packages and strategies funded (or part funded) by government in the 50-year coastal erosion zones with subsequent demolition of vacated property and removal of development rights.

Review the range of incentives which can assist in leveraging partnership funding in the coastal zone and establish a stronger basket of partnership funding measures to drive this in future.

Establish a clear position on how efficiencies can be maximised not only in capital investment but also in maintenance of defences in accordance with the policies established by SMPs.

The Environment Agency Strategy should:

Establish how the Agency will maximise the provision of information to all parties impacted by coastal change, or who are influential in driving change, ensuring effective knowledge sharing and dialogue to enable the meeting of national targets alongside local priorities.

Set in place mechanisms for stronger practical support for local authorities to take on board and implement the policies established within SMPs, when establishing local plans.

Support communities in taking practical steps to embrace and deal with change which has been identified within SMPs and local plans, helping them to maximise their resilience in the face of flood and erosion risk and during a period of change.

Enable skills and capacity building in appropriate areas of flood and coastal erosion risk management.

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- ⁱ Cabinet Office. [National Risk Register of Civil Emergencies 2017 Edition](#).
- ⁱⁱ Committee on Climate Change, 2018. [Managing the coast in a changing climate](#).
- ⁱⁱⁱ Slomp, Robert & Kolen, Bas & Bottema, Marcel & Terpstra, Teun & van Balen, Wim & Nieuwenhuis, Stephan, 2010. [Learning from French Experiences with Storm Xynthia – Damages after A Flood](#).
- ^{iv} East Riding of Yorkshire Council, Halcrow, 2015. [Coastal Change Adaptation Planning Guidance](#).
- ^v Committee on Climate Change, 2018. [Managing the coast in a changing climate](#).
- ^{vi} Jacobs for the Committee on Climate Change, 2018. [Research to Assess the Economics of Coastal Change Management in England and to Determine Potential Pathways for a Sample of Exposed Communities](#).
- ^{vii} Borough Council of Kings Lynn and West Norfolk, 2019. [LP15 - Coastal Change Management Area \(Hunstanton to Dersingham\) Policy](#).
- ^{viii} Environment Agency, 2015. [East Wash Community Interest Company](#).
- ^{ix} National Infrastructure Commission, 2018. [National Infrastructure Assessment chapter 5: Reducing the risks of drought and flooding](#).
- ^x Environment Agency, 2019. [Long-term investment scenarios \(LTIS\) 2019](#).
- ^{xi} Tendring District Council. [Jaywick: A Bright Future](#).
- ^{xii} House of Lords Select Committee on Regenerating Seaside Towns and Communities, 2019. [The Future of Seaside Towns](#).
- ^{xiii} Environment Agency, 2019. [Long-term investment scenarios \(LTIS\) 2019](#).
- ^{xiv} East Riding of Yorkshire Council, Halcrow, 2015. [Coastal Change Adaptation Planning Guidance](#).
- ^{xv} CIWEM, 2018. [National Adaptation Programme. CIWEM's Priorities for the Second Cycle](#).