

Building resilience and capacities for Ireland's coastal future

**Climate Change Advisory Council Adaptation Committee
Reflection and Learning Workshop Report**



September 2021

Summary

The Climate Change Advisory Council's Adaptation Committee convened an online workshop on the 15th September 2021. It was designed to provide an opportunity for experts and interested parties to discuss coastal adaptation, to hear about international examples of best practice, as well as work underway in Ireland, and to facilitate conversations about practical implementation and barriers to action. It was intended to inform the work of the Adaptation Committee and the Advisory Council. The workshop agenda and links to the presentations are provided in Appendix 1.

This is a report of the workshop prepared by the Secretariat for the information of the Adaptation Committee and Advisory Council. It does not necessarily reflect their views.

The 50+ registered attendees included members of the Advisory Council and Adaptation Committee, policy makers, representatives of local government and other relevant organisations, communities and researchers.

Coastal adaptation will be of vital importance to Ireland due to the large (and growing) percentage of the Irish population living on the coast, and the range of Irish infrastructure vulnerable to sea level rise, coastal flooding and erosion, not to mention the variety of important ecosystems our coasts are home to. Despite this there is no sectoral adaptation plan for coasts, and there is a need to clarify responsibilities between central government and local authorities when it comes to coastal adaptation issues. The [National Coastal Change Management Strategy Steering Group](#) may provide an opportunity for greater coherence in this space. Though there have been improvements to Ireland's ocean and coastal observation infrastructure, participants questioned if Ireland had sufficient good quality long-term data with which to build models to inform coastal adaptation strategies and that greater coordination and infrastructure is required in order to develop this.

The workshop heard that England's coastal management units and dedicated shoreline management plans for different stretches of its coast provide an example of coastal governance and the potential of Nature-based Adaptation as trialled in the Netherlands merits further consideration. It heard that community-led efforts to manage the Irish coast have had successes, and it will be important for local communities to be involved in future decisions regarding coastal adaptation, but these efforts must be supported with more national and local policy coherence and support than they have been receiving so far.

Overview of presentations

Marie Donnelly, Chair of the Climate Change Advisory Council, opened the workshop by reminding attendees that the Council's Adaptation Committee was set up in 2016 to provide guidance to the Council for consideration on matters relating to climate change adaptation and this role was recognised under the 2021 Amendment Act. The Chair noted the timeliness of the workshop given the ongoing work of the interdepartmental National Coastal Change Management Strategy Steering Group, and the fact that the Department of the Environment, Climate and Communications is due to begin working on the next National Adaptation Framework in the coming months.

Seán O'Leary, Scientific Officer with the Council's Secretariat, presented an overview of coastal adaptation issues noting that a total of 1.9 million people in Ireland live within 5km of the coast, representing 40% of the population, while 40,000 people live less than 100m from the coast (Census, 2016). Climate Ireland provides interactive access to the EPA/Met Éireann/Marine Institute's Status of Ireland's Climate, 2020 report which analysed almost 50 essential climate variables (ECV), including oceanic changes, see <https://www.climateireland.ie/#!/tools/statusReport>. Issues such as coastal squeeze and socioeconomic developments were discussed, as was the array of policy, legislative and research drivers. The previous findings of the Advisory Council from earlier [annual reviews](#) were also presented.

The first invited speaker, **Tjisse Nauta** of the [Deltares Institute](#) in the Netherlands, discussed the evolution of best practices in the Netherlands since the North Sea Flood of 1953. The socio-political impact of that event when it came to the imperative to protect the country's long low-lying coastal zones, and the practical reaction the disaster engendered in terms of increasing the power and influence of the country's Water Boards, making sure appropriate risk assessments were undergone before approving new projects, and engineering stronger coastal protections, was discussed.

He explained that the evolution of coastal adaptation strategies in the Netherlands since the 1950s, through funding and research, has come to encompass a wide variety of tools, including a number of Nature-based Solutions and the creation of artificial islands adjacent to the coast which strengthens the coastline by protecting and replenishing it, or planting appropriate vegetation to root soil in place and dissipate wave energy. In short, the Netherlands' approach to coastal adaptation is to continuously seek innovation, keep the risk of coastal inundation at the centre of every major infrastructural decision, and simultaneously prioritise increasing the biodiversity and aesthetic value of landscapes.

The second invited speaker was **Dr. Brian Kelleher** of the [Dublin Bay PREDICT project](#). PREDICT aims to provide experimental proof-of-concept in Dublin Bay that can be extrapolated to a range of environments. All data and models produced will be made publicly available. The project is multidisciplinary and will integrate mathematical modelling, remote and in-situ sensing, physical and chemical oceanography and seabed mapping. This research is funded by Science Foundation of Ireland (SFI), the Geological Survey of Ireland (GSI) and the Marine Institute (MI). The project is coordinated in Dublin City University (DCU), with Principal Investigators in Maynooth University (MU), University College Cork (UCC) and the GSI.

The project aims to assess and predict coastal vulnerability by the means of a coordinated program of coastal observations, using tools ranging from databases to drones, satellites to in situ buoys, boat transects to grab samples. This is because adequate quality data, covering as many years as possible, is needed to calibrate accurate models, yet none of the past scientific data gathered regarding Dublin Bay has been ambitious or consistent enough. The lack of coordination in coastal observations in Ireland was highlighted, as were the practical administrative issues encountered by researchers when attempting such work along the Irish coast.

Dr. Kelleher also touched upon the value of North Bull Island when it comes to coastal adaptation. Though inadvertently formed 200 years ago as a result of building walls to address the silting problem at the mouth of the River Liffey, the island is now providing a number of ecological services such as lowering flood heights, dissipating storm surges, protecting against erosion, capturing metals and pollutants and aiding in the cycling of nutrients. It is also a carbon sink, thereby playing a part in climate change mitigation as well as adaptation.

The third invited speaker, **Prof. Robert Nicholls** of the [Tyndall Centre for Climate Change Research](#), centred his talk around the question of the UK's (but predominantly England's) preparedness for the coastal erosion and flooding consequences of a possible rise in global temperatures of 3°C. Prof. Nicholls argued that the coastal management strategies which have been put in place in England and Wales since the 1990s would be sufficient to safeguard the countries' coasts against the consequences of such a rise in global temperatures, as long as they continue to be informed by the research and evolve accordingly.

These shoreline management strategies include forecast and warning services, coordination between the entities safeguarding different stretches of the coast, a move from defence against sea level rise to management of sea level rise, a move from hazard perspective to a systemic risk perspective, and the recognition of different adaptation approaches. Decisions regarding coastal adaptation are now made following an assessment of the economic costs and benefits, and approvals for infrastructure which could prove virtually useless or perhaps even deepen the problem into the future are no-longer simply granted without review. [The Flood and Coastal Erosion Risk Management: A Manual for Economic Appraisal](#) was discussed. In some cases, the cost benefit calculation leads to the conclusion that relocating an entire community is inevitable, as in the case of Fairbourne in North Wales and likely elsewhere.

The fourth and final group of invited speakers were **Martha Farrell, Muireann Kelliher and Dr. Eugene Farrell representing the Maharees Conservation Association**, a group formed due to a crisis period for the Maharees tombolo on the northern side of the Dingle Peninsula, which is now spearheading the call for community-based coastal adaptation in Ireland. Despite the area being protected under European habitats law, the lack of coordinated action to combat coastal erosion and regular flooding events led to the formation of this group. Through education and outreach, fencing and signage, active and fruitful communication with academics, and the implementation of Nature-based Solutions, significant strides have been made to facilitate the recovery of the Maharees ecosystem. The Association encourages community involvement through beach cleans, Marram grass planting and Chestnut fencing, and provides an

example to all community-led coastal adaptation efforts across Ireland. The Maharees Conservation Association could provide a template for action in many other areas, but any such efforts would still require funding and other supports.

Discussion

The discussion following the presentations was moderated by Prof. Robert Devoy, of the Adaptation Committee. Key points raised during the discussion include:

- Netherlands and England experienced events which led to a reassessment of their relationship with the coast and the imperative for coastal preparedness for climate and weather events. This has led to long term, large scale national approaches to coastal investment.
- Further cross sectoral discussion of our coastal future is necessary along with greater congruence between coastal and political/administrative processes. This also implies a cross border perspective.
- We require flexibility in our approach to coastal adaptation, so that we may respond effectively to future developments.
- Integrated Coastal Zone Management remains a useful tool, as do adaptation pathways.
- Nature-based Solutions when used appropriately can be just as, if not more, effective than grey engineering ones.
- Nature-based Adaptation can support other objectives. However, for local populations to trust in their efficacy, more pilot studies will be required in Ireland, not only to prove that these methods of combating erosion and flooding work, but also to establish which solutions are best suited to which situations.
- Ireland is deficient in data through which to understand the future patterns of our coasts. Without good quality long-term data, we cannot begin to build the models we require to inform future decisions. Permanent measurement and coordination resources must be put in place urgently if we are to begin to make the right decisions regarding coastal adaptation, particularly in urban areas with their added complications of important infrastructure, density and coastal squeeze.
- The Dublin Bay PREDICT project is far from the only project seeking coastal data which has run into such problems, and while the Marine Institute has assisted, and the OPW has begun to invest in the gathering of coastal data itself, a funded dedicated body would still be welcomed. Projects such as [SmartBay](#) are also relevant but these need to be built upon.
- Equally, there is a call for more official monitoring stations nationally, as well as greater coordination of the monitoring activities already in place.
- The management units in place along the English coastline are notable, monitoring the situation and taking action in accordance with their dedicated shoreline management plan – as well as its consideration of a range of possible solutions to every situation, including, when necessary, the relocation of entire communities.
- The adequacy of the current risk assessment approaches to climate change issues globally is called into question. Neither in Ireland, nor elsewhere, do policy decisions seem to grasp the reality of the risks supposedly taken into consideration in cost-benefit analyses. Approaches to risk assessment need to keep evolving alongside scientific understanding.

- The ability of the UK's [The Flood and Coastal Erosion Risk Management: A Manual for Economic Appraisal](#) to capture ecosystem goods and services was discussed.
- In Ireland, many coastal communities are witnessing a need for coastal adaptation and having to handle the situation on their own. They are finding that education, signage, fencing off areas and a variety of Nature-based Solutions can achieve real results. However, the burden of taking such actions should not fall exclusively upon the shoulders of these communities. The role of local communities in decision making and managing the coastline has potential. This requires deeper integration of funding and other socio-economic planning supports between government and coastal communities in Ireland, for the development of sustainable coastal economies and infrastructures under the impacts of future climate changes.

Conclusion

Following the end of the workshop, an email was sent out to attendees reminding them that the slides from the presentations would be available on the [Council's website](#).

The email also followed on from the workshop by providing some possible further reading suggested by the speakers and attendees. Namely:

- [van der Most et al. \(2014\) 'New risk-based standards for flood protection in the Netherlands'](#)
- details of England's National Network of Regional Coastal Monitoring Programmes available at [Channel Coastal Observatory \(coastalmonitoring.org\)](#);
- details of the Irish Coastal Wave and Water Level Modelling Study 2018, available at <https://www.floodinfo.ie/publications/?t=46> and https://www.floodinfo.ie/map/coastal_map/.
- [Mercure et al. \(2021\) 'Risk-opportunity analysis for transformative policy design and appraisal'](#)
- Details of the [International Guidelines on Natural and Nature-Based Features for Flood Risk Management](#) launch

Finally, attendees were invited to submit any other comments or observations on this topic that they wished to draw to the attention of the Adaptation Committee or any suggestions for future workshops in this annual series.

Appendix 1 - Agenda

Time	Topic
10:00	Welcome – Marie Donnelly, Chair, Climate Change Advisory Council
10:05	Situating <u>Setting the scene</u> – Seán O’Leary, Climate Change Advisory Council Secretariat
10:20	Analysing <u>Coastal Management in The Netherlands: evolutionary best practices</u> – Engr. Tjisse Nauta, Deltares <u>Predicting coastal change: challenges and opportunities</u> – Dr. Brian Kelleher, DCU <u>Coastal adaptation and resilience in the UK</u> – Prof. Robert Nicholls, Tyndall Centre, UEA <u>Lessons for community based adaptation in Ireland</u> – Maharees Conservation Association
11:00	Reflection Discussion – moderated by Prof. Robert Devoy, Member, Climate Change Advisory Council Adaptation Committee
11:45	Acting Key points and conclusions
12:00	Close of workshop