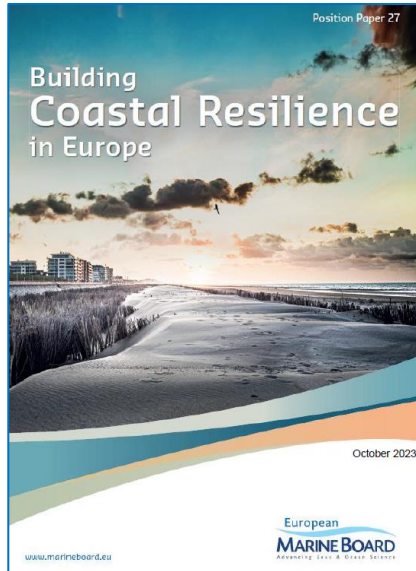
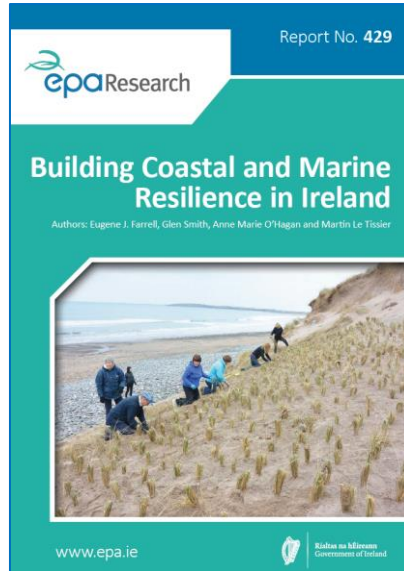


## Building Coastal and Marine Resilience in Ireland

Published Reports (2023)



October 2023



March 2023

New Reports (2024)



An Roinn Tithíochta,  
Rialtais Áitiúil agus Oidhreachta  
Department of Housing,  
Local Government and Heritage



Dr. Eugene Farrell (@DoctorDune)

Geography

University  
ofGalway.ie

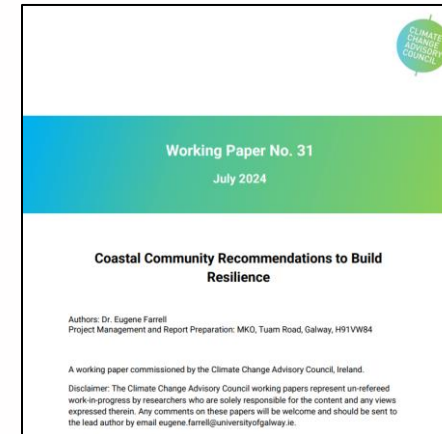
#	Q1 Group name	County	Q2 Years formed	Q7. Group leaders	Q8. People active in group work	Q12. <sup>2</sup> Clean Coasts	Q12. <sup>2</sup> Coast- watch
1	Maharees Conservation Association	Kerry	6-10	>10	>100	VF	R
2	Fenit Coast Conservation group	Kerry	1-5	2-5	31-50	F	VF
3	Banna Coastcare - Banna Sea Rescue <sup>2</sup>	Kerry	6-10	2-5	31-50	F	YO
4	Spanish Point Community Group	Clare	6-10	>10	10-30	VF	VR
5	Coastwatch	Clare	6-10	2-5	10-30	F	VF
6	BannerGleo Liscannor Bay Association	Clare	<1	1	<10	SWF	N
7	Gurteen Bay & Dogs Bay committee	Galway	1-5	6-10	<10	O	R
8	Connemara Green	Galway	6-10	2-5	10-30	N	F
9	Mulranny Environmental Group	Mayo	>10	2-5	<10	R	N
10	Enniscrone Tidy Towns	Sligo	>10	6-10	31-50	SWF	N
11	Skreen Dromard Coast Care Group <sup>2</sup>	Sligo	1-5	2-5	<10	O	R
12	Castlegoland Beach CLG	Donegal	1-5	>10	>100	O	N
13	Friends of Rossnowlagh	Donegal	6-10	6-10	31-50	VF	N
14	Friends of Murvagh Beach	Donegal	1-5	6-10	51-100	F	R
15	Fanad Coastal Group	Donegal	6-10	6-10	10-30	O	R
16	Bettystown Tidy Towns	Meath	6-10	6-10	31-50	VF	N
17	Killiney Beach Group & community council	Dublin	6-10	6-10	31-50	DNR	DNR
18	Portmarnock Comm. Assoc. & Clean Coast	Dublin	>10	2-5	10-30	SWF	O
19	Donabate Clean Coasts Group	Dublin	1-5	1	10-30	F	N
20	Coastwatch	Dublin	>10	1	<10	R	VF
21	Dun Laoghaire Rathdown Dublin	Dublin	>10	6-10	<10	DNR	DNR
22	Courtown Community Council	Wexford	>10	2-5	10-30	F	F
23	Coastwatch	Wexford	>10	>10	>100	YO	VF
24	Tramore Eco Group	Waterford	6-10	6-10	31-50	DNR	DNR
25	Bantry Bay: Protect Our Native Kelp Forests	Cork	6-10	>10	51-100	R	VF
26	Youghal Blue & Green Community Network	Cork	1-5	>10	51-100	VF	F
27	Ballynamona Clean Coasts <sup>1</sup>	Cork	6-10	6-10	>100	VF	N
			Total	<sup>3</sup> c.203	<sup>3</sup> c.1320		

## Online survey (Dec 2023 – Jan 2024)

1. Questions & responses
2. Interactive map

## Participatory Workshop (March 2024)

3. Questions & responses



- Community groups are frontline practitioners of coastal management + biodiversity conservation + climate adaptation + education + ....
- Community groups are knowledgeable (19 groups have 6+ years experience; 16 groups have 6+ leaders).
- Community groups should be “trusted” and “respected” (workshop participant).
- Community groups should be invited to participate in key stakeholder / scientific / policy meetings.

“if we’re even invited, we’re invited to government/academic events as exotic beasts” (workshop participant)



# What is the end goal of this community-based participatory research? Theory (we know why!) vs. Practice (what next? will impacts be measured?)

With the aim of fostering legitimacy, producing better decisions, and gaining public acceptance, **participation** tries to raise acceptance and integrate different values into the decision-making process.

There are at least **3 different rationales** for undertaking public participation:

1. The **instrumental** argument reasons that decisions that are taken in consent with communities are more likely to be legitimate and accepted.

Advantages

- Generating legitimacy (over final decision)
- Resolving conflict
- Ensuring policy implementation

Terms regularly used behind the rationales:

“raising awareness”  
“information”  
“buy-in”

2. The **substantive** argument states that considering community assessments of risk leads to better decisions than only relying on experts' judgement.

Advantages

- Harnessing local information and knowledge
- Incorporating experimental and value-based knowledge
- Testing the robustness of information from other sources

“co-creation”  
“co-development”  
“meaningful”

3. The **normative** rationale is based on the notion that the public is best qualified to decide on matters that lie in their own interest.

Advantages

- Enhancing democratic capacity
- Social learning (building social capital)
- Empowering marginalised individuals and groups

“empowerment”  
“two-way”  
“active”

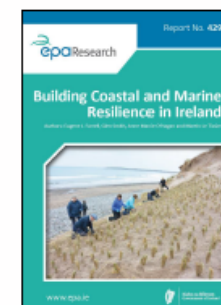


MSP CPD 2024: Participation vs Legitimation!  
Illusion of inclusion

Sources:

- 1: Axel Leahy, PhD Geography, University of Galway
- 2: "Citizen and Multi-Actor Consultation on Horizon 2020"

# “Why is this time different?” (workshop participant)



2023 report

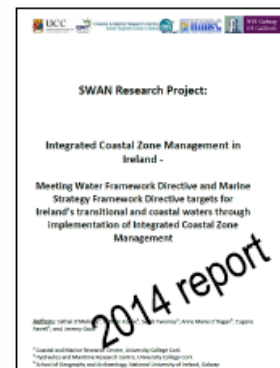


The CLAD ‘Local Scale Coastal Climate Adaptation: Practitioner Guidelines’ have been written for local coastal management practitioners. It seeks first and foremost to **enhance social-ecological system resilience** in the face of change.

**1. ENGAGE KEY STAKEHOLDERS**

- Select a project administrator
- Survey/select local expert stakeholders
- Form a local coastal resilience group
- Establish contact with other groups and adaptation experts

Join the Irish Coastal Resilience Network



2014 report

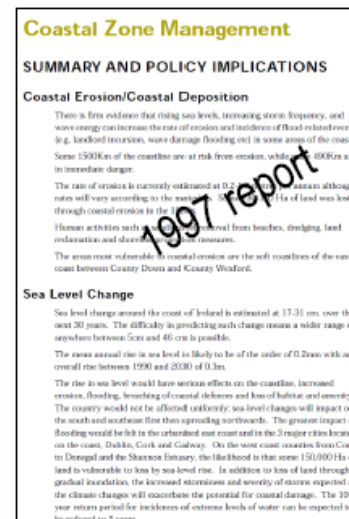
## Recommendations in 3 broad categories:

- A. Governance | legislation | administrative | policy support
- B. Public awareness | communication | participation | citizen engagement
- C. ICZM as a tool to support WFD/MSFD implementation

9. Use implementation models for ICZM such as **coastal partnerships and coastal fora** (see Good Practice Examples) as a means for all interested parties to investigate best options for **co-management of coastal resources**, and co-existence between multiple users of coastal space within specific areas; such an approach would contribute to providing greater clarity to those wishing to invest in coastal development and enterprises and support more strategic planning. [A] [B] [C]

Table 5.

Source	Description / Details
Coastal Climate Adaptation in Ireland: Assessing current conditions and enhancing the capacity for climate resilience in local coastal management CCRP Report, 2013.	<p>The Coastal Climate Adaptation in Ireland (CLAD) study developed a tool kit to support local level climate adaptation in coastal areas. The circumstances under which coastal climate adaptation in Ireland should proceed were explored and the potential for enhancing the capacity of coastal communities to develop resilient responses to changing climatic conditions was examined. Key findings include:</p> <ul style="list-style-type: none"> <li>• The ineffectiveness of existing management structures for addressing the challenges of integrated coastal adaptation governance is recognised by <b>practitioners</b>.</li> <li>• The barriers to effective coastal climate adaptation in Ireland are: <ul style="list-style-type: none"> <li>- the fragmentation of institutions and administrative functions with respect to coastal governance</li> <li>- ill-defined responsibilities among the actors and institutions involved in climate adaptation</li> <li>- short-term planning horizons and linear, top-down management</li> <li>- a lack of experience of cross-sectoral cooperation and stakeholder involvement.</li> </ul> </li> </ul>



1997 report

## POLICY IMPLICATIONS

- **Coastal Zone Management: A Draft Policy for Ireland** published in 1997 is still only a discussion document it is not yet official policy.
- A Coastal Zone Management policy is required urgently to guide Local Authority Development Plans. CZM policies may be included under the 2000 Planning Act.
- Coastal Erosion/Coastal Deposition.
- Public pressure will be to implement hard engineering protection measures. Such mitigation is costly and not cost effective in the long term.
- Sea Level Change.
- Management of the change in sea level will present policy issues and choices. Abandonment, Managed retreat (Accommodation), Protection are the main options to be considered.
- There is no clear CZM structure however CZM will need better co-operation between Local Authorities similar to Waste Management Strategy co-operation i.e. viable/logical groupings of Local Authorities.
- The UK has Coastal Zone Fora at National level for England/Scotland/Wales and Northern Ireland. There is currently no Irish equivalent to which the UK For a can respond to in relation to OSPAR.

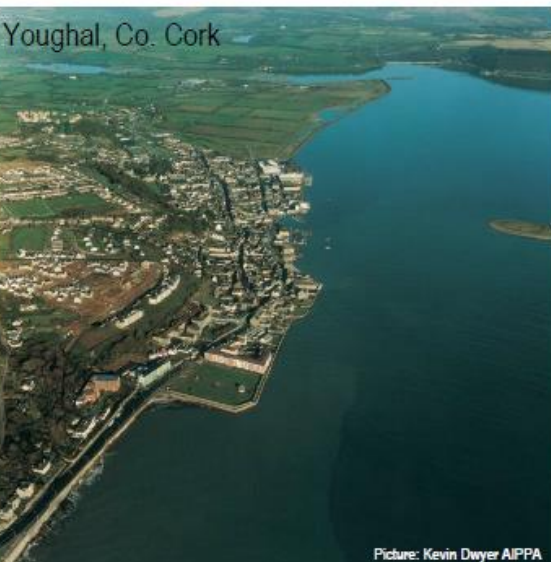


**Table 8.1. Identification of institutional barriers at a local level, among coastal communities consulted during the BCOMAR project, and possible solutions for overcoming them**

Area	Institutional barriers	Institutional enablers
Governance of the coast	The multitude of departments and public bodies with a remit for the coastal area have their own governing legislation and policy objectives that do not align with each other (see Figure 3.1).	The National Coastal Change Management Strategy Steering Group (formed in September 2020) can make recommendations on future structures and roles of government departments in dealing with coastal change; the CAROs (formed in 2018) coordinate the actions and regional priorities of local authorities for coastal adaptation.
Legal responsibility for the coast	Local authorities are currently not adequately resourced or, in many cases, do not have jurisdiction to deliver the climate adaptation actions needed to support their organisation or communities to achieve climate resilience.	MAPA provides for a new "nearshore" area, where local authorities will have responsibilities that extend three nautical miles beyond the high water mark.
Coastal stakeholder forum	Unlike some other communities, which have groups that support resilience-building (Local Authority Waters Programme; Irish Uplands Forum; Natura & Hill Farmers Association; Community Wetlands Forum), there is no organised or funded body to support actions to build resilience among coastal communities.	In January 2021, the Coastal Life Collective (CLC) emerged from the MCA network. The CLC comprises over 20 communities in Donegal, Sligo, Mayo, Galway, Clare, Kerry, Cork and Dublin, sharing common challenges on their coasts. The CLC has the potential to grow and link communities to the CAROs or lead to a new forum to address the juxtaposition of higher level (national) priorities and lower level (local) problems and provide access to relevant stakeholder knowledge and funding.
Tourism	Recent successful marketing initiatives by Fáilte Ireland (e.g. Wild Atlantic Way; Ancient East) are increasing the number of visitors to the coast and also increasing the pressure on socio-ecological systems.	Fáilte Ireland's new development plans for tourism focus on actions to disperse visitors from high-density hotspots (e.g. Youghal and the Maharees, which are easily accessible from Cork city or Dingle) and develop visitor experiences based on environmental awareness. In 2021, Fáilte Ireland awarded €19 million to 22 locations around Ireland to develop state-of-the-art facilities for outdoor water-based activities to boost the tourist appeal of rural locations.


**Table 8.2. Identification of technical barriers at a local level, among coastal communities consulted during the BCOMAR project, and possible solutions for overcoming them**

Area	Technical barriers	Technical enablers
Climate adaptation	In March 2021, the Irish government approved the Climate Action and Low Carbon Development (Amendment) Bill 2020, putting Ireland on the path to net-zero emissions by 2050. This emerged from the NMP as part of CALCDA 2015. The NAF was also part of this Act but is being implemented much more slowly as a result of confusion about what adaptation actions are to be considered and how they will be measured.	In 2021, the Climate Change Advisory Council Adaptation Committee (formed in 2016) started a review of how adaptation can be achieved and measured within coastal communities. A 2021 EPA report identified a suite of 127 indicators for measuring, monitoring, tracking and communicating climate resilience in Ireland (Flood <i>et al.</i> , 2021).
Funding	Ireland requires a comprehensive coastal asset inventory to identify and value the natural capital and the ecosystem services provided by its coastal margins across the full range of services (cultural and recreation, provisioning, regulatory and supporting). This step can highlight the value for money of capital investments in these locations.	Outcomes reported in Norton <i>et al.</i> (2016) and O'Fatharta (2019) on valuing Ireland's coastal, marine and estuarine ecosystem services and blue ecosystem services can be advanced and extended to include terrestrial coastal ecosystems.
Environmental designation	The management of Natura 2000 sites is viewed by communities as "preservation" and not as "conservation", leading to the chronic degradation and disappearance of priority habitats and the exclusion of communities in co-managing these areas.	Ireland has a template for Natura 2000 site management plans, drafted in the late 1990s by Dúchas, the Heritage Service, but this has never been implemented for varying reasons. New plans can engage with the dynamic, socio-economic, cultural and regional aspects of site management as described in the BCOMAR case studies.
Lexicon of climate resilience and sustainability	Despite the prevalence of the term "resilience" in research, policy and development plans, the findings from the case studies suggest that it is not particularly useful for engaging local stakeholders on the topic of adapting to climate change. The term is vague, ambiguous and, potentially, contentious.	There is real value in viewing resilience as a journey or pathway, rather than as an absolute attainment. There is also a preference to use alternative concepts in discussions when engaging with communities, e.g. green, heritage led, regeneration, investment or opportunity.
Coastal erosion and flooding	Coastal erosion and flooding are critical factors in the vulnerability of coastal communities. Nature-based solutions offer potential in many locations, and local communities have shown willingness to engage in these actions. Currently, information is lacking on best practice, government support structures (responsibility and funding) and permissions (e.g. on what can be done and where).	In May 2021, the Atlantic Seaboard North CARO facilitated a report by Natural Capital Ireland (2021) on nature-based solutions workshops delivered to five local authorities (Donegal, Galway City, Galway County, Mayo, Sligo). The case studies show that community-led and group-led nature-based solutions can reduce flood and erosion risks. In 2021, the OPW engaged with the BCOMAR project and has shown a willingness to consider nature-based solutions within their remit for the Minor Flood Mitigation Works and Coastal Protection Scheme.
Seasonal tourism	Local communities do not have appropriate infrastructure, services and facilities to host visitors during the peak summer tourist season. Short- and long-term tourism strategies lack sustainability imperatives and consideration of environmental and	Many communities around Ireland are engaging with local authorities in relation to beach access facilities, traffic management and enhanced enforcement activity. In 2021, An Taisce considered the potential for the long-term development of a seasonal beach




Report No. 429

2023 report




**Building Coastal and Marine Resilience in Ireland**

Authors: Eugene J. Farrell, Glen Smith, Anne Marie O'Hagan and Martin Le Tissier



www.epa.ie



2023 report

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Table 8.

	EXTREMELY CONCERNED (EC)	MODERATELY CONCERNED (MC)	SLIGHTLY CONCERNED	NOT AT ALL CONCERNED	I DO NOT KNOW	TOTAL	EC+MC
Extreme weather	20.00%	43.33%	33.33%	3.33%	0.00%	30	63%
	6	13	10	1	0		
Coastal risk - erosion	45.16%	38.71%	16.13%	0.00%	0.00%	31	84%
	14	12	5	0	0		
Coastal risk - flooding	35.71%	21.43%	28.57%	14.29%	0.00%	28	57%
	10	6	8	4	0		
Coastal risk - invasive species	10.00%	26.67%	43.33%	16.67%	3.33%	30	37%
	3	8	13	5	1		
Tourism - too much (e.g., in summer)	6.67%	30.00%	40.00%	20.00%	3.33%	30	36%
	2	9	12	6	1		
Tourism – too little (e.g., in summer)	0.00%	13.79%	17.24%	65.52%	3.45%	29	14%
	0	4	5	19	1		
Lack of amenities for visitors/residents	20.00%	36.67%	23.33%	20.00%	0.00%	30	57%
	6	11	7	6	0		
Water quality – freshwater	20.69%	27.59%	20.69%	20.69%	10.34%	29	48%
	6	8	6	6	3		
Water quality – ocean water	38.71%	29.03%	22.58%	9.68%	0.00%	31	68%
	12	9	7	3	0		
Pollution	45.16%	16.13%	32.26%	6.45%	0.00%	31	61%
	14	5	10	2	0		
Biodiversity loss	38.71%	35.48%	22.58%	3.23%	0.00%	31	74%
	12	11	7	1	0		
Loss or lack of critical infrastructure	30.00%	33.33%	20.00%	16.67%	0.00%	30	63%
	9	10	6	5	0		
Loss or damage to homes or property	20.00%	26.67%	20.00%	26.67%	6.67%	30	47%
	6	8	6	8	2		
Inappropriate development on coast	22.58%	22.58%	25.81%	25.81%	3.23%	31	45%
	7	7	8	8	1		
Inappropriate agriculture practices	16.67%	20.00%	40.00%	6.67%	16.67%	30	37%
	5	6	12	2	5		
Weak local economy	10.34%	34.48%	31.03%	17.24%	6.90%	29	45%
	3	10	9	5	2		
Population change - too much growth	10.00%	20.00%	30.00%	30.00%	10.00%	30	30%
	3	6	9	9	3		
Population change - too little growth	0.00%	13.33%	13.33%	63.33%	10.00%	30	13%
	0	4	4	19	3		
Climate change	40.00%	36.67%	16.67%	3.33%	3.33%	30	77%
	12	11	5	1	1		
Sea-level rise	33.33%	36.67%	20.00%	6.67%	3.33%	30	70%
	10	11	6	2	1		

Question 11 gauged the general levels of concern in coastal communities from potential natural and human stressors during the next decade(s).

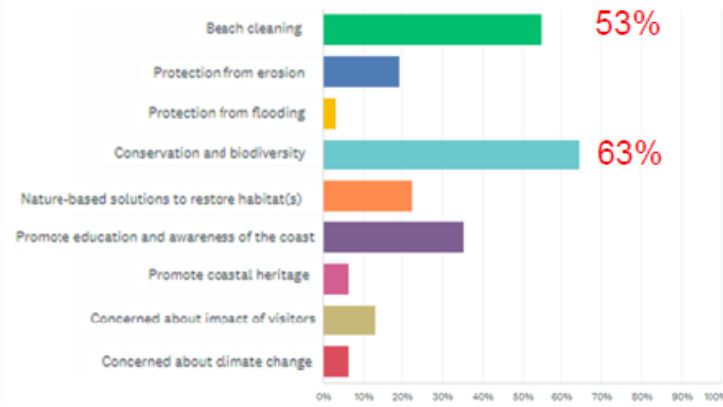
Coastal community groups are extremely and/or moderately concerned about the impacts of *erosion* (84%), *climate change* (77%), *biodiversity loss* (74%), and *sea-level rise* (70%).

*Ocean water quality* (68%), *extreme weather* (63%) and *flooding* (57%) also featured prominently in their concerns.

Note. The traffic light approach should not deflect from very real community concerns within site-specific locations. For example, three (11%) groups are extremely concerned of the impact of invasive species. These community groups highlighted the negative impact of invasive species in (1) intertidal and shallow marine areas where seagrass and kelp habitats exist, and (2) terrestrial areas comprising dune habitats.

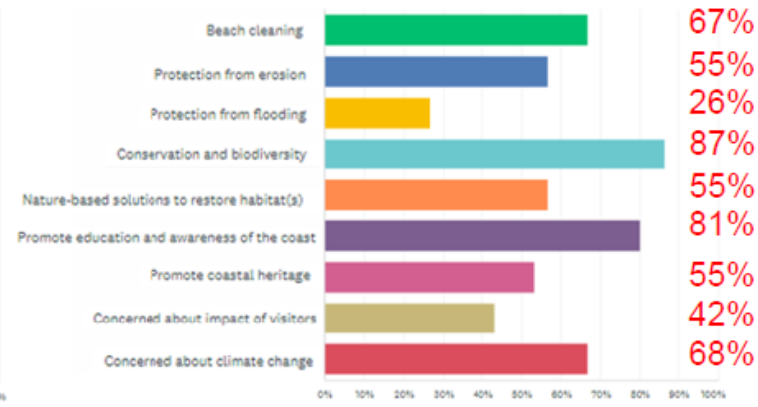






*What motivated your coastal community group to form in the first place?*

Answer choices	% Responses	Number
Beach cleaning	53.33	16
Protection from erosion	20	6
Protection from flooding	3.33	1
Conservation and biodiversity	63.33	19
Nature-based solutions to restore habitats	23.33	7
Promote education and awareness of coast	36.67	11
Promote coastal heritage	3.33	1
Concerned about impact of visitors	13.33	4
Concerned about climate change	6.67	2
<b>Total respondents (31)</b>		



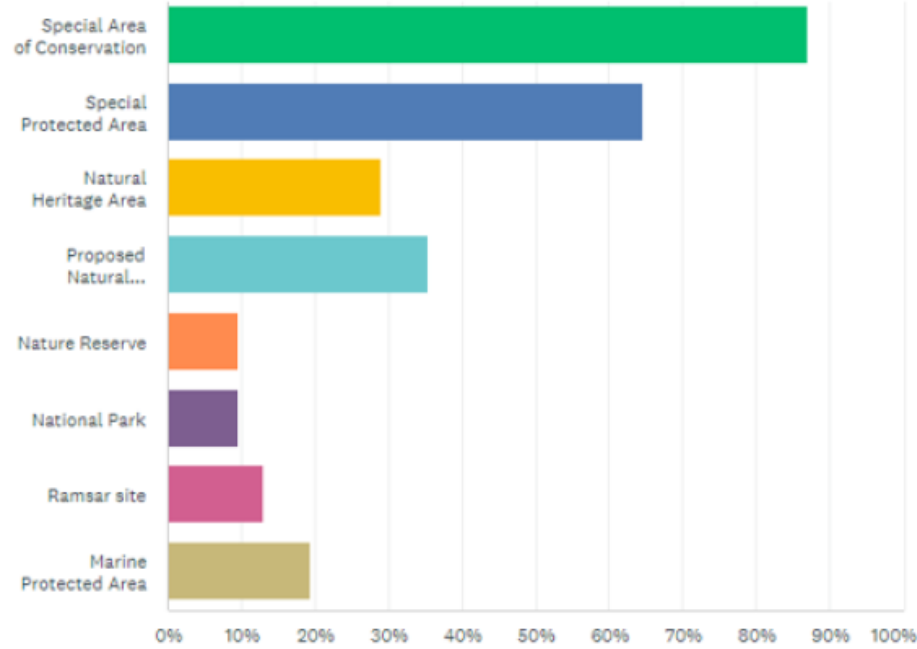
*What is motivating your coastal community group today?*

Answer choices	% Responses	Number
Beach cleaning	67.74	21
Protection from erosion	54.84	17
Protection from flooding	25.81	8
Conservation and biodiversity	87.10	27
Nature-based solutions to restore habitats	54.84	17
Promote education and awareness of coast	80.65	25
Promote coastal heritage	54.84	17
Concerned about impact of visitors	41.94	13
Concerned about climate change	67.74	21
<b>Total respondents (31)</b>		

**Note:** other motivations to form: **water quality; land degradation; public access.**

- Once mobilized, community groups **build raised awareness** to identify both **opportunities and challenges of the coast.**
- Community groups are a clear **focal point for positive change,**
- Community groups are **delivering activities/services** drawing on individual experiences, collective histories, and best practices to transform local places.
- Once mobilised, **the ambitions of community groups are potentially limitless** but are resource-limited, people-limited, and/or legally-limited.
- Investigating these changes in motivations and limitations may provide information of **how best to build capacity within coastal community groups.**

Q9. Are the following designated environmental areas in your location?



Answer choices	% Responses	Number
Special Area of Conservation	87.1	27
Special Protected Area	64.52	20
Natural Heritage Area	29.03	9
Proposed Natural Heritage Area	35.48	11
Nature Reserve	9.68	3
National Park	9.68	3
Ramsar site	12.9	4
Marine Protected Area	19.35	6
<b>Total respondents (31)</b>		<b>83</b>

- Community groups are working in coastal habitats lying within designated Natura 2000 sites: SAC (87%), SPA (67%), and (p)NHA (60%).
- Therefore, **supporting partnerships between volunteer groups, NPWS (District Conservation Officers), and local authorities (Biodiversity and Climate Officers) builds capacity to manage, protect, and restore these coastal and marine ecosystems.**
- Over 425,000 hectares (>1,000,000 acres) of coastal habitats lie within an SAC and nearly 90% of our dune habitats lie within SACs.
- **Habitats and species that lie outside of protected sites should receive more attention.**

*Operationalizing coastal management and conservation measures are not mutually exclusive for Ireland.*



# NbS can be good...but need to be managed!

- ## Solutions for CSES
1. Too little sand
  2. Too much sand
  3. Invasive species
  4. Loss of heritage
  5. Tourism
  6. Flooding
  7. Wildfire

CSES:  
Coastal Socio Ecological Systems



Degraded **sand dunes have been restored** and have become more biodiverse as a result of marram planting (with help from NGO Clean Coasts) and controlled access.

MCA volunteers have **secured funding** (through Kerry County Council (KCC) and National Parks & Wildlife Service (NPWS)) for and erected **dune fencing to restrict access** and allow the dune species to survive without human interference. **Signage** has been erected to appeal to visitors to use official paths and official camp sites.

**Enablers:** MCA became a Clean Coasts group; MCA organized community training events; MCA sourced local funding for trowels and signage; MCA purchased and erected fencing to protect NbS areas; Wide participation of schools, other groups & full spectrum of community.

**Barriers:** MCA had to identify and self-fund the fences and source expertise to install; Continued maintenance by MCA volunteers multiple times each year; State agencies should have more resources to manage coastal SACs.





# NbS can be good...but need to be managed!

- ## Solutions for CSES
1. Too little sand
  2. Too much sand
  3. Invasive species
  4. Loss of heritage
  5. Tourism
  6. Flooding
  7. Wildfire

CSES:  
Coastal Socio Ecological Systems



Streamer corridor: sand drift is one facet of wind-induced hazards



**HAZARD: too much sand**

**No access in/out Of Maharees 17 occasions Winter 2015-2016**

Kerry County Council refused to intervene as it was an SAC - a problem for the NPWS.

NPWS = 'science-first, top-down, non-communicative'.



**Stakeholder meeting on the dune**

**Unlocking the impasse**

- Health and safety risks
- Site Management
- Kerry County Council €5,000
- Maharees Conservation Association volunteers

Local council; NPWS; local community; university



**Local community install dune fences**

**Oct 2016. Meeting**  
Nov 2016. Proposal

**Apr 2017. Installation**  
Jan 2018. Dug out  
Jul 2019. Dug out  
Feb 2020. New fence

**Road clear since April 2017.**

Nature-based Solutions (NbS) work. Community effort rewarded (attainable goals) Stakeholders communicating. Building awareness and education.





# NbS can be bad...if unmanaged!

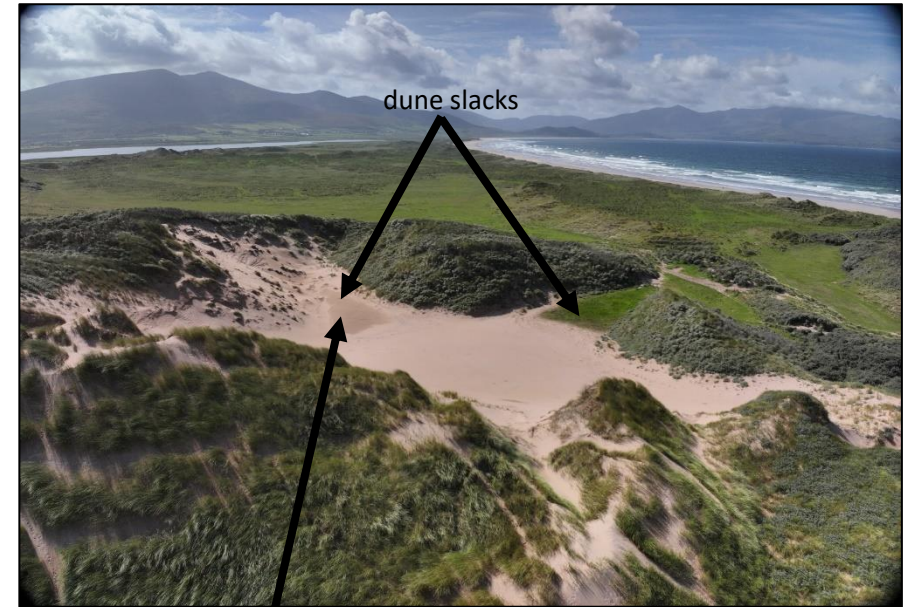
- ## Pressures on CSES
1. Too little sand
  2. Too much sand
  3. Invasive species
  4. Loss of heritage
  5. Tourism
  6. Flooding
  7. Wildfire

*Sea Buckthorn (Hippophae Rhamnoides) is dark greens/brown colour surrounded by dune marram grasses. Anecdotal evidence from local farmers and NPWS staff suggests that Hippophae rhamnoides was planted some time in the 1960s by Kerry County Council to combat dune erosion.*



<p>Negative effects:</p> <ol style="list-style-type: none"> <li>1. Replacing/displacing rare, native plant species.</li> <li>2. Decreasing species-richness of community.</li> <li>3. Change (increase) nutrient content of dunes.</li> <li>4. Facilitating establishment of other invasive woody plants.</li> <li>5. Difficult to control once established.</li> <li>6. Causing the sensitive floral seed banks to expire.</li> </ol>	<p>Positive effects:</p> <ol style="list-style-type: none"> <li>1. Stabilise shifting dunes.</li> <li>2. Control access.</li> <li>3. Provide breeding habitat, shelter, and food for birds.</li> <li>4. Increase microfaunal abundances.</li> </ol>
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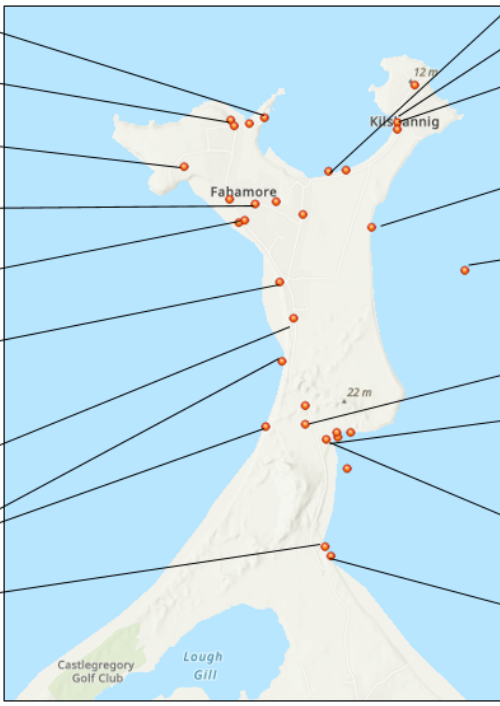
Ms. Helena Harmon, MSc  
**Area 1.** October 2003: 64,599m<sup>2</sup> (16 acres); June 2023: 113,377m<sup>2</sup> (28 acres)  
**Areas 1,2 & 3:** Expanded area 98% (2003-2023)







- on the Pier to celebrate fishing heritage
- Seaweed ID public event
- Maharees Heritage Sign; Heritage walks of Garrywilliam
- 10 signs to mark the traditional place names of Maharees
- Plaque commemorating those who migrated from Maharees to County Meath, County Kildare, County Wicklow
- Fencing, bales, planting and Christmas trees and control of access, signage, biodiversity education, ban and policing of wild camping, raves, and fires along a 2km stretch of Brandon Bay, Starting at the Grotto, ending at Clocha Dubha
- Campaign for road marking to prevent dangerous illegal parking
- Beach cleaning
- Beach cleaning



- Beach cleaning
- Heritage and Bird Spotting walks around Kilshannig
- Birds of Maharees sign and Maharees Heritage Sign; Award winning Living Heritage Walk (2023) for National Heritage Week
- Beach cleaning
- 2023 Protected seagrass beds established by Tralee Bay Oyster fishermen
- Campaign for and support of temporary sustainable car park
- Start of mobile accessible audio guide of Maharees at Béal Geal (blue flag beach) car park
- Support of swimming buoys at Béal Geal
- Biodiversity events: wild flower, skate and ray egg case ID, Natterjack toad, Jellyfish
- Addition of Council-funded Bales for coastal protection to support local land owners efforts - 400m

Maharees tombolo, Co. Kerry



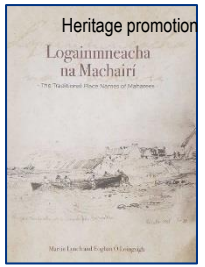
Temporary car park



Wild camping enforcement & SAC awareness



Heritage promotion



Heritage promotion



Heritage promotion



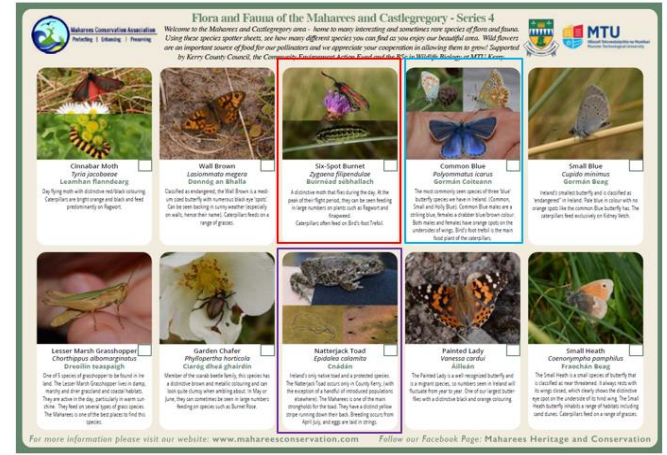
Wildfire intervention in summer 2023



Wildfire intervention in summer 2023



3 acres of burned dune



Six-spot Burnet Moth



Common Blue Butterfly



Natterjack Toad

"After all this effort over several years by so many people, and despite much progress, ultimately the community still feels like they have failed to deliver their objectives and safeguard themselves for the long-term. Lack of a joined-up, cross-agency solution-focused approach is key to these poor outcomes." - MCA



Biodiversity promotion



Biodiversity promotion



Biodiversity promotion




Biodiversity promotion



## KEY FINDINGS

### A. Empowering volunteer groups can lead to sustainable solutions to climate risks and threats to biodiversity.

<p>Coastal communities are protecting, conserving, and promoting our coastal assets. They want to collaborate with public sector bodies to develop sustainable solutions to climate risks and threats to biodiversity.</p> 	
A.1	Community groups are very passionate and the frontline of active coastal management in many locations around Ireland. Their voluntary efforts should be acknowledged and supported.
A.2	Coastal communities want to be part of the transition to climate and ecological security. Despite their decades long efforts they feel (1) isolated, (2) not respected, and (3) not trusted by government bodies.
A.3	Support from local authorities, NPWS, local political representatives, and scientists are viewed as critical enablers for coastal groups to maintain their efforts and continue to be motivated in their efforts to organize communities to make change 'on the ground'. This support can emerge in different ways: having access to key decision makers and 'champions'; access to funding; and access to scientific data.
A.4	Knowledge and ideas from coastal communities are critical to co-design sustainable plans for their coast. A coastal network can enable this (see B below).
A.5	Building relationships with key stakeholders takes "time and perseverance" (workshop participant words) but building this trust is essential for effective working partnerships. Building and maintaining relationships with community groups should be an explicit priority for local authorities and other key stakeholders (e.g., NPWS; OPW).
A.6	A recurring obstacle (barrier) for community groups is the changing responsibilities, functions and roles of local authorities and local authority staff. In theory, there are pools of expertise within local authorities (Biodiversity and Climate Officers) and NPWS (District Conservation Officers) that can support and inform volunteer groups but, in practice, these staff can be inaccessible and/or under-resourced and/or inexperienced (e.g., loss of 'champions' and brain drain when local authority staff move within/between offices) and/or lack decision-making responsibilities (e.g., no joined-up strategy between local authorities, NPWS and OPW, for example).
A.7	A national coastal protection plan would greatly benefit all stakeholders by providing a "standard reference guide" (workshop participant words) to plan community activities.
A.8	There is an urgent need for local governments to be able to prioritize support for community-led actions addressing climate adaptation and biodiversity conservation. Prioritization of this work within national or local plans can mitigate political interference within these organisations by empowering biodiversity and climate offices; ring fencing multi-year funding for 'priority' climate adaptation and conservation projects; and building capacity of these offices to work in communities (e.g., more trained staff 'on the ground' with expertise in 'adaptation' and 'conservation').
A.9	Coastal communities urgently need local authorities (LA) and NPWS to be sufficiently resourced to support their efforts. Biodiversity and climate officers in LA's and District Conservation Officer in NPWS should be allowed to prioritize (e.g., ring-fenced, multi-year funding) support of community- or LA-led actions focusing on climate adaptation and conservation.
A.10	Once established, community groups rapidly expand their remit and are motivated to engage with all aspects of their coast including, but not limited to, coastal protection (erosion and flooding), conservation, heritage, management and education. Cumulatively, these works increase coastal resilience and build a 'sense of place' and social cohesion.
A.11	Many communities understand the value of scientific data but perceived the lack of access to this data as a barrier (55%). Access to expertise or community-led citizen science would help measure the impact of their work, e.g., <i>are the coastal assets increasing in value?</i>
A.12	The OPW flood and erosion maps are potentially a very impactful tool to raise awareness of climate risks to communities but they are not easily accessible or interpretable. Community members highlighted the value of having access to these maps with overlays of residential and commercial properties, roads, land boundaries, zoning, and protected sites.
A.13	Community groups struggle to understand the (in)dependencies of the large number of policy documents relevant to their coast and how all these policies will impact them.
A.14	Community groups spend an "inordinate" (workshop participant word) amount of time organising their activities. This 'unseen' work is an enabler but requires group members to volunteer their time. It was noted that many volunteers have full- or part-time jobs, family and other obligations. This 'unseen' work is not visible to the community or other stakeholders but is critical to the success and sustainability of groups. Group members spend time writing applications (e.g., funding, awards); learning about regulatory compliance to ensure the group activities adhere to complex, interacting laws, regulations and standards established by government agencies; seeking permission to work on the coast from individuals (e.g., commonage landowners) and organisations (local authorities; NPWS); promoting their work (e.g., field events; workshops; social and broadcast media); and facilitating scientists to conduct research in their areas. In some cases, volunteer groups have to have funding before they get the awards (reimbursed using receipts); list all the grants they have received from government agencies each time, and be expected to act like a company despite being a volunteer group (e.g., tax certificates; registered with revenue). A coastal network can support volunteers to overcome these obstacles (see B below).
A.15	The majority of coastal communities (59%) believe that the lack of access to a coastal network, or forum, is an important barrier. It is noteworthy that the negative impact of many identified barriers can be alleviated, at least partly, by an effective coastal network.
A.16	When or if consulted, coastal communities can articulate their own vision for a sustainable future in their area. They can develop "local solutions for local problems" (workshop participant words).



## B. A coastal network will increase the impact and visibility of volunteer-led climate adaptation and conservation actions.

A coastal network – operated using principles of *empowerment; participation; inclusion; self-determination; and partnership* – would remove many of the obstacles that hinder community groups trying to plan and implement climate adaptation and conservation actions.

- B.1 A coastal network (or 'forum') can provide a space for volunteer groups to share their experiences, learn 'best practices', design solutions; identify gaps in planning, science, and governance; and submit informed and coherent responses to public consultations of new climate and nature policies impacting coastal and marine sectors.
- B.2 A coastal network can lead to greater consistency in the working relationships between volunteer groups and key stakeholders (e.g., local authorities; NPWS). Currently, there is very significant variability Ireland-wide how volunteer groups are treated by public bodies and responses to their requests for support.
- B.3 A coastal network can inform community groups of what actions are permissible and provide clear guidance to deliver these actions.
- B.4 There is precedence in Ireland of publically funded community-led organisations that are successfully conserving Nature. The Community Wetlands Forum, for example, has 1-2 fulltime development officers and is the representative platform for community-led wetland conservation groups. Their principles (empowerment; participation; inclusion; self-determination; and partnership) closely align with the approach and ambitions of coastal community groups.



The main aim of the Community Wetlands Forum (CWF) is to provide a representative platform for community-led wetland conservation groups based on the principles of community development (empowerment; participation; inclusion; self-determination; and partnership).

The diverse and growing membership of the CWF includes community groups and initiatives at various stages of wetland promotion and protection, from groups with fledgling ideas on how to protect their local wetland, to other groups who actively manage and protect sites of high biodiversity and recreational value.



## C. The large influx of visitors during the summer requires appropriate management plans to enhance the visitor experience and protect coastal ecosystems.

Degradation of coastal ecosystems is being exacerbated by increasing visitor numbers and is set to further deteriorate as visitor numbers increase. Equally, the unmanaged pressures from visitors can adversely impact local residents and landowners during the summer season.

- C.1 Every summer, coastal residents and visitors highlight the lack of management plans and seasonal facilities in coastal areas. The lack of basic amenities linked to waste, drinking water, parking, camper van facilities, and signage (code of conduct; biodiversity awareness; environmental education) is impacting the community and visitor experiences and causing degradation of coastal ecosystems. In many cases, visitors are simply not informed (e.g., trespassing on commonage; wild camping) and do not recognize or understand the damage they are causing. In cases where they are informed but do not care, there is a general lack of enforcement of local plans and county beach bye-laws due to limited An Garda Síochána resources and ambiguity in the responsibilities of the local authorities. Coastal communities believe these problems will never go away unless there is joined-up thinking between communities and all the organizations with vested interests in coastal management to deliver sustainable alternatives to visitors during the summer.
- C.2 An analogy used to provide context to ongoing management issues linked to large influxes of summer visitors to the coast is to consider similar scenarios where large volumes of people gather in a confined outdoor space, e.g., folk festivals; live music events, arts and crafts fairs, summer fetes, or a family fun days etc. In these circumstances, the event organizers are required to submit detailed plans in advance for traffic and access control, toilet and waste management, site restoration, risk assessments, first aid and crowd management. Similar type plans would benefit coastal areas with very high visitor numbers during the summer months so that these coastal sites are properly managed and protected.
- C.3 The perception of coastal communities is that public funding for climate adaptation and biodiversity conservation is not founded upon any coherent strategy for the coast that is linked to priority needs assessments nor are there guidelines for spending – especially to target coastal community-led efforts. Investing in sustainable alternatives for visitors (e.g., managed camper van facilities) is an investment in protecting our coastal assets.
- C.4 Increasing the capacity of rural areas to host visitors in response to increasing visitor numbers is not identified at any stage as a priority need. This is even more relevant now following the very large investments by Fáilte Ireland in developing tourist attractions integrally linked to the coast (e.g., Wild Atlantic Way; Ancient East). Tourism is welcomed (and critical for many rural businesses) but should be sustainably planned with joined-up thinking. Fáilte Ireland are recognized as a key partner for community groups in the future.
- C.5 65% of coastal community groups work frequently with Local Authorities. 91% of coastal community groups stated that access to Local Authority decision makers supported their success. We remind government that building capacity of coastal communities to develop responses to a changing climate can only realistically be achieved using bottom-up approaches where the communities inform the decision makers of 'local solutions to local problems'. Resourcing ongoing partnerships between community groups and local authorities (at Directors of Services levels) are critical to this process.



# The impact of the Wild Atlantic Way

IN 2013

IN 2023

TOURISTS TOOK 6.2 MILLION TRIPS TO THE WILD ATLANTIC WAY

TOURISTS TOOK OVER 8 MILLION TRIPS TO THE WILD ATLANTIC WAY, AN INCREASE OF 29%

TOURISM ON THE WILD ATLANTIC WAY WAS WORTH €1.9 BILLION IN REVENUE

TOURISM ON THE WILD ATLANTIC WAY WAS WORTH €3 billion AN INCREASE IN 59%

TOURISM SUPPORTED 86,000 JOBS ALONG THE WILD ATLANTIC WAY

OVER 121,000 JOBS ARE SUPPORTED BY TOURISM ON THE WILD ATLANTIC WAY

ALMOST 2 MILLION MORE TOURISTS TO THE WILD ATLANTIC WAY IN 2023, THAN IN 2013

THE IRISH TIMES

Travel

## Ten years of the Wild Atlantic Way: 'It felt like we were part of something bigger'

The route has been a resounding success, although over-tourism at hot spots and patchy infrastructure remain concerns

## Capital Investment on the Wild Atlantic Way

Fáilte Ireland has invested €120 million in over 50 projects including (but not limited to):

- Céide Fields Visitor Centre, Co. Mayo
- Cliffs of Moher, Co. Clare
- Connemara National Park, Co. Galway
- Downpatrick Head, Co. Mayo
- Derrigimlagh, Co. Galway
- Fanad Lighthouse, Co. Donegal
- Galway City Urban Regeneration
- Garish Island, Co. Cork
- Ionad an Bhlascaoid – The Blasket Centre, Dún Chaoin, Dingle, Co. Kerry
- Ionad Cultúrtha an Phiarsaigh Connemara Pearse's Cottage and Visitor Centre, Connemara
- Killarney House, Co. Kerry
- King Johns Castle, Co. Limerick
- Kylemore Abbey, Co. Galway
- Mizen Head, Co. Cork
- Mizen Head Visitor Centre, Strandhill, Co. Sligo
- The Transatlantic Table Story, Valentia Island, Co. Kerry
- Peatmoor Cultural Centre, Co. Mayo
- Wild Nephin Ballycroy National Park, Co. Mayo

Expected to be complete in next 5 years:

- Dún Aonghasa, Inis Mór, Co. Galway
- Fort Dunree, Co. Donegal
- Atlantic Museum Galway
- National Mountain Biking Centre, Sligo
- Outdoor Watersports Facilities in 11 locations
- Queen Maeve Square, Sligo
- Westport House, Co. Mayo
- Destination Towns projects

Is there a benefit for Fáilte Ireland to invest in 'natural capital'?

VICE Model:

Visitors | Industry | Communities | Environment

### GOALS AND OUTCOMES

To ensure that the Wild Atlantic Way brand is compelling to our target market segments and that the Wild Atlantic Way itself becomes a world-class visitor experience. ✓

To ensure that the Wild Atlantic Way delivers benefits to local communities in the west of Ireland and contributes to a better place to live for everyone. ?

To ensure that the Wild Atlantic Way delivers balanced and sustainable revenue and jobs growth with greater geographic and seasonal spread. ✓

To ensure that the implementation of the Wild Atlantic Way Operational Programme facilitates the protection and enhancement of the environment of the west of Ireland – as the fundamental asset that is the basis of the Wild Atlantic Way – in association with other key stakeholders. ?

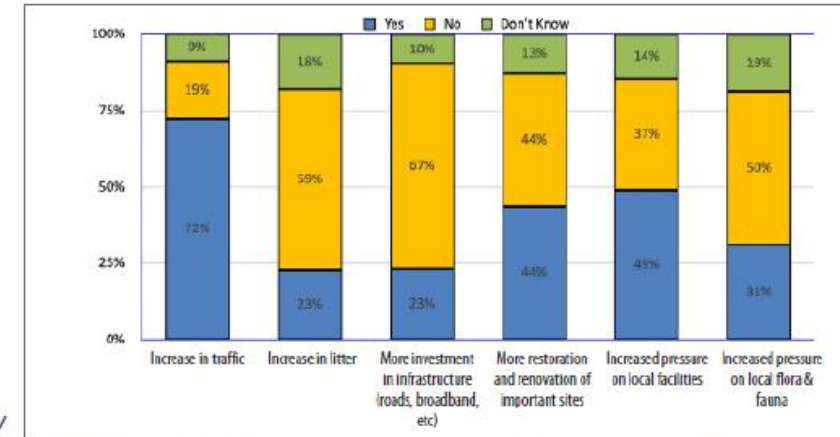


Figure 5. Environmental impacts felt as a result of the introduction of the WAW (n=284)

## The Wild Atlantic Way – A Tourism Journey

Gerard Dunne<sup>1</sup>, Enita Sprince and Kevin Griffin

School of Hospitality Management and Tourism, Technological University Dublin

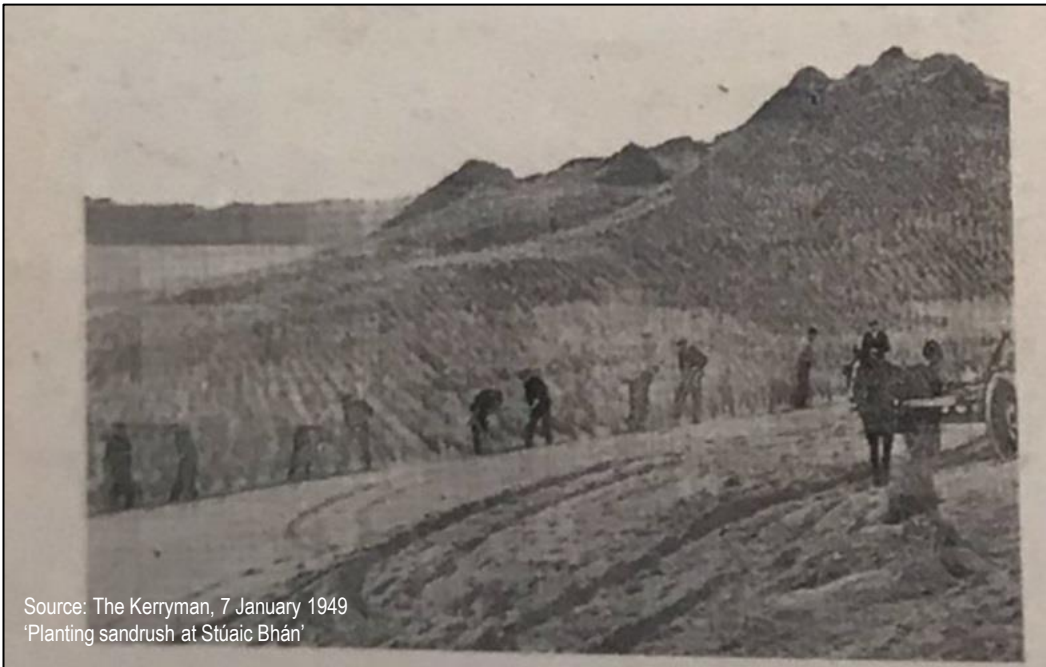
Irish Geography

Vol. 53, No. 2 November 2020

Tierney said: "We feel forgotten about. People have come before us and hit brick walls. That's the way the political game is because the government will help where there are the most people that will vote. But we can't just settle for that."

"I took over the business 10 years ago and we were opening on St Patrick's Day and closing after Halloween. As a result of the Wild Atlantic Way, we are now open six months full-time and five days a week in the off-season, from November to February, which has a huge impact on staff retention and, for an old building such as ours, it's fantastic to be able to keep it open and aired."





Source: The Kerryman, 7 January 1949  
'Planting sandrush at Stúaic Bhán'



Source: Bill Doyle, Island Funeral;  
Location: Inis Oírr, 30 June, 1965



Source: Maharees Conservation Association  
30 July 2020 'Planting sandrush at Stúaic Bhán'



Source: Irish Examiner, 25 July 2020



# 1 Nature-based solutions: defining the concept for coastal and marine environments

**Desktop study (January to June 2024):**  
Roadmap to implement Nature-Based Solutions in coastal and transitional waters in Ireland



An Roinn Tithíochta,  
Rialtais Áitiúil agus Oidhreachta  
Department of Housing,  
Local Government and Heritage

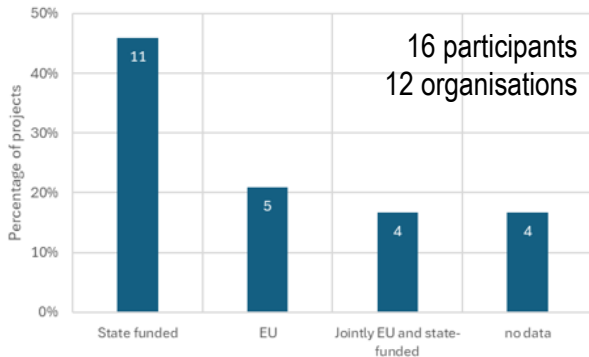


## 1. January 2023 Workshop

- Questionnaire analysis
- Identify key practitioners

## 2. January-July 2024: Interviews & desktop research

- Interview key practitioners
- NbS typology
- Cost-benefit analyses of NbS
- Enablers and barriers to implementing NbS at scale



Ireland's Marine Strategy Part 3: Programme of Measures

*Nature Based Solutions*

Nature based solutions to improve environmental conditions can play a key role in the conservation and restoration of estuarine, coastal and marine habitats. Nature based solutions can be cost-effective and simultaneously provide environmental, social and economic benefits while helping to build resilience to climate change.

They can provide multiple environmental co-benefits and ecosystem services. Examples include nutrient uptake, the natural sequestration of carbon, storm surge attenuation, and biodiversity protection and augmentation. In addition, over the long-term, salt marshes and wetlands may adapt to sea level rise.

Nature based solutions have also been considered in the development of Ireland's draft River Basin Management Plan. Specifically, Action 10 states: 'A multiagency group under the NTIG to continue a forum to co-ordinate efforts for implementation of Nature Based Catchment Management.'

is envisaged that this measure will link with, and build upon existing Irish projects that are currently developing nature based solutions.

**M236. Nature Based Solutions**

By 2028, Ireland will develop nature-based solutions to reinstate and safeguard the natural capacity of ecosystems to supply regulating ecosystem services, including the sequestration of nutrients. This will be undertaken through a regional approach under OSPAR Objective S1O6.

<p>Oslo-Paris Convention for the Protection of the North-East Atlantic (OSPAR)</p>	<p>North-East Atlantic Environment Strategy (NEAES) 2030:</p> <p>Operational Objective 1: S1.O6</p>	<p>By 2030 OSPAR will develop and implement a regional approach to applying <b>nature-based solutions</b> to reinstate and safeguard the natural capacity of the ecosystem to sequester nutrients through conservation and restoration of estuarine, coastal and marine habitats, where this is practicable</p>
	<p>North-East Atlantic Environment Strategy (NEAES) 2030:</p> <p>Operational Objective 6: S6.O1</p>	<p>By 2023 OSPAR will identify habitats suitable for <b>restoration</b>, and develop a common knowledge base on the most appropriate and effective methods for <b>restoration</b> of degraded habitats.</p>

# 1 Nature-based solutions: defining the concept for coastal and marine environments

**NbS** defn. “actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, **coastal and marine ecosystems**, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits.” - United Nations Environment Assembly, March 2022

Or, more simply, Working with Nature and People for Nature and People.

**Blue carbon** defn. Blue carbon (BC) is the carbon accumulating in tidally influenced vegetated coastal and marine ecosystems such as tidal wetlands (saltmarshes) and seagrass meadows. This includes the carbon stored in sediments and soils, water, living biomass and non-living biomass.

**Ecosystem Services** defn. Marine ecosystem services (ES) are provided by the processes, functions and structure of the marine environment that directly or indirectly contribute to societal welfare, health and economic activities “ Norton et al., 2018).

Or, more simply, ES are the benefits that Society receives from Nature and Nature’s contributions to people.



Source: Shafiee (2021)

EXAMPLES OF NbS	ASSOCIATED ECOSYSTEM SERVICES						
	Coastal protection	Carbon sequestration	Enhance biodiversity	Nutrient recycling	Recreational opportunities	Water quality	High value products
Beaches	●		●	●	●	●	
Dunes	●	●	●	●	●	●	
Machair	●	●	●	●	●	●	●
Wetlands	●	●	●	●	●	●	
Seagrass meadows	●	●	●	●	●	●	
Oyster beds/reefs	●	●	●	●	●	●	●
Kelp forests	●	●	●	●	●	●	●

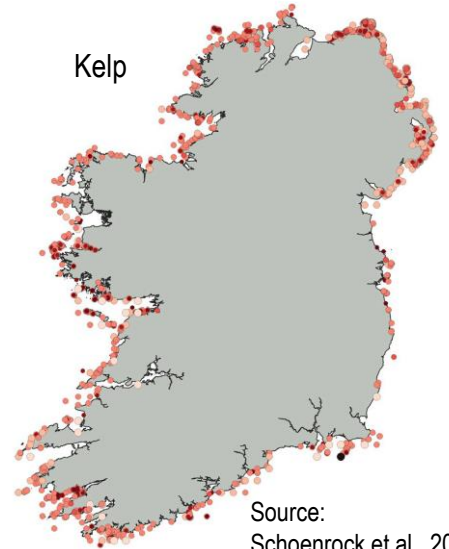
Table XX. Broad overview of Ecosystem Services (ES) provided by coastal and marine NbS [● high delivery; ● low delivery]. This list is not exhaustive.



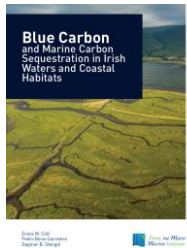
# 1

## Nature-based solutions: defining the concept for coastal and marine environments

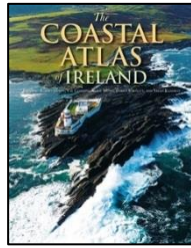
NbS potential in Ireland is significant in our coastal and transitional waters.



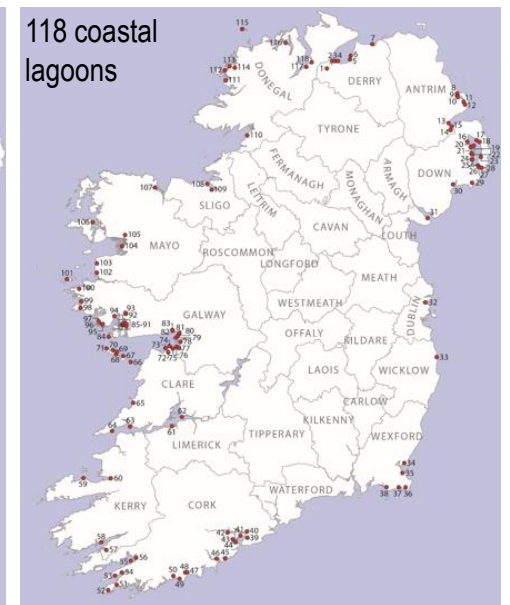
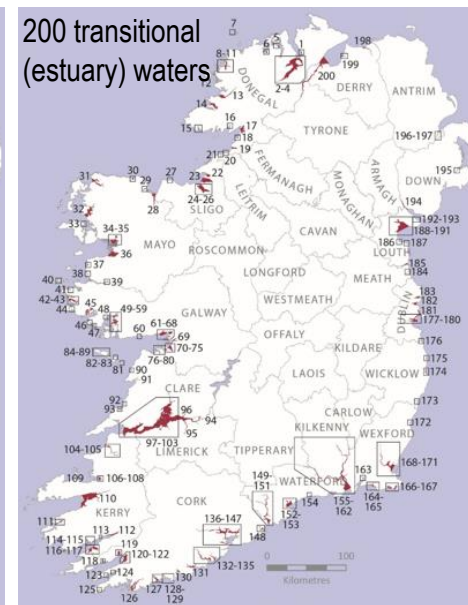
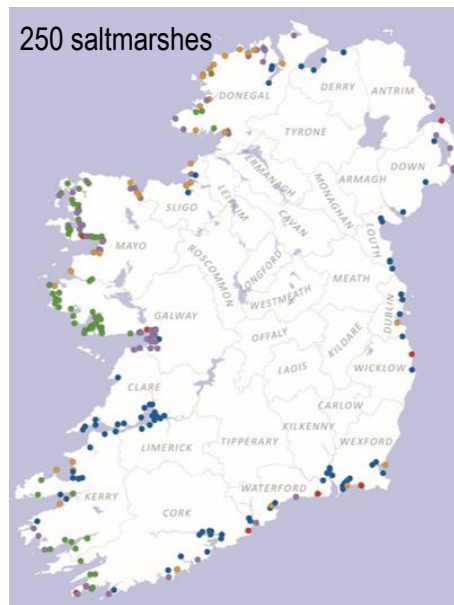
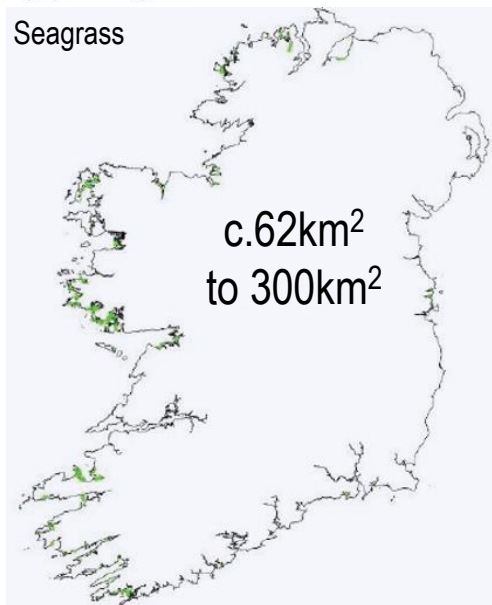
Source:  
Schoenrock et al., 2020



Source of map:  
Blue carbon and marine  
sequestration in Irish waters  
and coastal habitats  
(Cott et al., 2021)



Source of maps:  
The Coastal Atlas of Ireland (2021)  
Editors: Robert Devoy; Val Cummins; Barry Brunt;  
Darius Bartlett & Sarah Kandrot



# 2

## Nature-based solutions: the use of NbS in Ireland

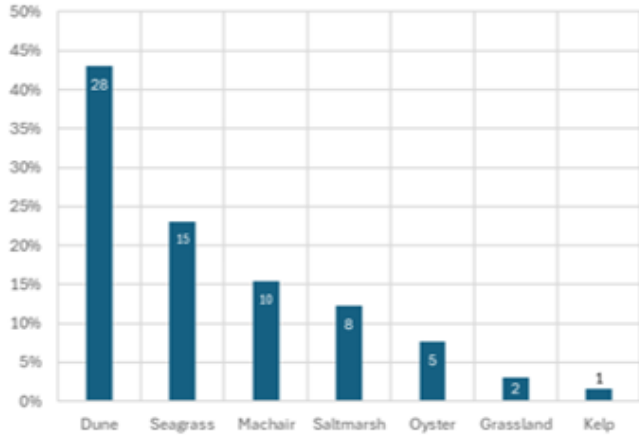


Figure XX. Distribution of habitat types in NbS typology

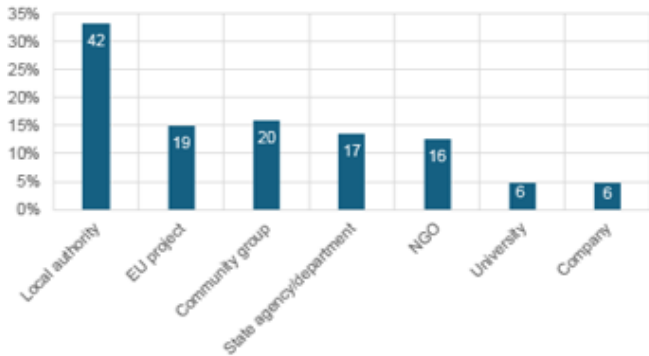
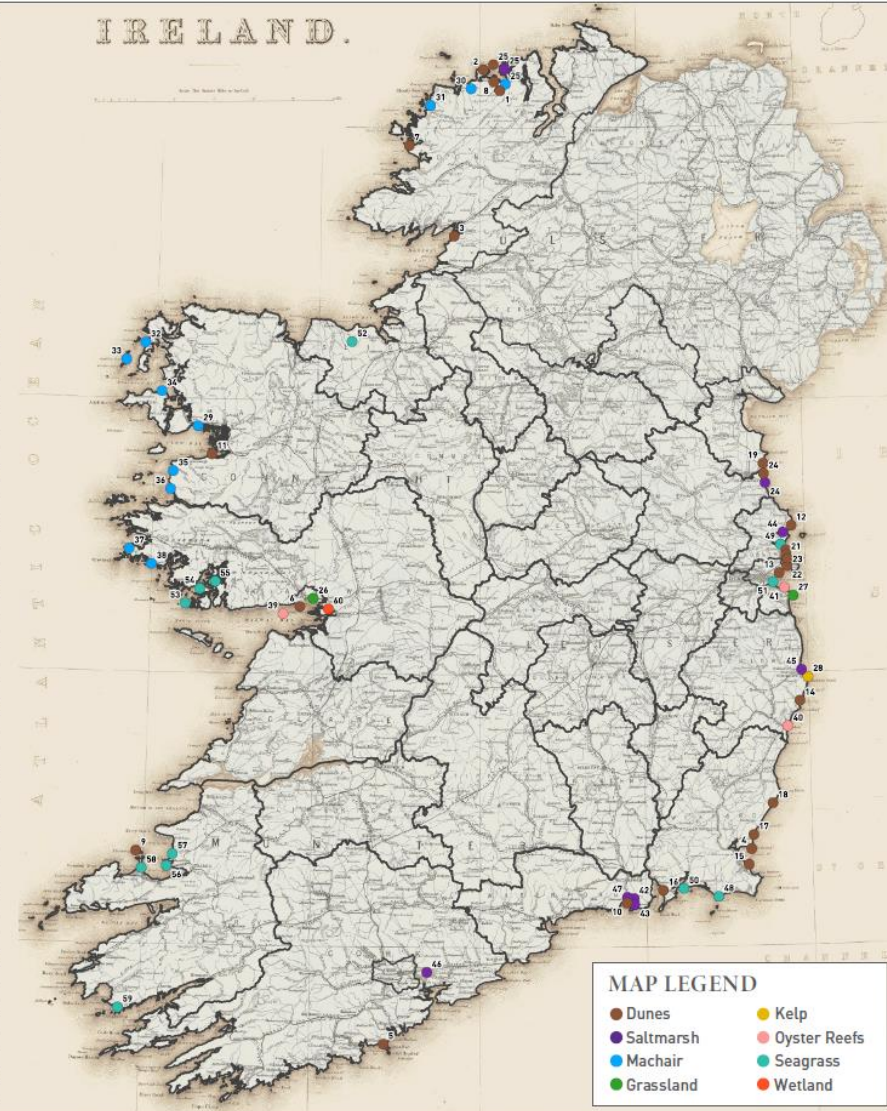


Figure XX. Organisations (co)leading NbS projects

Case Study No.	Case Study Location	County	Lead Organisation(s) Type
1	Ards Forest	Donegal	State Agency
2	Horn Head and Rindevan	Donegal	State Agency
3	Murvagh	Donegal	State Agency
4	Raven Reserve	Wexford	State Agency
5	Gary Lucas White Strand	Cork	Local Authority
6	Grattan Beach	Galway	Local Authority
7	Maghery	Donegal	Local Authority
8	Marble Hill	Donegal	Local Authority
9	The Maharees	Kerry	Community group
10	Tramore	Waterford	Local Authority, Community Group
11	Bertra Beach	Mayo	Local Authority, Community Group
12	The Burrow, Partrane	Fingal	Local Authority, Community Group
13	Dollymound strand	Dublin	Local Authority
14	Brittas Bay	Wicklow	Local Authority, Community Group
15	Rosslare Beach	Wexford	Local Authority
16	Bowley	Wexford	Local Authority
17	Ballinaker Beach	Wexford	Local authority, NGO
18	Morriscastle Beach	Wexford	Local Authority, NGO
19	Termonfeckin and SeaPier	Louth	Community Group, NGO
20		Dublin	NGO
21		Dublin	Local authority, Industry
22	North Bull Island	Dublin	Local Authority, State Agency
23		Dublin	Local Authority
24	Whitington Channel	Meath	Local Authority, State Agency
24		South	Local Authority, State Agency
25		Donegal	Local Authority, State Agency
25		Donegal	Local Authority, State Agency
25		Donegal	Local Authority, State Agency
26	Ballyfoghane	Galway	Local Authority
27	Din Laoghaire-Rathdown	Dublin	Local Authority
28	Wicklow Coast	Wicklow	Community group
29		Wicklow	Community group
31		Wicklow	EU Project
32		Wicklow	EU Project
33	Jackalope Island	Mayo	EU Project
34		Mayo	EU Project
35	St. Mary's Bay, Louisa	Mayo	EU Project
36		Mayo	EU Project
37	Clontarf	Galway	EU Project
38		Galway	EU Project
39		Galway	EU Project
40	Wicklow Coast	Wicklow	Community group
41	Dublin Bay	Dublin	NGO, Community Group, Local Authority
42	Tramore	Waterford	Industry, University, State Agency, Local Authority
43	Tramore Back Strand	Waterford	Local Authority
44	Rogerstown Estuary	Dublin	Community Group, NGO
45	Murrough Wetland	Dublin	Local Authority, NGO
46	Harper's Island	Wicklow	NGO
47	Kilmaclesh West Wetlands	Cork	Local Authority
48	Kilmore Quay	Wicklow	Local Authority
49	Mullabide	Wexford	NGO
50	Bannow Bay	Dublin	NGO
51	Sandymount and Merrion Gates	Wexford	NGO, EU Project
52	Killala Bay	Dublin	State Agency
53	Furze Beach	Mayo	EU Project
54	Lettercarrow	Galway	EU Project
55	Balle Lar	Galway	EU Project
56	Fenit Island	Galway	EU Project
57	Barrow Harbour	Kerry	EU Project
58	The Maharees	Kerry	EU Project
59	Derrynane Bay	Kerry	EU Project
60	Ballyfoghane	Kerry	EU Project
60	Ballyfoghane	Galway	Local Authority, Community group, State Agencies

### TYPOLGY

1. LOCATION
2. ORGANISATION
3. ECOSYSTEM TYPE
4. OBJECTIVES
5. SERVICES DELIVERED
6. BIODIVERSITY VALUE
7. BENEFICIARIES
8. AREA
9. COST





# 2

## Nature-based solutions: the use of NbS in Ireland

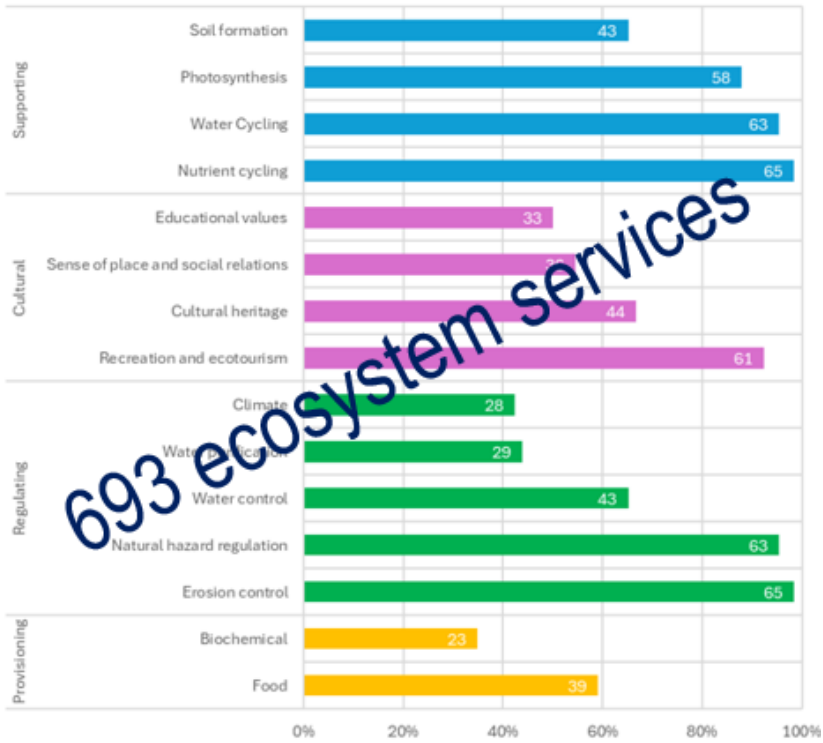
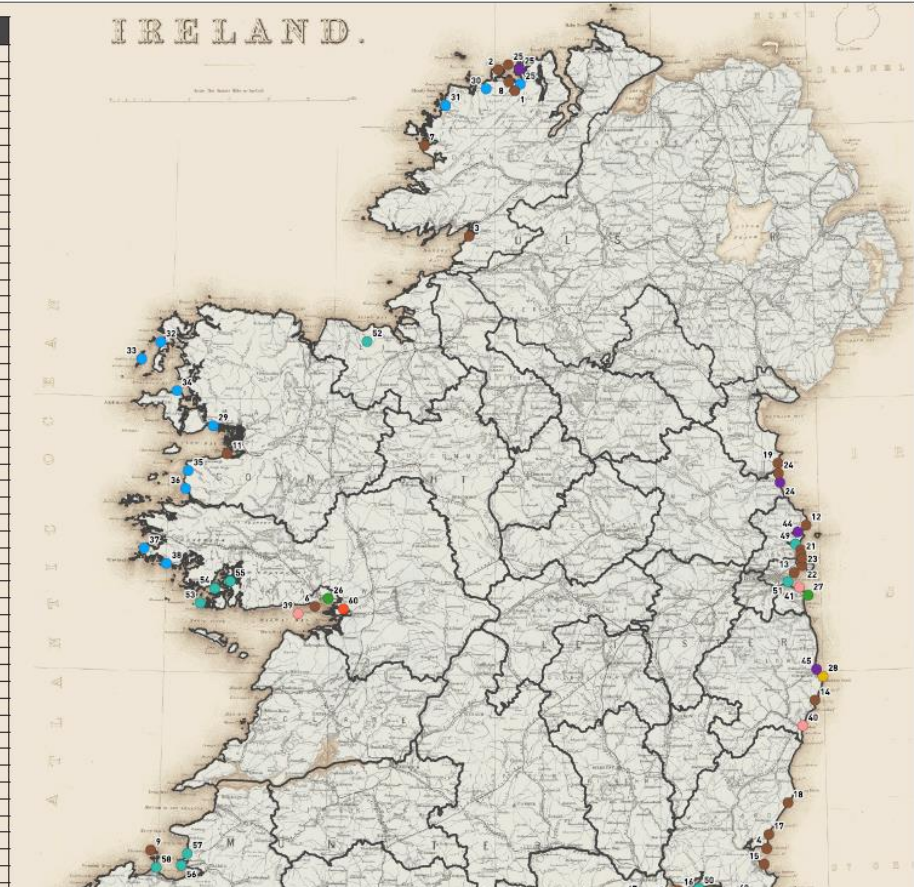


Figure XX. Range of Ecosystem Services delivered by NbS projects

Case Study No.	Case Study Location	County	Lead Organisation(s) Type
1	Anis Forest	Donegal	State Agency
2	Horn Head and Rindevan	Donegal	State Agency
3	Murvagh	Donegal	State Agency
4	Raven Reserve	Wexford	State Agency
5	Gary Lucas White Strand	Cork	Local Authority
6	Cratton Beach	Galway	Local Authority
7	Maghery	Donegal	Local Authority
8	Marble Hill	Donegal	Local Authority
9	The Maharees	Kerry	Community group
10	Tramore	Waterford	Local Authority, Community Group
11	Bertra Beach	Mayo	Local Authority, Community Group
12	The Burrow, Partrane	Fingal	Local Authority, Community Group
13	Duhamonagh strand	Dublin	Local Authority
14	Portlough	Wicklow	Local Authority, Community Group
15	Wexford	Wexford	Local Authority
16	Wexford	Wexford	Local Authority
17	Ballinacorney	Local authority, NGO	
18	Merrion	Local Authority, NGO	
19	Teagasc	Community Group, NGO	
20	Polkerry	NGO	
21	Polkerry	Local authority, Industry	
22	Nahinch	Local Authority, State Agency	
23	Ballymore	Dublin	Local Authority
24	Merrion	Meath	Local Authority, State Agency
24	Merrion Dunes	Meath	Local Authority, State Agency
25	Shannon	Local Authority, State Agency	
25	Shannon	Local Authority, State Agency	
25	Shannon	Local Authority, State Agency	
26	Ballinacorney	Local Authority	
27	Dunmore	Local Authority	
28	Wexford	Community group	
29	Rossmore	Community group	
30	Harbour	EU Project	
31	Clonsilla	EU Project	
32	Mayo	EU Project	
33	Inishowen	EU Project	
34	Donegal	EU Project	
35	Loughs	EU Project	
36	Mayo	EU Project	
37	Mayo	EU Project	
38	Galway	EU Project	
39	Galway	EU Project	
40	Galway	Community group	
41	Wicklow	NGO, Community Group, Local Authority	
42	Dublin	Industry, University, State Agency, Local Authority	
43	Waterford	Local Authority	
43	Tramore Back Strand	Waterford	Community Group, NGO
44	Rogerstown Estuary	Dublin	Local Authority, NGO
45	Murrough Wetland	Wicklow	NGO
46	Harper's Island	Cork	Local Authority
47	Kilmacloe West Wetlands	Wicklow	Local Authority

### TYPOLGY

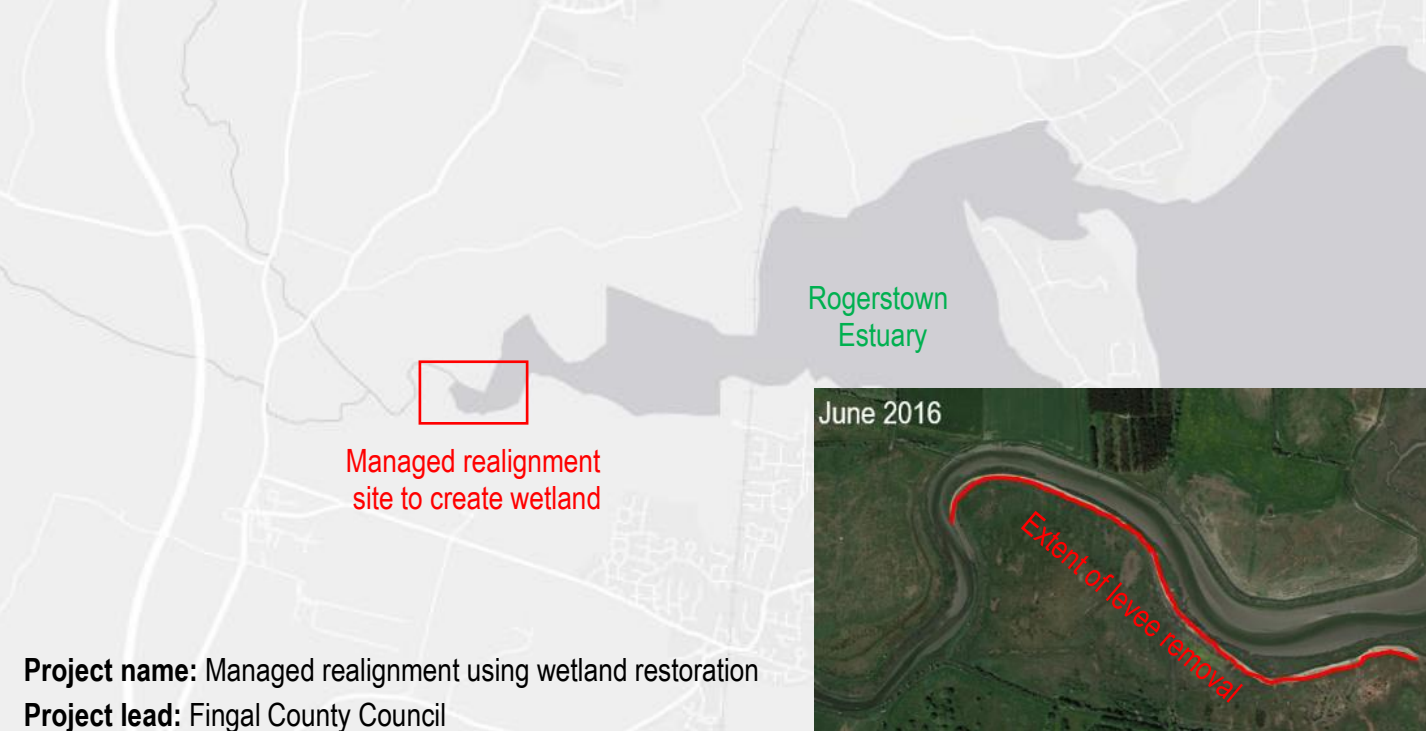
- PROJECT NAME / LOCATION
- ECOSYSTEM TYPE
- ORGANISATION
- OBJECTIVES
- CLIMATE CHANGE TARGET
- SERVICES DELIVERED
- BIODIVERSITY VALUE
- BENEFICIARIES
- TYPE OF NBS
- AREA
- COUNTY
- AREA
- COST



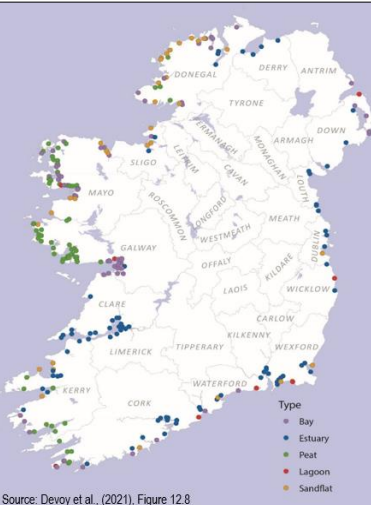
Project name/case study	Ecosystem Type	Organisation Type	Organisation Name	Objectives	Climate change target	Services delivered	Biodiversity value	Beneficiaries	Type of NBS	County	Area (km <sup>2</sup> )
Rogerstown estuary and Turvey national park Partrane Co. Dublin	Saltmarsh	Local Authority	Fingal County Council, Birdwatch Ireland, Nature Conservation Dublin (local community)	Rewet saltmarshes	mitigation	1.4-km section of a 1.5-m-high levee was intentionally removed for the purposes of habitat creation and restoration of the natural hydrology. No new levee was constructed to the rear of the site; instead, the rising topography of the nature reserve has been allowed to restrict flood waters. Now the area floods naturally and vegetation from existing saltmarshes further back has reappeared.	Restoration of Rogerstown Estuary SAC; roosting sites for thousands of wintering wildfowl and waders; new wetland vegetation successions.	Tourists and locals - valuable location for recreational use, birdwatching and education. Local communities and local authorities - success story of national park management co-designed with local community	Marine and wetland	Dublin	0.24km <sup>2</sup>



Nature-based solutions: managed realignment of tidal wetlands (saltmarshes).



**Project name:** Managed realignment using wetland restoration  
**Project lead:** Fingal County Council  
**Project background:** Turvey Island Nature (County Dublin) is a 220-acre local authority owned park that was bought in the 1970's. At the time of purchase, Turvey Island had no freshwater habitats and no wetlands. **In 2015, a 1.4-km section of a 1.5-m-high levee was intentionally removed for the purposes of habitat creation and restoration of the natural hydrology.** No new levee was constructed to the rear of the site; instead, the rising topography of the nature reserve has been allowed to restrict flood waters. Subsequently, drains were blocked to enhance the restoration of the wetlands. Hans Visser, Biodiversity Officer at Fingal County Council said the transformation ***“didn't cost a lot and in the main it was a case of leaving nature to its own devices..... and this is a model that can be replicated anywhere else in Ireland”***. The original farmland is now an area of grasslands, wetlands, forestry, wildflowers and other habitats. The Turvey Island Nature Reserve now delivers substantial ES's.



Source: Devoy et al., (2021), Figure 12.8



**Project name:** Unmanaged realignment using wetland restoration

**Lead:** Cork County Council; BirdWatch Ireland

**Background:** Harper's Island Wetlands is owned and managed by Cork County Council in partnership with BirdWatch Ireland, Glounthaune Community (Glounthaune Community Association/Tidy Towns/Men's Shed), and NPWS. The area was partly rewetted in 2006 from a breach in the levee. Subsequently, a new management plan was created to provide ES: saltmarsh habitat created; bird reserve in partnership with Birdwatch Ireland and Glounthaune Community Association; carbon sink; protect inland areas from flooding and storms; water birds and aquatic species benefit from the protection of this area and the creation of new habitats; reduced flooding benefits the local authority and local community; added amenity provided by the wetland.



Source: [birdwatchcork.com/about-harpers/](http://birdwatchcork.com/about-harpers/)



**Table XX.** NBS types linked to level of intervention.

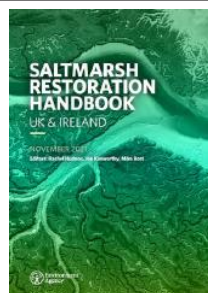
NBS Type	Description
1	Minimal or no intervention in ecosystems, with objectives related to maintaining or improving delivery of ecosystem services within and beyond the protected ecosystems (e.g., MPA site to increase fish stocks to enhance food security and increase biodiversity).
2	Solutions based on developing management protocols to develop sustainable, multifunctional ecosystems and landscapes in order to improve delivery of ecosystem services relative to conventional interventions (e.g., dune restoration using marram grass planting and controlling access).
3	Solutions characterised by highly intensive ecosystem management or creation of new ecosystems (e.g., creating new oyster or seagrass beds).



Figure XX. 2003: Farmland; 2007 post-breach; 2018-2020 two new scrapes visible on west side of island.

**Table XX.** Key references for saltmarsh restoration in Ireland.

Authors / Publisher, (year)	Title
Kupilas, Benjamin, et al. / Ecologic Institute, (2024)	Compilation of existing guidance on ecosystem restoration. Ecologic Institute, Berlin (193 pp).
Doolan, G. and Hynes, S / Jr. of Ocean and Coastal Economics 10(1), (2023)	Ecosystem Service Valuation of Blue Carbon Habitats: A Review for Saltmarshes and Seagrasses.
Hudson, R., Kenworthy, J. and Best, M. (eds) / Environment Agency, (2021).	Saltmarsh Restoration Handbook: UK and Ireland (105pp).
Devoy, R, Cummins, V., Brunt, B., Bartlett, S., and Kandrot, S. (eds) / Cork University Press, (2021)	The Coastal Atlas of Ireland (893pp).
Perrin, P.M., Waldren, S., Penk, M.R. and O'Neill, F.H. / EPA, (2020).	Saltmarsh Function and Human Impacts in Relation to Ecological Status (SAMFHIREs).
Penk, M.R. and Perrin, P.M. / <i>Estuaries and Coasts</i> 45(6), (2022).	Variability of plant and surface soil carbon concentration among saltmarsh habitats in Ireland.
Penk, M.R., Wilkes, R., Perrin, P.M. and Waldren, S. / <i>Estuaries and Coasts</i> 42, (2019).	Nutrients in saltmarsh soils are weakly related to those in adjacent coastal waters.
UK Defra and Environment Agency, (2007).	Saltmarsh management manual (R&D Technical Report SC030220) (123pp).
Devaney, F.M. and Perrin, P.M. / EPA, (2015).	Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE) (108pp).
Curtis, T.G.F. and Skeffington, M.S. / Royal Irish Academy, (1998).	The salt marshes of Ireland: an inventory and account of their geographical variation.



#### 2.1.4.3 Competent authorities and advisory agencies

Licence and planning permissions vary by project and by site. The competent authorities and advisory agencies for licensing and permissions in Ireland also change and you are advised to refer to latest advice by checking relevant organisations.

Topic	Competent authorities and advisory agencies
Planning permission	LA
Marine management and marine licences	MARA
Foreshore and seabed leases/ owner permissions	DHLGH; private landowners
Flood risk management	The Office of Public Works
Quality of the water environment	EPA; LAWPRO; An Teagasc
Wildlife and protected species licensing	NPWS

**Table XX.** Key considerations for tidal wetland (saltmarsh) restoration. Points 1 to 7 are from Hudson et al., (2021).

- Saltmarsh habitats can be created or restored in a number of ways, by (i) reducing wave energy and placing or encouraging sedimentation on existing marshes and mudflats, (ii) creating new intertidal areas landward of existing defence lines (iii) enhancing estuary edges in urban areas.
- One of the most important design considerations for saltmarsh restoration involving realigned defences or urban fringes is achieving the correct ground elevation relative to the local tidal frame – typically mean high water neap (MHWN) to highest astronomical tide (HAT).
- In areas close to existing saltmarshes, vegetation in restored areas will develop naturally within a few years. Planting may be appropriate to encourage rarer species or in areas that are more removed from natural supplies of seeds and propagules.
- Scheme designs need to consider creating successful conditions for saltmarsh within the scheme itself as well as avoiding adverse impacts on surrounding areas.
- Consult with a wide range of stakeholders from the project conception to ensure local knowledge is incorporated into the project design and to increase stakeholder engagement and support.
- Community engagement brings about benefits to both the project and local communities.
- Consider a variety of approaches and styles of communication and consultations to engage effectively with different stakeholders.
- Map vulnerable (current and future) saltmarsh areas in Ireland and the accommodation spaces adjacent to these areas. Analyse the accommodation spaces for flood and erosion risks (elevation and exposure maps); landownership; land-use; and potential value (including blue carbon and regulatory ES for flood and erosion control. especially).
- Build a typology of (un)managed realignment sites of saltmarshes in Ireland. Include details such as saltmarsh type; area realigned; landownership; costs; management protocols; monitoring results (recovery rates; species; geomorphology and ecology reports); education and amenity value etc.
- Estimate the benefit-costs of a selection of (un)managed realignment projects based on monetary and non-monetary ES. This can be done using demonstration sites where the essential data is available. An ES approach should be used.
- Work at a catchment scale to identify potential accommodation spaces and NBS's to manage flood water (flood water retention; slower flow rates to coast).



**Project name:** Cost and benefits of a coastal amenity; native oyster restoration

**Lead:** Cuan Beo; University of Galway

**Background:** Research on native oyster reef restoration in Galway Bay shows that the nature-based solution to protecting an at-risk coastal amenity (that is, restoring the native oyster reefs and dampening the impact of storm surges) had a benefit-cost ratio multiple times larger than the grey infrastructure alternative of (revetment/seawall). Over 20 million juvenile native oysters settled on 200 tonnes of scallop shell they imported to the site in South Galway Bay during the summer of 2021.

**Ref:** Hynes et al., 2022. Estimating the costs and benefits of protecting a coastal amenity from climate change-related hazards: Nature based solutions via oyster reef restoration versus grey infrastructure. *Ecological economics*, 194, p.107349.

*"Guided by Science; driven by Community"*  
-Cuan Beo working principle from project participant



Grattan Beach

Mutton Island  
causeway

Source: Cuan Beo



Renville coastal walk

Future area  
of restored  
oyster beds

Figure XX. Cost and benefits of protecting a coastal amenity using NbS (native oyster restoration).



The Native Oyster Restoration Alliance (NORA) supports the protection and ecological restoration of the native European oyster, *Ostrea edulis*, and its habitat in areas of its current or historical distribution. NORA works to overcome existing barriers to the conservation, restoration and recovery of the European oyster by providing a platform for the NORA community to collaborate and participate in knowledge exchange. NORA seeks to support responsible restoration practice, in compliance with biosecurity and sustainability. – NORA Mission Statement



Figure XX. Snapshots of oyster farming in Ireland. Pictures were extracted from: A. //theskipper.ie/by\_right\_little\_oyster/; B. //www.dkconnemaraoysters.com/gallery/; C. //www.tcd.ie/tceh/projects/foodsmartdublin/recipes/; D. //ipo.ie/portfolio/guided-tours-5/; E. <https://ipo.ie/portfolio/guided-tours-5/>; F. //www.dkconnemaraoysters.com/; G. //nora-europe.eu/ireland-galway-bay-oyster-restoration-project/; H. //nora-europe.eu/ireland-galway-bay-oyster-restoration-project/

Table XX. Oyster restoration projects around the island of Ireland.

Galway Bay Native Oyster Restoration Project	This project is a community, state and scientific institution led initiative that aims to restore the native oyster ( <i>Ostrea edulis</i> ) populations that once existed in huge quantities in Galway Bay. The goals are to (1) restore native oyster habitats through strategic cultch deployment to promote larval settlement, (2) to identify critical habitat for potential native oyster restoration including modelling of temperature and salinity, (3) develop spatial management plans of fisheries that include closed areas for oyster reef restoration, (4) to gain a more in-depth knowledge of native oyster habitat restoration through practical research, (5) to monitor the prevalence of <i>Bonamia</i> and (6) to improve coastal water quality in Galway Bay by fostering a community understanding that land based activities have an immediate impact on coastal water quality. The Marine Institute is a key partner in this project and has broad participation of native oyster fishermen and oyster growers. Parts of the project are funded by the EMFAF Marine Biodiversity and Marine Knowledge Scheme.
Native Oyster Restoration Northern Ireland (NONI)	NONI is designed as the first step to restore once-abundant native oyster beds and the associated ecosystem services they provide (clean water, healthy fisheries, and enhanced biodiversity) in Northern Ireland. The Department of Agriculture, Environment and Rural Affairs (DAERA) are supporting the native oyster work (5 years) as part of the larger Blue Recovery programme within Ulster Wildlife. To support the natural recovery of the native oyster in Northern Ireland, Ulster Wildlife is installing oyster nurseries across key sites with links to historical beds and fisheries. These oyster nurseries can be considered as micro-habitats housing mature fecund oysters that will reproduce and release the next generation of larvae to settle out on the seabed. The cages are hung in the water underneath the pontoons, which provides the oysters with protection from predation and hand harvesting. To upscale oyster restoration across Northern Ireland, survey licences have been granted by the Crown Estate to explore historical oyster beds as suitable sites for restoration efforts by the deployment of oysters directly onto the seabed. In the future
Native Oyster Reef Restoration Ireland (NORRI)	NORRI is working in Arklow Bay North and South, Wicklow County, Ireland. The project aims to initiate collaborative efforts and restore native oyster reefs, integrated with restoration of kelp habitats and other degraded coastal habitats. The NORRI Project received funding from the Rural Development program, LEADER grant and County Wicklow Partnership for "East Coast Oyster and Kelp Biodiversity Project". This work package will specifically address training and education of local community about biomimetic restoration. Local Biomimicry Living Labs will be established for testing <i>in situ</i> design of floating island structures in Wicklow Bay in support of integrated oyster and kelp restoration.
Oisre Conamara (Oyster Information and Scientific Restoration of Ecosystems of Conamara)	This project was launched in September 2023 and is led by the Atlantic Technological University and the Marine and Freshwater Research Centre in partnership with Údarás na Gaeltachta and the Comharchumann Sliogéisc Chonamara Teo (Conamara Shellfish Co-Operative). The project is mapping the extent, population structure and ecology of remnant native oyster beds to inform ecological restoration and enhancement plans. Oisre Conamara builds up on previous recruitment studies conducted by Údarás na Gaeltachta and the Connemara Shellfish Co-Operative. The project is using beds in Kilkieran (Cill Chiaráin) and Bertraghbui (Beirtreach Bui) to describe the native oyster biocenosis and its biodiversity to develop metrics of ecological restoration success. Oisre Conamara has a strong focus on the description of biodiversity and faunal assemblage baselines and provide evidence to identify suitable areas as sanctuaries that can serve as broodstock and nurseries. The rejuvenation and expansion of existing oyster beds within their historical range using cultch, reseedling, and translocation of local broodstock will also be undertaken. By working with the Connemara Shellfish Co-Operative, the project aims to raise awareness among the local community for support of oyster restoration and provides them with advice in harnessing this ecosystem, in a scientific and sustainable manner.
IRC; EPA research project in UCD (2022-26)	This project aims to trial and test different established and novel methodologies to evaluate the potential to restore oyster reefs at several historical oyster reef sites within and around Dublin Bay. The project is funded (€111,833.33) by the Irish Research Council (IRC) and EPA and being led by UCD. The project will consult with the relevant agencies and local county councils within Dublin Bay. The research findings will support national and European strategies on promoting and conserving native oyster species that enhance ecosystem services.



**Table XX.** Key points identified in the project for oyster restoration in Ireland. Note: Points 1-6 are adapted from Tully et al., (2023), p.11.

Key considerations for oyster restoration		NBS type	Responsibility
1	Clear objectives as to the scale and ambition of the project.	-	MI; DHLGH
2	The legal framework and operational constraints that need to be considered.	-	DHLGH; DAFM
3	Identifying the causes of population decline and whether these causes persist or can be mitigated. Most oyster beds lie within coastal and transitional waters. Removing the pressures from these waters is needed before oyster bed restoration is planned and implemented. Key state agencies involved in water quality issues should continue to engage with stakeholders to identify priority shellfish growing areas for further investigation leading to improvements in wastewater treatment plant processes and water quality in shellfish growing waters.	-	MI; EPA; Uisce Éireann; OPW; Volunteer groups; co-op's
4	Information on current status of oyster stocks at the proposed restoration site. The status will largely define the approach to re-building stocks. The approach at sites where spawning stocks no longer exist will be very different to sites which have spawning stocks.	-	MI
5	Habitat suitability assessment is key to successful oyster restoration. Sites that previously held oyster stocks are likely to be more suitable than areas that did not. At least they are proven suitable habitats, provided significant changes have not occurred.	I	MI
6	Identifying the constraints to population recovery is important. Knowledge gaps include: a. Is spawning stock present and at densities that enable high rates of fertilization? b. Is the spawning stock located in areas which will enable high larval retention in the system? c. Is water temperature high enough to enable gametogenesis, larval production and settlement annually? If not, then recruitment will be infrequent. d. Is there an abundance of clean shell material available for spat settlement in areas where larvae are distributed? e. Is the balance of growth and mortality of a cohort of oysters such that biomass is expected to increase?	I	MI
7	From a national perspective the commercial viability of oyster fisheries and prospects for maintenance of populations could be considered to be at significant risk; biomass is concentrated in inner Tralee Bay, biomass is very low and dispersed in other sites, catch rates are low, recruitment is irregular, there are pressures from disease and non-native species, fisheries operate in areas where stocks are depleted, scientific advice is rarely incorporated into regulation of seasonal oyster fisheries and there are generally no fishery management plans with explicit objectives, harvest control rules and reference points in operation. (from Tully and Clarke, 2012 p.33)	-	MI
8	Oyster beds are not restoring passively in Ireland because of a variety of reasons linked to substrate type, environmental gradients (salinity; temperature) and spawning. They need active restoration measures. This can still include better fisheries management.	I	MI; DHLGH; DAFM
9	The Fisheries Local Area Groups (FLAG) funding schemes is a high priority funding source for local volunteer groups to plan NBS. There is now a two year lag between the previous (2014-2020) and new (2021-2027) scheme which has "decimated" [participant words] the effectiveness of these groups. A pre-approval a scheme of applications would optimize the effectiveness of the FLAG programme in Ireland.	I	BIM; DAFM

10	Scientific monitoring programmes are critical to understand seabed and oyster habitat change over time. Education programmes are critical to share local (cultural; heritage) and scientific knowledge of oyster beds; outline the pressures on our coastal and marine ecosystems; and highlight the value of NBS's.	I	MI
11	Education programmes are critical to share local (cultural; heritage) and scientific knowledge of oyster beds; outline the pressures on our coastal and marine ecosystems; and highlight the value of NBS's.	-	MI; DHLGH; LAWPRO
12	Native oyster spat can be reliably produced in spatting ponds which provide stable and higher temperatures for spawning and larval settlement. Spat settlement can be enhanced by providing bivalve shell material (cultch) for settlement. Small scale trials show that settlement occurs in all areas when this material is provided and indicates that substrate availability is limiting recruitment.	III	MI
13	<i>Bonamia ostrea</i> is present in oysters in Galway Bay. Prevalence varies annually and seasonally. Intensity of infections is usually less than 30%. Current understanding suggests that <i>Bonamia</i> infection is responsible for high mortality of larger size classes of oysters.	-	MI
14	Ocean models to predict changes in oyster habitat linked to climate change projections of sea surface temperature, pH, salinity, and seasonal rainfall patterns will benefit NBS's. <i>Oysters tolerate a broad range of temperatures and salinities but prolonged (days) exposures to reduced salinities, especially when temperatures are high, can be lethal or can reduce feeding rates. Modelled estimates of daily temperature and salinity in inner Galway Bay indicate that estuarine areas, that previously supported oyster stocks, are now high risk areas due to low salinity events. (Tully et al., 2023, p.7).</i>	-	MI
15	The future of native oyster restoration and farming is very precarious as capacity is reduced within volunteer groups and generational knowledge is lost. Policy initiatives and demonstration projects are needed to successfully address the challenges of generational renewal by connecting new (younger) practitioners with older ones who have nostalgia and knowledge of traditional farming methods, leading to a better return for all parties involved. A recommendation from the oyster co-operatives workshop (2017) in Clarinbridge Co. Galway was to form a working group for native oyster fishermen and co-operatives in Ireland to promote and foster relationships and knowledge transfer between managers and stakeholders in Ireland's oyster fisheries. This has yet to occur.	-	MI; DAFM; BIM; Volunteer groups; co-op's
16	Coastal communities recognize that oysters are important part of their social fabric. It is important to map out the cultural and heritage values of oysters alongside the more	-	DHLGH
	standard indicators like water quality, benthic community, and oyster population. This kind of monitoring is important in efforts to expand fisheries management to an ecosystem perspective and also potentially gives community members yet another reason to be concerned of the poor water quality in some coastal and transitional waters.		
17	Ireland still has a number of extant populations some of which are commercially fished but production and productivity is much reduced compared to historic levels. Oysters, in addition to being commercially valuable and a significant potential source of income for coastal fishing communities, provide valuable ecosystem services such as carbon sequestration, maintenance of water quality and provision of structural habitat that may support high biodiversity.	-	MI
18	Successful citizen science projects mapping coastlines have occurred (Cuan Beo mapped 80km of coast using citizens and a mobile app). These initiatives can be linked to education programmes.	-	MI

**Table XX.** The 65 factors identified as important to consider in site selection for European native oyster habitat restoration projects (17 classified as 'Essential'; 48 as 'Desirable'). These 'Essential' and 'Desirable' factors can be used as a checklist by restoration practitioners in the early stages of site selection. Source: Hughes et al., (2022), Figure 3, p.726).

**We need this data for all marine ecosystems as a starting point for long-term management!**

Theme	Factor	Category
Threats	Protection from destructive fishing methods Absence of dredging in the area where restoration is being performed Minimum dissolved oxygen concentration Absence of extractive practices	Essential
	Low sedimentation rate Absence of unregulated harvesting or poaching Absence of high impact invasive non-species Low pollution levels (e.g., TBTs, PAHs, other hydrocarbons and heavy minerals) Minimal sewage outflow with close proximity to the site Inorganic nutrient concentrations are below harmful threshold Absence of OIE/EC listed diseases	Desirable
Project logistics	Agreements that the area can be useful for restoration Licencing and regulation Availability of source oysters Site safety concerns	Essential
	Area of site Low intensity of anchoring or mooring Site accessibility	Desirable
Abiotic factors	Substrate suitable for settlement (type, stability, quality and quantity) Summer water temperature conditions provide potential for reproduction Salinity minimum Low seabed mobility Salinity range Water temperature maximum in summer	Essential
	Turbidity (low) Wave exposure (low to moderate) Concentration of inorganic nutrients (nitrates and phosphates) Water temperature minimum in winter Volume of freshwater inputs from rivers and streams Current velocity (low to moderate) Existence, strength and flushing of tides (low to moderate) Water pH (pH range, maximum and minimum)	Desirable

Biotic factors	Evidence of historical distribution of <i>O. edulis</i> at site Low predator abundance Site lies within historical range of <i>O. edulis</i> Connectivity with naturally occurring larval broodstock Potential for biodiversity enhancement at site Prevalence of OIE/EC diseases Phytoplankton abundance (measured using chlorophyll a) Low levels of harmful algae Balanced food web with predators of predators Prevalence of high impact invasive non-native species Existing non-oyster habitats not negatively impacted by restoration activities Low abundance of species that compete for settlement area Prevalence of non-native species Absence of biotoxins Prevalence, density and distribution of Pacific Oyster	Desirable
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Socio-economic factors	Engagement with policy makers and environmental regulators Stakeholder interest and support Local ecological knowledge	Essential
	Potential for ecosystem service enhancement Potential for ecosystem service enhancement with relevance to stakeholders Potential to develop local partnerships Returning heritage value to the area Protected area status Coastal community development and well-being Boosting local economy and providing job opportunities Education value Potential for scientific research Cooperation with (non-oyster) fisheries Cooperation with potential co-location with local oyster fisheries or aquaculture Are not essential for livelihoods (e.g., through fishing) Potential for citizen science research Absence of key benthic fisheries target species at the site Site requires environmental goals and targets to be met through restoration activity	Desirable

**Long road ahead...**



Topic	Competent authorities and advisory agencies
Planning permission	LA
Marine management and marine licences	MARA
Foreshore and seabed leases/ owner permissions	DHLGH; private landowners
Flood risk management	The Office of Public Works
Quality of the water environment	EPA; LAWPRO; An Teagasc
Wildlife and protected species licensing	NPWS
Marine invasive species	LA; BIM; NPWS



Coastwatch volunteers removing the invasive *Sargassum* seaweed from rocks in Kilmore Quay.

**Table XX.** Key considerations for seagrass restoration.

1. Active seagrass restoration is occurring, or is being planned, in Tralee Bay, Galway Bay, Clew Bay, Dublin Bay and north Mayo. Active restoration methods include transplanting, mud balls, and cores. These methods are logistically very challenging and small-scale (1-2 m<sup>2</sup>). Scaling up these small-scale studies cannot occur until substantial seed sources are supplied from optimal donor populations across Ireland.
2. Large tracts of healthy seagrass meadows are being lost and/or degraded due to poor water quality (e.g., untreated wastewater; nutrient enrichment; sedimentation) and/or invasive species (e.g., brown seaweed (*Sargassum muticum*)).
3. At the policy level, if we are to invest in restoring seagrass habitats, this has to include concurrent investments and joint-department policies to remove the pressures causing their chronic decline. An inter-departmental (DHLGH; DAFM; LA) and inter-agency (EPA; OPW; LAWPRO; BIM) approach is required to reduce pressures from diffuse pollutants originating in upper catchment areas but transporting to coastal and transitional waters and the rapid growth of invasive species.
4. Restoration techniques for seagrass bed restoration includes removing the non-native alga Japanese wireweed (*Sargassum muticum*) from seagrass beds. This work is onerous as it requires trained volunteers to work by hand by wading or by snorkelling at low tide to impacted beds. In Ireland, this work is only being done by volunteer coastal groups. A common barrier identified by all these group is the lack clarity of which government department is responsible for managing and restoring seagrass beds. It is reasoned that the DHLGH and LA's have responsibility of this foreshore issue but this has not been resolved.

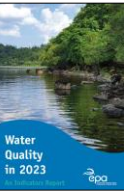


**Figure XX.** A. Dr. Liam Morrison and Dr. Ricardo Bermejo prepare seagrass samples for transplantation; B. Grid showing the seagrass transplants. Source: climarest.eu





# 3 Nature-based solutions: we need to adjust traditional enabling structures to foster NbS



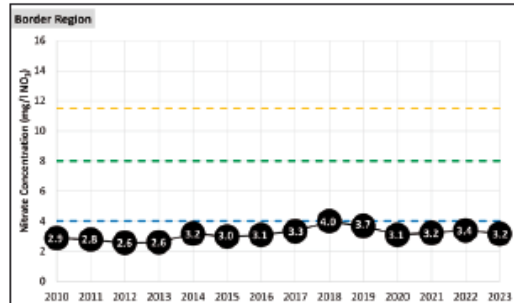
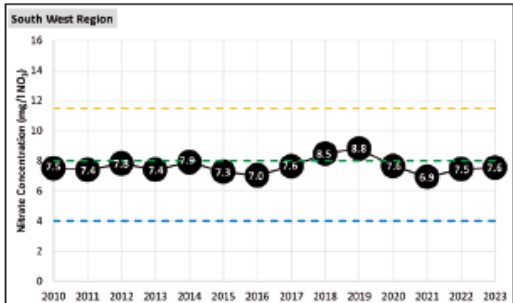
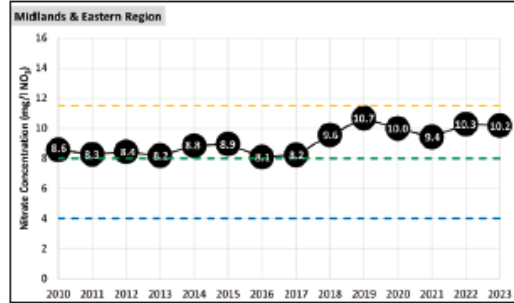
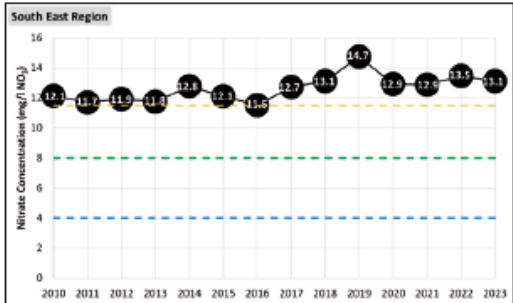
## Nitrogen in Estuaries and Coastal Waters

This indicator is based on winter levels of dissolved inorganic nitrogen<sup>14</sup> (DIN). The concentration of DIN is expected to be at its highest in winter because of the absence of any significant plant or algal growth at that time of year, therefore less nitrogen is used up and remains in the water.

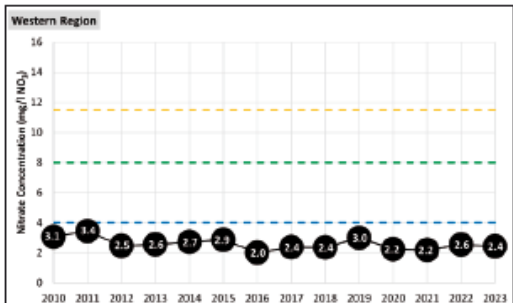
Increased nitrogen concentrations in our estuaries and coastal waters are an indicator of human activities in the upstream catchments affecting water quality<sup>15</sup>. Any increase in nitrogen will result in increased algal growth, which in turn can lead to problems such as low oxygen levels and the shading of sunlight needed by aquatic plants. These changes can damage the ecology of these systems.

### Findings

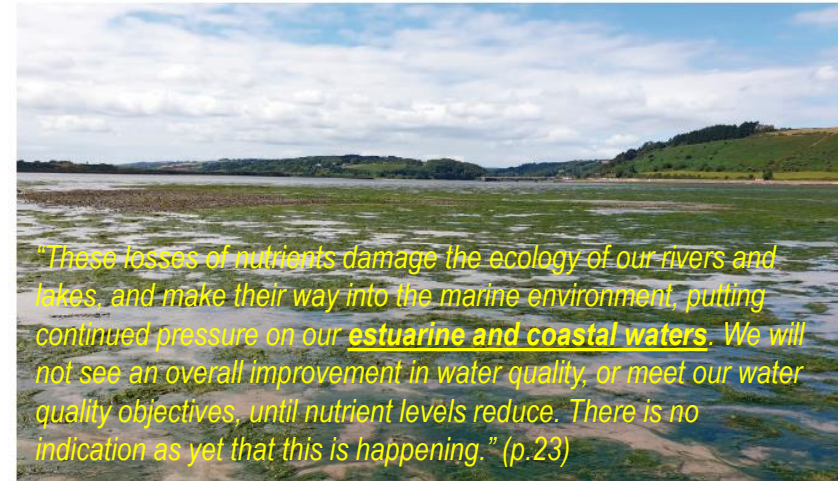
Twenty of the 117 (17%) estuarine and coastal water bodies assessed were in unsatisfactory condition for DIN. These were located primarily along the eastern, south eastern and southern coastlines. This is an apparent improvement from the previous assessment in 2022 (20% were in unsatisfactory condition for DIN) however this is more likely a result of the inclusion of an increased number of coastal water bodies which generally are less impacted.



● Annual average concentration  
--- Level to maintain high river water quality  
--- Level to maintain good river water quality  
--- Level to maintain good water quality in marine waters



"17% of our estuarine and coastal water bodies assessed were in unsatisfactory condition for nitrogen... The elevated levels of nitrogen in our waters are found mainly in the east, south east and south of the country and are too high to support good water quality in our estuaries. This is primarily attributable to intensive agricultural activities on freely draining soils in these areas." (p.3)  
 (Nitrate) levels remain too high to support good biological quality, especially in our estuaries and coastal waters." (p.10)



"These losses of nutrients damage the ecology of our rivers and lakes, and make their way into the marine environment, putting continued pressure on our estuarine and coastal waters. We will not see an overall improvement in water quality, or meet our water quality objectives, until nutrient levels reduce. There is no indication as yet that this is happening." (p.23)

Youghal, Robert Wilkes



## KEY FINDINGS

### A. Multiple departments and state agencies have commitments (legal; policy; strategy) to restore biodiversity and ecosystem services in coastal and marine environments.

Coastal and marine ecosystem restoration appears in policies and strategies across multiple government departments and state agencies with objectives to (1) protect and restore biodiversity, and (2) increase the resilience of socio-ecological systems to climate change. An inter-departmental NBS taskforce can build clarity on roles and responsibilities across and between levels of governance and facilitate advisory partnerships between national-, regional-, and local-level stakeholders so that higher-level priorities connect with lower-level (local) NBS practitioners. This would avoid duplication of efforts and maximize the effective use of available resources to implement NBS's.

A.1 Restoration of coastal and marine ecosystems is identified as an objective in government department and research agency policies and strategies, including, but not limited to:

- **DHLGH** via Marine Strategy Framework Directive 2008/56/EC, Article 13 Programme of Measures M236: Nature based solutions (2022).
- **OPW** and **DHLGH** via Report on the Inter-Departmental Group on National Coastal Change Management Strategy, Recommendation 11: Promotion of Nature-based Solutions (2023).
- **DAFM** via Food Vision 2030 (2021), Mission 1, Goal 3: Protect High Status Sites and Contribute to the Protection and Restoration of Good Water Quality and Healthy Aquatic Ecosystems, as set out in the Water Framework Directive.
- **DTCAGSM** via Biodiversity Climate Change Sectoral Adaptation Plan (published under DCHG, Objective 1: Protect, restore and enhance biodiversity to increase the resilience of natural and human systems to climate change (2019).
- **NPWS** via Ireland's 4th National Biodiversity Action Plan 2023-2030 (2024).  
Outcome 2C: Biodiversity and ecosystem services in the wider countryside are conserved and restored - peatlands & climate action.  
Outcome 2D: Biodiversity and ecosystem services in the marine and freshwater environment are conserved and restored.  
Outcome 2F: A National Restoration Plan is in place to contribute to the ambition of the EU Biodiversity Strategy 20230 and global restoration targets.
- **Local Authority** Climate Action Plans (2024-2029). Seventeen counties have an ocean/sea coastline (Atlantic Ocean, 9; Irish Sea, 7; Celtic Sea, 3) but all counties should have restoration actions that recognize the land-sea connectivity. The Fingal County Council CAP (2024-2029) provides one example of how restoration actions are being prioritized within local government: N13. Restore marine ecosystem along Fingal coast by supporting restoration projects - designed, led and implemented by appropriately competent, trained ecologists - of Oyster beds, Shellfish beds, Seagrass beds and Kelp stands; having due regard to environmental sensitivities such as European sites and biodiversity.

- **BIM** via Alien species and aquaculture (2023). Recommendation: A strong baseline on marine alien species (Invasive Alien Species, IAS). BIM has set up a cross department and inter agency working group to examine invasive species in the context of aquaculture and have committed resources to baseline studies, risk assessments and training.
- **EPA** via Water Framework Directive 2000/60/EC (European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003)) to achieve Good status or to protect Good or High status where it already exists for the water quality in coastal waters, estuaries, rivers, lakes, and groundwaters. It is recognized that **DECC** funds significant numbers of NBS-related research via the EPA.

An NBS taskforce can build clarity on roles and responsibilities across and between levels of governance and build a coherent roadmap to plan how government departments and agencies can upscale restoration efforts. The taskforce can facilitate advisory partnerships between government departments, research and management agencies, industry, researchers and NBS practitioners so that higher-level priorities connect with lower-level (local) NBS practitioners. This would avoid duplication of efforts and maximize the effective use of available resources to implement NBS's.

A.2 A key finding in CCAC Working Paper 26 (Molloy et al., 2024, p.5) reiterates the need for structured collaboration across all sectors for mainstreaming NBS's in Ireland: *"A collaborative approach across governmental departments, non-governmental organisations, public service bodies, local authorities and the private sector, along with engagement with local communities and a clear governance strategy, is essential for mainstreaming the implementation/monitoring of nature-based solutions at a national level."*

A.3 At the policy level, if we are to invest in restoring coastal and marine habitats, this has to include concurrent investments and joint-department policies to remove the pressures causing their chronic decline. It is unproductive to implement NBS's without removing pressures from poor water quality (nutrient enrichment; wastewater; sedimentation), invasive species, reduced accommodation spaces, ocean- and land-use practices (overfishing and/or types of fishing; catchment flood and drainage schemes), and recreational activities.

A.4 The government aims to expand Ireland's MPA network from 2.1% (current area of SACs and SPAs) to 30% of our maritime area by 2030 to meet commitments made under the Kunming-Montreal Global Biodiversity Framework (GBF). This represents a 15-fold increase in protected area coverage within this decade. During the MPA planning stage(s), it is critical to integrate restoration methods and clarify how the coastal and marine Ecosystem Services (ES) they deliver will be measured, reported and evaluated.

**DHLGH:** Department of Housing, Local Government and Heritage; **OPW:** The Office of Public Works; **DAFM:** Department of Agriculture, Food and Marine; **DTCAGSM:** Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media; **DCHG:** Department of Culture, Heritage and Gaeltacht; **NPWS:** National Parks & Wildlife Service; **BIM:** Bord Iascaigh Mhara; **EPA:** Environmental Protection Agency; **DECC:** Department of the Environment, Climate and Communications.



## B. Identifying and harnessing the blue carbon (BC) sequestration potential of coastal and marine resources in Ireland

In the context of climate policy frameworks, blue carbon (BC) is the carbon accumulating in tidally influenced vegetated coastal ecosystems such as tidal wetlands (saltmarshes) and seagrass meadows. This includes the carbon stored in sediments and soils, waters, living biomass and non-living biomass.

**B.1** Coastal and marine carbon sequestration is significant and requires more research to fully understand it. Ireland boasts two significant BC coastal and marine ecosystems: c.100 km<sup>2</sup> of saltmarshes and c.62-300 km<sup>2</sup> of seagrass beds. It is estimated that at least 9.2 Mt of carbon is stored in these habitats. Additionally, Ireland has a vast marine territory of BC ecosystems such as carbon-rich macroalgae, maërl, cold water corals, phytoplankton and sediments. Currently, there is a paucity of data on the stock (extent), condition, and carbon uptake and storage of all these BC ecosystems. These knowledge gaps prevent accurate assessments of the current (or future) carbon storage capacity of BC ecosystems (if restoration efforts are scaled up) in Ireland.

**B.2** Managing BC habitats can support Ireland in meeting our climate mitigation and adaptation targets. Developing strategies and effective mechanisms to implement BC NBS 'on the ground' or 'in the ocean', should be co-designed with NBS practitioners identified in the seagrass (15) and saltmarsh (8) case studies.

**B.3** Integrating BC ecosystems into climate policy should prioritize using Natural Capital Accounting (NCA) to measure the extent and condition of BC ecosystems, including the flow and value of BC Ecosystem Services (ES), into accounting and reporting systems. The NCA approach will enhance the visibility and value of BC ecosystems within climate policies.

**B.4** Saltmarshes require accommodation space to implement (un)managed realignment management strategies. Case studies in Cork (Harpers Island), Waterford (Tramore) and Dublin (Turvey Nature Reserve) illustrate the significant benefits of restoring tidal wetlands (e.g., biodiversity; amenity value; flood risk). The spaces immediately landward and adjacent to tidal wetlands should be mapped and excluded from development plans to prevent loss of these BS ecosystems from 'coastal squeeze'. Even if the EU meets its aim to be climate-neutral by 2050, sea-level rise is locked-in for Ireland and will take decades, or even centuries, to stop (a 1m sea level rise by 2150 is projected using the IPCC moderate greenhouse gas trajectory (SSP2-4.5)). This will cause irreversible loss of large tracts of tidal wetlands across Ireland in locations where 'coastal squeeze' occurs.

**B.5** Active seagrass restoration is occurring, or is being planned, in Tralee Bay, Galway Bay, Clew Bay, Dublin Bay and north Mayo. *Active restoration* methods include transplanting, mud balls, and cores. These methods are logistically very challenging and small-scale (1-2 m<sup>2</sup>). Scaling up these small-scale studies cannot occur until substantial seed sources are supplied from optimal donor populations across Ireland. *Passive restoration* measures are supporting seagrass restoration by removing pressures impacting their extent and health (e.g., volunteer groups removing *Sargassum muticum*). These groups need clarity on who is legally responsible for managing seagrass beds on the foreshore.

**B.5** Large tracts of healthy seagrass meadows are being lost and/or degraded due to poor water quality (e.g., untreated wastewater; nutrient enrichment; sedimentation) and/or invasive species (e.g., brown seaweed (*Sargassum muticum*)). An inter-departmental (DHLGH; DAFM; LA) and inter-agency (EPA; OPW; LAWPRO) approach is required to reduce pressures from diffuse pollutants originating in upper catchment areas but transporting to coastal and transitional waters.

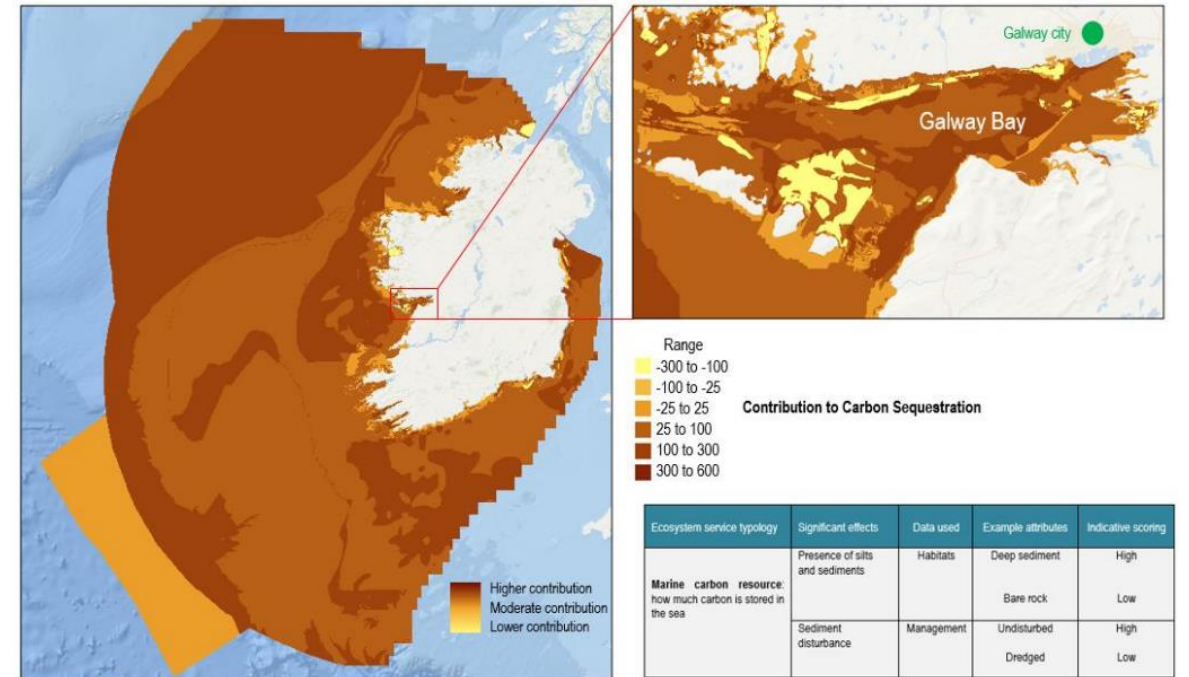


Figure XX. Source: Marine Atlas. Inset table. Valuation example of assessing marine carbon sequestration. Source: Parker et al., (2016), Figure 45, p.116 (National ecosystem and ecosystem service mapping pilot for a suite of prioritised services).

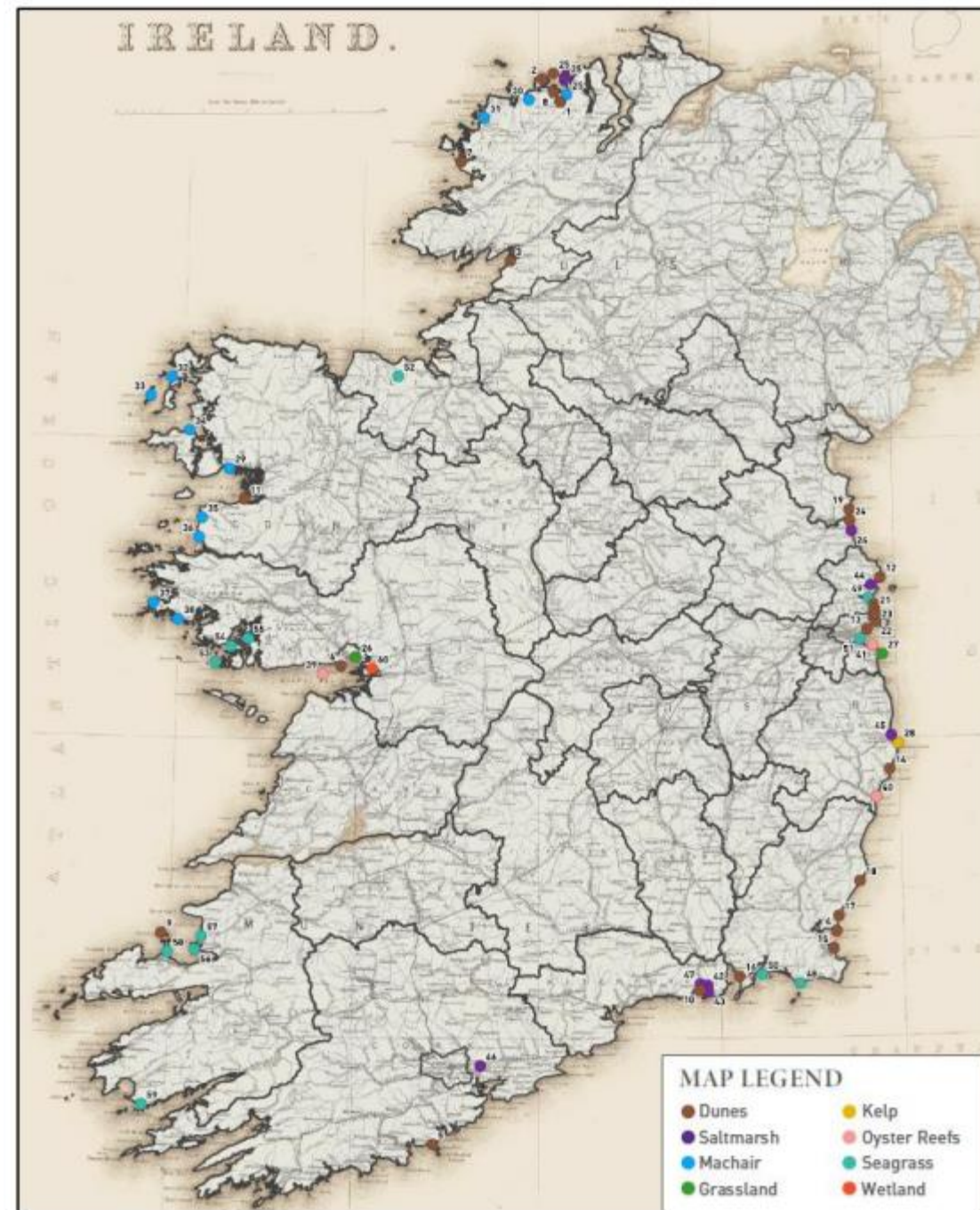
needed here to determine more detail on the sequestration potential of our deep sea sediments. Norton et al., (2018) estimated that Ireland's offshore waters absorb 42,059 ktCO<sub>2</sub> each year which far exceed equivalent values for saltmarshes (26.9), sand dunes (26.4), estuaries (-1702) and coastal waters and bays (525.7). Offshore waters are the largest contributors to the climate regulating service owing to their large size. The high negative value associated with estuaries is due to carbon-rich material in the rivers being converted into CO<sub>2</sub> by the highly productive ecosystems. Data from the Marine Atlas maps out the



**C. At least 66 NBS projects are being implemented in Irish terrestrial coastal habitats and in our transitional and coastal waters at varying scales (small- and medium-scale) and degrees of success.**

NBS projects are delivering 693 ecosystem services in dune, saltmarsh, seagrass, oyster, grassland and kelp habitats and directly contributing to our climate mitigation, climate adaptation and biodiversity conservation targets.

C.1	<p>Based on a desktop scoping review of 66 NBS project locations in Ireland it was found:</p> <ul style="list-style-type: none"> <li>• Seven main coastal and marine ecosystem types are being restored, including, dunes (28) and machair (10), seagrass meadows (15), saltmarshes (8), oyster beds (5), grasslands (2) and kelp (1).</li> <li>• Eleven NBS projects (c.17%) contribute to climate change mitigation (e.g., carbon sequestration); thirty-six (c.55%) contribute to climate change adaptation (e.g., coastal protection); and nineteen (c.29%) projects contribute to both.</li> <li>• NBS projects are being (co)led by local authorities, volunteer community groups; EU-funded projects; state agencies; and (e)NGO's. In total, thirty-one (c.47%) NBS projects had only one key/lead stakeholder; thirty-four (54%) had multiple partners.</li> <li>• Local Authorities were key stakeholders in 40 (c.61%) projects; volunteer community groups were key stakeholders in 20 (c.30%) projects; and a significant number of projects (19, 29%) were being supported by large-scale EU-funding comprising a strong presence of university researchers.</li> <li>• These NBS projects are delivering 693 Ecosystem Services (ES) across all ES categories: provisioning, regulating, supporting and cultural.</li> </ul>
C.2	<p>A key element missing in most NBS projects in Ireland is the lack of onsite scientific measurements which is viewed as a missed opportunity to highlight the monetary (ecosystem services) and non-monetary (cultural and social) value of the work and an evidence-based means to objectively assess the impact of the NBS. An NBS taskforce [see Key Finding A1] should prioritize devising a suite of Ireland-appropriate indicators and metrics to measure the social-ecological effectiveness of NBS's.</p>
C.3	<p>Scientific monitoring programmes will increase our understanding of NBS effectiveness and site-specificity, and reduce the possibilities of unintended consequences or maladaptation. There are also 'feel good' and pragmatic considerations for NBS leaders to share their results with local communities, key government stakeholders, and funding agencies.</p>
C.4	<p>NBS projects are mostly being conducted independently. There is significant scope for a future NBS network (or like) in Ireland to facilitate scaling-up NBS's in coastal and transitional waters.</p>
C.5	<p>Demonstration sites are opportunities for key government stakeholders and state agencies to learn how NBS's are implemented and see the multiple benefits. Site visits encourage buy-in from national-level departments and agencies and can be used to co-design clearer pathways for replication and/or upscaling. Demonstration sites should extend to catchment-based NBS's. Site visits can highlight how "NBS work in practice but not in theory" re: governance, planning, resourcing, monitoring, valuation and management.</p>
C.6	<p>The perception of volunteer community groups is that public funding provided to local authorities for climate adaptation and biodiversity conservation is not founded upon any coherent strategy for coastal and marine areas. Funding streams are not linked to priority needs assessments nor are there guidelines for spending – especially to target community-led NBS efforts in terrestrial coastal habitats and coastal and transitional waters.</p>





**D. Understanding the economic value of NBS's is essential for making informed policy decisions that carefully consider the costs and benefits of investing in restoration plans.**

Coastal and marine ES's are not only the foundation for essential Irish economic activities (e.g., coastal fisheries, soils, water) they also provide direct benefits through recreation, social connection, and well-being and play an important role in protecting water quality, biodiversity and assisting in efforts to address climate change.

D.1 The 2028 EPA Report "Valuing Ireland's Coastal, Marine and Estuarine Ecosystem Services" (Norton et al., 2018) showed found that parts of the Irish coastal, marine and estuarine ecosystems (fisheries, aquaculture, genetic materials, water services, coastal defence, habitats, pest and disease control, climate regulation, recreational services, scientific and educational services, marine heritage, aesthetic services) likely have an economic value that will, perhaps significantly, exceed €3.58 billion per annum. Although the authors explicitly directed users not to use their aggregated single value (€3.58 billion) as a representation of the total economic value (as it oversimplified their approach which comprised of disparate techniques (see their Table ES.1)), the figure highlights the potential value and an important knowledge gap that exists in Ireland for research.

D.2 The 2011 UK National Ecosystem Assessment report included an ES assessment of the UK's coastal margins (dunes, machair, saltmarsh, shingle, sea cliffs, coastal lagoons) and estimated these systems were worth at least £48 billion per annum (3.46% of UK Global National Income) to their economy. Applying a similar (crude) valuation method and proportional contribution to Ireland produces an estimate of €2.57 billion per annum. This figure can serve as an indicator of the potential value for Ireland's coastal margin ecosystems, but again highlights the knowledge gap that exists in Ireland for equivalent research.

D.3 Ireland needs to commit to building a coherent system of natural capital accounting for coastal and marine ecosystems such as the UN System of Environmental-Economic Accounting (SEEA) framework. This framework includes ecosystem extent, condition, and service accounts by integrating economic, environmental and social data. Enhancing the extent and condition of our coastal and marine ecosystems will incur economic costs, making it crucial from a policy standpoint to have reliable estimates of the ecosystem service benefits from restoration and conservation efforts to compare against those costs.

D.4 The National Treasury Management Agency (NTMA) controls and manages the Ireland Strategic Investment Fund (ISIF). A core part of the ISIF Food & Agriculture strategy is supporting the development of Ireland's marine resources. It is noteworthy that the NTMA have stated that they are actively seeking opportunities to invest in NBS and view blue carbon and other ecosystems (e.g., seagrasses and seaweed) as potential future investment opportunities but currently lack real mechanisms to initiate NBS investments beyond the scoping stage.

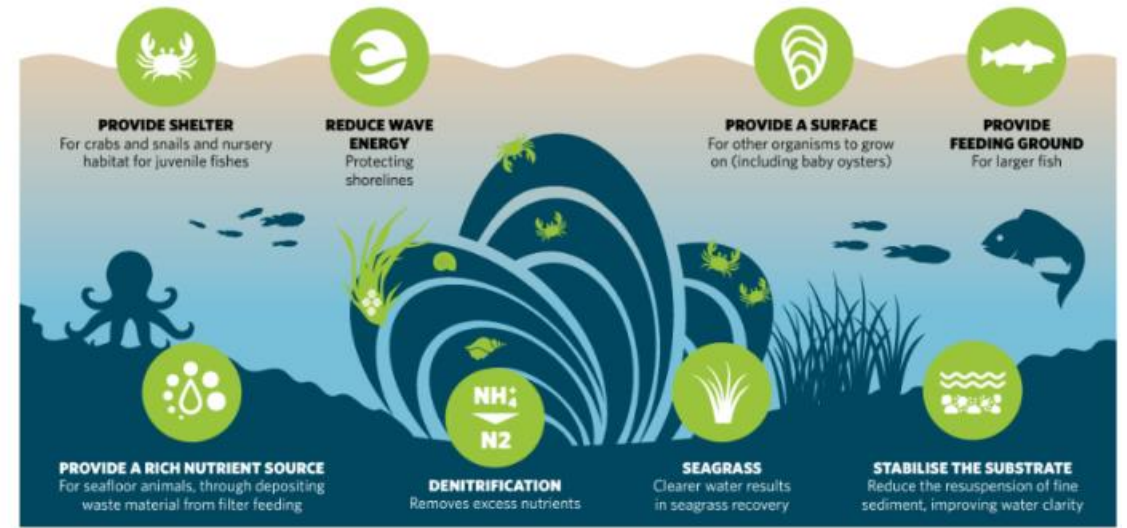


Figure XX. A healthy Oyster reef is of great environmental importance and increases biodiversity. Source: Fitzsimons et al., (2019), Figure 2.2, p.9).

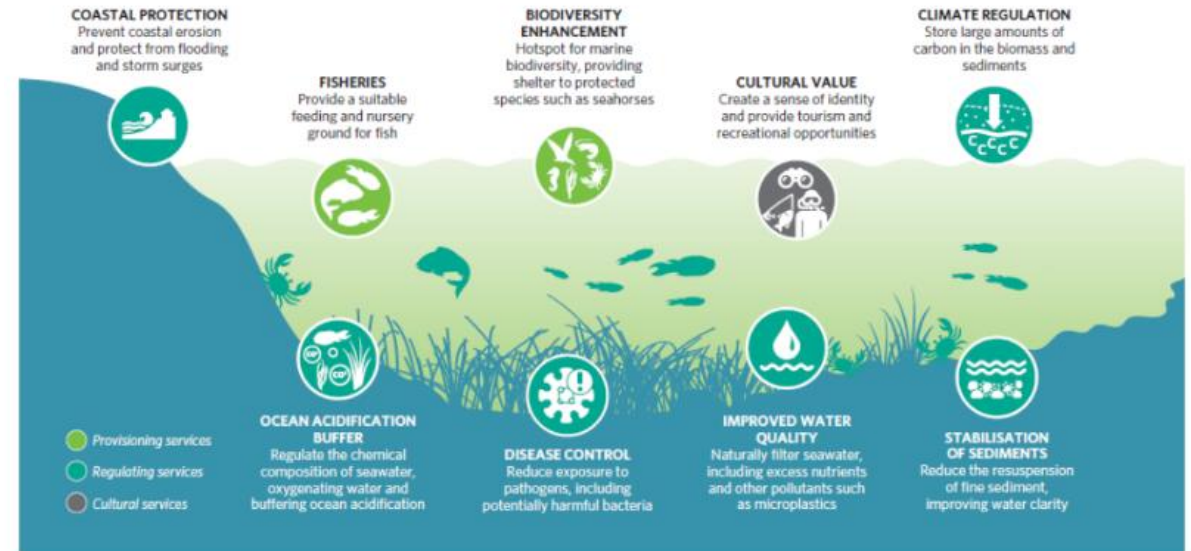


Figure 1.5: Ecosystem services provided by seagrass beds. Modified from UNEP (2020) and Potouroglou, M., Westerveld, L. and Fylakis, G. (2020).



# 3 Nature-based solutions: we need to adjust traditional enabling structures to foster NbS

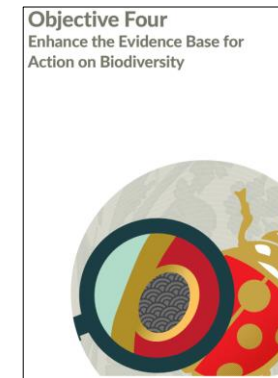
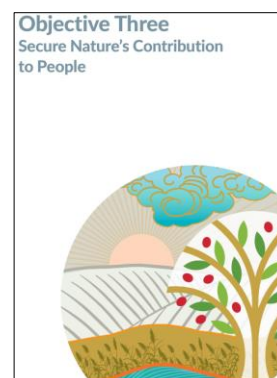
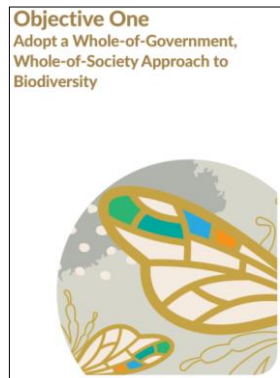
- Too many bodies responsible for managing/licensing/consent in coastal /ocean activities
- Resource Local Authorities (€; experts)
- Link LA biodiversity & climate offices
- Prioritize NbS within LA policy and budgets
- Link policies of NPWS, OPW, and other relevant NbS stakeholders
- Create an NbS Data Hub / Think Tank

- Map/protect Accommodation Space
- Genetic diversity / genome pool
- Remove confusion of how N2000 site are managed; Plans for non-protected areas
- Active vs. passive restoration decisions (e.g., MPA's)
- Suitability maps for each NbS ecosystem
- Ground truth maps using EO and statistical relationships (functional traits vs environmental gradients)

- Reduce CSES pressures from tourism (Failte Ireland)
- Four strands are intertwined for NbS: biodiversity; economic; heritage; education
- Catchment flood management is impacting water quality
- Land stacking (community engagement; changing amenity use; ES benefits)

- Define ES framework (linked to catchment-based ES)
- Identify, map and value NbS Ecosystem Services / Natural Capital
- Monitor ES like assets (appreciating/depreciating?)
- Catchment-scale approach remains elusive but is critical
- NbS trained geomorphologists, ecologists, and economists

- Establish standards in NbS monitoring (e.g., ecology; geomorphology; invertebrates)
- Need data on coastal and ocean processes (e.g., sea level rise)
- Support international funding initiatives (Shared Island)



The BWG + cross-Government bodies will examine interlinkages between policies and departmental actions and the resources required to deliver on those actions; Awareness-raising across Society.

Address freshwater, **marine**, agricultural and forestry challenges, as well as genetic diversity and invasive species. Protection and **restoration** of designated areas and species; **Restoration** of degraded 'less resilient' habitats.

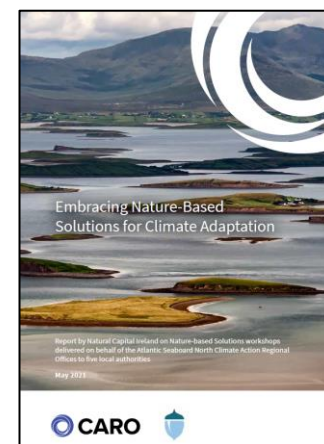
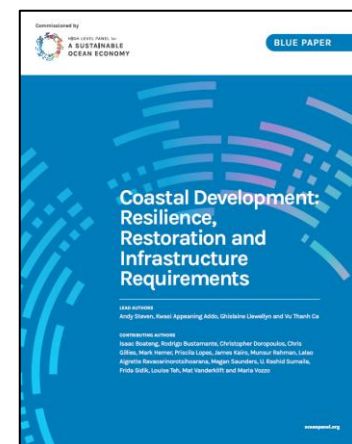
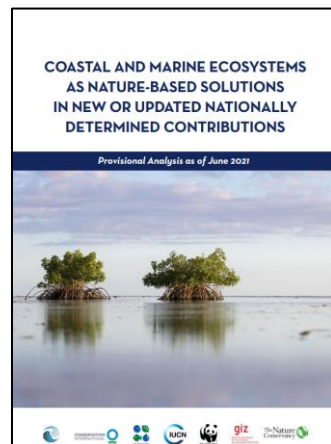
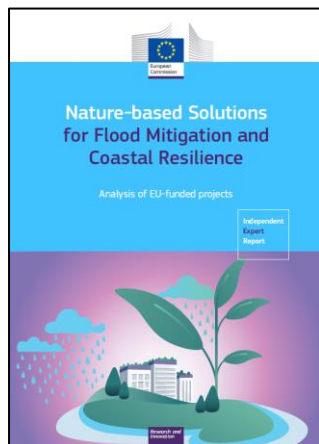
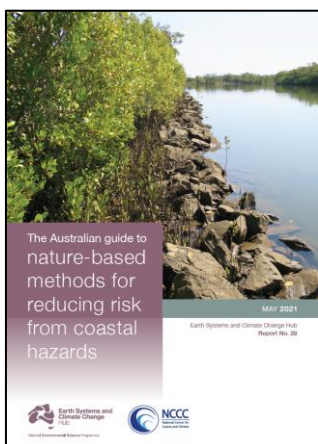
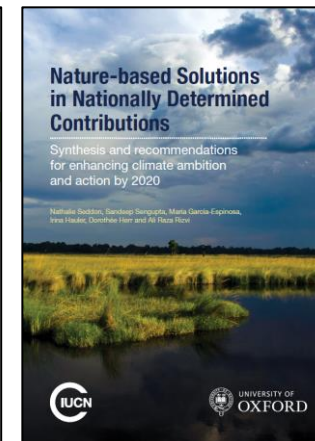
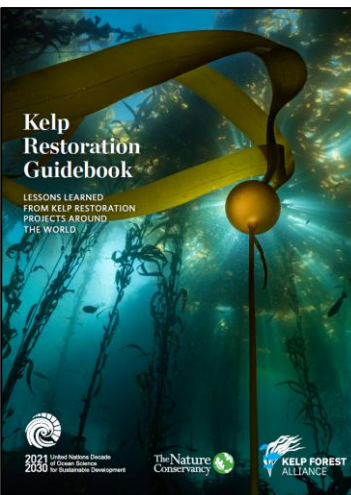
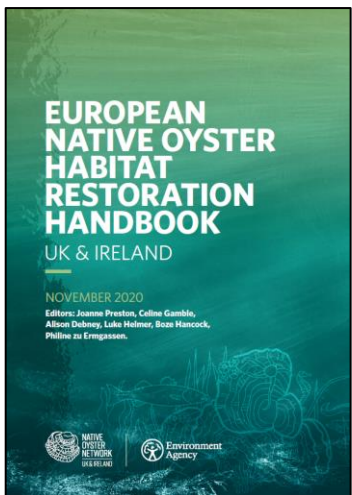
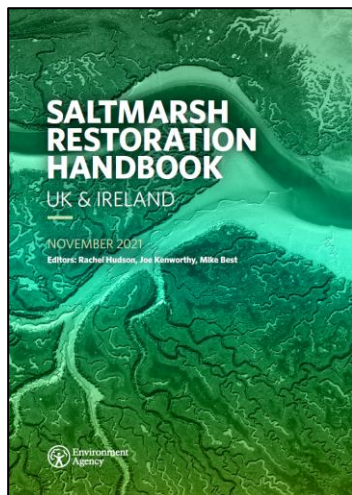
Recognise and secure the **ecosystem services** that nature provides, with a particular focus on tourism, heritage and language. Embed biodiversity in planning + best-practice principles such as green infrastructure and **nature-based solutions**.

Identify research gaps; address skills needs; **biodiversity and ecosystem data and monitoring; recognising, measuring and valuing natural capital**.

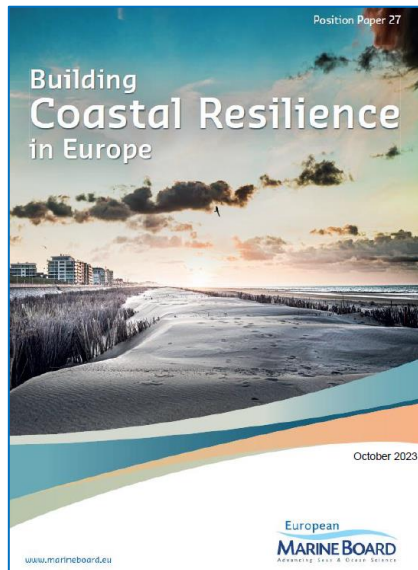
All-island approach to support research networks and tackle invasive alien species. Financial aid & knowledge sharing to LDCs and SIDS; strengthen Ireland's contribution to international biodiversity initiatives and science and data (IPBES; EU Biodiversity Platform).



# 4 Nature-based solutions: learn from (inter)national best practice and new research







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European  
**MARINE BOARD**  
Advancing Sea & Ocean Science

# Building Coastal Resilience

European Marine Board Position Paper No. 27

## SCIENTIFIC RECOMMENDATIONS

**I. Establish integrated transdisciplinary research on coastal social-ecological systems**

...to address knowledge gaps for single pressure and site-specific multiple, cumulative pressure-response relationships, and tipping points.

**III. Develop and operationalise resilience indicators**

... in a pan-European platform.

**V. Invest in research on nature-based and hybrid solutions**

Identify the environmental and social-economic co-benefits, site specific feasibility, and impacts of various combinations of seaward and landward nature based solutions.

**II. Develop sufficient observational, monitoring and data capacity**

Increase monitoring, big data and artificial intelligence investment and integrate data into a unified interdisciplinary platform with resilience indicators.

**IV. Improve model prediction capacity**

... to predict the magnitude, timing, location and impacts of multiple, cumulative pressures.

**Examples of nature-based solutions**

**HYBRID** Marsh-levee systems; dune-dyke systems; 'green' structural engineering.

**SEAWARD** Conservation and restoration of marine coastal habitats; vertical ocean farming; marine protected areas; and low trophic aquaculture.

**LANDWARD** Conservation and restoration of landward coastal habitats; vegetated dunes and marshes; and beach nourishment.

European  
**MARINE BOARD**  
Advancing Sea & Ocean Science

# Building Coastal Resilience

European Marine Board Position Paper No. 27

## POLICY RECOMMENDATIONS

**I. Adopt a systems approach to coastal management**

This should be based on adaptive, cross-sectoral and coherent policies. All aspects of the land-sea interface should be included in the Integrated Maritime Policy and links between marine- and land-based policies should be improved.

**III. Build adaptive capacity at multiple scales**

This should be across local communities, and national, regional and EU governance.

**IV. Reflect the value of natural capital**

The value of natural capital should be reflected in our economies and societies.

**II. Include nature from the beginning of the design process**

Coastal resilience solutions should be designed using an ecosystem-based management approach.

**V. Follow the six-step approach**

1. Conceive the management process as long-lasting and adaptive
2. Engage stakeholders throughout the process
3. Define the resilience issue to be addressed and select frameworks to use
4. Define coastal social-economic system boundaries, structure and dynamics
5. Identify, pilot and provide training on tools to build coastal resilience
6. Sort and refine possible solutions and identify realistic scenarios



# Westminster Forum Projects = Policy Forum for Ireland

## Next steps for climate change adaptation and resilience in Ireland

new National Adaptation Framework | Ireland's Climate Change Assessment report | immediate priorities & key sectors | data & evaluation | Biodiversity Net Gain | fair & just adaptation | EU's approach

Morning, Wednesday, 26<sup>th</sup> June 2024

Sessions in the agenda will bring out latest thinking on concerns raised, looking at challenges in Ireland's approach to adaptation, including:

- **sectoral priorities:** identifying clear plans across sectors, and allocating support and resources effectively to implement adaptation measures
- **financial support:** long-term policy signals to enable substantial investment in sustainability and resilience, and key financial support mechanisms for industries already at risk climate change effects
- **local-level strategies:** next steps for driving community involvement and moving towards a whole-of-society approach with clear, achievable goals
- **monitoring:** integrating robust mechanisms for monitoring progress and evaluating the effectiveness of adaptation

Overall, areas for discussion include:

- **Ireland's current ability to adapt:** considering findings from ICCA - adaptation planning - risk management - assessing adaptation fitness - communicating benefits of transitioning to a low carbon economy
- **immediate priorities:** developing Ireland's climate resilience - implementing local adaptation plans - flood risk management and responses to extreme weather events - key financial support
- **key sectors:** developing adaptation plans across agriculture, health, urban development, and financial services - assessing opportunities for high quality jobs and growth
- **just resilience and adaptation:** ensuring equity and fairness in adaptation approaches - supporting rural areas and coastal communities - consulting with vulnerable groups - guidance
- **data and evaluation:** fostering and funding a whole-of-society approach to data collection - addressing gaps in data - ensuring effective evaluation of approaches to adaptation
- **Biodiversity Net Gain:** assessing long-term goals for nature restoration - utilising green infrastructure for carbon capture and flood defence - transitioning to restoration and heritage practices
- **policy:** priorities for a new NAF - clarity on long-term policy signals - meeting climate targets within carbon budgets - scaling up and resourcing systematic approaches to adaptation - aligning with EU's approach and findings of Europe's climate risk assessment - lessons learned from Ireland's first adaptation plans

Policy Forum for Ireland Keynote Seminar:  
**Addressing biodiversity loss in Ireland**

Timing: Morning, Thursday, 25<sup>th</sup> January 2024

Venue: Online

*The conference will be an opportunity for stakeholders to consider the issues alongside key policy officials who are due to attend from DAFM; Met Éireann; NPWS; DHLGH; DAERA, NI; and DfE, NI.*

Options and charges are as follows:

- Access to *Next steps for climate change adaptation and resilience in Ireland* (plus a permanent record of proceedings) is **€305** plus VAT per delegate
- Concessionary rate places for small charities, unfunded individuals and those in similar circumstances are **€135** plus VAT. Please be sure to apply for this at the time of booking.

For those who cannot attend on the day:

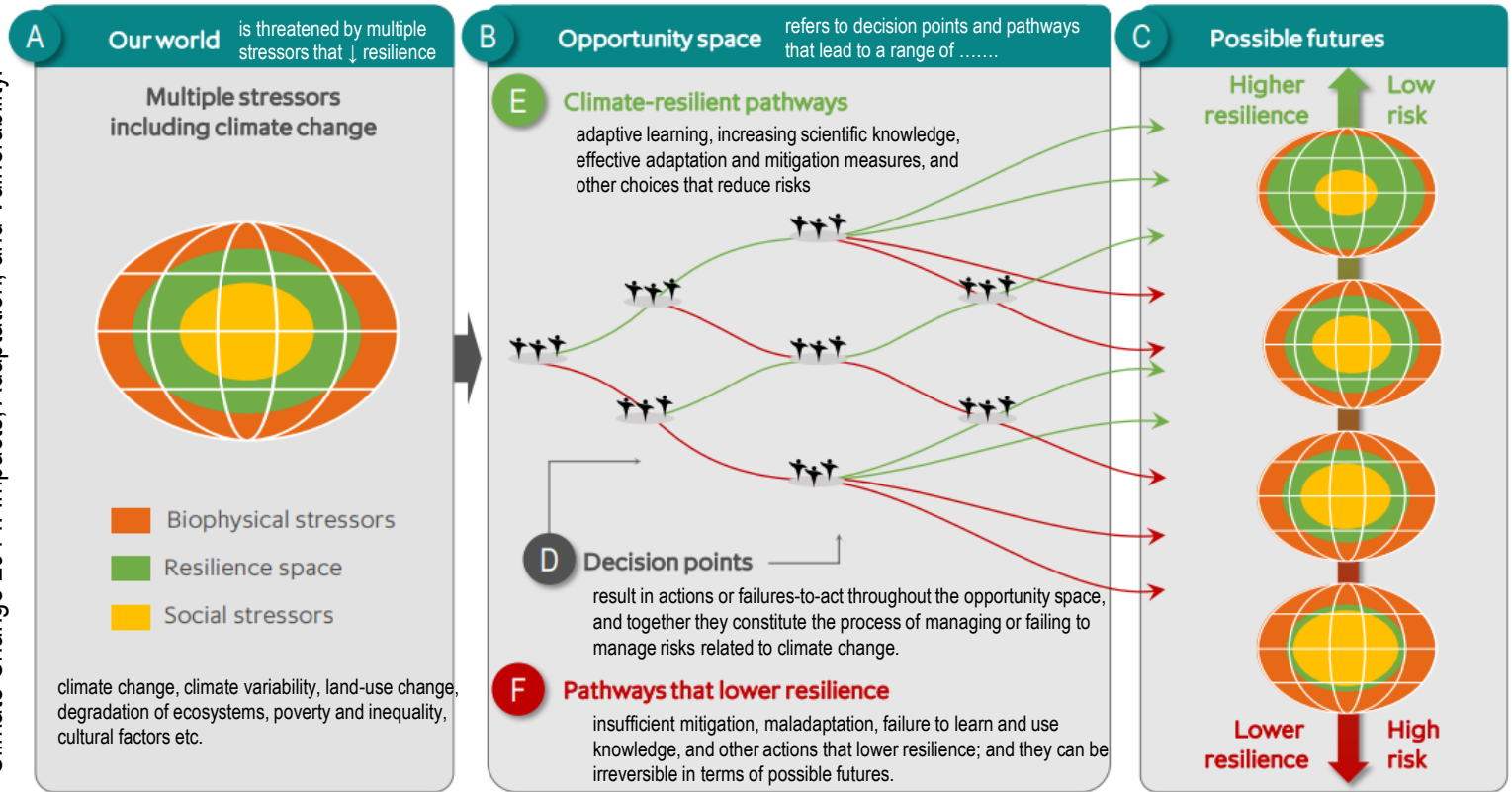
- full transcripts of all presentations, the questions and comments sessions, and further articles from interested parties, will be available [via our website](#) approximately 12 days after the event for **€125** plus VAT
- Concessionary rate: **€65** plus VAT



## KEY MESSAGES TO IRISH GOVERNMENT

- (1) new government policies and planning structures in OPW and NPWS to organize the planning, implementation and maintenance of NbS, including a coastal community engagement mechanism to coordinate working partnerships and funding between DHLGH, OPW, NPWS, LA's and other key government bodies at every stage in the process;
- (2) appropriate and expert staffing resources within LA's, (e.g., climate and biodiversity officers), NPWS, OPW, and other key government bodies for NbS;
- (3) a standardized NbS indicator and valuation framework to measure the 'impact' of NbS projects; and
- (4) a valid financial mechanism to facilitate significant future investment in NbS as 'new assets' and biodiversity credits (measurability, monitoring, verification, and certification of the NbS process).

IPCC (2014) Summary for Policymakers.  
Climate Change 2014: Impacts, Adaptation, and Vulnerability.



An Roinn Tithíochta,  
Rialtais Áitiúil agus Oidhreacht  
Department of Housing,  
Local Government and Heritage



Marine Institute  
Foras na Mara



OPW  
Oifig na nOibreacha Poiblí  
Office of Public Works



Geological Survey  
Suirbhéireacht Gheolaíochta  
Ireland | Éireann



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# Thank you

Thank you to the funding agencies and collaborators

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