

CLIMATE CHANGE ADAPTATION - PLANNING FOR THE SOFT COAST

Dr Kevin Lynch School of Geography and Archaeology, NUIG
The Atlantic Network for Coastal Risk Management



OUTLINE

Context

- Coastal risks
- Failures

Possible solutions

Example from Co Mayo

COASTAL RISKS

Coastal Risk:

Expected losses

(of lives, persons injured, property damaged, economic activity disrupted and **environmental degradation**)

due to a particular

natural (e.g., a storm) or **human-induced** (e.g., an oil spill) hazard for a given area and reference period.

Hazard:

A threatening event (e.g., a coast flood; a pollution event from shipping of hazardous materials)

or **an on-going process** (e.g., wave action moving sand along a coast; excess fertiliser runoff from agricultural lands),

or the probability of occurrence

ON-GOING FAILURES HABITAT LOSS/ DEGRADATION

Appendix VII. Summary of damaging operations (impacts) on coastal sites

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Impact	pNHA		
Infill/Reclamation	5	22	19
Agricult. Improvement		19	8
Scrub clearance		2	3
Hedge removal		2	-
Woodland felling		2	2
Drainage		1	7
Modific. to water		12	16
Grazing		16	-
M...		12	-
	4	-	-
	29	19	-
	1	-	-
	6	2	-
	20	7	-
	18	7	1

ACTION ON COASTAL RISK =
COASTAL EROSION + COASTAL FLOODING
AFFECTING CITIZENS

**Climate Change
Impacts on Coastal Areas**
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Introduction

Coastal erosion and coastal flooding cause serious economic and social disruption and pose serious threats to the coast of Ireland. In the climate change scenarios outlined in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2007), mean sea level is predicted to rise and the frequency and severity of coastal storms is predicted to increase. These consequences of climate change will significantly increase the risks posed by coastal erosion and coastal flooding.

In this paper the threats posed by erosion and flooding are outlined, the effects of climate change on those threats are presented and the measures that can be taken in the immediate and longer terms to respond to those threats are discussed.

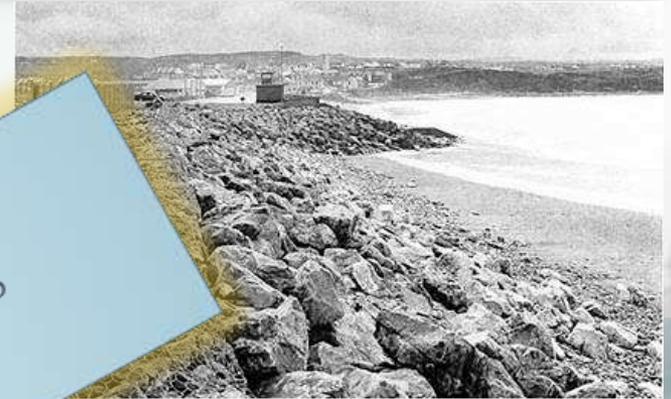
Coastal Erosion and Coastal Flooding

Coastal erosion is the progressive encroachment upon the land by the sea. Erosion can be due to a combination of many different factors. A coast may be working its way slowly towards equilibrium with the forces acting upon it, including an underlying slow mean sea level rise of 1.3mm to 2.3mm per annum (Carter, 1991; IPCC, 2007).

Scrub encroachment	2	1	-
Disturbance of habitats/birds (by people)	3	2	1



ON-GOING FAILURES HABITAT LOSS/ DEGRADATION



HARD ENGINEERING SOLUTIONS



ON-GOING FAILURES HABITAT LOSS/ DEGRADATION



Youtube -
Carrowmore Beach, Louisburgh, Co May

POSSIBLE ALTERNATIVES TO HARD DEFENCES

Policy options

- retreat – **hold the line** – realignment – no action

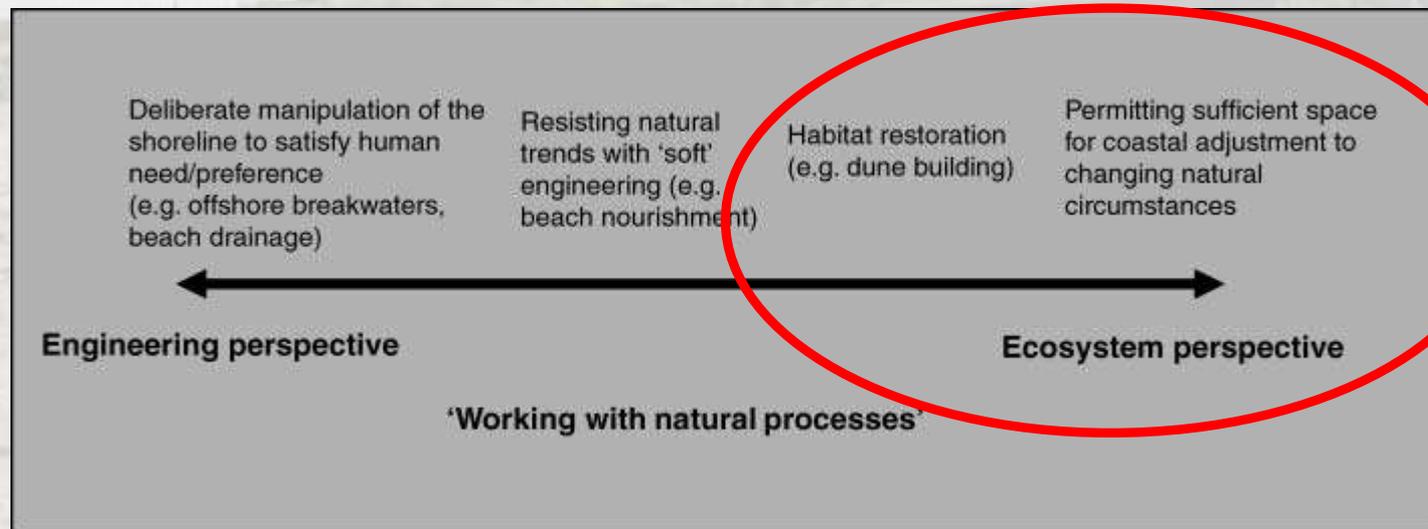
‘Working with natural processes’

- Soft protection measures



POSSIBLE SOLUTIONS TO HARD DEFENCES

- Policy options (retreat – **hold the line** – realignment – no action)
- ‘Working with natural processes’
 - Soft protection measures



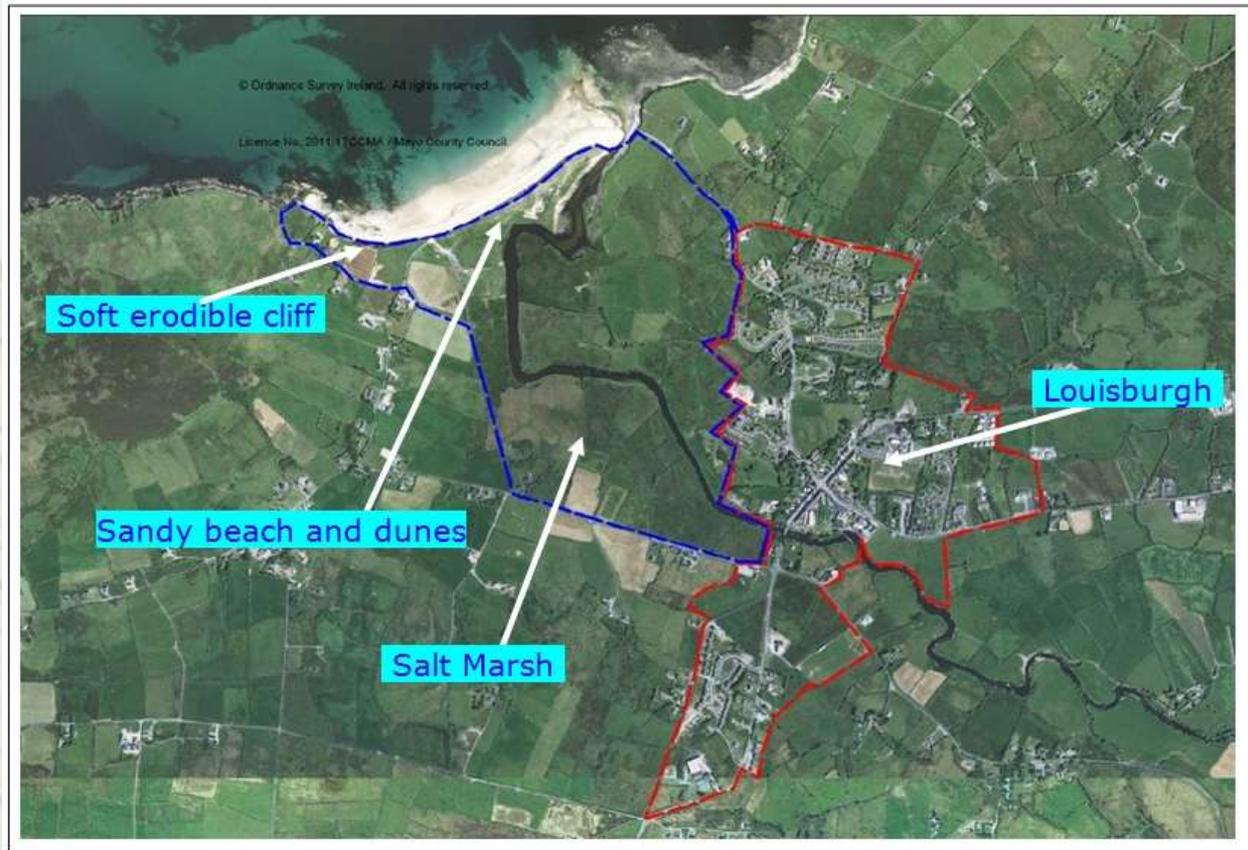
(Cooper and McKenna, 2008)

AN EXAMPLE FROM THE MAYO COAST



- Louisburgh is a rural village (pop. 314)
- 1km from the coast
- To double in size by 2022
- Local economy
 - small factory, some agricultural, commercial and retail activity, village's inhabitants commute out of the area to work
- Holiday homes during summer months
- Tourism central to future development
- No major flood or erosion problems

AN EXAMPLE FROM THE MAYO COAST



AN EXAMPLE FROM THE MAYO COAST

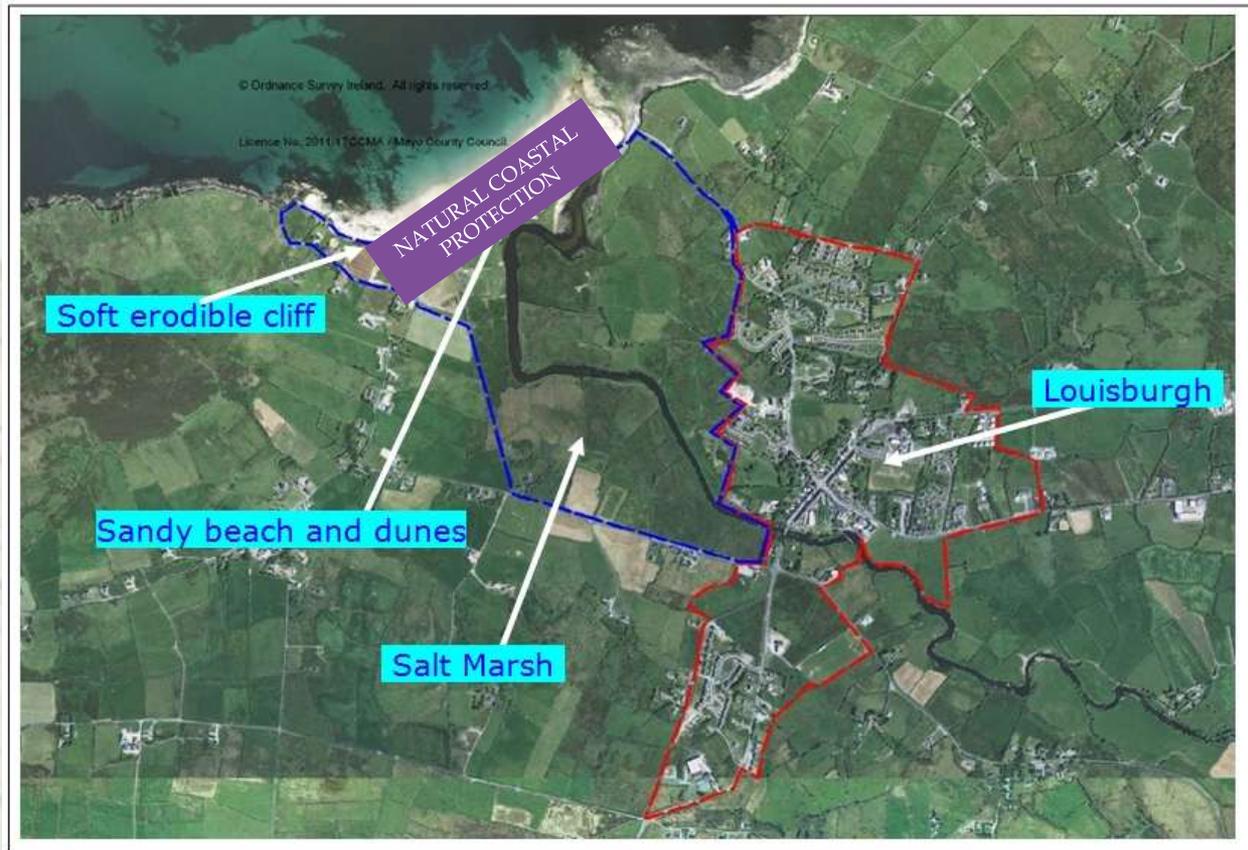
Deposition

NATURAL COASTAL PROTECTION

Transport

Erosion

AN EXAMPLE FROM THE MAYO COAST



Local area planning options

AN EXAMPLE FROM THE MAYO COAST

A coastal land planner's dilemma

Scenario 1 – Do not include land in local area plan (red boundary on map)

- Proposed as a NHA - a degree of protection from development
 - Consolidate development around core of town
 - Does not assure retention of protection

Scenario 2 – Include land in the local area plan (blue boundary)

- Recognise the role of the dune system and marsh in protecting Louisburgh
 - Zone lands accordingly

HOWEVER - a danger that the area could be zoned inappropriately as the final decision made by elected representatives

- May be subjected to pressures from vested interests to have lands zoned for development.

AN EXAMPLE FROM THE MAYO COAST



CONCLUSIONS

Panning for the soft coast

Greater awareness

Implement existing policy

- ANCORIM Tools
 - Educational guides
 - Natural infrastructures and soft protection handbook
 - Website and databases
 - Good practice guide for decision makers

ANCORIM National seminar 21 Feb 2012 Galway

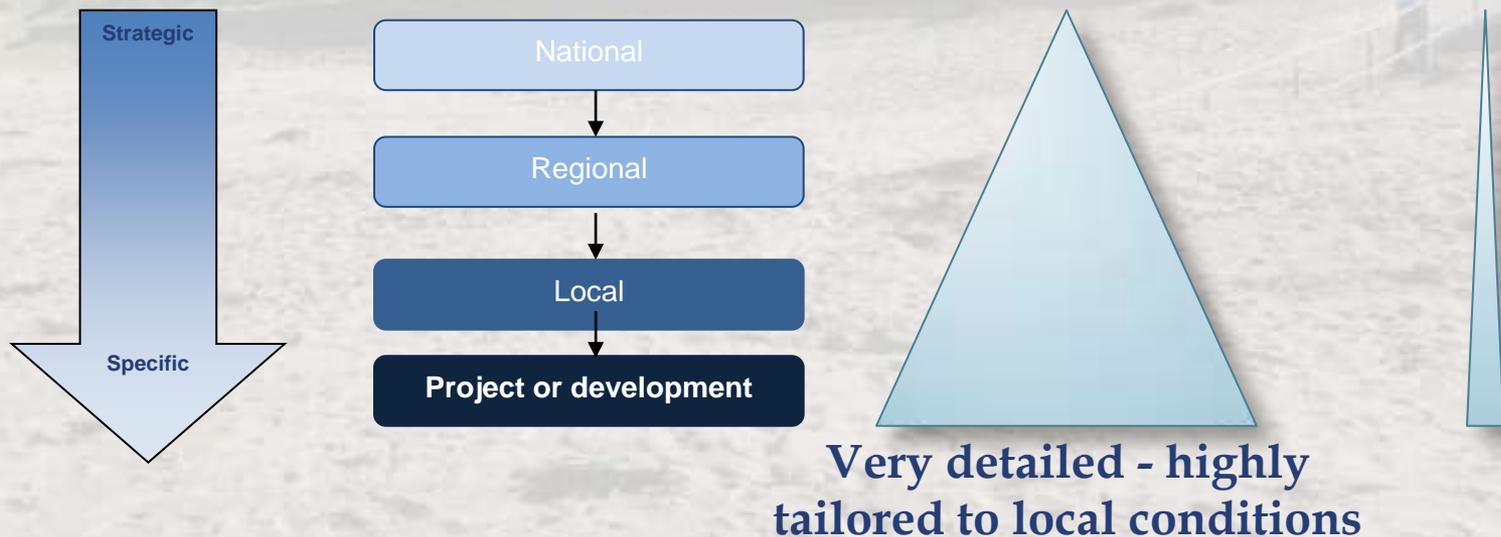
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ON-GOING FAILURES COASTAL PLANNING

Policy failure?
Planning failure?
Management failure?



ON-GOING FAILURES COASTAL PLANNING

Policy failure?
Planning failure?
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Limited detail

Lack of resources,
including in-house expertise

Limited detailed - minimal
regard to local conditions

(Management practices failing to follow policy - O Hagan and Cooper, 2002)