

# Theme 2: CHANGING ENVIRONMENTS Key Idea 2.1: Shaping the landscape - Coastal Management

## COASTAL MANAGEMENT STRATEGIES

	STRATEGY (HARD OR SOFT)	BENEFITS	COSTS
HARD	<p>Curved lip sea wall at Hornsea, Holderness Coast, absorbs wave energy, lip reflects energy to prevent wall undercutting.</p>	Can withstand the strongest waves. The size and height of the walls reassures stakeholders. With a two-tiered wall/promenade is used less able groups can still access the beach.	Very expensive to build and maintain. The reflection of waves back out to sea can cause the beach to erode. Walls can make access to the beach difficult.
	<p>Groynes at Hornsea: trap LSD sediment transport, builds up beach which absorbs wave energy.</p>	Cheaper than a sea wall along a whole beach. Builds up a beach that absorbs wave energy. Can also attract tourists.	Can starve beaches further along the coastline of sand/sediment. This knock-on effect makes other areas more prone to erosion.
	<p>Gabions at Chesil Beach, Weymouth: gaps between boulders absorb wave energy.</p>	Baskets can trap sand. Vegetation can grow in the gaps in the stone baskets so they can end up looking natural.	Shorter life span, especially in high wave energy area as wire baskets can be ripped. Therefore, not as effective as rock armour or a sea wall.
	<p>Rock armour at Hornsea: absorb wave energy in gaps between boulders.</p>	Very efficient at absorbing wave energy due to high surface area of the boulders.	Can be expensive if boulders have to be imported. Rocks must be over 3 tonnes to be stable. Can be dangerous if young children climb on them.
	<p>Beach nourishment in Lincolnshire: bigger beach more wave energy is absorbed before the waves reach the cliffs.</p>	Builds up a beach for tourists. Uses natural processes to reduce erosion. You don't have to build anything so it looks natural.	Extra beach material can easily be eroded in a storm. Dredging for the material can cause erosion in another place.
SOFT	<p>Sand dune stabilisation at Ynyslas, Wales: planting deep rooted marram grass traps sand to build and stabilise dunes.</p>	Relatively cheap. Maintains a natural-looking coastline. Encourages wildlife and vegetation to establish and thrive.	Areas have to be zoned off from the public (to avoid trampling of newly-planted grass), which may be unpopular.
	<p>Managed realignment in Medmerry, Sussex: old sea defences have been breached to allow the sea to flood the land creating new salt marshes.</p>	No hard engineering needed. As the coastline erodes salt marshes and beaches will be built which create natural habitat and defences against flooding and erosion.	Very controversial as even if areas have low population, people will lose land and homes. Compensation for these stakeholders is required.

### CONFLICTS OF INTEREST

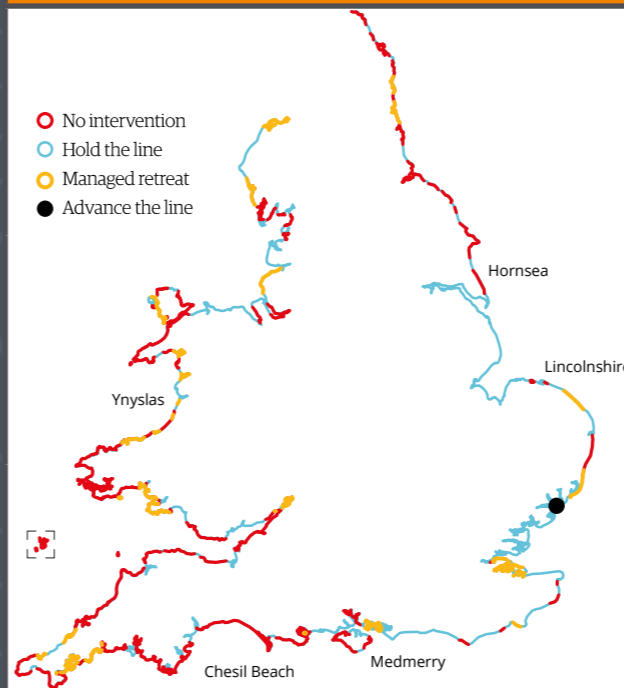
Land uses at the coast include: tourism, industry, fishing, trade and transport. Different **stakeholders** have conflicts of interest about how the coast should be managed. These include: local residents, environmental groups, developers, local councils, national governments, tourist boards, and National Park Authorities.

**THINK:** Who might be for or against coastal management? Can you explain and justify your reasons?

### CONTEMPORARY COASTAL MANAGEMENT CONCEPTS

Planners must try to find sustainable schemes of managing the coastline. This involves SMPs being drawn up and cost-benefit analyses carried out (if costs < benefits the scheme is more likely to go ahead).

### PROPOSED SHORELINE MANAGEMENT PLANS (SMPS) 2010-30



### APPROACH

Coastal defences are built or maintained to protect coastline with higher value against the impacts of sea level rise and coastal erosion/flooding. Often a mixture of hard and soft engineering strategies is used. This is less sustainable and often expensive but popular with local residents.

People move out of the dangerous, most vulnerable areas with lower value with no defence against coastal erosion/flooding. The coastline is often eroded inland creating inter-tidal habitat e.g. salt marshes. This is more sustainable and less expensive but not always popular with local residents.

Build new coastal defences further out to sea. Requires a huge engineering project as is the most expensive option. However, new flat land would be created which could be used as a port or airport facility.

### PREDICTED IMPACT OF CLIMATE CHANGE ON COASTAL COMMUNITIES

Sea level rise and increased storm frequency due to climate change are increasing the vulnerability of coastal communities being affected by coastal flooding/erosion. Management challenges are being faced by governments and stakeholders in HICs, NICs and LICs, with differing vulnerabilities due to their location and development status.

NIC or LIC: \_\_\_\_\_  
(your named example)

Potential impacts:  
Management challenges:

HIC: \_\_\_\_\_  
(your named example)

Potential impacts:  
Management challenges: