# Coastal Landscapes Hard Engineering <br> read 

## The Big Picture

## physical processes



## Hard Engineering

Hard engineering coastal management involves the construction of structures built to control erosion and reduce flooding. Hard engineering strategies work against nature. Decisions about hard engineering solutions are based on cost-benefit analysis.

## Sea Walls

## Benefits

- Gives people a sense of safety and security.
- Tend to have a long life-span and provide excellent defence where wave energy is large.


## Costs

- Flooding can occur when waves overtop (break over) the sea wall.
- Very expensive to construct and maintain.


## Gabions

## Benefits

- Cheap and easy to construct.
- Quick to build and cheap to maintain.
- Does not restrict longshore drift.
- Blend in well.


## Costs

- Damaged gabions are unsightly and dangerous to wildlife.
- Can make access to the beach difficult.


## ब目) Key Terms

Gabion - Steel wire mesh filled with boulders.
Groyne - A wooden barrier built out into the sea to stop longshore drift.
Hard engineering - The use of artificial structures to defend from erosion.
Rock armour - Large boulders dumped on the beach to defend the coast. Sea wall - A concrete wall which reflects wave energy protecting the coast.

## (ㅛㅜ) Rock Armour

## Benefits

- It is cheap compared to constructing a sea wall and absorbs wave energy very well.
- Quick and easy to construct.
- Extends the life of sea walls.


## Costs

- Costs increase when the rock is imported.
- Rock armour looks unattractive.
- Access to beach can be affected.


## Hin Groynes

## Benefits

- Act as wind-breaks for people on the beach
- Groynes do not affect access to the beach.
- At around $£ 5000$ each, they are relatively cheap.


## Costs

- do not look attractive.
- The downdrift beach can be much lower.
- Beaches downdrift are starved of beach material.

