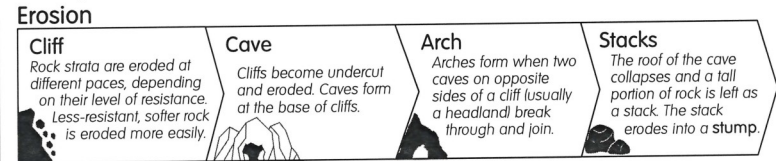


# Year 12— Topic 3—Global Systems and Global Governance

## COASTAL LANDSCAPE DEVELOPMENT

**Headlands:** softer rock is eroded into a bay, leaving harder, more resistant rock sticking out. The part that sticks out is called the headland.  
**Wave-cut platforms:** bases of cliffs are eroded into a wave-cut notch. The cliff on top collapses and reveals the wave-cut platform.



**Deposition**

**Beaches:** mostly formed of sand and shingle. Sand particles are smaller than shingle so less water percolates through, meaning a greater backwash and a shallower beach. **Ridges, ripples, runnels, berms and cusps** form on beaches as a result of the movement of the water eroding and depositing sediment.

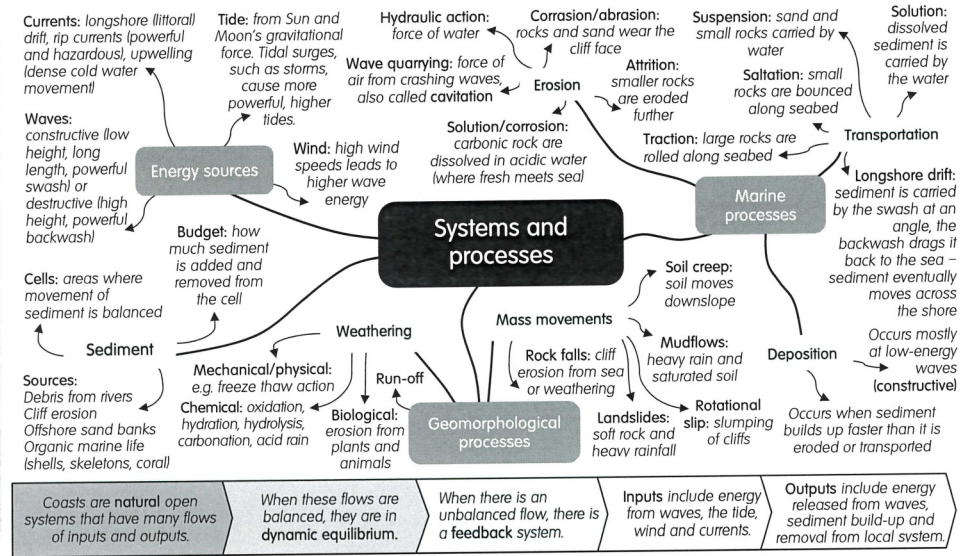
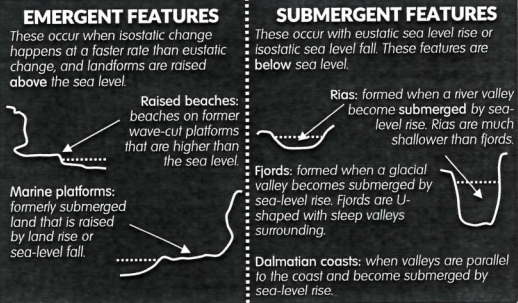
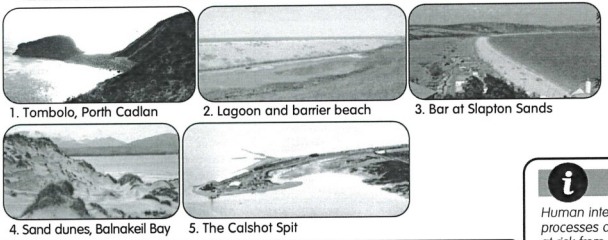
**Spits:** formed when sand and shingle are carried and deposited adjoining the land in a long, thin-ish strip that tends to curve inwards at the end due to wave refraction and wind. **Salt marshes** may form behind the spit. **Simple spits** are straight or curved but do not have minor spits or recurved ridges, unlike **compound spits**.

**Tombolos:** formed when a spit joins the mainland to an island. The tombolo is the section between the two.

**Offshore bar:** a partly submerged bar, formed of built-up beach sediment away from the mainland and breaker zone.

**Barrier beaches and islands:** formed when beach sediment builds up parallel to the mainland but is not submerged.

**Sand dunes:** formed by onshore wind into large mounds of sand. Dunes may be **embryo dunes, fore or yellow dunes, grey (fixed) dunes or wasting dunes**, with the latter existing longer and further away from the shore.



## COASTAL SYSTEMS and LANDSCAPES

### SEA-LEVEL CHANGE

**Eustatic change:** a rise or fall in sea level due to the actual sea itself. Eustatic rise may occur as a result of decreasing glaciation and ice sheet runoff or thermal expansion, which increases the density of the water (this is the kind of sea-level rise affected by global warming). Eustatic change affects the sea on a global scale.

**Isostatic change:** a rise or fall in sea level due to rise or fall of the land. When the land rises, the sea level will decrease, and vice versa. Isostatic change affects the sea on a local scale.

**Tectonic change:** a rise or fall in the sea level due to tectonic activity that causes a change in shape of the ocean basin, e.g. subduction zones usually cause a fall in sea level.

### COASTAL MANAGEMENT

Human intervention in the coastline is often necessary to protect the landforms and natural processes of the coast, to conserve biodiversity as well as human settlements, especially those at risk from sea-level rise.

**Hard engineering:** physical change to coastal systems, usually through human-made materials or large human-built structures.

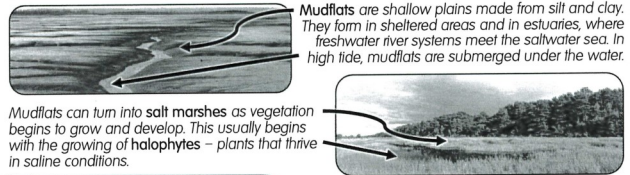
- Sea walls – disperse wave energy back onto the next oncoming wave to reduce its power.
- Rock armour (rip-rap) – large, angular boulders are placed to absorb wave energy.
- Gabions – small rocks in wire metal cages, which may be joined, to absorb wave energy.
- Cliff fixing – iron bars are drilled into the cliff face to help stabilise the cliff.
- Groynes – barriers that disperse wave energy and control longshore drift.
- Revetments – wood or concrete structures placed on beaches to prevent erosion.
- Offshore reefs – to force wave breakage away from the shore to protect the coastline.
- Barrages – prevent flooding in estuaries and inland through large dam-like structures.

**Soft engineering:** more natural than hard engineering. Includes **Do nothing** approach.

- Beach nourishment – replacing sediment that has been lost to longshore drift or erosion.
- Dune regeneration – afforestation, selective grazing, restricting human/tourist interaction.
- Land-use management – local education on limiting human damage to coasts.
- Managed retreat – abandoning old sea defences and managing marshland.

**Sustainable management**  
**Shoreline management plans** – to address risks and promote sustainable policies.  
**Integrated coastal zone management** – a UN-based approach to coastal policymaking.

### ESTUARINE MUDFLATS AND SALTMARSHES



**Mudflats** are shallow plains made from silt and clay. They form in sheltered areas and in estuaries, where freshwater river systems meet the saltwater sea. In high tide, mudflats are submerged under the water.

Mudflats can turn into salt marshes as vegetation begins to grow and develop. This usually begins with the growing of **halophytes** – plants that thrive in saline conditions.

### CASE STUDY BLACKPOOL SEA WALL

Blackpool is a town in north-west England. It is a coastal town, known for being a traditional UK seaside resort. The area is at risk of flooding and so a sea wall was built to reduce the risks and provide protection for the built environment behind the shoreline. However, there was some concern over the stability of the defence after its completion. The original wall was estimated to cost over £27 million.

### SYNOPTIC GEOGRAPHY

**Hazards:** how do hazards affect coastal environments?  
**Population:** why do people live near coasts?  
**Ecosystems:** why do ecosystems are found in coastal environments?  
**Changing places:** how has human perception of place changed the way we see coasts?  
**Water cycle:** how do coasts interact with the natural water cycle?

