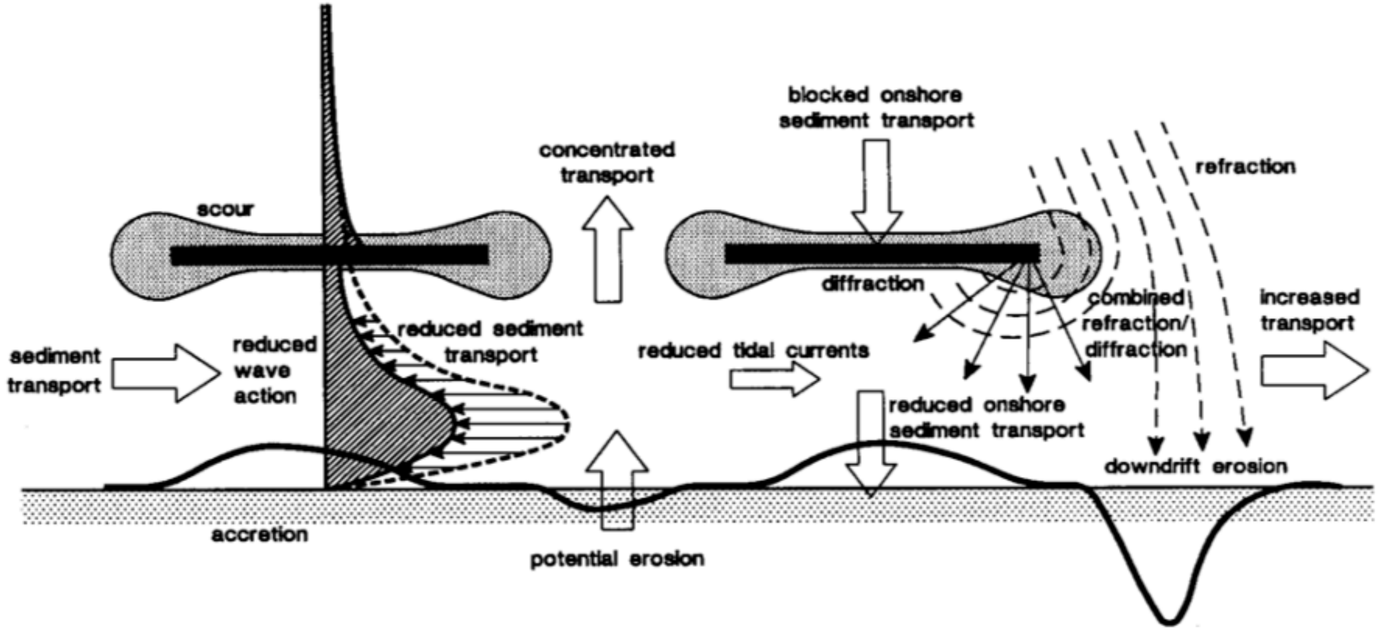
Breakwaters



- **wave energy at the shoreline is reduced** (breaking and reflection at breakwater); some of the incoming wave energy will arrive in the lee zone by:

  — diffraction around tips & through gaps — transmission through breakwater — overtopping of submerged breakwater
- diffracted and transmitted waves will continue to propagate to the shoreline in the lee zone but the **longshore transport capacity in the lee zone will be substantially reduced**
- sand moving along the shore is trapped behind the structure resulting in local deposition of littoral sands within the protected lee of the breakwater; **seaward outbuilding of the beach**
- **recirculation cells** may be generated by gradients in wave set-up along the shore carrying sand toward the lee zone

Coastal protection