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Teacher materials

Coasts: Erosion

Scenario description

Players take on the role of coastal managers on an island threatened by coastal erosion. They must gather data, make decisions and manage competing interests to protect people, infrastructure, and the area's economy. Players must think critically about the complex balance between environmental sustainability, economic activity and public safety as they respond to evolving coastal hazards.

Approximate location: United Kingdom

Learning objectives

- To identify physical processes along coastlines, such as erosion and longshore drift.
- To make decisions about how to manage coastlines, including the appropriate use of hard and soft engineering strategies.
- To examine the social, economic and environmental impacts of decisions made along coastlines.

Key geographical terminology

- **Erosion:** Wearing away of the land by natural forces such as water or wind, where rocks are worn away and moved.
- **Longshore drift:** The zigzag movement of sediment along the beach in the direction of the prevailing wind.
- **Hard engineering:** Human-made structures built to control natural processes like erosion.
- **Soft engineering:** Ways of managing natural processes like erosion by working with nature rather than stopping it.

Key decisions

- How should we respond to sand depletion caused by longshore drift?
- What methods should we use to prevent coastal erosion: hard or soft engineering?
- Should we prioritise public safety, maintaining public access to coastlines, or the protection of coastal environments?
- How should we best prepare for storm surges and spring tides?
- How should emergency services respond to coastal hazards?

Think, work and apply like a geographer

Encourage students to explore the links between gameplay and real-world job roles, such as:

- coastal engineer
- environmental scientist
- emergency services coordinator
- marine geologist
- civil engineer

Coasts: Erosion

Questions to explore	• What causes longshore drift and how does it contribute to coastal erosion? • How can we manage the impacts of erosion in ways that are fair to everyone, sustainable and cost-effective? • What are the pros and cons of different coastal management strategies? • What are the impacts of storm surges and spring tides and how can we prepare for them? • How can decision makers balance risk with public access in safety decisions? • How do coastal hazards affect tourism, housing, transport and the local economy? • What is the role of data collection in managing natural environments?
Emotional and ethical considerations	• **Fear and uncertainty:** Rising sea levels and storm surge risks may evoke fear about the future. • **Ethical decision-making:** Should people be allowed to take risks if warnings are given, or should areas be closed off completely? Do some communities bear more of the burden when erosion is redirected from one place to another (e.g. groynes shifting erosion down the coast)?
Links to other BBC resources* **Some video content may only be available in the UK.*	• BBC Bitesize – Coastal processes and landforms: https://www.bbc.co.uk/bitesize/topics/z6bd7ty/articles/z6394xs#zcvsf82 • BBC Bitesize – Coastal management: https://www.bbc.co.uk/bitesize/topics/z6bd7ty/articles/zhg8kty • BBC Bitesize for Teachers – Erosion: https://www.bbc.co.uk/teach/class-clips-video/articles/zjdjjhv • BBC Bitesize for Teachers – Coastal flooding: https://www.bbc.co.uk/teach/class-clips-video/articles/zvhsf4j • BBC Bitesize for Teachers – Coastal erosion: what management techniques are being used on Hayling Island? https://www.bbc.co.uk/teach/class-clips-video/articles/zdpsxyc • BBC Bitesize for Teachers – Coastal erosion – the high cost of protecting homes: https://www.bbc.co.uk/teach/class-clips-video/articles/zbbf47h
Play *Planet Planners on Roblox*	The URL for the game is: https://www.roblox.com/games/80099528313812. This link will take you to the Roblox platform.