

Year 11 to 12 Physical Geography transition work

Coastal landscapes:

In your first Physical Geography unit you will study coasts and coastal landscapes. You will investigate the concept of the coast being a system with inputs, processes and outputs and then investigate how humans interact with this system, rely on this system and how they are increasingly disrupting the system leading to an uncertain future.

Although the course will start with a sequence of lessons on the physical processes, we would like you to skip forward to the latter parts of the course and complete some work that investigates some key case studies centred around **3 broad themes**: coastal flooding, coastal erosion, coastal management.

To complete this work we would like you to research each case study using internet resources (articles, videos/ documentaries etc) and complete the table provided on the following page. In A Level Geography it is rarely about knowing a case study inside out and instead is about knowing specific pieces of case study evidence that back up points you will make in your essay - the table is designed to help focus the information you collect.

We are intentionally not guiding you to resources as we would like you to develop your researching skills. Please use a reliable search engine and use prompts such as 'summary of physical geography of the Bangladesh coast' or 'outline the current coastal threats in Tuvalu'

Please create a list of where you sourced your information from:

Source list:

1. Google
2. Dhaka Tribune
3. Earth. Org
4. Only one
5. Tr Tom's Geo insights
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Case study	Physical geography of the coastal area	Human Geography of the country/ region incl. Development level, land-uses, inequality	Threat of coastal erosion	Threat of flooding from sea level rise and increased storm surges (both related to climate change)	Existing management approaches	Current consequences of coastal threats (flooding, erosion)	Potential future threats	Any other notes
Bangladesh	The coastline spans around 580-710 km along the Bay of Bengal , featuring a dynamic, flat, low-lying landscape shaped by the Ganges-Brahmaputra-Meghna river system. It is split into 3 physical zones: The west, The central zone and the Eastern zone which are all shaped by tidal forces, cyclones and erosion.	Bangladesh is a highly populated country, which has experienced significant urbanisation. Bangladesh is an NEE and classified as a lower middle-income country. Its economy has grown mainly through the garment industry and agriculture. However there are still challenges such as poverty and limited access to healthcare and education. The major land uses are: Agriculture, Industry, Settlements, and forestry. There is significant income inequality between different regions.	Rising sea levels, cyclones and fragile land are all factors that threaten Bangladesh's coastline. Millions of people are at risk of losing their lives and their homes. The main impacts are: loss of land, loss of homes, migration and environmental damage.	Bangladesh faces an unprecedented threat as rising seas could submerge 18% of coastal areas by 2100. Coastal regions are currently experiencing sea level rise of 3.8-5.8mm per year which is nearly double the global average. An estimated 3.5 million people are at risk of river flooding every year due to sea level rise and intense monsoon seasons.	-Coastal Zone policy -Embankments -Mangrove forests -Community management -Cyclone shelters Existing management schemes have been put into place to prevent harsh erosion and flooding.	Destroyed farmland, contaminated drinking water, infrastructure damage and harming people's everyday lives. Erosion has displaced many people and enforced migration to other regions of the country.	Rising sea levels could submerge 18% of coastal regions by 2100. Cyclones could increase the number of affected people by 50-80% by 2100. Heatwaves are projected to become longer and more intense, increasing risk of heat related illnesses and cardiovascular disease. People with limited access to water will remain vulnerable. Agriculture is also at risk, employing 1/3 of the population, through heat stress, salinity and flooding.	Bangladesh is home to the one of the world's longest beach- Cox's Bazar which is a 120km continuous natural sandy beach.
Tuvalu	Narrow, low lying atolls and reef islands which is entirely exposed to the Pacific Ocean. Elevations do not rise over 5m above sea level making the entire region a coastal zone. It has many beaches, coastal atolls and small reef islands.	Tuvalu is classified as a least developed country due to its small size and lack of resources. Around 60% of the land is used for agriculture as it's covered in forests whilst the remaining is covered in residential and infrastructure use. Inequality manifests through gender differences in the work place, geographical divides between islands and uneven access to technology and healthcare.	Tuvalu faces threat as it has an average elevation of 2 metres, exposing it to the Pacific Ocean. Local waters have risen twice as fast as the global average over the last few decades.	Sea levels threaten to submerge Tuvalu and its low lying coral atolls by the end of the century. The rising water could destroy much of it's agriculture causing a great loss in jobs and income.	-Ecosystem conservation -sustainable agriculture -ta kakeega plans -long term adaptation plans -water and resource security	Tuvalu faces aggressive shoreline erosion, salination, routine tidal flooding around the coast and resource loss. Infrastructure has faced damage as more severe storms have hit the islands.	Sea levels rising threaten to submerge Tuvalu along with extreme weather which could threaten the population and the country's resources. It is said that Tuvalu could be submerged by the end of the century.	

Maldives	The Maldives features a 644-km long coastline across low lying coral islands grouped into 26 natural atolls which has sandy white beaches, shallow turquoise waters and ring shaped barrier reeds with elevation exceeding 1.5-2.4 metres.	The Maldives is classified as an upper middle class income country with a high level of human development. It has rapid growth due to fishing and tourism. The primary categories of land use are resort islands, agricultural land, inhabited land and natural land. Inequality in the Maldives is between the densely populated capital of Malé and the outer atolls, alongside gender pay gaps.	The threats of coastal erosion pose a high risk to infrastructure. The threats are driven by rising sea levels and deterioration of the coral reefs. The main causes are climate change, local development and extreme weather which all pose a threat to the islands. More than 90% of the islands have experienced severe erosion, whilst 97% of inhabited islands have been affected by that erosion.	The Maldives face a large threat of flood due to sea levels rising and storm surges. Due to climate change, future sea levels are projected to increase which threatens the habitants of the Maldives. In 2021, more than 50% of the national budget was spent efforts to adapt to the effects of climate change. The country lost one of its natural defenses in a 2016 bleaching event that affected 60% of its coral reefs.	The Maldives have used a range of hard and soft engineering techniques to mitigate the issues with flooding and loss of land. They consist of: -sea walls -islands elevated -groynes -beach nourishment -coral reef restoration -mangrove rehabilitation	14 islands have already had to be abandoned due to intense coastal erosion. Furthermore, 77% of Maldivians have to rely on rain water for their drinking supply. Over 60% of inhabited islands already suffer from beach erosion which can wash away coastal infrastructure and decrease land mass. The increase in storm surges forces locals to relocate elsewhere.	Facts show that by 2050, 80% of the Maldives could become inhabitable. Future sea levels are projected to increase in the range of 10-100cm by 2100, and the entire country could be submerged. This would cause the tourism sector to collapse, which provides over 50,000 jobs for workers, meaning that thousands of people would lose their jobs and likely have to migrate.	The Maldives consists of 1,190 coral islands grouped into 26 natural atolls. It is the flattest and lowest country on earth.
Netherlands Deltawerken	Low lying, vulnerable delta formed by the Rhine, Meuse, and Scheldt rivers merging with the North Sea. The Dutch built a vast area of dams and storm barriers which re emerged the coastline. It is mostly located below sea level, making it prone to flooding.	The southwest Netherlands has a very high human development level matching top global standards. They have a good port and industry alongside great services. The key land use categories in the southwest are: agriculture, wetlands, dunes, and infrastructure. The main inequality stems from opportunity gaps and divides between urban and rural areas.	The Netherlands faces a severe coastal threat driven by rising sea levels, intensifying storms, and the trapping of sediment behind large barriers. They have been facing higher storm surges with river discharge peaks. This causes water down against barriers, trapping water on both sides. Changing coastal patterns can strain defences for the future.	Ongoing climate change and rising sea levels present new threats. As the sea levels rise, the coastal barriers face much more pressure which increases the risk of a flood if the barriers break down. Higher storm surges push water toward the Dutch coastline posing a stronger threat.	The modern framework of the structure adapts to climate change and provides safety. There have been government agreements such as the polder model and the delta programme each involving specialised water authorities. There have been changes so that there is room for the river. This means instead of fighting the water away, the floodplains can accommodate a high river discharge naturally.	Some of the key consequences of Erosion were: Increased maintenance costs, habitat disruptions, scouring on the sand beneath the rivers and sediment deficit. The consequences of flooding include: material and mechanical wear, higher water loads and upgrading standards to ensure that the barriers remain safe and function well.	Sea levels rising may cause more pressure to build on the dams which could harm the barriers meaning they would need upgrading or replacement. Rising sea levels can push salt water further inland which could threaten fresh water supplies. More extreme weather would cause rivers to discharge more water into the Netherlands. This would make it harder to drain water out to sea as the sea levels are already high which would increase flood risk.	It was built between 1950 and 1997 after the 1953 disaster of the sea flood in 1953, killing over a thousand people.
Holderness coast	The coast, located in the east of England, spans 61km featuring chalk cliffs in the north, rapidly eroding boulder clay central cliffs averaging 2 metres of retreat each year, and a	Development levels along the east coast of England vary, featuring low carbon energy and infrastructure projects. On average, the east faces lower average pay and a	The coast retreats at an average rate of 1.8-2 metres per year which threatens local homes, caravan parks, and important infrastructure. The main causes of erosion are the soft	The holderness coast is already vulnerable, as it is very low lying. Homes, farmland and infrastructure could be flooded as the sea level rises and continues to erode away the coastline.	The holderness coast relies heavily on hard engineering strategies like sea walls and groynes. The town of Bridlington is protected by a long concrete sea wall	Many properties are at risk alongside infrastructure. Many properties have dropped in value causing people to migrate away from the coastline. Agricultural land has	Transport links such as the A1033 and Holmpton road near Witherssea are expected to be lost to the sea in the near future, cutting off key connections. Climate change will	

	major sand spit at spurn point in the south. The holderness coast consists of low lying land forming a broad, flat plain made of boulder clay. The holderness coast is Europe's fastest eroding coastline.	skill gap. The primary land use is: agriculture, energy infrastructure, industry, nature conservation centres and tourism/recreation centres. Eastern coasts face deprivation, poor health and low paying jobs compared to inland and the south.	geology, powerful waves and long shore drift each contributing to a high erosion rate. Roads also face risks, preventing people from travelling around the coast.	As climate change is expected to increase the power of storms, the storm surge will likely increase meaning higher sea levels and higher storm surges. This could make flooding more frequent and severe.	spanning 4.7km. The town of Witherssea is shielded by a £2 million scheme using sea walls, groynes, rock armour and beach nourishment. Hornsea is defended by a concrete sea wall, groynes, and rock armour to protect tourism and urban areas.	been lost reducing local agricultural yields and impacting the rural economy of the east coast.	accelerate erosion and create mass slumping. This could also cause property losses, isolated communities and critical infrastructure threats.	
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