

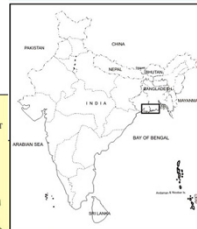
the sundarbans delta, bangladesh

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v1.1, 12.11.24

Topic: 3.1.3.6 Case Study of a contrasting coastal landscape beyond the UK to illustrate and analyse how it presents **risks and opportunities for human occupation and development** and evaluate **human responses of resilience, mitigation, and adaptation**.

Extensive network of little channels called **khals** drain the land when the tide goes out.

SUNDARBANS ECO-REGION



Big channels can be up to 2km wide. Lots of sand dunes and sediment islands known as **chars**

Background Information:

The Sundarbans River Delta is a cluster of low-lying islands in the Bay of Bengal, spread across a small proportion of India, and Bangladesh. It is well known for its unique mangrove forests, a fragile ecosystem currently under threat. This is the largest delta regions in the world, covering around 40,000 sq. km in total (2/3 of which in Bangladesh), formed by the rivers Ganges, Brahmaputra and Meghna. Interlinked by a complex network of tidal waterways and dotted with small islands of salt-tolerant mangrove forests, this area is most famous as the last surviving coastal habitat of the Royal Bengal Tiger. It is a great example of a **tropical estuarine ecosystem**.

Challenges Fact Box 1

Bangladesh 'meaning Bengal Nation', itself is an incredibly densely populated, low-lying nation between India and Myanmar.

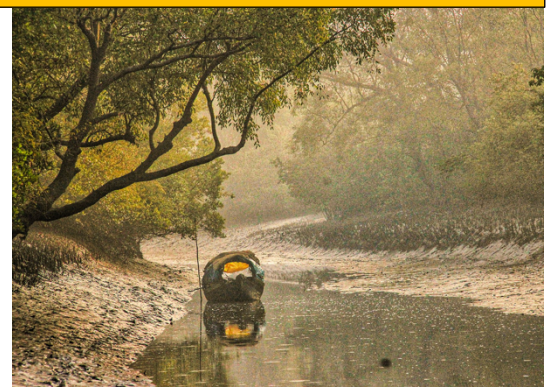
The rivers' annual floods bring silts to renew farmland fertility, often creating new islands in the delta which are quickly claimed by the mostly agrarian (farmer) locals. Bangladesh is one of the poorest countries on Earth, with a GDP per capita of \$1800, literary rate of 44% and life expectancy of 59.

Monsoon winds come between June and September and bring heavy rains and cyclones. This poses a number of risks to the ecosystem, particularly with the **increasing frequency and severity of big storm events** due to climate change and global warming. On average, around 1/3 of Bangladesh is flooded in the rainy season, when paradoxically droughts and landslides can also occur. **Deforestation** also has made flooding worse by removing trees which naturally absorb water and help slow down surface runoff. This also leads to loss of ground nutrients and minerals, which together with rising temperatures leave a **very salty (high salinity) soil**. For local people, this makes growing crops often challenging.

A* Thinking:

Think about our knowledge of systems. Is the Sundarbans an open / closed system ?

What inputs to the system can you think of? What are the flows and transfers between states and what outputs are there?

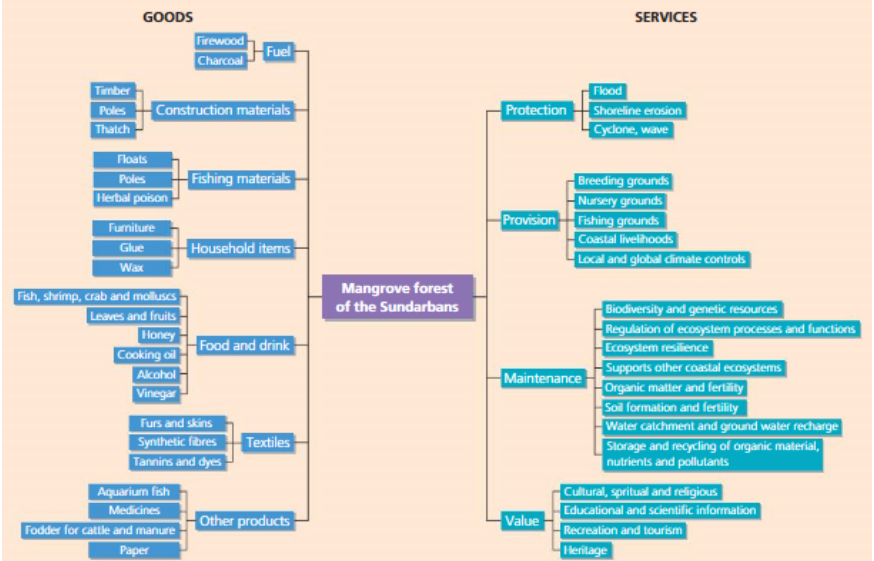


Challenges Fact Box 2

There's more! Commercial fishing has made the delta more fragile by building embankments that **raise water levels** in the river, and pesticide / fertiliser use, as well as pollution from upstream in Dhaka, the capital of Bangladesh, has led to a **rapid decline in water quality**. This all puts local people at risk, who often show 'fatalist' attitudes to the situation because of poor education as well as a lack of disposable income to move and the reliance on this landscape for food as well as income. This means that the area is in a very tense situation and in need of good holistic management. And don't forget the man-eating tigers!

So Why Live There?

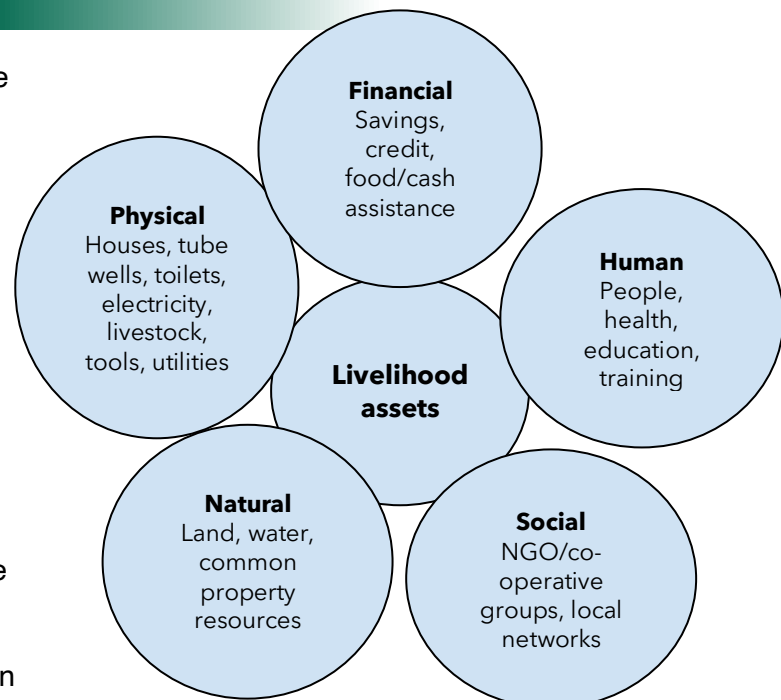
Put yourself in the position of a local person. Your whole family has grown up in the Delta, you rely on it for food like fresh fish, for resources such as water for cleaning, firewood as well as money by trading crops. That's reason enough for many not to leave, let alone the financial constraints and challenges moving often large and multi-generational families. The chart shows just some of the resources directly or indirectly provided by the mangroves!



opportunities in the sundarbans

Life in the Sundarbans can be difficult, and there are a few different groups who live there. Think about how each of these groups use or abuse the livelihood assets of the area.

- The Forest Fishers.** Have been around for ages. They live and breathe this delta, fishing 20 days per month. They follow *Bonbibi*, spiritual mother of the forest, who says you must not take more than you need. They consider all things in the forest, especially the Tigers, as their brothers. To harm or disturb their brothers is incredibly detrimental.
- Those who **"do the forest."** These are honey/wood collectors and poachers. These are risky jobs, and its estimated 150 are killed per year by tigers or crocodiles. They are despised by the Forest Fishers, and often blamed for the condition of the lands.
- Landowners** are those who control plots to farm, often crops or shrimp/prawn seeds. They hold the most political power and often come from the 'up' islands (more inland.) They see the land as ripe for cultivation, ignorant of the realities of many traditional or poorer people. Shrimp farming turn land into pools for export, which faces backlash from NGOs and environmentalists for overexploiting the lands, waters and making flood recovery in the monsoon season longer.



so, what's being done?

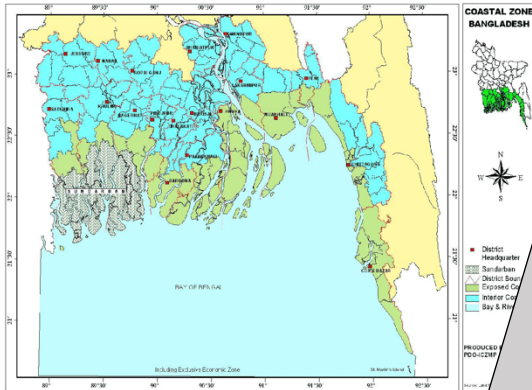


Figure 1: Map of the coastal zone of Bangladesh

Think about how these are promoting resilience, adaptation, OR mitigation!



2. USAID

2. USAID

Have worked for quite a few years in Bangladesh. This includes promoting education resources on critically endangered tiger populations and peaceful coexistence. New training schemes on building greater farming and fishing efficiency helps to increase yields at less of an environmental debt.

Watch [this](#) cool video from I



Watch [this](#) cool video from USAID on the work they've been doing! >>



3. South Asia Water Initiative

South Asia Water Initiative

This is a joint effort between the World Bank and WWF which aims to help Himalayan River Systems through better governance, pollution management, and resilience against flooding events through rewilding of mangroves, reducing runoff from farming and fishing plots as well as improving funding for local people to help flood proof their homes and businesses.



What Case Studies can this be used with?

The Sundarbans is a really great contrasting case study to what you've learnt from the UK or Netherlands or anywhere else really. It's such a unique ecosystem in a developing region with high population growth and a lot of risk and tension. Different actors are trying to help encourage a fresh perspective, but how much do you think is it really going to work?

Have A Go At A Practice Exam Question:

20 MARKER (AO1 & 2) QUESTION #3

'No amount of coastal intervention by people can halt the natural processes which continue to present serious risks to coastal communities.' To what extent do you agree with this view?



Great References:

<https://www.youtube.com/watch?v=dfcadj23vdY> < **Earth From Space: Sundarbans Web** By EASA (2016). This really cool satellite view talks through what you can see from above and what it means. It's a really good way to get an understanding of the scale and scope of this big region. **3 MINS**

<https://www.aljazeera.com/features/2024/1/27/the-sundarbans-dilemma-islands-swallowed-by-water-and-nowhere-else-to-go> < **The Sundarbans dilemma: Islands swallowed by water, and nowhere else to go** by Al Jazeera (2024). A great feature from Al Jazeera News talking about similar problems on the Indian side of the conflict, particularly looking at the role of women. **5 MINS**

<https://www.youtube.com/watch?v=LNSZjsjeTog> < **Feared, Loved, Worshipped: The Enigma of the Sundarbans Tiger** by Roundglass Sustain (2020) **6 MINS**

<https://www.iucncongress2020.org/newsroom/all-news/sustainable-conservation-practices-indigenous-peoples-sundarbans> < **Sustainable conservation practices of indigenous peoples in the Sundarbans** by Dr Rashed Al Mahmud Titumir / IUCN (2020). Looking at how 'Forest Fishers' have worked to be sustainable for thousands of years. **5 MINS**

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