The indirect impacts of climate change

Global warming will result in eustatic sea level rise due to two main factors i)melting of ice sheets in Antarctica and Greenland as well as mountains ii) the thermal expansion of our oceans. The worlds ice sheet store enough water to cause sea levels rises of 65 meters, with the largest estimated being a 1meter rise by 2100. Globally 200 million people living above 1 meter of present sea levels are at risk.

1. **Maldives**

Background:

- The Maldives, officially the Republic of Maldives is a small group of 26 atolls (coral islands) located in the Indian Ocean.
- The temperature ranges between 24°C and 33°C, and is brought by the heat storing Indian Ocean, which slowly releases it making the islands mild all year round.
- The coral reefs that surround the islands and home to 1100 species of fish, 5 species of sea turtle and 21 species of whales and dolphins.
- In 1998, the El Nino caused sea warming of around 5°C which caused severe coral bleaching, killing nearly 2/3 of it off.
- Fishing is the main occupation across these islands and as of 2010 fishing accounted for 15% of the country's GDP and engaged 30% of the country's workforce
- Tourism accounts for over a quarter of the country GDP, with 28% coming from it.
- Male, the capital, is surrounded by a 3 meter sea wall that took 14 years to construct and cost $63 million. The Maldives was unable to pay for this themselves so Japan have paid 99% of the cost for this sea defence.

Impacts:

- The tourism resorts which line the coasts of many of the islands that make up the Maldives will potentially be flooded. This will cause a huge loss of jobs and cause a fall in economic activity. Tourism accounts for 28% of GDP.
- Many islanders will have to abandon their homes, losing their livelihoods and way of life, as well as their culture. This is because the IPCC has predicted that Maldives will be uninhabitable by 2100, due to sea levels rising by 9mm/year.
- More intense tropical storms cause greater damage to homes and flood the coastline with tropical storm fuelled storm surges.
- A greater amount of money has to be spent on sea defences, and therefore less is spent on development.

2. **Bangladesh:**

The impacts of sea level rise will be the worst in Bangladesh than anywhere else in the world. This is because:

- most of the country occupies the floodplains and delta of the Ganges and Brahmaputra river system which is less than 10 meters above sea level
- 15-20million people live only 1 meter above sea level, and by 2100 will be forced to leave their homes, as rising seas will permanently flood 15% of Bangladesh
- Rising sea level will increase the **salinity** of groundwater and soils - this will be a particular problem where many people are reliant on agriculture for an income. By 2100 and estimated 60,000 hectares of agriculture land could be lost to rising sea levels or salinity problems
- rising seas level will destroy the coastal mangroves that protect the coastline of Bangladesh, this means there will be an increased amount of coastal erosion. They are also a vital nursery for fish and other marine life.
- People living on the coast and in the delta are extremely vulnerable to cyclone hazards; 44% of Bangladeshis live in poverty, 4.5 million (main rural dwellers) are landless.