

Unit 3

S1: climate change impacts on
different sectors

sectors affected by climate change

- Agriculture
- Forestry
- Ecosystem
- Water resources
- Human health
- Industry
- Settlement/Infrastructure
- Society

Intro

- **Economy** is heavily dependent on climate sensitive sectors such as agriculture, fisheries, tourism, forest sector, etc..
- Some of the expected impacts are:
Agriculture: Based on a 20-year baseline climate observation, it is projected that yields of maize and other cereal crop will reduce by 7% by 2050.

We are already seeing the economic impacts of the changing climate. According to Morgan Stanley, climate disasters have cost North America \$415 billion in the last three years, much of that due to wildfires and hurricanes.



Flooding in Southeast Texas from Hurricane

high tide flooding in coastal area



Agriculture

- Climate change and climate variability are projected to have a substantial effect on **agricultural** production both in terms of crop yields and the location where different crops can be grown.
- Increases in temperature and carbon dioxide (CO₂) can alter crop yield
- Warmer temperatures may make many crops grow more quickly, but warmer temperatures could also reduce yields.

- More extreme temperature and precipitation can prevent crops from growing.
- Many weeds, pests and fungi thrive under warmer temperatures, wetter climates, and increased CO₂ levels.
- Changes in the frequency and severity of droughts and floods could pose challenges for farmers and ranchers.
- Overall, climate change could make it more difficult to grow crops, raise animals, and catch fish in the same ways and same places as we have done in the past.
- Affects nutrition and food security of countries affected by climate change.

Forestry

- Effects on **forestry** due to climate change include increased risk of **droughts, storms and fires (abiotic)** and **pests and diseases** (biotic) – all leading to disturbances to forest health.
- Climate influences the structure and function of forest ecosystems and plays an essential role in forest health.

- Climate changes directly and indirectly affect the growth and productivity of forests: directly due to changes in atmospheric carbon dioxide and climate and indirectly through complex interactions in forest ecosystems.
- Warming temperatures could increase the length of the growing season. However, warming could also shift the geographic RANGES of some tree species.

https://www.youtube.com/watch?v=G4H1N_yXBiA

Fishery

- There is strong global evidence for these effects. Rising ocean temperatures and ocean acidification are radically altering marine aquatic ecosystems, while freshwater ecosystems are being impacted by changes in water temperature, water flow, and fish habitat loss.
- Climate change is modifying fish distribution and the productivity of marine and freshwater species.

- while changing rainfall patterns and water use impact on inland **freshwater fisheries** and aquaculture.
- The **rising ocean acidity** makes it more difficult for marine organisms such as shrimp, oysters, or corals to **form their shells – a process known as calcification.**
- Many important animals, such as zooplankton, that forms the base of the marine food chain have calcium shells. Thus the entire marine food web is being altered – there are ‘cracks in the food chain’.
- As a result, the distribution, productivity, and species composition of global fish production is changing.

- Fisheries and aquaculture contribute significantly to food security and livelihoods.
- Low-lying countries such as the Maldives are particularly vulnerable and entire fishing communities may become the first climate refugees.
- The impacts of climate change can be addressed through adaptation and mitigation. The costs and benefits of adaptation are essentially local or national, while the costs of mitigation are essentially national whereas the benefits are global.

- Nobel Prize-winning economist Joseph Stiglitz, a professor at Columbia University, wrote :
“We will pay for climate breakdown one way or another, so it makes sense to spend the money now to reduce emissions rather than wait until later to pay a lot more for the consequences...”

It's a cliché, but it's true: An ounce of prevention is worth a pound of cure.”

https://www.youtube.com/watch?v=390Ar_KtIW0