Unit 13: Climate Change Adaptation and Mitigation

Climate Change and Variability

1. Definitions

- **Climate Change**: This refers to long-term changes in temperature and weather patterns over decades. Climate change involves extreme weather events becoming more common, such as floods, droughts, and intense storms. It affects ecosystems significantly and can lead to problems like reduced crop yields and changes in water availability.
- **Climate Variability**: This describes short-term fluctuations in climate, which can last from days to months. Unlike climate change, climate variability does not cause long-term damage to ecosystems. It includes variations in rainfall and temperature, such as a few years of below-average rainfall or occasional heatwaves.

2. Examples

- **Climate Change Examples**:
  - Increase in global temperatures leading to more frequent heatwaves.
  - Rising sea levels causing coastal flooding.
  - Long-term droughts affecting water supply and agriculture.
- **Climate Variability Examples**:
  - A particularly rainy season followed by a dry one.
  - Short-term shifts in temperature from one year to the next, without a long-term trend.

3. Impact of Climate Change

- **On Agriculture**:
  - Decreased crop and animal productivity.
  - Increased frequency of droughts and floods affecting water supply.
  - Changes in soil quality and erosion.
- **On Forestry**:
  - Reduced forest growth and loss of tree species.
  - Decreased forest capacity to absorb carbon dioxide.
- **On Sea Levels**:
  - Melting ice caps lead to rising sea levels, causing coastal flooding.
- **Ocean Acidification**:

    - Increased carbon dioxide in the atmosphere leads to more acidic oceans, harming marine life.

4. Mitigation Strategies

- **Reducing Greenhouse Gas Emissions**:
    - Shift to renewable energy sources like wind and solar.
    - Reduce deforestation and promote reforestation.
- **Enhancing Carbon Sinks**:
    - Plant new forests (afforestation).
    - Improve soil management practices to increase carbon storage in soils.

5. Adaptation Strategies in Ethiopia

- **Agriculture**:
    - Use drought-resistant crop varieties.
    - Implement crop rotation and mixed cropping to reduce risk.
- **Forestry**:
    - Protect and expand forests to enhance carbon storage.
- **Indigenous Knowledge**:
    - Traditional practices like the Gedeo agroforestry system and Konso stone terraces help in adapting to climate change and conserving soil.

Understanding these concepts and strategies can help in effectively addressing the impacts of climate change and improving resilience in affected areas.