Climate

Climate Change

- Climate change worsens threats to natural and human systems that may be primarily caused by other reasons.
  This means that places which are already struggling with the impacts of climate change will struggle more
  - Disadvantaged communities:
    -Many live in unfortunate squatter houses which are vulnerable to weather elements.
    -Unable to afford higher food prices
    -More vulnerable to disease as they have limited ability to get medical attention, further affecting their work
    Developing countries:
    -Lack financial ability to put in place measure to reduce the impacts on climate change
    - Uneven impacts widens inequalities that hinders sustainable development
- Climate change contrains development paths as:
  -Limits the ability of current and future generations to meet their own needs
  - Erodes development gains achieved by countries, such as opoverty reduction
  - Slows down development progress as money meant for development of economy or education is channelled towards climate related issues

Climate Risks

- The loss of lives and properties
- Climate-related hazard, vulnerability, exposure
  - Short-term (cyclones, floods)
    - Forms and lasts over a short period of time which causes immediate climate risk. EG. Torrential Rains by tropical cyclone Seroja in 2021 brough flash floods in the Nusa Tenggara in Indonesia, causing 59 deaths and displacing over 563
    Long-Term (sea-level rise, droughts)
    - Takes time to develop so the risks may be delayed
    - Communities have ample time to prepare and adapt but since change is small, they may go unnoticed before its too late EG. The Western region of the USA has been experiencing a multidecade drought since 2000 which 2 major resevoirs have shrunk and there has been an increase in forest fires in the past 20 years.
  - Vulnerability
    -People in poverty may not be able to afford with the impacts of climate change
    -Lack of access to piped water causes communities with the issue to have no access to clean water, increasing the possibility of getting cholera
  - Proximity to coastal environments
    - More exposed to hazards like storm surges and sea level rise
    Proximity to dry environments
    - More exposed to droughts

Climate Action

- Stepped up efforts to combat climate change.
  - Mitigation Strategies (reduce and enhance) EG. using renewable energy instead of fossil fuels.
  - Adaptation Strategies (change) EG. use food technology like greenhouses to manage food insecurity
  - Helps build community resilience and achieve sustainable development. Communities are better able to resist, absorb, recover and adapt to impacts of climate change. Investment < Lost incurred from climate change
  - Strategies are complementary. Mitigation slows down worsening and adaptaion minimises harm. Without either, having sustainable development will be difficult
  - Creates risks and benefits Employment opportunities or resource scarcity

Adaptation Strategies

- Structural Adaptations
  - Seawall
  - Polder
  - Water storage tanks
  - Expensive to build and maintain
  - May cause eviction of informal communities
- Technological Approaches
  - High-tech farms
  EG. Singapore's 30 by 30 plan aims to increase local food supply to account for 30% of residents' nutritional needs by 2030
  - Expensive
    Singapore's 30 by 30 used 40 million to fund farms, automation and ai
- Social approaches
  - Raise awareness and educate communities on how to respond to climate change impacts
  EG. In Nepal, communities are taught to plant drought resistant crops such as apples
  EG. In Singapore, the public is educated on what to do in case of a flash flood
  - Difficult to change peoples' minds EG. Some Nepalis prefer to stay traditional and turn to temporary migration in the case of a drought instead of trying new methods while staying
- Institutional Approaches
  - National Policies to coordinate organisations and agencies towards climate action EG. Singapore's Ministry of Sustainability and Environment
  - Regional Policies enables counties to collaboratively develop climate outlooks for the region. EG. ASEAN
  - Countries may have competing priorities and may not have the capacity to draw on their national budget to finance adaptation projects

Mitigation Strategies

- International agreements and cooperation
  - Puts greater responsibilities on developed, industrialized countries as they are the main source of most greenhouse emissions
  - Funds and technologies are directed to climate action in developing countries
  - Monitoring progress of climate change policies
  EG. The United Nations Framework Convention on Climate Change
  - Depends on a countries' commitment to act. EG. USA withdrawing from Paris Agreement in 2017 as DT thought that it would undermine its economy
- Use of low carbon technology
  -Carbon Capture which separates and captures CO2 from power plants and other industrial sources
  - Utilisation and storage by storing co2 in the ocean and using it to make cement
  - Expensive EG. Singapore announced in 2020 that $49 would be set aside to research on such technology
- Use clean energy sources
  -Solar Energy EG. by 2030, Singapore wants to increase its solar capacity by 4% to meet Singapore's electricity demand
  - Hydro-electric power
  - Geothermal
  - Nuclear
  - Expensive EG. Indonesia's cost to install a solar system may cost 900-1300 USD
- Change in consumption patterns
  - Food choices, less meat
  - Food waste
  - Use of plastics
  - Fashion
  - Difficult to change people's minds. EG. Despite the drinkability of Singapore's tap water, Singaporeans consume more than 467 million bottled waters in 2018
  - Depends on the commitment of businesses which may hard due to the reduce in profits
- Enhance carbon sinks
  - Protection of oceans and forest through land-use change
    - Difficult to reduce deforestation in a growing economy which has competing land-use
  - Protection of forests through forest regeneration
    - Large-scale afforestation may lead to competing land-use
    - Large-scale planting may take 50-100 years to have its full effect of removing 200 billion tonnes of carbon dioxide from the atmosphere