



# Climate Change Impacts on Ecosystems

An ecosystem is a community of living organisms in conjunction with non-living components of the environment (air, water and soil), interacting as a system. Some of the most vulnerable ecosystems to climate change can be identified as follows;



## Polar

Polar environments are in the Arctic and Antarctic regions. Arctic region is in the Northern Hemisphere, and Antarctica is in the Southern Hemisphere.



Cause	Impacts
Temperature rise	<ul style="list-style-type: none"> <li>Melting ice affects breeding of polar animals (Ex: Polar bears, seals, sea birds, walrus, algae, etc...)</li> <li>Loss of habitats and feeding grounds , increase risk of diseases of polar animals</li> <li>Open and ice-free areas in arctic ocean will attract more shipping and commercial exploitation resulting in more pollution</li> <li>Loss of sea life due to increased oceanic temperature (Ex: planktons, penguins , whales)</li> <li>Polar bears lose weight due to less food – affects the survival of the population</li> </ul>

## Fresh water bodies

Freshwater ecosystems are a subset of earth's aquatic ecosystems. They include reservoirs, lakes, ponds, rivers, streams, springs and wetlands etc...



Cause	Impacts
Increased water temperature	<ul style="list-style-type: none"> <li>Depletion of oxygen causing stress for aquatic flora and fauna</li> </ul>
Prolonged drought	<ul style="list-style-type: none"> <li>Scarcity of drinking water and water for irrigation</li> <li>Disrupt hydro power generation</li> <li>Flow in permanent streams become intermittent and water bodies may become more saline</li> <li>Disrupt lifecycle patterns of aquatic biodiversity</li> </ul>
Changes in rainfall	<ul style="list-style-type: none"> <li>Intensive rainfall could cause flashflood and damage water infrastructure</li> <li>Changes in water level, disruption of habitats and behavior changes in biodiversity</li> <li>Increase health impacts</li> </ul>
Intrusion of Seawater	<ul style="list-style-type: none"> <li>Salt water moves in to fresh water areas and loss of habitat and livelihood</li> </ul>

## Coastal and Mangrove

Coastal zone is a region where interaction of the sea and land processes occurs. Mangroves are a taxonomically diverse group of salt-tolerant, mainly arboreal, flowering plants.



Cause	Impacts
Sea level rise	<ul style="list-style-type: none"> <li>Coastal areas may get flooded and erode beaches</li> <li>Loss of nesting beaches of some marine species (Ex. Sea turtles)</li> <li>Increased salinity and increased wave action can cause serious threats to mangroves</li> <li>Loss of mangroves will have a serious economic impact on both fisheries and coastal communities.</li> <li>Alter flooding patterns</li> </ul>
Increases intensity of storms	<ul style="list-style-type: none"> <li>Alter erosion and sedimentation rates in mangrove forests</li> </ul>

## Ocean

The marine ecosystem is a part of the largest aquatic ecosystems on the planet. This includes habitats such as sandy shores, rocky shores, mudflats etc...



Cause	Impacts
Rising oceanic temperature	<ul style="list-style-type: none"> <li>Coral bleaching and death of the corals</li> <li>Decline of habitats of species which depend on corals</li> <li>Changes in current affects fish migration</li> <li>Damage of skeletons and shells of many ocean species due to ocean acidification</li> <li>Change in water cycle</li> </ul>
Sea level rise	<ul style="list-style-type: none"> <li>Corals and sea grass meadows are in danger of disappearing since they can only photosynthesize in relatively shallow water</li> </ul>

## Agricultural lands

Agricultural lands are land devoted to agriculture. They are the major manmade ecosystem in the world.



Cause	Impacts
Increase temperature	<ul style="list-style-type: none"> <li>Reducing the harvest of some crops</li> <li>Increase pests and diseases in agricultural lands</li> <li>Changes in the nutritional quality of some food crops</li> <li>Loss of agro-biodiversity</li> </ul>
Prolonged drought	<ul style="list-style-type: none"> <li>Crop damage</li> <li>Reducing crop yield</li> <li>Drinking water shortage affects dairy and livestock losses</li> <li>Increasing post harvest losses</li> </ul>
Intense precipitation and flash flood	<ul style="list-style-type: none"> <li>Damaging crop yield</li> <li>Increasing soil erosion</li> <li>Increasing post harvest losses</li> </ul>
Sea level rise	<ul style="list-style-type: none"> <li>Damage crops with salt water intrusion</li> <li>Loss of agricultural lands</li> <li>Reduce crop yield</li> </ul>
Increase intensity of storms	<ul style="list-style-type: none"> <li>Damage infrastructure built in farm lands</li> <li>Damage crops and reducing yield</li> </ul>



## Forest

Forests are the dominant terrestrial ecosystem of the Earth, and are distributed across the globe. Forest ecosystem provides many environment services that help to maintain a healthy lifestyle.



Cause	Impacts
Increase atmospheric temperature	<ul style="list-style-type: none"> <li>Migration of species Ex: Some animals and plants move further north or higher elevations to find suitable climate conditions Some animals change their usual migration period</li> <li>Many plants start early growing and blooming in the spring</li> <li>Some species are unable to survive and extinct</li> <li>Some animals wake from hibernation earlier than usual</li> <li>Birds lay eggs earlier in the year than usual</li> <li>Biodiversity changes with the increase of temperature favorable species of the forest</li> </ul>
Prolonged drought	<ul style="list-style-type: none"> <li>Reducing the growth of trees</li> <li>Increasing the risk of forest fire</li> <li>Reducing the ability of producing sap, which protects trees from insects</li> <li>Reducing water for drinking to wild animals</li> </ul>
Intense precipitation and wind storms	<ul style="list-style-type: none"> <li>Damage to trees , wildlife and their habitats</li> </ul>

