

# Climate Change

## The Climate System:

The term “climate” refers to the long-term pattern of weather, which is observed at a particular area. Although climate changes frequently, the annual pattern of weather in a specific location is relatively constant over time. The global climate system is a complex and interactive network of natural physical processes, which are influenced by the interactions of solar energy, the Earth’s surface and the atmosphere.

## The Greenhouse Effect:

Not all of the sun’s energy reaches the Earth. About 30% is reflected back into space while the rest is either transferred around the globe by winds and ocean currents or trapped by gases in the atmosphere. The ability of some gases to trap heat works the same way as glass in a greenhouse, which is why this phenomenon is known as the “Greenhouse Effect”, which keeps the average surface temperature on Earth in a range needed to sustain life without it; the Earth would be about 30°C cooler. The main Greenhouse Gases are water vapor, carbon dioxide, ozone, methane, oxides of nitrogen and chlorofluorocarbons.

In order to sustain life as we know it is important that the Earth’s incoming and outgoing energy is maintained in balance. Due to rapid increase in human activities such as the burning of fossil fuels, greenhouse gas emissions have become much higher than the natural levels. This in turn will disturb Earth’s energy balance resulting in global warming and climate change.

Even though greenhouse gas emissions from Samoa are relatively small, that does not mean it is exempt from the impacts of climate change. Samoa is among those countries most vulnerable to climate change, which is why it is important that the issue is understood so that precautions can be taken to protect our future.

## Impacts of Climate Change:

Climate change has the ability to adversely affect society and the environment. Limits placed on natural resources caused by the impacts of climate change are most acutely felt in small island states such as Samoa.

### Key impacts of climate change are:

- Sea level rise due to the thermal expansion of the upper layers of ocean is expected to place great stress on coastal ecosystems. Shorelines will undergo erosion and coastal areas will be prone to flooding which can affect habitation, water supply, agriculture, forestry and suitable energy.
- Extreme weather events such as cyclones, wind damage, storm waves, heavy rains and flooding are likely to increase in frequency and intensity with climate change.
- Industry and human settlement concentrated along the coast, especially in areas where the sea is a major source of income through fishing, tourism and transport, will be most vulnerable to sea level rise as a result of climate change.
- Human health – higher temperatures may lead to a higher incidence of heart and respiratory disease and rises in mortality due to heat stress. Warmer conditions can also increase the population of disease carrying organisms, such as mosquitoes and hence cause a rise in vector and water borne disease.
- Agriculture – crop yields and productivity will be affected due to changes in rainfall patterns and the proliferation of plant pests and insects from warmer and wetter conditions.
- Tourism – beaches are key attractions for the tourism industry in Samoa. Change in climate may lead to: the loss of beach due to erosion and inundation; salt water intrusion which would affect freshwater supplies; increased strain on coastal ecosystems; and damage to infrastructure from tropical storms.

# Childrens Corner



**1. How much of the sun's rays are reflected back to space?**

- [a]10%
- [b]20%
- [c]30%
- [d]40%

**2. What traps the sun's energy on the earth's atmosphere?**

- [a]trees
- [b]soil
- [c]gases
- [d]animals

**3. The most practical way we can all do to reduce climate severe impacts is to:**

- [a]reclaim the sea to increase land space for living
- [b]plant more trees as sink of greenhouse gases
- [d]build underground fortresses as refuge from hurricanes
- [e]build seawalls to protect buildings from sea waves

**4. According to scientists the mostly cause of climate change patterns today is the:**

- [a]impact of human activities
- [b]evolution of the planet weather system
- [c]impact of the sun's surface solar flares
- [d]all of the above

**5. The most immediate result of global warming on us everyday is the:**

- [a]changes in our diets
- [b]changes in our clothes
- [c]changes in our music
- [d]changes in our recreations

**6. On the planet the opposite of global warming is global:**

- [a]ice age
- [b]cooling
- [c]disasters
- [d]evolution

**7. In Samoa climate change is mainly referred to as the cause of the:**

- [a]most recent severe cyclones
- [b]building of strong seawalls in Apia
- [c]migration of people to overseas countries
- [d]reclamation of the sea in several villages

**8. Tokelau will be severely affected by global warming due to its:**

- [a]being far away from bigger islands like those of Samoa
- [b]low-lying atoll islands
- [c]very limited population
- [d]limited agriculture

9. Which of the following activity in Samoa is giving out great amounts of greenhouse gases?

- [a]vegetation
- [b]forest clearance
- [c]vehicles
- [d]inland lakes

10. Which of the following countries is contributing the highest amount of greenhouse gases?

- [a]Samoa
- [b]New Zealand
- [c]China
- [d]USA

## Word Find

Find the following words

Global Warming  
Atmosphere  
Renewable  
Climate Change  
Impacts

Greenhouse  
Humans  
Energy  
Ice Age  
Reclaim

Gases  
Industries  
Weather  
Human Induced  
Seawall

L L A W A E S X E S U D A A C  
W E A T H E R H B V E G T W L  
S G U A O E D R J C N R M E I  
S A E T C T N A U C I E O A M  
U E S L E W U D A C M E S T A  
T C A T S L N X A U P E P H T  
T I D E U I M P E A A H H E E  
M Z S U N O P S L P C O E R C  
R A N A A I I V B N T U R S H  
G F M G E P N A A O S S E D A  
H U M A N S P Q W S P E S B N  
H I O Y S Y G R E N E H V I G  
S E I R T S U D N I N C J R E  
A R I T S E L T E P R B U D K  
G L O B A L W A R M I N G A F