

# OUR ENVIRONMENT OUR HERITAGE

## ((( Impacts of Climate Change )))



It can affect our usage of land, water resources, agricultural activities, terrestrial and marine biodiversity, forest resources, our health, infrastructures, our culture, and our way of living. The main problems associated with climate change in Samoa include; sea level rise, droughts, flooding, frequent occurrence of tropical cyclones, increase in temperature, increase in ocean temperature, rainfall fluctuation. Climate change can affect Samoa directly and indirectly. Direct impact is when we are affected directly by climate change. Indirectly on the other hand is when climate change creates other problems in which later on affects us. This week we will talk about the impacts of climate change in Samoa focusing on our agriculture, water resources, forests, biodiversity, health, tourism and our village communities.



### AGRICULTURE



- Tropical cyclones - TC's can devastate our agricultural production particularly if they become more frequent giving crops less time to recover; this is especially true of tree crops such as coconut which have longer recovery time. Associating with TC's are extreme winds and storm surges



- Increase in temperature, frequent flooding and extreme winds - These conditions can provide favorable conditions for the widespread of pests and diseases harmful to agriculture. E.g. the Taro Leaf Blight in 1993 which devastated Samoa's taro population



- Droughts - Drought conditions also pose a threat to the agricultural sector as it affects the growth of some crops especially vegetables. The 1998 episode of El Nino and La Nina resulted in the reduction of vegetable growth.



- Flooding - Flooding is responsible for the erosion of the top soil and can eventually lead to the exposure of root systems



### WATER



- Droughts - Rivers which were running all year round are now mostly dry. The Fuluasou River which now supplies two water treatment plants servicing the western part of the country has been experiencing very low quantities from the source. Vailele and Afiamalu intakes are some of the worst affected intakes with supplies being off for months due to water shortage.



- Flooding- can result in dirty and poor quality water especially in times of heavy rain. The Alaoa treatment plant during heavy rains is now facing a problem of high total suspended solids and turbidity when it rains. A major contributing factor is the high deforestation rate upstream from farming and settlement purposes, which have greatly affected the catchments area.



- Sea level rise- SLR can lead to the salinity of our underground coastal springs. This problem is now common with freshwater springs located in the coastal areas of both Upolu and Savaii. This is happening to springs in villages such as Saoluafata and Lano.



### HEALTH



- Our health is also vulnerable to climate change, particularly from diseases. Generally, some vector-borne diseases are weather sensitive, meaning their



widespread is dependent on specific climatic conditions. E.g. changes in weather can trigger the transmission of diseases such as dengue fever and flu. Scientific researches show evidence that the rising sea surface temperature can actually increase the risk of cholera spreading.

- Flooding- Samoa's surface water can be contaminated with sewage and waste and later triggers the transmission of water borne diseases such as typhoid. Typhoid in Samoa remains very high with up to 693 cases per year.

- Droughts and increasing heat waves can also cause skin infections such as skin cancer and diseases of the respiratory system.

### BIODIVERSITY

- Tropical Cyclones -TC's can lead to the destruction of habitat for our forest birds, reptiles, trees and the rest of Samoa's flora and fauna including our endemic species. Bird species are highly dependent on the forest trees for shelter and for food.

- Storm surges, temperature changes - Climate change can also impact on our marine flora and fauna through storm surges, wave activities and ocean temperature changes

- Temperature rise- The rise in ocean can lead to the bleach of coral. This is because corals, as the main habitat for marine fish life needs a temperature of between 18 - 28°C to survive therefore a slight increase in temperature of the water causes bleaching. They are also called forests of the sea

### FORESTRY

- Droughts - During droughts forest fires are likely to occur, particularly in the northwest region of Savaii, Asau and Aopo. On record, the Asau area has experienced two forest fires in the last two decades that caused considerable damage to the forest ecosystem. These fires occurred in 1983 and 1998 respectively, with 1983 being the more devastating. Since these areas are located in the dry region, the rate of growth or recover is quite low compared to the forest areas in the wet regions.

- Tropical Cyclones - Cyclone Val and Ofa in the early 90's and cyclone Heta in 2004 destroyed a large percentage of our forest plantations.

### TOURISM

- Sea Level rise- through the loss of beaches, inundation and degradation of coastal systems, saline intrusion and damage to infrastructure discourages tourists from visiting Samoa.

- Tropical Cyclones -Tourists mostly favor staying in small beach fales rather than expensive hotels in town for they are much closer to the beach. However these small setups are in no condition to withstand tropical cyclones.

- Droughts and water shortage- Tourism potential sites are facing water shortage and with a continuing changing climate Samoa will expect less tourists in the near future.

- Heavy rain can also cause the contamination of drinking water and may result in the outbreak of water and vector borne diseases, discouraging tourists to visit. Heat stress has also become more and more problematic to tourism as it redirects tourists from visiting Samoa. Due to climate change Samoa's weather is becoming very hot.

### VILLAGE COMMUNITIES

- Village communities are the most affected people from the consequences of climate change. They face problems such as the loss of land due to erosion from sea level rise, storm surges, tropical cyclones, and gale force winds.

- Climate change also leads to the loss of biodiversity, loss of heritage and land values. The environment is closely associated with cultural materials. The loss of biodiversity, both flora and fauna will also mean the loss of material culture. E.g. the lau'e which was originally used to make fine mats is barely used nowadays.

- Climate change related problems affecting the communities also include the destruction of crops, plantations and livestock which is a major source of living in Samoa, both subsistence and commercial. Usually after events such as flooding and droughts, there is an outbreak of pests and diseases which affects our livestock and our plantations.

- Droughts resulting in water scarcity often trigger the spread of diseases such as malaria. The increase in temperature favors the spread of malaria carrying mosquitoes

- Climate Change Section -  
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## (((CHILDREN'S CORNER)))

Children aged 9-15 are invited to answer the following corner. The name of 3 students with top scores at the end of every month will be posted under the "Children's Corner" for special prizes. "2008 Young Environmentalist Star Awards" will be given to 10 students with top total scores at the end of the year.

### TRUE OR FALSE

Answer the following statements True or False

1. The 1998 episode of El Nino and La Nina resulted in the increase production of vegetables in Samoa
2. Due to Climate Change our coastal water springs have been contaminated with salt water (saline)
3. Changes in weather can trigger the transmission of diseases such as dengue fever and flu
4. Coral reefs can survive in a temperature of 22°C
5. Forest areas in the wet side of Samoa are more vulnerable to forest fires than in the dry areas
6. Tourists favour staying in beach fales because of their ability withstand tropical cyclones
7. Climate change can lead to the loss of heritage and land values and can later change our way of living
8. There will be less freshwater available for our use. Climate change increases the incidence of extreme events such as floods, droughts and cyclone which threaten freshwater supply.
9. Sea level rise is caused by high rainfall

### PARAGRAPH

View and assess the following pictures. In a few sentences describe what the picture is showing and how it relates to climate change. How does the problem affect Samoa?




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### MATCHING

Match the following with their appropriate definition

Flora	a. Also known as forests of the sea. Reef fish and other marine organisms depend on them for food and shelter
Fauna	b. A term given to communication, transportation, road networks
Drought	c. Refers to the plant resources/biodiversity. Includes organisms such as shrubs, vines, trees and weeds
Taro Leaf Blight	d. Diseases arising from the consumption of contaminated water. e.g typhoid
Water Borne Diseases	e. Term referring to the scarcity or the unavailability of water. Shortage of water resources
Coral Reef	f. A disease which affected Samoa's taro population in the year 1993
Infrastructure	g. Refers to the animal resources or biodiversity. Includes animals such as dogs, cats, birds, pigs.

### FILL-IN-THE-GAPS

Flooding can result in \_\_\_\_\_ and poor quality water especially in times of \_\_\_\_\_ rain. The Alaoa treatment plant during heavy rains is now facing a \_\_\_\_\_ of high total suspended solids and turbidity when it rains. A major contributing factor is the high \_\_\_\_\_ rate upstream from farming and settlement purposes, which have greatly affected the \_\_\_\_\_ area.

### ACKNOWLEDGEMENTS

We wish to acknowledge and thank the following companies for sponsoring our children's corner prizes

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