



Two Pager

Climate Change: What do you know?

Think our earth planet is too much cold or hot compared to the average temperature we have today. 120,000 years ago when the last glaciations began the planet was too cold. It began melting 12,000 years ago which gave birth to many civilizations on the earth. We have at present a life supporting temperature because of the right mix of different gases in the atmosphere. If not the temperature would have been minus 18 centigrade in the planet.

The Earth gets warm because of the Sun. The Sun emits light which is required for plants to make food from photosynthesis. It also emits Ultra Violet (UV), Infrared, Cosmic and other rays which reach the earth as well. Much of them is absorbed by the earth and reflects part of it back to the universe. Earth's atmosphere helps to absorb and reflect these unnecessary quantities of heat waves.

N_2 and O_2 which are most abundant in the atmosphere do not capture heat due to its linear molecular structure. However, H_2O , CO_2 , CH_4 , N_2O , and CFC absorb the photons (the basic unit of light) in the Infrared rays which makes the atmosphere warmer.

CO_2 is naturally available in the atmosphere in small quantities. Life survives on earth due to this CO_2 . Green plant leaves absorb CO_2 and make food inside the plant leaves and release O_2 gas which is important for the animals' respiration. Heat capturing nature of the CO_2 makes the earth warmer making it suitable for life. If there is no CO_2 in the atmosphere average temperature of earth will be around minus 18^o centigrade. However, too much CO_2 in the atmosphere results in the greenhouse effect and creates climate change. Much of these Greenhouse Gases are industrial byproducts which have been released since the industrial revolution began.

The Planet is warmer compared to few decades ago. Annual temperature increase is approximately 0.74 °C in the past hundred years. This is because of the release of high quantities of CO_2 since the industrial revolution began. Although N_2O and CFC are many times heat absorbent compared to CO_2 they are available in low quantities in the air.

High CO_2 emission is not tolerable to the earth's atmosphere since we don't have enough green cover to absorb it for the photosynthesis process or by the oceans. This causes temperature rise in the earth.

Climate change happens naturally since the beginning of the creation of the earth. But there are many evidences to -

- show that climate change is happening very fast during the last 50 years which the life forms cannot adapt to or evolve that past.

During the last monsoon season we heard about heavy floods in South Asia. More than hundred thousand people died in Burma when Cyclone Nargis struck Irawady delta. Hurricane Katrina destroyed many properties in the United States in 2005. When the Seas are warmer the intensity of the Typhoons, Cyclones and Hurricanes are higher.

It was also found that most of the earth's glaciers and ice caps melt very fast. This can be seen in the Arctic, the Himalayas, and many places. This brings new water to the oceans and warm temperature increases its volume resulting the sea level rise.

Warm water in the tropic oceans kills coral reefs which are called rainforests in the ocean. Coral reefs biodiversity is only second to rainforests. It provides food, living and breeding grounds for fish. Coral bleaching in the 1998 in many Asian countries is a result of warm seas. This effects fish as well as fishing communities.

Warm temperature also helps various diseases to spread. Increase of Malaria and many other mosquito spread diseases such as Dengi, Chikungunya, and Nile Encephalitis is a result of the high atmospheric temperature.

Maldives, Pacific Islands such as Tuvalu, Kiribathi are more vulnerable to sea level rise. Bangladesh and River Nile delta will suffer most due to the sea level rise.

Recent IPCC report states that between 1990 and 2100, the global average sea level will rise somewhere between 3.5 and 34.6 inches with a central value of 18.9 inches. It will create 120 million climate refugees in South Asia according to Greenpeace. It will also destroy best agricultural lands and create fresh water scarcity.

Sri Lanka has 1585 kilometers of Coast line encompassing estuaries and lagoons. There are no estimates of the area that will be affected in future sea level rise. Sri Lankan coast line has as much as 60% of its population.

Global warming will affect different communities in different ways. Fisher folk will have coastal erosion and sea level rise directly. Farmers will be affected with floods, droughts etc. Fresh water will be a problem for many people around world. Natural disasters such as cyclones, hurricanes, or typhoons, floods will affect most low line habitants. Below are some of the predicted impacts on Sri Lanka due to climate change:

- ◆ Rainfall will change with a maximal range of 20% during the North East monsoon in both dry and wet zones.
- ◆ The increase in rainfall will lead to higher floods, increased soil erosion and increased landslides.
- ◆ The timing, extent and distribution of precipitation and run-off will be altered. A rise in temperature of 1°C has resulted in a 4% increase in potential evaporation.
- ◆ Water quality will be badly affected by water pollution and salinity intrusion into aquifers and rivers with sea level rise.
- ◆ The tidal prism will be increased. It will destroy the sand bars found at some of the river outlets such as Gin ganga, Bentara ganga, Kalu ganga and Maha oya. The sea water entering will adversely affect the agricultural lands.
- ◆ The rice cultivation will drop by 6% with temperature increase of 0.5°C by the year 2010. The paddy farming output will fall by 20-30% in the next 20 to 30 years.
- ◆ A large amount of (28,350 hectares) of low lying rice lands already affected by flooding and poor drainage, would be lost.
- ◆ Coastal wetlands are generally less than 1 tide range (72cm) below mean sea level. A rise of sea level of 1m will destroy most of the coastal wetlands in Sri Lanka (85% of the Muthurajawela marsh is located between 0.1 to 0.2m of sea level).

Prepared by: Hemantha Withanage, Chamali Liyanage

More information:

Centre for Environmental Justice, 20 A, Kuruppu Road, Colombo 08, Sri Lanka.

Web: www.ejustice.lk, email: info@ejustice.lk Tel: 0094112683282

- One meter rise in sea level would lead to shore erosion 30m in 2010 and 100m in 2070. Ports, Fisheries harbors, Hotels and most of the coastal structures will be affected.
- Most of the mangrove ecosystems will be killed by even a 20cm sea level rise.
- Climate change will affect the marine life in and around Sri Lanka and even amphibians like toads and frogs that are natural predators of mosquitoes and other vectors.

The Kyoto Protocol which was signed in 1996 by countries other than United States and Australia was seen as the best solution to climate change since it proposed to cut 5.2% emissions by those who release more CO₂ into the atmosphere. But it was not successful due to the big pressure of the USA, Canada and Australia.

The global event which happened in Bali in December 2008 was the latest attempt to agree on emission cuts. The world required to keep the CO₂ level by 550 PPM by 2050. However, United States government did not agree to make any emission cuts but proposed helping adaptation and volunteer emission cuts. Later during the G8 event held in Japan they pushed other G8 countries to agree reduce CO₂ level by 50% by 2050. However, China and India refused to agree to this proposal.

There is no political solution yet. However, people need to act urgently. Adaptation is one of the global proposals. It can be done by the local communities.

To reduce your contribution to climate change

- ◆ **Turn off lights, computers and other appliances when not in use**
 - ◆ **Reduce travel and use public transport when possible**
 - ◆ **Conserve and not waste water**
 - ◆ **Reduce Reuse Recycle**
 - ◆ **Use more energy efficient lights**
 - ◆ **Plant trees**
 - ◆ **Tell your friends and neighbors what is climate change.**
-