

ENVIRONMENT

World Environment Day – its time to take responsibility

Jo-Anne Nina Sewlal
Dept of Life Sciences, University of the West Indies



EVERY year since its inception in 1972 by the United Nations General Assembly, the 5th of June is World Environment Day, which has grown over its 37 year history to be celebrated by over 160 countries.

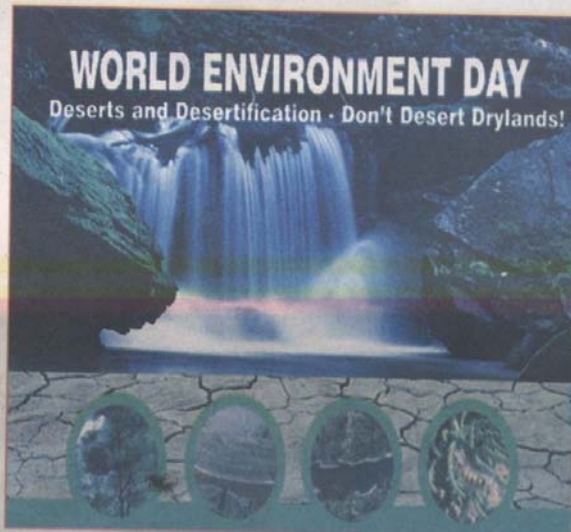
This year's theme is "Your Planet Need You – Unite to Combat Climate Change". Climate change started showing up in World Environment Day celebrations early in its history with the 1977 theme, "Ozone layer Environmental concern; land loss and soil degradation". But as you can see it shared the spotlight with other environmental issues.

However, over the decades concern over climate change has grown however, it has been a recurring theme the past few years. Climate change was recognised as becoming a potential environmental problem from as early as 1898 soon after the start of the industrial era by Swedish scientist Svante Arrhenius, who warned of global warming due to carbon dioxide emissions.

However, it was only during the 1970s that it was recognised on a global scale. Since then vast amounts of research have been carried out on this topic and towards finding possible solutions to the problem. This is too much information for a single article; therefore I have chosen to give a brief overview on the factors influencing climate change.

One of the major anthropogenic or human causes of carbon dioxide emission is our burning of fossil fuels to supply energy to for transport and to generate electricity for machines and appliances we have come accustomed to, to maintain our standard of living. However, the sulphate particles released into the atmosphere have a "cooling effect".

We are familiar with the use of aerosols and how they have contributed to climate change by releasing



chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) both of which deplete the ozone layer. This layer of gas shields the planet's surface from harmful ultraviolet rays that is detrimental to both plant and animal life.

Then there is land use, where the increase in global population has resulted in the clearing of increasing areas of vegetation for housing, industries and farming, thereby removing the natural areas or sinks that absorb carbon dioxide. Livestock farming in particular is a major contributor of carbon dioxide emissions with 18%, which includes deforestation to accommodate the animals in terms of space and making of grazing pastures.

Building these houses and industries takes cement, whose production accounts for 1.5% of the global emissions of carbon dioxide from industrial sources.

We often hear that we (humans) are to blame when it comes to climate change but there are some factors at work beyond our control. Some of these factors include orbital variations refer to slight changes in the Earth's orbit

which in turn determine the distribution and amount of sunlight that reaches the planet's surface. In addition to orbital variations the sun also varies and with time gets brighter, thus outputting more heat, which is in turn felt on Earth.

Plate tectonics is another contribution factor that is out of our control and shape our landscape and the climatic conditions there. The Earth has two outer layers, one of which is the more rigid lithosphere which is fragmented into plates and on which lays the ocean floors and continents. This layer glides on the more liquid asthenosphere layer. It is the movement of the lithosphere layer that is referred to as plate tectonics.

Volcanoes also spew large amounts of carbon dioxide into the atmosphere. However, these are not regular occurrences and anthropogenic causes generate over 130 times more carbon dioxide.

But both natural and anthropogenic causes interact to display the intensity of climate change we see today. A good example is the shrinking of glaciers worldwide. Orbital variations are believed to be responsible for the growth and retreat of these ice sheets. Increase in the size of glaciers results in a decrease in sea level and the area available for plant growth, both of which indirectly causes lower levels of carbon dioxide and methane to be present in the atmosphere, thus making it cooler. Further cooling is provided by the glaciers themselves which reflect sunlight and in turn heat back into the atmosphere, which also promotes their growth. However, the shrinking glaciers reveal the darker ground beneath which absorbs light and heat thus turning up the temperature around the world.

Although climate change is brought about by the interplay of factors of both natural and anthropogenic origins, the latter plays a major role in bringing about the adverse changes in the environment we experience today much more than the natural factors. What I feel makes the theme of this year's World Environment Day unique is that it lets us know that we have a great responsibility when it comes to the health of our planet's environment.