The Effects of Global Warming in Myanmar since 2000

Aye Mya Nanda*

Abstract

This paper is an attempt to explore the study of the effects of global warming in Myanmar. In the contemporary world, the warming process is important because it occurred storm surges, floods, massive earthquakes and changes in the frequencies and intensities of extreme events. Myanmar is effected by extreme weather resulting from climate change that the impact of global warming over a period of nearly two decades. In 2006, Mala was slightly stronger, but had a significant lower impact. Cyclone Nargis was the worst natural disaster in the recorded history of Myanmar in 2008. During the storm, there were damages and loses, trees fell down and the roofs of some buildings were thrown away in some areas. As a result, there were deaths and destruction in Ayeyarwaddy and delta regions. In 2010, Giri also destroyed the several villages of Myebon and Kyaukphyu townships. Moreover, the floods were occurred in different states and regions of Myanmar. Another natural disaster is massive earthquakes that collapsed bridge and damaged ancient Buddhist pagodas in northern Myanmar. These events are the effects of global warming in Myanmar.

Introduction

Environmental issues are danger and effect on the all life of the living things. Human activities are creating a buildup of green-house gases in the atmosphere. The more gases in the atmosphere reflect the more heat conflicts back to the earth. It causes a rise in temperature. It is knows as green house effect or global warming. Forest management affected the cause of global warming. Deforestation has resulted in a net release of carbon dioxide and other greenhouse gases into the atmosphere. The warming process is also likely to lead an increase in maximum tropical cyclone wind speeds and lower central pressures. It lead to more damaging storm surges, floods, massive earthquake and changes in the frequencies and intensities of extreme events. Thus, natural disaster caused the destruction of economic and social life.

Materials and Methods

In doing this research, descriptive analytical approach is used to counter the global environmental issues. It has been based on the survey research and cooperative approach and new facts on the relevant fields of environmental issues. Major sources of data were collected not only from the secondary sources like published books, and pamphlets, journals and magazines but also the primary sources like reports and thesis. In addition, it also used personal interviews from the respective officers of the National Commission for Environmental Affairs (NCEA) and relevant departments.

Research Question

Why the global warming is ongoing? What are the main causes of warming? What are the effects in Myanmar? How do management for relief supplies aftermath of natural disaster? How do preparations for the prevention of natural disasters in Myanmar?

Results and Discussion

Over the centuries, human beings have used fossil fuels, such as wood, coal, oil and gas for their energy needs .But they are dirty and give off a great amount of smoke and cause pollution. Air pollution attacks the atmosphere and effects global weather patterns. The oceans have the food potential to sustain a far larger world population than now exists. Hazardous waste dumping, inadequate sanitation and disposal of solid wastes, open brown coal smoke stocks and contaminated water supplies have contributed to disease and ill-health. Toxic wastes make soil and water resources unusable.

* Dr., Lecturer, Department of International Relations, Dagon University

The Effects of Deforestation

Forests are crucial for maintaining biodiversity. It is estimated that natural forests contain half of the world's total biological diversity. Biodiversity is essential for sustaining human life. Trees, plants and animals provide useful products and services for mankind. They also provide important environmental services. So, the loss of forests has exacerbated the loss of biodiversity. Forest cover is vital importance from the ecological point of view. It protects and stabilizes soils and local climate as well as soil hydrology and the efficiency of the nutrient cycle between soil and vegetation. Forests are also the habitats of people and numerous plants and animal species. From the economic point of view, forests provide not only timber and firewood, but also medical and other plants of use to humankind. The role of forests as carbon sinks to reduce the effects of carbon dioxide in the atmosphere, thereby helping to contain global warming, is well established. Forest ecosystems persists for sometime under altered climate conditions, but long term responses depend on the ability of species to adapt to the new conditions or to change their geographic distribution. Still, long-term global warming likely causes the loss of forest habitats.

Therefore, forest managements affected the cause of global warming. Deforestation involves the clearing of forests for economic and social reasons. The burning of forests also releases carbon into the atmosphere. If exceeds the growth rates of plants and if the oceans, which store much of world's carbon are not able to hold this additional carbon, global warming occur. Deforestation provides some of the most extensive evidence of environmental change in the region. The consequences of deforestation include commercial logging and land clearance for agriculture.

Widespread deforestation in the country means that it has contributed significantly to global warming. Although Myanmar's forests covered 344,237 km^2, or 50.9 percent of the land in 1989, Myanmar's forest area is now 322,218.6 km^2, or 47.62 percent of the total land area, according to official statistics– a loss of more than 3 percent over the past two decades. Myanmar's deforestation is a result of unsustainable logging. Logging-both legal and illegal-for commercial purposes is the worst cause of deforestation.

Agricultural expansion, infrastructure projects, including dams projects, and excessive consumption of firewood are challenges for sustainable forest management in Myanmar. The use of firewood by the public causes both deforestation and the release of carbon dioxide. From a street-side teashop in Yangon to a village household, burning firewood is still necessary for cooking. They have a lack of knowledge of environmental issues. Some information about the environment is available in Myanmar journals and magazines, but they are not written for the general public.

Deforestation in the country is ongoing, despite forest protection laws which adopted legislation for sustainable forests such as the "Protection of Wildlife and Wild Plant and Conservation of Natural Areas Law" in 1994, the "Myanmar Forest Rules" in 1994, the "Myanmar Forest Policy" in 1995, and the "Protection of Wildlife and Wild Plant and Conservation of Natural Areas Rules" in 2002.

Ocean depths are warming, the great ice cover across the top of the globe, is forty percent thinner than it was four decades ago and glaciers are melting. Global warming increased frequency of forest fire. Due to Deforestation, forest habitats loss also leads to the loss of certain species. Of all animal groups, mammals and birds have both the highest proportion and the highest number of threatened with extinction. At the same time, almost 6,800 plant species are endangered or vulnerable. Sea levels probably rise as the warming

oceans expand, and great areas of land are flooded, particularly during storms. Rivers, lakes and estuaries have their courses and boundaries changed forever.

The Effects of Climate Change

The overall impact of climate change seems to be leading to natural disaster. Natural disaster often takes a great toll of life. They have caused major loss of human lives and livelihoods, the destruction of economic and social infrastructure as well as environmental damage. Myanmar is one of the country's worst affected by extreme weather resulting from climate change that assesses the impact of global warming over a period of nearly two decades. Cyclone Mala sent powerful waves up the coastline of Myanmar in 2006. Near the landfall area, 88 houses were completely destroyed, while 1,246 were damaged to some degree. 75% of all of the structures in Gwa Township were damaged.

In the northern Ayeyarwady Region, heavy rainfall was dead 18 people, with 14 missing. The area most affected by Mala was the city of Yangon. There, the strong winds tore the roofs of several buildings, with over 150 buildings were damaged. The industrial area faced severe damage as well. There, two factories were destroyed, while the powerful winds shattered windows on numerous buildings. The winds also downed numerous power lines, leaving many without electricity. Heavy rainfall in the city clogged storm drains, leaving some downtown areas in 1 metre (3 ft) of water. Throughout Myanmar, the cyclone were dead 22 people and caused damage to over 6,000 houses, of which 351 were completely destroyed.

In 2008, cyclonic Nargis was a rare, eastward moving at low-latitude strong tropical cyclone that caused the worst natural disaster in the recorded history of Myanmar. The cyclone Nargis struck in Myanmar making landfall in the Ayeyarwady Region, approximately 250 km Southwest of Yangon and affecting more than fifty townships, mainly in Yangon and Ayeyarwady Regions. With wind speeds of up to 200 km/h accompany by heavy rain, the damage was most severe in the Delta region, where the effects of the extreme winds were compounded by (12 ft) storm surge. Many lives, homes and properties in the affected regions were devastated. Moreover, Climate change is likely to affect the El Nino events also.

The Labutta Township alone was affected to 80,000 dead, with about 10,000 more deaths in Bogale. There were around 55,000 people missing and many other deaths were found in other towns and areas. Damage was estimated at over US$10 billion, which made it the most damaging cyclone ever recorded in this basin. Nargis is the deadliest named cyclone in the North Indian Ocean Basin. It was danger that Cyclone Nargis posed 48 hours before it hit the country's coast.

Thousands of buildings were destroyed; in the town of Labutta, located in the Ayeyarwady Region, 75 percent of buildings were collapsed and 20 percent were their roofs ripped off. The 95 percent of buildings in the Irrawaddy Delta area were destroyed. The Ministry of Religious Affairs stated that 1,163 temples were destroyed in Ayeyarwady Region and 284 in Yangon Region. The government formally declared five regions- Yangon, Ayeyarwady, Bago Regions and Mon and Kayin States- as disaster areas. Almost all the houses were smashed. According to the UN report, the Irrawaddy delta was hit extremely hard not only because of the wind and rain but because of the storm surge. On May 7, 2008, the government received Italian flights containing relief supplies from the United Nations, and twenty-five tonnes of consumable goods, to land in Myanmar.

In 2010, Cyclone Giri was classified a very severe storm, warnings were issued for the coastline of Myanmar. The cyclone caused devastation similar to that of Cyclone Nargis. The Myanmar Meteorology and Hydrology Department urged people to move to higher grounds and into sturdy buildings as a storm surge up to 3.6 m (12 ft) was anticipated. Warnings of the

storm were constantly broadcast through television, radio and newspapers. In Sittwe, the capital of Rakhine State, authorities used loudspeakers to warn residents about Cyclone Giri. According to the government, an estimated 53,000 were evacuated Kyaukphyu before the arrival of the storm. Ships and vessels were returned to shore quickly.

Cyclone Giri brought a storm surge up to 3.7 m (12 ft) and winds in excess of 260 km/h. In Kyaukphyu, much of the city was left more than 1.2 m (3.9 ft) under water by the storm. Most of Kyaukphyu was destroyed by Giri, with nearly every tree and lamppost felled and all structures damaged. Roughly 70% of the city had been destroyed by Giri. In the Ashey Paing ward, an entire village was flattened by the storm as roughly 1,000 homes were destroyed. Near the Gangawtaw Pagoda in Kyaukphyu, nearly 100 homes were completely destroyed. The local Red Cross office in the city was also destroyed after a large tree fell on it due to high winds. Myebon Township was the hardest-hit area in the country: several villages were completely destroyed by the storm and many others were severely damaged.

In the Seikphyu Township, flood waters up to 4.6 m (15 ft) deep inundated 20 villages after overflow from a dam was released. Most of the livestock in the area perished as there was no time to bring them to higher ground safely. The overall timing of the cyclone's landfall was also devastating for the region. It came at the only harvest of the year for Rakhine State. According to the United Nations Food and Agriculture Organization, 40,000 acres of rice paddies were destroyed and another 100,000 acres were damaged.

Within a day of Giri striking Myanmar, three people were killed by the storm and tens of thousands of residents were homeless. On October 25, officials in Myanmar stated that the death toll had risen to 50 and at least 30 people in the Pyin Wan Village were missing. So, the situation is alarming, as dead bodies were discovered. Offshore, more than 100 fishermen from Myanmar and Bangladesh were stated missing after 21 ships were caught in rough seas produced by the cyclone. On October 29, at least 94 people were confirmed to have been killed by Giri. Of these fatalities, 84 were in Myebon Township and 10 in Pauktaw Township. However, according to local relief groups, the death toll had risen over 100. According to officials in Kyaukpyu Township, damage from the storm amounted to 2.34 billion kyat.

Immediately after the storm, urgent requests for food and clean water were made by residents in the hardest hit areas. On October 23, the Red Cross began deploying relief supplies to the affected region; 300 tents and 150 bags of rice were planned to be distributed to Kyaukphyu where at least 5,000 people were left homeless. According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), a total of 176,823 people were affected by the storm and 70,795 were left homeless. On October 30, the number affected and homeless had risen to 1.1 million and roughly 100,000 respectively. Red Cross officials also stated that an estimated 60,000 people were in need of assistance throughout Myanmar. Later that day, a relief charity was opened in Yangon to aid victims of the storm, the charity had received donations of 10 million kyat ($10,000 USD). Temporary shelter camps set up by relief agencies housed an estimated 5,000 people.

The Government of the Union of Myanmar had distributed 60,000 zinc roof sheets and the Ministry of Forestry provided 200 tonnes of timber. In addition, six non-governmental organizations in Myanmar planned to distribute emergency food supplies, such rice, oil, salt and pulses, to 5,000 residents in Kyaukpyu and Myebon. Health supplies were distributed at relief camps by UNICEF in the hardest-hit areas. About 500 family kits containing non-food items, such as tarpaulins and mosquito nets, had been distributed by the Myanmar Red Cross Society. The government of Myanmar needed medical aid from the United Nations as a cholera outbreak began to unfold. Additional post-storm diseases such as diarrhoea, dysentery, eye infections and skin diseases became prevalent as well. According to locals, at least six

people died as a result of cholera. At least 200 people were infected with dysentery and four were killed by the disease in the towns of Kyaukphyu, Minbya and Myebon. The cause of the outbreak was linked to a lack of clean water.

Within a week after the passage of Cyclone Giri, the Governments of Australia, Britain and Japan pledged to donate US$200,000, US$700,000 and US$500,000 respectively to victims of the storm in Myanmar. The United Nations provided a total of US$54 million in aid. In November, the United States provided an additional US$3 million in relief funds.

Myanmar earthquake was a magnitude 6.9 earthquake on 24th March 2011 that had its epicenter in the east of Shan State. At least 74 people were dead and over 3,000 people became homeless. The earthquake devastated a lot of towns and villages mainly in Tachilek. Hundreds of houses and building were damaged. There are many cracks in houses, buildings, roads and bridges in the area of the Tachileik-Keng Tung road, made by tremors from five massive aftershocks. In 2012, a strong earthquake collapsed bridges and damaged ancient Buddhist pagodas in northern Myanmar. Myanmar's second-biggest city of Mandalay is the nearest population center to the main quake but there were no casualties or major damage. Mandalay lies about 72 miles south of the epicenter near the town of Shwebo, and the smaller towns in the area that is a center for mining of minerals and gemstones were worse hit. At least 16 people were dead and over 400 houses, 65 schools and 100 religious building were damaged due to the earthquake. Historically, strong earthquake have resulted in rural temple damage but relatively few causalities.

Flooding has always been one of the major hazards in Myanmar, accounting for 11% of all disasters, second only to fire. The Ayeyarwady River basin alone, the largest in the country, covers 404,200 square kilometer of the country. Over 2 million people are exposed to flood hazard in Myanmar every year. Flooding leads to loss of lives and properties, damage to critical infrastructure, economic loss and health related problems such as outbreak of water borne diseases when the lakes, ponds and reservoirs get contaminated. The country receives practically all its rainfall between mid-May and October, the rainy season, during which flooding and landslides are common.

In 2010 floods were occurred in Rakhine state. It was dead 68 people and affected 29,000 families. Over 800 houses were completely destroyed. In 2011, nearly 30,000 people were affected in Magway region. Over 3,500 houses and some 5,400 acres of cropland were destroyed. Heavy monsoon rains and overflowing local rivers caused flash floods in various parts of Myanmar in late July 2013, affecting Kayin, Mon and Rakhine States, and Taninthayi and Ayeyarwaddy Regions. The flash floods initially displaced over 38,300 people, leaving six dead and one person missing, and damaged residential buildings, roads and bridges. On 7th August 2013, 73,300 people were residing in temporary relocation camps. Many others were able to return to their places of origin as heavy rains ceased and the flood waters receded in most affected locations. These events are the effects of natural disaster in Myanmar.

Conclusion

The process of global warming is so great that many nations have called for international co-operation and immediate action to counteract this problem. The global environmental deterioration, especially global warming has profound impacts on the social and economic development of Myanmar. These events are likely to increase magnitude and frequency of sea level rise, pollution of rivers and lakes, earthquake and storm. Myanmar has faced several storms, floods and earthquake. These events had effect on the all life of the living things in Myanmar.

The Department of Meteorology and Hydrology (DMH) is trying to promote our communication system to link the stations as a network. DMH is trying its best to successfully complete the establishment of the digital seismic stations network in Myanmar. Myanmar is ready to share information and learn through other nations' experience regarding of disaster mitigation. In order to cope up with problems and relief, Myanmar also welcomes co-operations from other nations for educational programs, strategic plans according to local conditions and other forms of assistance. So, Myanmar must enforce relevant rules to protect the environment more effectively.

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