

## **MYANMAR'S ENDEAVOR ON CLIMATE CHANGE MITIGATION**

Sann Sann Shein\*

### **Abstract**

As a result of its exposure to meteorological conditions, Myanmar is vulnerable to severe natural weather events and extremely affected by the impacts of climate change. The serious impacts of climate change have damaged the all-round development sectors of Myanmar and continue to delay country's future improvement if these impacts are not effectively tackled. As an effort to manage climate change problems, Myanmar establishes a number of policy and strategy on environmental development and climate change mitigation and adaptation process. Myanmar's endeavor on climate change mitigation, joining with the comprehensive global efforts, focuses on its accessible approach towards UN-facilitated climate change mitigation and adaptation politics. In theory, the actions and procedures of climate change mitigation and adaptation are manageable to be implemented in Myanmar. But in practice, Myanmar needs to overcome the obstacles in obtaining future finance and in mobilizing the proficient expertise indispensable for the effective implementation of climate change mitigation and adaptation. A lack of considerable investment in climate-smart responses could deter Myanmar to cope with the severe disadvantages of climate change. A deliberative and operational roadmap is requisite in the long journey of Myanmar climate change mitigation and adaptation actions.

**Keywords:** climate resilient, mitigation, adaptation, strategy, roadmap

### **Objective**

The objective of this research is to analyze Myanmar climate change policy and strategy to tackle the climate problems in consistent with global environmental architecture. Expected results of the research can bring better understanding of Myanmar capacity in climate change mitigation and adaptation within international framework and to lend the weight of the UN, and several environmental organizations to the validity of the its capacity.

### **Research Methodology**

In conducting this research, qualitative method is used through descriptive and analytical approaches. Some qualitative primary sources such as National Report, Workshop Proceedings, Policy Documents, Rules and Regulations are based along with many books and data from Libraries and Information Centre under the Ministry of Natural Resources and Environmental Conservation. Multiple sources such as books, journals, and bulletins from the Libraries and Information Centers and some website data are carefully collected. The author attempts to interpret the information and data as it is being collected and to analyze them thoroughly. After assessing the data of authenticity, conformability and dependability, analytical generalization has been drawn linking the data for interpreting the findings.

### **Research Questions**

How do the adverse impacts of climate change undermine the development outcomes of Myanmar's society and economy?

How does Myanmar attempt to manage climate change problems and build climate resilience in line with the agenda of regional and international organizations?

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\* Dr, Associate Professor, Department of International Relations, Monywa University

## **Introduction**

Climate change is one of the global concerns that affect serious impacts on the stability and development process of social, economic and environmental fields. Climate changes include temperature rise, variation of rainfall and increased occurrences of dangerous weather events. According to the 2010 forecast of Intergovernmental Panel on Climate Change (IPCC), average global temperature rise due to the discharge of anthropogenic greenhouse gas into the atmosphere. This trend is likely to continue and increase in the coming decades. In 2016, the Mauna Loa Observatory in Hawaii announced that global carbon dioxide levels had passed the 400 parts per million (ppm) marks, probably never to return below it in human's lifetimes. The safe level of carbon dioxide in the atmosphere is 350 ppm, as the estimate of many climate scientists. Passing 400 ppm could cause a shift to hazardous weather events.

Myanmar is highly exposed to severe natural weather events annually. The 2016 Climate Risk Index categorized Myanmar as a vulnerable country in the world to the consequences of climate change. The Department of Hydrology and Meteorology in Myanmar, in partnership with the Center for Climate System Research of Columbia University, used the state-of-the-art climate models to project Myanmar's future climate circumstances under different Green House Gas (GHG) emissions. The temperature in Myanmar will increase between 1.3 and 2.7 degree centigrade under least traditional situations, whereas rainfall is estimated to escalate by 2-12 percent in 2011-40 and by 6-27 percent in 2041-70. These trends are very likely to raise more severe in the future, and there is no doubt that Myanmar needs to prepare for more floods, droughts and heat waves.

## **Topographical Situation**

Seasonal temperatures fluctuate critically throughout most regions in the country. In the dry season, temperatures vary within upper limit of 40 to 43 degree centigrade in the Central Zone of Myanmar. In the cool season, the temperature rises within 10 to 15 degree centigrade and in the highland areas, temperature declines from 0 degree centigrade to 1 degree centigrade. The lower limit of rainfall varies from 500 to 1,000 millimeter per annum in the Dry Zone. Precipitation is higher in the Eastern and Northern Hilly Regions; and highest in the Southern and Rakhine Coastal Regions, 2,500-5,500 millimeter annually. Myanmar's coastline region along with the Andaman Sea and Eastern Bay of Bengal is inclined to heavy storms, floods and cyclones. Delta area experiences heavy rain-induced floods, tropical storms, and cyclones and several areas of Central Dry Zone are always exposed to chronic droughts.

The majority of the total population is resided in two critical areas: the Delta area, generally vulnerable to floods and possible storm-surge consequences; and the Central Dry Zone area, familiar with serious drought and water shortage. The living way of the total rural population rests on natural forests, agriculture, and livestock industry. There is no doubt that the largest portions of the population are likely to be the victims of natural disaster and climate hazards destroying to their occupation and wellbeing at any time. According to the observation of climate trends during six decades, seasonal temperature increased about 0.08 degree centigrade; rainfall and sea levels increase though it decrease in some areas; it is likely to happen further acute weather events in Myanmar. A hydro meteorological indicator, analyzed by the Department of Meteorology and Hydrology (DMH) points out that Myanmar's climate is critically shifting.

## **Impacts of Climate Change on the Development Sectors**

Myanmar is characterized by severe climate events, intensified in extent and level of damage during the last 60 years. It is familiar with extreme natural weathers including increased occurrences of drought, higher intensity of cyclones and heavy storms. The dangerous

consequences of climate changes affect vital social and economic sectors of Myanmar. According to the Study of Cyclonic Storms crossed Myanmar's coastal zones, 80 storms (around 6 percent) reached Myanmar's coastal regions, among the 1,304 tropical storms originated in the Bay of Bengal. In May 2008, the outbreak of Cyclone Nargis caused nearly 140,000 people dead and disturbed approximately 2.4 million people in the Ayeyarwady Delta region. In October 2010, Cyclone Giri hit Rakhine State, damaging 21,242 houses and affecting approximately 224,212 people. Precipitation has become more variable, and Myanmar suffers intense rainfall every year with erratic and record-breaking intense rainfall events. In central Myanmar, a penetrating flood in the Wundwin Township destroyed many villages in October 2010. Heavy rains caused the damage of paddy fields in Rakhine State in October 2010. Moreover, strong rain and severe floods occurred predominantly in Magway, Ayeyarwady and Bago Regions, Mon and Rakhine States during July to October in 2011. Storm surges and landslides occurred within 2015 affected nearly 120 deaths, shifted 1.6 million people. The cost of weather disasters was equal to three percent of Myanmar's Gross Domestic Product (GDP) in 2014-2015. In 2015, Myanmar was regarded as the world's second vulnerable country to serious climate problems for the third recurrent years.

In 2019, severe monsoon rains and rising river levels have caused flooding both in upper and lower land areas of Myanmar. Kachin State Government declared that more than 6,200 people were relocated to 39 sites in Myitkyina, Bhamo and Shwegu townships in July 2019. Sagaing, Mandalay, Bago, Magway Regions and Kayin State were severely affected by serious floods with above 26,000 people affected. On 9 August 2019, the heavy rain caused a dangerous landslide killing more than 70 people in Paung Township, Mon State. According to the announcement of the National Disaster Management Committee, over 170 houses were damaged. Paddy fields were inundated and farmers required seeds, tools and other support to recover their livelihoods. In the Dry Zone which stretches most of Magway Region and from lower Sagaing Region to western and central Mandalay Region, covering 58 townships, severe droughts have increasingly occurred between 1992 and 2002. Droughts are also recurrent, predominantly in Central Myanmar. Drought years were recurring in the 1980s and 1990s; Myanmar faced the most extreme drought happening in 2010 summer by the cruel temperatures of 47.2 degree centigrade causing heat-related health problems and deaths.

It is obvious that climate change would decrease rice yield, and reduce food production and food security. Impacts on agriculture not only threaten the living conditions of farmers but also diminish the progress of Gross Domestic Products of the country. For instance, the 2005 Cyclone Nargis hit in Ayeyarwaddy Delta left the destruction of total cost in excess of 40 million US dollar. Cyclone Nargis caused US dollar 1,814 million cost of damage in the industrial sector. In 2015, the outbreak of floodings and landslides within only 2 months from July to August, led to the estimated total loss of 10.51 million US dollar. 20 percent of the country's agricultural areas were overwhelming by the heavy occasions of rains and floods, equal to the damage of 4.2 percent agricultural GDP. Caused by the impacts of climate problems, country's progress in economy (2015-2016) was decreased to 7 percent lesser than 8.5 percent of past two years' GDP. Adverse impacts of climate change affect all vital sectors of economic and social development, including human health, wellbeing and education. Climate problems may hamper national capacity of Myanmar to attain comprehensive economic and social development.

The climate changes in Myanmar within the last six decades include a temperature increase of average 0.08 degree centigrade and rainfall rise of 29-215 millimeters per decade. The most current climate change predictions confirm the rain inclinations; increasing temperature; and related events such as heat waves, droughts and floods. The consequences of such climate change events may cause the likelihoods of extreme tropical cyclones: sea level rise; and salinity incursion. Fundamental reasons of climate change events are annual deforestation, excessive timber extraction, illegal logging, and large demand for public use firewood. Moreover, extreme weather

events are raised by the land mining, copper mining and other environmental damaged industrial projects. The climate change factors undoubtedly interrupt agricultural production and water supply, cause coastal and urban flooding and bring climate-induced social and health problems and risks. The impacts of climate change also produce the poverty and shortage of foods and shelters in the affected regions of the country.

The level of GHG release was estimated about 10 percent, discharged from country's industrial sectors and construction zones in 2000. The annual domestic firewood consumption was 2.7 million tons in 2016. It is likely to grow the estimated level of 5.6 million tons in 2030 eventually causing the higher level of GHG release. Myanmar must endeavor to counter to climate change, before it weakens country's general improvement. If the climate change events are not effectively tackled, the severe impacts will hinder the country's all round development goals. Without considering the actions of climate change mitigation and adaptation into the future development agenda, it would inhibit the country's socio-economic development outcomes. In this context, climate change mitigation and adaptation is imperative for the future progress of economic and social development plans.

### **Myanmar Climate Change Policy and Strategy**

As an effort to reduce climate change problems, Myanmar established a number of policies on environmental conservation in consistent with global environmental architecture. Since the 1990s, the government has established the environmental policies and strategies with the main objective to sustainable forest and environment. Myanmar Forest Policy of 1995 highlighted the soil protection, watershed management, and ecosystem and biodiversity conservation. The strong vision of Forest Policy is to maintain 30 percent of the total country area as Reserved Forests and 5 percent as Protected Areas. Forest Policy recognizes that sustainable management of natural forests can deeply facilitate the environmental benefits for the recent and next populace of the country.

In 1992, a proposal for international sustainable development in the 21<sup>st</sup> century, called the Agenda 21 was agreed by 178 governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil. That Conference realized that the universal perception of Sustainable Forest Management (SFM) is an essential element of Sustainable Development. Agenda 21 adopted the obligations and actions for participant countries to conduct the numerous ways of sustainable development. In 1997, Myanmar designated Myanmar Agenda 21 to describe its commitment to the international obligations of the Agenda 21. Besides, Myanmar established National Sustainable Development Strategy (NSDS) in 2009 with the support of the United Nations Environment Program (UNEP). Myanmar identifies the three primary visions such as reliable management of natural resources, cohesive economic development, and stable social development. Furthermore, Myanmar has advanced the Environmental Conservation Law and the National Adaptation Program of Action (NAPA) in 2012 to initiate the actions of climate change mitigation and adaptation.

Myanmar Climate Change Alliance (MCCA) was organized in July 2014 with the assistance of the UN-Habitat and the UNEP. MCCA provides to raise climate awareness and promotes the national capacity to include climate awareness in its policies. In 2016, MCCA launched a Capacity Building Program and a National Awareness Campaign to promote the climate awareness for the policy makers, communities and the public. Myanmar realizes increasingly threatening impacts of climate change and tries to strengthen technology and institutional capacity by participating in the global efforts especially in reducing global warming. Myanmar coordinated the Official Functioning Team of the MCCA with the Natural Resources and Environmental Conservation Ministry to implement an action plan of policies and strategies improvement within

time limit from 2015 to 2017. The Climate Change Policy was established in March 2018 in order to effectively manage the climate change problems. The main objective of Climate Change Policy is to afford long-term direction and management for all stakeholders and development partners to improve climate change mitigation and adaptation actions. The Climate Change Policy contains guiding principles and measures for achieving Myanmar's vision to be a climate-resistant and low-carbon society.

The National Environment Policy 2018 launched guiding rules and principles to accomplish the environmental considerations. This Policy was prepared to conduct environmental conservation as the fundamental efforts for reducing natural disasters and promoting economic and social development. The main objectives of Environment Policy are to guide government institutions, local community, and other private partners on systematic management for attaining environmental protection and sustainable development. The government has taken steps to improve its green economy policy and waste management strategy. Moreover, Myanmar designated the Climate Change Strategy (2018-2030) in 2019 with the combined support of the MCCA, UNEP and UN-Habitat. Building a Road Map with strategic approaches and procedures in resolving climate change problems is the significant goal of Myanmar Climate Change Strategy.

Furthermore, mission and vision of Climate Change Strategy is to convert Myanmar into a climate-resilient and low-carbon country, and guarantee for promoting the living conditions, prosperity and security of the society. In line with this idea to become a climate-resilient country, Myanmar must motivate and extend the environmental efforts of the government, public and private sectors. Ideally, the Myanmar Climate Change Policy outlined the nine guiding standards: Sustainable Progress; Protection; Deterrence; Ecological Integrity; Mutual Responsibility; All-inclusiveness; Moral Governance; Climate Justice and Equity; Gender Parity and Females' Empowerment. The strategic vision of the Climate Change Policy aims to contribute on global efforts reducing GHG emissions, by declining its contribution to the underlying causes of climate change problems.

Myanmar Climate Change Strategy also complements the country's Green Growth Strategy and the Reducing Emissions from Deforestation and Forest Degradation (REDD) strategy. The Climate Change Strategy includes deliberative agenda that identify priority actions to achieve substantial outcomes. Through implementation of the Climate Change Strategy, Myanmar contributes to achieving all 17 United Nations Sustainable Development Goals (UNSDGs) together with other UN member states. Myanmar Climate Change Strategy needs to undertake through five mechanisms: a key outline to undertake adherent investment in climate resilient and low carbon improvement; a diverse organized system and function; a financial apparatus to allocate budget for comprehensive investment; an intensive agenda of capacity improving for the key players, and a plan for raising knowledge and awareness. Myanmar is obligated to implement National Environmental Policy through a series of Master Plans and Climate Change Strategic Framework.

### **Regional and International Cooperation**

Additional collaborations of Myanmar with international organizations and non-governmental organizations (NGOs) are consisting in the strategic approach towards climate change mitigation and adaptation plan. Myanmar participates in regional and international climate change activities through relevant departments and institutions. In June 2002, Myanmar signed ASEAN Agreement for Trans-boundary Haze Pollution (AATHP) to prohibit land and forest fires to control trans-boundary haze pollution. Moreover, in 2003 Myanmar joined the Kyoto Protocol and committed to deter hazardous anthropogenic interference and reduce GHG emissions in the atmosphere.

Myanmar has obtained financial assistance of international organizations to the field of climate change mitigation and adaptation. Myanmar Climate Change Alliance initiatives are funded by the European Union (EU), UN-Habitat and UNEP launched to coordinate climate change mechanism in Myanmar. Myanmar has received financial support of the EU and Global Climate Change Alliance (GCCA) since 2007 under the cooperative program between EU and developing countries mostly affected by climate change impacts. Major part of the GCCA finance intended to provide the preparation of the Myanmar Climate Change Strategy. In 2013, EU Member countries pledged to support entire budget for US dollar 170 million cost climate actions using Special Climate Change Fund and Adaptation Fund for the Least Developed Countries. In that year, the European Commission provided € 47 million for sponsoring nine climate projects in developing countries including Myanmar. The EU donated € 4 million through the EU- Global Climate Change Alliance to MCCA in order to facilitate the expertise, technology and institutions for the development of Myanmar Climate Change Strategy in 2013. The main objective of EU funded MCCA project highlights the subscribing climate change actions under Myanmar development agenda and policy reform.

As a significant landmark for climate preventive diplomacy, the Paris Agreement on Climate Change was ratified by 195 countries in 2015 to agree legally binding limit of global temperature level. The legally binding commitment of Paris Agreement designated the international Action Plan to control global warming under 2 degree centigrade for preventive global climate change. Myanmar became a signatory to the Paris Agreement in April 2016 and attempted to follow the global obligations of the 2015 Paris Agreement. The 22<sup>nd</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC-COP 22) was held in Morocco to discuss the realization of the Paris Agreement on December 2016. The Myanmar Climate Change Strategy and Action Plan (MCCSAP) 2016-2030 was formulated with the strategy development aid of EU-initiative GCCA in close partnership with the Ministry of Natural Resources and Environmental Conservation. National Climate Change Policy also endorses Myanmar's commitment to the Paris Agreement, and United Nations 2030 Agenda for Sustainable Development, including the Sustainable Development Goals and UNFCCC. Myanmar's endeavor on climate change mitigation joining with the comprehensive global efforts focuses on its accessible approach towards UN-facilitated climate change mitigation and adaptation politics.

### **Research Finding and Conclusion**

In theory, climate change mitigation and adaptation measures are under the well preparation to be implemented in Myanmar. But, in practice, Myanmar has likely to overcome additional challenges for attaining sustainable funding and technical support, and in mobilizing the proficient institutions indispensable for effectively managing the climate change issues. Moreover, the intersection between extensive land grabbing and natural resource-oriented climate change mitigation actions results another conflicts in land investment and climate change mitigation. The twin challenges of agricultural justice and climate justice are continued to be settled at the same time. Around 10 percent of GHG release level in 2000 was discharged from the industrial sectors and construction sites in Myanmar. An increase of annual coal production, estimated from 2.7 million tons by 2016 to 5.6 million tons by 2030, leads to rising GHG emissions. This trend could fail the opportunity of climate-resilient and low-carbon development plan and also impede country's development outcomes. Besides, without effectively managing the underlying causes of climate change such as annual deforestation and degradation, excessive timber extraction, illegal logging, copper mining, land mining and other environmental damaged industrial projects, the increased impacts of climate change would undermine the national capacity to achieve social and economic developments.

Myanmar must strengthen its endeavors for managing climate change for two main purposes: to make sure that country's development objectives are attainable without being challenged by climate impacts and to improve living circumstances for the wellbeing and security of the community. The sustainable target of Climate Change Strategy is building climate-smart society and following a low-carbon development way to provide sustainable and comprehensive all round developments. To accomplish this target, Myanmar must highlight its development plans specifically on the infrastructure, social and economic sectors by means of applying two strategic tracks consistent with the worldwide determination in combating climate change. The first track is enhancing climate resilience adapted to the inconvenient climate change impacts. The second track is building low-carbon development choices and making the right balance between economic development and environmental sustainability. These two tracks comprehend the parallel climate change obligations pursuing a low-carbon development pathway to guarantee a climate resilient country. Promoting climate resilience is crucial endeavor to accomplish the country's socio-economic development objectives. Myanmar must have to strengthen its social and economic infrastructure within the framework of climate change to absolutely achieve country's sustainable development plans. Myanmar needs to improve an effective roadmap to steer Myanmar's strategic plans to reduce the risks and impacts of climate change for the next 10 years and beyond.

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### **References**

- ASEAN Cooperation on Environment: At A Glance, Jakarta, ASEAN Secretariat, 2017
- Climate Change and Private Sector Resilience in Myanmar, Policy Brief I, Nay Pyi Taw, MCCA, 2017
- CSO Urges More Climate Change Cooperation: The Myanmar Times: <https://www.mmtimes.com/news>
- Impact of Climate Change and the Case of Myanmar, <https://myanmarccalliance.org/en/climate-change-basics/impact-of-climate-change-and-the-case-of-myanmar/>
- Myanmar Agenda 21, Yangon, National Commission for Environmental Affairs (NCEA), 1997
- Myanmar Climate Change Strategy (2018-2030), Ministry of Natural Resources and Environmental Conservation (MONREC), Nay Pyi Taw, 2009
- Myanmar Country Partnership Framework for the Period 2015-2017, Report No.95183-MM, World Bank Group, Washington, DC, 2015
- Myanmar: Flood –July 2019; <https://reliefweb.int/disaster>
- Myanmar Forest Policy (1995), Yangon, Ministry of Forestry, 1995
- Myanmar Monsoon Floods Update-As of 15 August 2019 Myanmar: <https://reliefweb.int>
- Myanmar-Post-disaster Needs Assessment of Floods and Landslides July-September 2015, World Bank Group, Washington DC, 2015
- National Adaption Plan 2017, Climate Change in Myanmar, Process and Prioritizing Adaptation at the Local Level Asia Expo, Seoul, 2017
- National Progress Report on Forestry in Myanmar, Yangon, Forest Department, Ministry of Natural Resources and Environmental Conservation, 1989
- National Report on Environment and Development of the Union of Myanmar, Yangon, Ministry of Foreign Affairs, NCEA, June 1992

National Report on Environmental Performance Assessment (EPA), Nay Pyi Taw, NCEA, 2010

National Report on Sustainable Forest Management in Myanmar: Workshop on Exchange of Experience among ITTO SFM Supported Projects in Asia and the Pacific Region, Nay Pyi Taw, Forest Department, Ministry of Natural Resources and Environmental Conservation, 2007

National Report on the United Nations Convention on Combating Desertification (UNCCD) Implementation, Yangon, NCEA, 2000

National Sustainable Development Strategy (NSDS) for Myanmar, Nay Pyi Taw, NCEA, Ministry of Natural Resources and Environmental Conservation, 2009

Proceedings of a Regional Expert Consultation held in Bangkok (December 1995), Implementing Sustainable Forest Management in Asia and the Pacific, Bangkok, FAO, 1997

Speech of Myanmar President on National Environmental and Climate Change, Nay Pyi Taw, June 5, 2019

Working Paper: The twin challenge of agrarian and climate justice, Yangon, Transnational Institute, 2018

<https://www.rebellion.earth>, event, second global climate strike for future-extinction rebellion

<https://www.mmtimes.com>>news