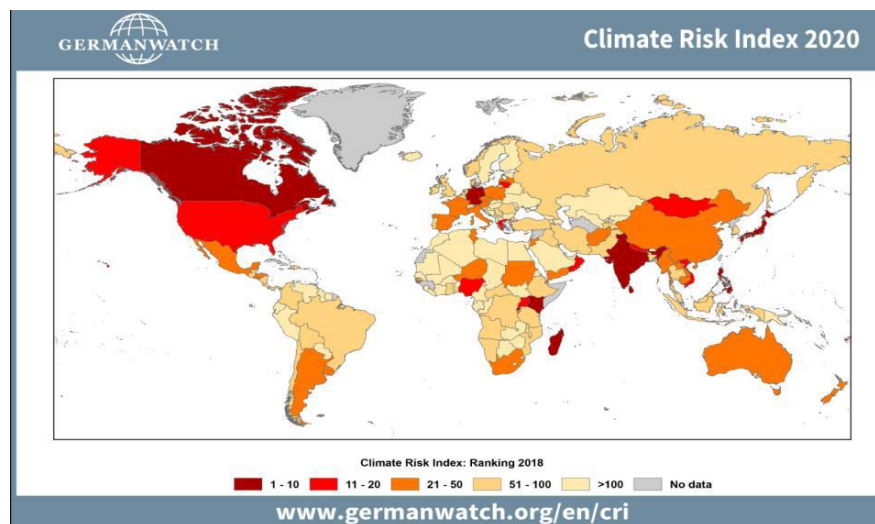


Academic Article

Climate Change Action of ASEAN Member Countries

1. Introduction

At the present, countries around the globe have encountered climate change¹ in different ways which affect environment, economy and society of the country as well as health and safety of the people in every region. The study by the UN Intergovernmental Panel on Climate Change (IPCC) emphasizes scientific evidence supporting how human activities such as fossil fuel use, transportation, agriculture, livestock, industry, deforestation and land use have increased the amount and concentration of greenhouse gas in the atmosphere. These activities affect how climate has unprecedentedly changed and the global averaged temperature has continued to rise since 1950².



Picture 1 Climate Risk Index: Ranking 2018

Source: German Watch: Global Climate Risk Index 2020

¹ Intergovernmental Panel on Climate Change: IPCC defined climate change as changes of climate as a result of whether natural variability or human activities. For more information please visit <http://climate.tmd.go.th/content/article/9>

² Intergovernmental Panel on Climate Change: IPCC, "Global Warming of 1.5°C", Summary for Policymaker, https://www.ipcc.ch/site/assets/uploads/sites/2-2018/07/SR15_SPM_version_stand_alone_LR.pdf (accessed Mar, 2020).

According to Climate Risk Index 2018, it shows that every country around the world is at risk in being affected by climate change. Such problem leads to a call for international agreements namely the United Nations Framework Convention on Climate Change (UNFCCC) as a framework to cooperate among international community. The assembly of the country parties monitors and follows up the implementation of the convention³ and international regulations such as the Kyoto Protocol and the Paris Agreement as instruments to help achieve the ultimate objective of the convention.

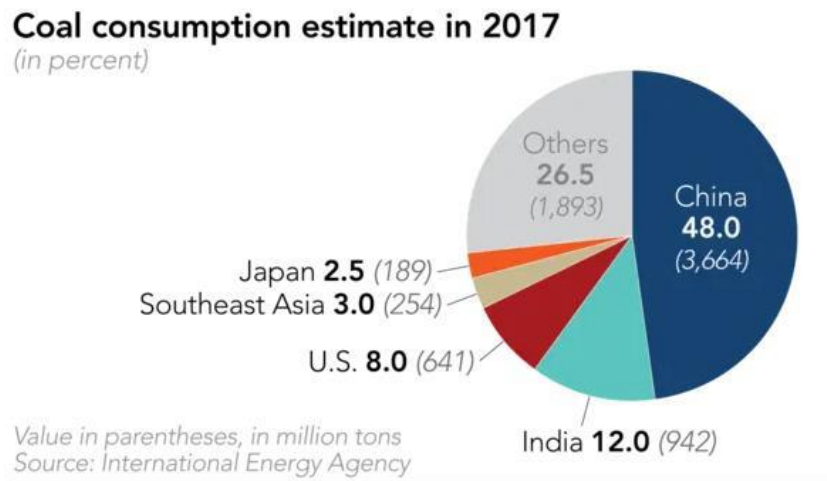
CRI 1999-2018 (1998-2017)	Country	CRI score	Death toll	Deaths per 100 000 inhabitants	Total losses in million US\$ PPP	Losses per unit GDP in %	Number of events (total 1999-2018)
1 (1)	Puerto Rico	6.67	149.90	4.09	4 567.06	3.76	25
2 (3)	Myanmar	10.33	7 052.40	14.29	1 630.06	0.83	55
3 (4)	Haiti	13.83	274.15	2.81	388.93	2.38	78
4 (5)	Philippines	17.67	869.80	0.96	3 118.68	0.57	317
5 (8)	Pakistan	28.83	499.45	0.30	3 792.52	0.53	152
6 (9)	Vietnam	29.83	285.80	0.33	2 018.77	0.47	226
7 (7)	Bangladesh	30.00	577.45	0.39	1 686.33	0.41	191
8 (13)	Thailand	31.00	140.00	0.21	7 764.06	0.87	147
9 (11)	Nepal	31.50	228.00	0.87	225.86	0.40	180
10 (10)	Dominica	32.33	3.35	4.72	133.02	20.80	8

*Table 1 Long Term Climate Risk Index:
World's Top 10 Affected Countries in 1999-2018 (Yearly Average)
Source: German Watch: Global Climate Risk Index 2020*

Moreover, Asian Development Bank's report on Climate-Related Disasters in Asia and Pacific indicates that the South-East Asian region is vulnerable to natural disasters which

³ United Nations Framework on Climate Change Conference: UNFCCC was adopted in 1992 and opened for signature at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Federative Republic of Brazil. The UNFCCC came into force in 1994. All 10 ASEAN countries ratified the convention and became parties. The Conference of the Parties, the highest organization under the Convention on Climate Change, held the first meeting in 1995 and meet annually. The most recent meeting was held in 2019 as COP-25.

occur more frequently and seriously for a long period and cover more areas⁴. The report corresponds with the Global Climate Risk Index 2020 which indicates that for the past 20 years (1998-2018), Myanmar, the Philippines, Vietnam, and Thailand are the world's top 10 countries most affected by climate change⁵. Key factors causing ASEAN to be vulnerable to climate change and have serious loss from natural disasters are major population's establishment of residences and economic activities around coastal areas as well as agricultural ways of life dependent on environment, natural resources and forestry. Major disasters in this region are related to the climate or water in various forms such as drought, storm, floods and especially, the rise of sea level which affects capital cities namely, Jakarta, Bangkok and Manila to be at risk of drowning⁶.



Picture 2 Coal Consumption Estimate in 2017

Source: International Energy Agency

⁴ Vinod Thomas, Jose Ramon G. Albert, and Rosa T. Perez, "Climate – Related Disasters in Asia and the Pacific," ADB Economic working Paper Series, <https://www.adb.org/sites/default/files/publication/30323/ewp-358.pdf> (accessed July, 2020).

⁵ David Eckstein, Vera Kunzel, Laura Schafer, Maik Wings, "Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2018 and 1999 to 2018," Global Climate Risk Index 2020, https://germanwatch.org/sites/germanwatch.org/files/20-2-01e%20Global%20Climate%20Risk%20Index%202020_14.pdf (accessed July, 2020).

⁶ Dan Southerland, "SE Asia slowly but surely sinking into the sea," Asia Times, <https://asiatimes.com/2020/01/se-asia-slowly-but-surely-sinking-into-the-sea/> (accessed January, 2020).

For decades, ASEAN has had rapid economic growth. Fossil fuel such as oil, natural gas and especially, coal have been key energy and mechanism for economic expansion, city development, industrial production and electricity generation. Due to lower cost compared to other energy, the need of coal consumption in this region continues to increase. The situation of coal consumption corresponds with the International Energy Agency's report on then estimate increase of coal consumption in ASEAN by 5 percent per year until 2023 which is considered the world's fastest increase rate. However, though ASEAN are not top countries to produce greenhouse gas emission compared to China, United States or India, ASEAN still have to depend on fossil fuel as well as land use and forestry in response to economic development. Such factor leads ASEAN to face challenges in being one of the world's top regions to continue increase greenhouse gas emission rate⁷.

Due to the problems and the effects from climate change, ASEAN member countries face mutual challenges. If the ASEAN countries can cooperate and empower each other especially by parallel implementation between the executive and legislative organs among the ASEAN countries to enhance cooperation with international community to solve climate change issues, the implementation will be more effective and successful than implementing individually. In addition, according to the previous meeting, the executive body of the ASEAN countries implemented the strategy under the ASEAN Socio-Cultural Community Blueprint 2025 towards sustainable climate and immune community. At the same time, the legislative body of the ASEAN countries held a meeting on climate change during the 40th General Assembly of the ASEAN Inter-Parliamentary Assembly (AIPA) in 2019 hosted by Thailand. The assembly adopted the Resolution on Regional Parliamentary Initiative for Enhancing Climate Action in ASEAN in order to express mutual determination of the ASEAN parliamentarians on climate change.

⁷ International Energy Agency: IEA, "Southeast Asian coal demand to grow at fastest rate in world," Nikkei Asian Review, <https://asia.nikkei.com/Business/Markets/Commodities/Southeast-Asian-coal-demand-to-grow-at-fastest-rate-in-world> (accessed July, 2020)

This article aims to study international obligations at the global community level and the ASEAN regional level, policy and measures for the implementation on climate change of the ASEAN countries as well as the possibility for cooperation among the ASEAN member countries to take measures on climate change in order to support the implementation according to Resolution on Regional Parliamentary Initiative for Enhancing Climate Action in ASEAN.

2. International Obligations

The meeting of IPCC and the Second World Climate Conference led to the adoption of the United Nations Framework Convention on Climate Change in 1992. After that, the convention countries held the Conference of the Parties (COP) to adopt protocol and agreements which are legally binding as international obligations. Concurrently, the ASEAN member countries agreed to make ratification, accession and adoption of the United Nations Framework Convention on Climate Change, Kyoto Protocol, and Paris Agreement.

AMS commitments for climate change

AMS	Status of Approval(AA), Acceptance(A), Accession(a), Succession(d)/Ratification			
	UNFCCC	Kyoto Protocol (KP)	Doha Amendment to KP	Paris Agreement (PA)
Brunei Darussalam	7 Aug 2007 a	20 Aug 2009 a	14 Nov 2014 A	21-Sep-16
Cambodia	18 Dec 1995 a	22 Aug 2002 a	17 Nov 2015 A	6-Feb-17
Indonesia	23-Aug-94	3-Dec-04	30 Sep 2014 A	31-Oct-16
Lao PDR	4 Jan 1995 a	6 Feb 2003 a	-	7-Sep-16
Malaysia	13-Jul-94	4-Sep-02	12 Apr 2017 A	16-Nov-16
Myanmar	25-Nov-94	13 Aug 2003 a	19 Sep 2017 A	19-Sep-17
Philippines	2-Aug-94	20-Nov-03	13 Apr 2016 A	23-Mar-17
Singapore	29-May-97	12 Apr 2006 a	23 Sep 2014 A	21-Sep-16
Thailand	28-Dec-94	28-Aug-02	1 Sep 2015 A	21-Sep-16
Vietnam	16-Nov-94	25-Sep-02	22 Jun 2015 A	3 Nov 2016 AA

Table 2 shows commitments of ASEAN member countries in becoming country parties

Source: ASEAN Secretariat

2.1 The United Nations Framework Convention on Climate Change (UNFCCC) has the objective to stabilize greenhouse gas concentrations at a level that would prevent dangerous anthropogenic (human induced). The principle of the convention is common responsibilities towards climate change for human interest at the present and in the future based on common but differentiated responsibilities based on development status of an individual country. Developed countries should be leaders in combatting climate change and provide assistance to developing countries. The UNFCCC established obligations for country parties to make national report which includes greenhouse gas inventories and steps of implementation to achieve the objective of the convention. Country parties are required to make appropriate national and regional plans, set up measures for climate change mitigation and promote sustainable management⁸. In this regard, the UNFCCC divides countries into 2 groups namely countries in Annex 1: A1 consisting of developed countries and countries with economies in transition such as European Union, Canada, Russia, Japan and Non-Annex 1: NA1 consisting of developing countries including ASEAN member countries. Country parties in Annex 1 not only have mutual obligations according to the convention, the parties are obligated to provide financial assistance to countries of Non-Annex 1 for different matters such as support for national report making, adaptation to the effects of climate change, technology transfer and place importance needs of developing countries and under-developed countries in solving climate change issues.

⁸ “United Nations Framework Convention on Climate Change,” United Nations, May 4, 1992, Article 2-4, pt. 9-15.

2.2 Kyoto Protocol: The Kyoto Protocol was adopted at the third session of the Conference of Parties to the UNFCCC (COP-3) in Kyoto in 1997. It is used as a tool for achieving the ultimate goal of UNFCCC. The Kyoto Protocol's essence is the application of a market mechanism for supporting Annex I countries to achieve a goal of reducing greenhouse gas emissions in accordance with the obligations which can be categorized into 3 mechanisms. These mechanisms consist of Joint Implementation between Annex I countries and Non-Annex I countries, Clean Development Mechanism⁹ and Emission Trading which is a mechanism of buying carbon credits from Non-Annex I countries which obtain carbon credits from the projects of reducing greenhouse gas emissions. These projects were certified by a Clean Development Mechanism Executive Board for bringing carbon credit to deduct the amount of greenhouse gas emissions in the country. ASEAN member countries can participate in reduction of greenhouse gas emissions from the implementation of Clean Development Mechanism projects.¹⁰

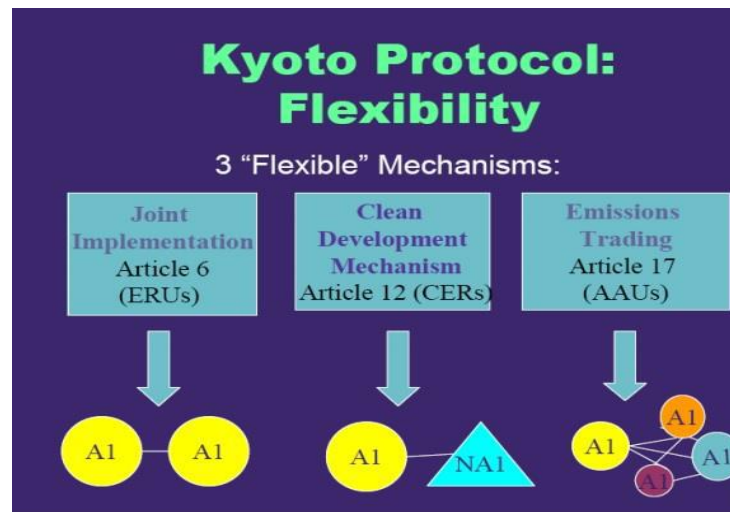


Figure 3: Important Mechanisms in the Achievement of the UNFCCC's goal
Source: Amr Osama Abdel-Aziz, Ph.D. President of Integral Consult

⁹ For example, Certified Emission Reduction: CERs in Thailand has the first CDM project receiving CERs which is A.T. Biopower Power Plant, Pichit Province.

¹⁰ United Nations, "The Clean Development Mechanism," <https://unfccc.int/process-and-meetings/the-kyoto-protocol/mechanisms-under-the-kyoto-protocol/the-clean-development-mechanism> (accessed Aug, 2020)

2.3 Paris Agreement: Paris Agreement was adopted at the Paris Climate Conference (COP-21) in 2015. It is used as a tool following the Kyoto Protocol. The ultimate goal is to control the increase in global average temperature to well below 2 °C above pre-industrial levels. The target is set to aim net-zero greenhouse gas emissions and increase the world’s climate resilience by 2050. Sustainable development and poverty eradication are important principles in coping with global climate change. The Paris Agreement’s essence is the elevation of financial support, technology development and transfer, the strengthening of potential to developing countries having vulnerability to climate change. Member States shall prepare, communicate and maintain successive Nationally Determined Contributions (NDCs) every 5 years for showing the progress and reflecting the highest possible endeavor in accordance with the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.¹¹

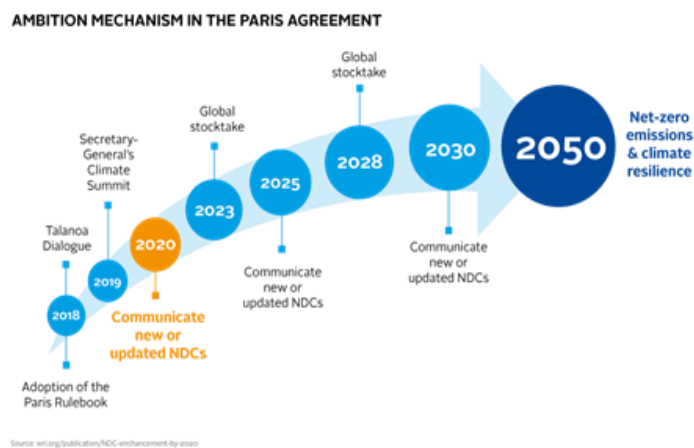


Figure 4 shows the ultimate goal of the Paris Agreement

Source: Principles for Responsible Investment: PRI

¹¹ United Nations, “Nationally Determined Contributions (NDCs) Spotlight,” <https://unfccc.int/process/the-paris-agreement/nationally-determined-contributions/ndc-spotlight> (accessed June, 2020).

3. ASEAN's Cooperation towards Climate Change

Environmental issues in ASEAN are inter-linked such as land, water and air. Environmental impact which takes place in one country also unavoidably affects another country. Natural resources and environmental issues are obstacles towards the driving of ASEAN Community for achieving the ultimate goal. These obstacles led to ASEAN cooperation on environment under ASEAN Strategic Plan on Environment (ASPEN) 2016-2025 which all three pillars place importance on environment. The ASEAN Socio-Cultural Community (ASCC) gives priority to climate change and has the ultimate intention in committing itself to lifting the quality of life for people through collaboration activities. These activities give precedence to the people, hold people-centered and environmentally-friendly principles and head to the promotion of sustainable development. The ASEAN Socio-Cultural Community sets a goal that by 2025 ASCC will become a community having interaction with the people and emphasizing on the public participation and the people's benefits. In addition, ASCC will have sustainability, strength and dynamics. All parties will implement to obtain a community that everyone is involved. Public participation supports social development and protects environment through efficient mechanism for responding the people's demands at present and in the future according to the ASEAN Community Vision 2025 which correspond with the United Nations Sustainable Development Goals 2030.

The issues on climate change have been discussed in many meeting agendas of the Executive and the Legislature of ASEAN member countries. In the last meeting, the Executive issued a joint statement and the Legislature approved a resolution on climate change.

3.1 ASEAN Joint Statement on Climate Change to the 25th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP25) was held in Madrid, the Kingdom of Spain in December 2019. As the Chair of ASEAN, Thailand delivered the ASEAN Joint Statement which was approved by the 35th ASEAN Summit. The ASEAN Joint Statement's essence is the commitment of member States to the framework convention under ASEAN's implementation in various areas and the emphasis on impact from climate change. Member States were requested to

promote science and activities on reduction of greenhouse gas emissions and adaptation to the impact of climate change. In addition, member States were also requested to expedite the completion of negotiations in various issues such as time frames for Intended Nationally Determined Contributions (INDCs), the realization of importance in enhancing the implementation by 2020 and implementation of developed country Parties. These developed countries were requested to fulfill commitment on reduction of greenhouse gas emissions, elevate their financial support commitment of USD 100 billion per year by 2020 for supporting the implementation of adaptation and reducing greenhouse gas emissions to ASEAN member countries and other developing country Parties and to ratify the Doha Amendment to the Kyoto Protocol. It stresses the need to strengthen support for ASEAN member countries and other developing country Parties to analyse climate risks and implement adaptation towards impact from climate change. Moreover, member States were requested to implement the Koronivia Joint Work on Agriculture¹². Moreover, it emphasizes on the need of support and access to the climate fund, technology development and transfer and capacity building to ASEAN member countries and other developing country Parties¹³.

3.2 Resolution on Regional Parliamentary Initiative for Enhancing Climate Action in ASEAN in the 40th General Assembly of the ASEAN Inter-Parliamentary Assembly (AIPA): was held in Bangkok on the occasion that Thailand hosted the meeting on August 2019. Parliamentarians in ASEAN expressed their common standpoint on climate change. The

¹² Koronivia Agriculture is Climate Smart Agriculture (CSA) which helps increase productivity and income to farmers, boost the capacity in the adaptation of climate change and reduce greenhouse gas emissions. This is Koronivia Joint Work on Agriculture of agriculture negotiators under United Nations Framework Convention on Climate Change leading to concrete practices.

¹³ The ASEAN Secretariat, "ASEAN Joint Statement on Climate Change to The 25th Session of The Conference of The Parties to The United Nations Framework Convention on Climate Change (UNFCCC COP25)," Secretariat, <https://asean.org/storage/2019/11/2-ASEAN-Joint-Statement-on-Climate-Change-to-the-UNFCCC-COP-25.pdf> (accessed August 7, 2020).

resolution's essence is the promotion of more public awareness of the need for climate actions and the preparation of measures on adaptation, mitigation and resilience towards climate change. This resolution emphasizes the cooperation of member States in addressing problems and challenges and building a mechanism for inter-parliamentary cooperation for responding to climate change. Parliamentarians have been urged to encourage and monitor the implementation of various projects for achieving the target of Nationally Determined Contributions (NDCs). It emphasizes upon the need for better climate actions by encouraging knowledge share and greater green technology transfer within ASEAN. Moreover, ASEAN was called for using a common measurement, reporting and the same platform of greenhouse gases inventory so that reports on ASEAN are uniform. AIPA was requested to expedite the implementation of clean energy policies for reducing greenhouse gas emissions into the atmosphere. ASEAN was encouraged to support zero-emission and climate friendly investments with economic and financial measures. AIPA is a platform for the exploration and promotion of carbon pricing initiatives. Global warming reduction efforts have been accelerated. Moreover, more renewable energy development is also encouraged.¹⁴

4. Domestic Implementation of ASEAN Member Countries

According to the obligations in the Paris Agreement, each Party shall prepare, communicate and maintain Nationally Determined Contributions (NDCs). Each country shall prepare a proposal in reducing greenhouse gas emissions and implement climate change solutions successively and communicate every five years. The communication will show the progress and reflect the highest possible ambition in accordance with the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances for coping with the climate change impacts and reducing

¹⁴ AIPA Secretariat, "Resolution on Regional Parliamentary Initiative for Enhancing Climate Action in ASEAN," <https://www.parliament.go.th/ewtadmin/ewt/aipa2019/download/article/AIPAGA/conclusion/social/5SOCRESonCLIMATEACTION.pdf>

energy consumption in order to achieve the Sustainable Development Goals (SDGs). Next time, each party shall submit NDCs to the UNFCCC Secretariat by 2020.

According to the study of NDCs in 2016¹⁵, each Party in ASEAN sets the ultimate goal to reduce greenhouse gas emissions (GHG) by 2030, in the light of different capacity and readiness of the individual parties. Singapore is a country which sets the highest goal at 36% while the Philippines sets a high goal at 70% but on the condition that the country must receive a subsidy and a transfer of technology under international cooperation. Meanwhile, many countries still cannot set a target in reducing greenhouse gas emissions clearly such as Brunei, Lao PDR and Myanmar. However, the report of NDCs of each country has a guideline in controlling greenhouse gas emissions such as the promotion of efficiency in energy consumption, promotion and development of renewable energy and alternative energy and an increase of green areas or forest areas.

According to a study of the domestic implementation of ASEAN member countries, it found that the Executive announced various policies, strategic plans or action plans concerning climate change which corresponds with the compliance of UNFCCC and Paris agreement. For example, the government of Cambodia has the Cambodia Climate Change Strategic Plan and Action Plan as well as National Strategic Plan on Green Growth. The government of Malaysia has Melaka Green City Action Plan which aims Melaka to be a low carbon city model. The government of Thailand announced 20-year National Strategy on eco-friendly development and growth. Furthermore, a Bill on Climate Change, B.E. is being drafted by Office of Natural Resources and Environmental Policy and Planning. The government of Vietnam announced a paradigm shift in the country's economic development towards a low carbon and eco-friendly economy and sustainable development including a national plan on the mitigation of greenhouse gas emissions. The government of the Philippines and the government of Indonesia issued Presidential orders or regulations on the mitigation of greenhouse gas emissions.

¹⁵ ASEAN Secretariat, "ASEAN Cooperation on Climate Change," <https://environment.asean.org/awgcc/> (accessed July, 2020).

For the Legislature's implementation, the Parliament of Singapore directly enacted a law on climate change which is the Carbon Tax Act. This Act uses a Polluter Pays Principle (PPP) which sets a tax measure of collecting tax from carbon emitters. Meanwhile, the Parliament of Malaysia is studying the Climate Change Act of the United Kingdom for using as a model in drafting a law for domestic enforcement. Other countries applied laws on environment to cope with climate change. NDCs's contents in 2016 set the ultimate goal of the mitigation of greenhouse gas emissions including the implementation of the Executive and the Legislature according to a Comparison Table of Domestic Implementation of ASEAN Member Countries.

Comparative Domestic Implementation of ASEAN Member Countries

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
Brunei	<ul style="list-style-type: none"> - Increase renewable energy in electricity generation to 10 percent by using solar energy - Decrease overall energy consumption by 63 percent - Transportation sectors will decrease CO₂ emission from cars during rush hours by 40 percent. - Increase reserved forest by law to cover 55 percent from 41 percent at the present 	<ul style="list-style-type: none"> - Ministry of Energy, Manpower and Industry supports the establishment of “National Council on Climate Change” - Assign government agencies to make strategic plans on energy management - Improve energy tax to be progressive tax - Promote technology development for alternative energy 	<ul style="list-style-type: none"> - Laws on protection and environment management (related laws) - Specific law on climate change has not yet been enacted.
Cambodia	<ul style="list-style-type: none"> - Aim to decrease CO₂ to 16 percent - Decrease production energy to 7 percent 	<ul style="list-style-type: none"> - Ministry of Environment announced policy and strategy on Green Development 2013-2030 	<ul style="list-style-type: none"> - Laws on environment protection and natural resources management (related laws)

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
	<ul style="list-style-type: none"> - Decrease energy use in transportation sector to 3 percent - Create the plans for energy efficiency promotion and renewable energy development for electricity generation - Increase forest areas to cover 60 percent of the country 	<ul style="list-style-type: none"> - Strategic plan and action plan on climate change - Tax decrease for alternative energy and recycled energy - 20 Year National Forest Programme (2013-2030) and Green Growth Program with the focus on forest reservation and ecology - Sub-decree on Organization and Implementation of the Secretariat Office of National Biosafety Committee 2015 - Royal Decree on the Establishment of National Committee on Cambodia's Coastal Area Management and Development 2012 	<ul style="list-style-type: none"> - Environmental Codes (related laws) - Specific law on climate change has not yet been enacted.

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
Indonesia	<ul style="list-style-type: none"> - Aim to decrease CO₂ to 29 percent but will increase to 41 percent in case of receiving fund and technology transfer under international cooperation - Create a plan to increase renewable energy to 23 percent - Use waste management and reduction by using it for energy production - Promote the increase of forest areas 	<ul style="list-style-type: none"> - Presidential Decree No. 61/2011 on National Action Plan to reduce GHG emissions and Presidential Decree No. 71/2011 on Inventory report of GHG - National Action Plan on Climate Change 2007 - Establishment of National Committee on Climate Change 	<ul style="list-style-type: none"> - Environmental Management Act 1997 (Amendment of existing laws to cover climate change solutions) - Specific law on climate change has not yet been enacted.
Laos PDR	<ul style="list-style-type: none"> - Does not set a clear goal to decrease CO₂ - Increase the use of renewable energy to 30 percent of all energy consumption - Increase the use of large hydropower for hydroelectricity generation to export to neighbouring countries 	<ul style="list-style-type: none"> - Prime Minister Office's announcement on the adoption and announcement of the strategy on climate change - Prime Minister Office's announcement on protection of importing – exporting and the use of chemicals causing atmospheric 	<ul style="list-style-type: none"> - Laws on environment protection (related laws) - Specific law on climate change has not yet enforced.

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
	<ul style="list-style-type: none"> - Increase forest areas to 70 percent 	<p>pollution which has measures for criminal, civil penalty and administrative measures.</p>	
Malaysia	<ul style="list-style-type: none"> - Aim to decrease CO₂ to 35 percent but will increase to 45 percent in case of receiving fund and technology transfer under international cooperation which will decrease CO₂ to 45 percent - Set measures to increase non-fossil fuel power - Support investment in research and green technology development 	<ul style="list-style-type: none"> - The 11th National Economic Development Plan (2016-2020) place the importance on urban sustainable development and environmental friendly city and promote potential in dealing with the impact from climate change - Melaka Green City Master Plan sets up the goal to make Melaka a model city of low carbon - The campaign to support maximum efficiency of energy use and more alternative energy use have been promoted. 	<ul style="list-style-type: none"> - The Parliament has been studying the “Climate Change Act of the United Kingdom 2008” as a model for drafting climate change bill - Specific laws on climate change has not yet been enacted.

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
Myanmar	<ul style="list-style-type: none"> - Does not set a clear goal to decrease CO₂ - Plans to increase hydropower to generate electricity by using efficient technology aiming to produce 9,400 megawatt of hydropower - Support the communities in remote areas with non-access to electricity to use the alternative energy to generate their own electricity - Set measures to improve power efficiency in industrial sectors - Increase reserved forest areas to 30 percent of the country 	<ul style="list-style-type: none"> - National environment policy - National climate change policy - Project implementation of Myanmar Climate Change Alliances supported by European Union and technical assistance from UN Environment Programme and United Nations Human Settlements Programme (UN-Habitat) 	<ul style="list-style-type: none"> - Environmental reservation laws (related laws) - Specific law on climate change has not yet been enacted.

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
The Philippines	<ul style="list-style-type: none"> - Set the goal to reduce CO₂ to 70 percent under the condition that the Philippines receives financial support and technology transfer under international cooperation - Set energy plan to support CO₂ reduction will help increase renewable energy use in every sector to 37 percent - Improve electricity generation system and decrease energy consumption in every sector to 10 percent 	<ul style="list-style-type: none"> - Presidential Decree No. 1151 on the improvement of the Environmental Policy 1977 - Presidential Decree No. 1152 on the National Environment Code 	<ul style="list-style-type: none"> - Environment codes (related laws) - Republic Act No. 9729 established climate change fund 2009 - Specific law on climate change has not yet been enacted.
Singapore	<ul style="list-style-type: none"> - Aim to decrease CO₂ to 36 percent 	<ul style="list-style-type: none"> - Action Plan on Climate Change focusing on smart energy use and improve 	<ul style="list-style-type: none"> - Carbon Pricing Act 2019 (aim to decrease energy concentration to 20 percent and increase alternative energy

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
	<ul style="list-style-type: none"> - Lack of potential renewable energy and depend mainly on fossil fuel due to the limitation of area - Aim to use efficient energy measures and invest in research and development to find innovation and technology to help decrease CO₂ emission 	<ul style="list-style-type: none"> infrastructure of the country which aims to use renewable energy instead of coal - Action Plan to eliminate petrol and diesel within 2040 	<ul style="list-style-type: none"> to 23 percent within 2025 using tax measures on companies that release high GHG emission and require companies to regularly submit GHG inventory report - Laws on energy reservation (related laws)
Thailand	<ul style="list-style-type: none"> - Aim to decrease CO₂ to 20-25 percent - Increase electricity generation with alternative energy to 20 percent - Improve the efficiency of electricity generation and promote energy saving by reducing energy use to 30 percent 	<ul style="list-style-type: none"> - The National Strategy (2018-2037) No.5 on Eco-Friendly Development and Growth Section 4.3 Promoting Sustainable Climate-Friendly Based Society Growth 	<ul style="list-style-type: none"> - The Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992) (related laws) - Specific law on climate change has not yet been enacted.

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
		<ul style="list-style-type: none"> - Climate Change Master Plan 2015-2050 setting the goal in building immunity to climate change and the growth of carbon emissions - Plans for climate change adaptation - Office of Natural Resources and Environmental Policy and Planning has been drafting “Climate Change Bill B.E. ...” - National Reform Plan on National Resources and Environment, Section 3: encouraging every sector to cooperate in solving climate problems 	
เวียดนาม	<ul style="list-style-type: none"> - Aim to decrease CO₂ emission to 8 percent and will decrease up to 25 percent in case of receiving financial 	<ul style="list-style-type: none"> - Change paradigm in developing the country’s economy to low carbon and eco-friendly economy for sustainable development 	<ul style="list-style-type: none"> - Laws on environment protection (related laws) - Specific law on climate change has not yet been enacted.

Country	NDCs Report 2016 setting the ultimate goal for Green House Gas Emission Mitigation by 2030	Implementation of the Executive Body (Updated 2020)	Implementation of the Legislative Body in Legislations (Updated 2020)
	<p>support and technology transfer under international cooperation</p> <ul style="list-style-type: none"> - Renewable energy technology development plan together with energy saving promotion and energy efficiency in production and daily life - Increase green areas by forest reservation 	<ul style="list-style-type: none"> - National and regional plan to reduce greenhouse gas emission - Promote renewable energy development or clean energy instead of GHG generating energy - Improve laws on environment protection by placing the importance on atmosphere protection, setting measures on importing and exporting ozone-depleting chemicals, and setting measures on forest rehabilitation and protection of deforestation 	

5. Summary and Recommendations

Scientific evidence shows the relationship between climate change and various human activities such as industry, transportation, agriculture, livestock and land use resulting in greenhouse gas in the atmosphere. These activities not only increase the global temperature but also cause ecological and natural variability. Global consciousness towards climate change leads to the formulation of collaborative frameworks in the prevention following a Precautionary Principle which prevents greater severity of climate change. Many protocols and international agreements are tools and mechanisms which will lead to the ultimate success. In this regard, developed countries are the leaders in accordance with the principle of common but differentiated responsibilities.

Climate change causes many areas in ASEAN to encounter risks of severe natural disasters. Many large cities in ASEAN tend to become permanently flooded areas. Although ASEAN is not a group of countries emitting greenhouse gas at the top rank, ASEAN increases the use of coal rapidly because coal is the important mechanism in driving and developing the economy. Therefore, ASEAN faces with a dilemma to balance between the cooperation with the global community in compliance with international agreements on the mitigation of greenhouse gas emissions and the economic stabilization. However, ASEAN demonstrates a common intention which cooperates with the global community in coping with climate change. For example, the Executive issued the ASEAN Statement to the Conference of the Parties to the UNFCCC and the Legislature issued a resolution for enhancing climate action.

In 2016, each member country in ASEAN submitted NDCs to the UNFCCC Secretariat. The ultimate goal is set to reduce greenhouse gas emissions by 2030 in different rates according to the capacity and readiness of each country. In addition, various measures which will help reduce greenhouse gas emissions were launched such as the campaign of alternative energy use, the increase of forest areas. Furthermore, the study found that each country has a different progress in the implementation. The Executive has determined various strategic plans and measures concerning the coping with climate change while the implementation of the Legislature in each country is still not clear in form of the enactment of specific law on climate change. However, ASEAN

member countries tend to concretely enact laws on climate change in the future leading to sustainable cooperation in ASEAN.

Climate change is an important problem affecting the country's environment, economy and society. This problem results in the loss of human life and damage to property throughout the regions of the world. To prevent or solve the problem and impact which may occur in the future, many concerned parties such as the Legislature, the Executive, government agencies, the private sector and civil society need to cooperate for driving the implementation on climate change of ASEAN member countries into concrete practices. Recommendations are as follows:

5.1 Recommendations in the International Level of ASEAN Member Countries

1) AIPA should create a specific forum on the legal harmonization of climate change. This is an important forum which ASEAN member countries must discuss this matter specifically. In addition, parliamentarians who are champions or key persons in the coordination of the parliament should be recruited to push the legal harmonization of climate change issue concretely.

2) AIPA delegations should use a forum having a meeting with ASEAN leaders (AIPA – ASEAN Interface) for determining a plan or a guideline which will integrate the cooperation between the Legislature and the Executive for solving the problem. The formulation of such plan or guideline should open the opportunity to various concerned sectors in the participation which will contribute to receive correct information. Therefore, the determined plan or guideline will have the feasibility and gain acceptance from various sectors.

3) The Legislature of each ASEAN member country should use international forums in the AIPA meeting, especially AIPA Caucus Meeting which is an important mechanism to push and monitor the implementation of resolutions on climate change. Moreover, the Legislature should build awareness of the Sustainable Development Goals (SDGs) Goal 13: Climate Action.

4) The ASEAN Community should push the ASEAN Socio-Cultural Community Plan 2016-2025 on sustainable climate. This plan sets a strategic measure on strengthening the global partnership and supporting the implementation in accordance

with agreements and international frameworks for action. All ASEAN member countries jointly prepare ASEAN's Regionally Determined Contributions (ASEAN's RDCs) along with the preparation of NDCs which each ASEAN member country has already implemented for elevating the compliance with the Paris Agreement. Furthermore, ASEAN should promote the cooperation and the Action Plan on Energy and Environment through the mechanism in ASEAN frameworks such as ASEAN Ministers on Energy Meeting (AMEM), Senior Officials Meeting on Energy (SOME) and the Ministerial Meeting under ASEAN Plan of Action for Energy Cooperation (APEC) 2016-2025. Therefore, the issues and environmental cooperation at the regional level can be brought to implement more concretely such as transboundary haze, marine debris, development of ASEAN Power Grid for having renewable energy and clean energy sources for economic development and environmental care in the region. In addition, the dissemination of research and documents concerning climate change should be promoted in order to build common awareness.³¹

5.2 Recommendations in the Internal Level of ASEAN Member Countries

1) The Legislature and the Executive of ASEAN member countries must place importance on laws and jointly consider pushing the enactment of specific laws within the country which corresponds with international obligations on climate change for the enforcement. These laws will be the tool which integrates all sectors in preventing and solving the problem concretely.

2) Government agencies are the important mechanism in the application of policies into concrete practices. They should study or exchange the learning with ASEAN member countries having the progress in the implementation on climate change such as Singapore for bringing to be a model and applying in practices with their own countries. Furthermore, the implementation of various sectors such as the public sector, the private sector and civil society should be promoted. For example, the potential private sector should be promoted to participate in a project or any activities concerning the climate

³¹Arief Wijara and Shira Idris, "ASEAN Countries Must Act Together to Confront Climate Change," World Resources Institute, <https://www.wri.org/blog/2017/11/asean-countries-must-act-together-confront-climate-change> (accessed Sep, 2020).

change. Information must be correctly and continuously distributed to the people for adapting themselves and reducing risks which may occur from the climate change. More importantly, the government agencies should conduct a public relations campaign for building common consciousness in the energy conservation, using energy wisely, having public mind and social responsibility and taking care of environment leading to the achievement of Goal 13 of the Sustainable Development Goals (SDGs).

5.3 Recommendations to Thailand's Legislature

1) Laws on climate change should be pushed to the enforcement. A suitable budget on coping with climate change should be considered for further practices. The implementation and spending of the Executive's budget should be monitored and audited for the efficiency. The public participation in concretely pushing the Sustainable Development Goal on Climate Action should be promoted.

2) The parliament's mechanisms should be used in driving and pushing the climate change concretely through related committees such as environment, energy, land and natural resources, agriculture and cooperatives, disaster prevention and mitigation. The implementation can be executed through a meeting for monitoring the implementation of the Executive, a seminar for educating the people, a study visit within the country and ASEAN member countries for seeking the cooperation with various sectors.