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Assessment of Climate Change Impacts and Mitigation in ASEAN: Heavily Impacted with Unestablished Commitment to Act

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Summary

Climate change has become a significant issue in ASEAN, considering the critical geographical and socio-economic developments that intensify natural disasters, food insecurity, and territorial and migration conflicts. It transformed the climate change/environmental problem from potential risks into a real, pervasive threat to survival. Unfortunately, ASEAN has yet to see concerted significant regional efforts to achieve a global standard of climate change mitigation, preventing a 1.5°C temperature rise by 2100. ASEAN member states' Nationally Determined Contributions (NDCs) have not aligned with the Paris Agreement as commitment varies regarding targets, strategies, and monitoring and evaluation control. The regional efforts to combat climate change could not yet qualify as an established commitment to act. Differentiated obligations based on historical emissions should be elaborated with investment, technology development, and green infrastructure to support net-zero, which should be promoted unconditionally or conditionally to international support in ASEAN countries.

Keywords: ASEAN, Climate Change Mitigation, Commitment, Nationally Determined Contribution (NDC), Southeast Asia

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Risks and Threats Posed by Climate Change

Geography is a destiny. ASEAN's position along the equator and its landscape of coastal plains and low-lying agricultural plains on river basins means that the planet's warming risks will have resulted in natural disasters and extreme weather events. In other words, ASEAN's geography is vulnerable to climate change-induced natural disasters due to its topographical and climatic conditions, while at the same time also dealing with socio-economic reality as developing countries' regions that have a higher risk of climate change impact due to limited mitigation and adaption capacities.

In this regard, climate change transforms from a risk into a pervasive threat to survival. First, climate change may have an impact on the loss of substantial territory due to sea level rise; this is mainly the case for Indonesia, Myanmar, the Philippines, Thailand, and Vietnam, where sea level rise has already impacted seaboards and flat fertile plains, causing coastal erosion and salination of fresh water.[3] The latter will affect food security as ADB[4,] and the Potsdam Institute for Climate Impact Research[5] predicted that rice yields in Indonesia, the Philippines, Vietnam, Thailand, and Myanmar will potentially be 50% lower in 2100 compared to 1990.[6] It indicated a real threat of climate change to the state's territorial integrity in Southeast Asia, requiring immediate and concrete commitment to act.

Secondly, climate change will contribute to declining agricultural productivity and food insecurity in most ASEAN states without swift technological intervention, impacting riverine ecosystems and marine fishing resources. As fish stock declined – also due to over-exploitation and acidification of oceans – the regional seas might become more competitive.[7] The destabilization of riverine ecosystems may result from the changing precipitation of the Himalayas, which would flood the Mekong, Salween, and Irrawaddy rivers and cause further insecurity for agricultural communities along the Greater Mekong region.[8] Climate change in the Southeast has also created uncertainty and difficulty for farmers to produce high quantity and quality agricultural products. Longer dry seasons prompt forest fires in Indonesia that constrain water irrigation for more arid regions. Rice and barley production within the area has experienced a drop in recent years, with 426.81 million tons of rice in 2015 becoming 418.56 in 2019 and 2.25 million tons of barley in 2015 becoming 1.42 in 2019.[9] This situation is more impactful for the overall population, as the majority of them depend on the agriculture or fishery sector.

Thirdly, climate change in Southeast Asia has created severe, intense disaster risk management issues within the ASEAN countries, as climate change affected crops, natural resources, and the people who

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[9] Yuan, S., Stuart, A.M., Laborte, A.G. et al. Southeast Asia must narrow down the yield gap to continue to be a major rice bowl. Nat Food 3, 217–226 (2022). https://doi.org/10.1038/s43016-022-00477-z; Southeast Asia must narrow down the yield gap to continue to be a major rice bowl | Nature Food

inhabited the region. Floods, forest fires, typhoons, storms, hurricanes, drought, and heat waves are a few examples of

climate change directly affecting ASEAN people.[10] Flood has become a significant natural disaster-climate change in Southeast Asia, with more than 1,000 cases within the last decade that were progressing and increasing due to climate change.[11] Total deaths from natural disasters also grew by less than ten thousand deaths a decade before 2000 and doubled in the last decade. This condition reaffirmed the idea of altering climate change from a risk into a pervasive threat to survival in ASEAN.[12]

Fourthly, the impact of climate change on the ASEAN region is migration from within and outside the region. While ASEAN states are not alien to migration, the region's population continues to rise, and member states may need more fertile land to accommodate influxes of people on a long-term basis. It may exacerbate tensions as ASEAN is projected to host 770 million people in 2040, according to World Population Review.[13] Migration-related tensions are not hard to imagine. For some member states, the flow of irregular labor migration and asylum-seeking refugees has already caused national and international tensions.[14] A case in point is a mass migration from low-lying Bangladesh, resulting in strains with neighboring Myanmar and other ASEAN member states. Migration is also possible as China's coastal lands are eroded.[15] Climate-induced mass migration into Southeast Asia could exacerbate social frictions and present significant resource and political challenges.

Finally, climate change presents the risk of escalating insecurity resulting from armed conflict. The warming planet and extreme weather events it caused are eroding traditional livelihoods as harvests fail and fish stocks decline; in turn, this situation would make the dependent communities vulnerable to recruitment by terrorist, separatist, and other subversive and criminal groups.[16] Climate change and the resulting loss of traditional livelihoods could result in economic grievances that subversive groups may exploit for Indonesia, Myanmar, the Philippines, and Thailand. In the Sahel region of Africa, climate change has increased insurgency and terrorist attacks in Mali, Niger, Nigeria, and Burkina Faso as Lake Chad is progressively drying up.[17] It has a relationship with eco-terrorism that underlines the use of violence to further environmental policy change, as perpetrators perceive themselves as experiencing severe impacts from environmental degradation, such as climate change.

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[11] WEF, 2021, Southeast Asia to bear the brunt of worsening global climate, IPCC warns; What are the effects of climate change on Southeast Asia? | World Economic Forum (weforum.org)

[12] Erica Soekardono, 2022, Natural Disasters in Southeast Asia – Why It Matters (why-it-matters.org)

[13] ERIA, 2019, ASEAN Vision 2040: Towards a Bolder and Stronger ASEAN Community; ASEAN Vision 2040: Towards a Bolder and Stronger ASEAN Community - Publications : ERIA

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[17] ICRC, 2019, Mali-Niger: Climate change and conflict make an explosive mix in the Sahel, Mali-Niger: Climate change and conflict make an explosive mix in the Sahel | International Committee of the Red Cross (icrc.org)

Regarding the previous elaboration, this article argues that climate change is a real issue in ASEAN that has been transforming from a mare of risks to a pervasive threat to survival. It also highlights the condition of the region as one of the heavily impacted by climate change across many livelihood sectors, from territorial integrity, food security, disaster, migration, and armed conflict potential. Therefore, ASEAN member states urgently need to mitigate climate change, which also means pre-empting potential climate-induced conflicts and further costs in terms of declining regional relations and the effectiveness of multilateral cooperation. In turn, climate change-induced migration and resource competition would result in declining confidence and trust between member states, impede cooperation in other environmental issues such as transboundary haze issues, and delay deeper ASEAN integration as member states struggle to adapt to climate change independently. Without concerted and established efforts and commitment, it will be unlikely ASEAN will be able to diminish the impact of climate on the people, economy, and institution.

How Serious Is ASEAN in Responding to Climate Change?

All ASEAN member states are signatories to the Paris Agreement and are therefore bound by the mandate to prepare, submit/ communicate, and keep up the accomplishments of their Nationally Determined Contributions (NDCs), i.e., plan to achieve a certain goal in mitigating climate change, which all signatory states must update every five years. The mitigation targets submitted by ASEAN member states (most recently in 2021) reflect a gradual progression of climate change mitigation commitments. As shown in the picture below, different member states set different targets for contributing to climate change mitigation.

Table: ASEAN Member State's NDCS

Country	First NDC Target Document		Latest NDC Target Document		Sector
	Unconditional	Conditional	Unconditional	Conditional	
Brunei Darussalam	20% (2020)	N/A	20% (2020)	N/A	Energy, IPPU, Agriculture, FOLU, and waste
Cambodia	N/A	27% (2017) FOLU not included as a key sector	N/A	42% (2020) Updated first NDC, included FOLU	FOLU, Energy, Agriculture, IPPU, and Waste
Indonesia	29% (2016)	38%	31.89% (2022) Enhanced first NDCs	43.20%	Energy, Waste, IPPU, Agriculture, and FOLU
Laos	Intended NDC (2016)		60% (2021) Updated first NDC	Unspecified total percentage	FOLU, Energy, and Transport. (Agriculture and waste -- conditional)
Myanmar	Intended NDC (2017)		244,525,968 tCO2e (2021)	414,760,604 tCO2e.	Energy, AFOLU, Agriculture, Fuel Efficient Stoves, Mini-grids, and other energy-efficiency

Philippines	2.71% (2021)	72,29% of the total 3,340.3 MtCO2e	Same with the first document		Agriculture, Wastes, Industry, Transport, and energy,
Singapore	36% (2016)	N/A	60 Mt CO2e (2022) Second updated from the first NDC	N/A	Energy, Industrial Processes and Product Use, Agriculture, LULUCF, and Waste.
Thailand	20% (2016)	25%	30% (2022) Second updated the First NDC	40%	Economy-wide (excluding land use, land-use change, and forestry)
Vietnam	8% (2016)	25%	15.8% (2022) updated NDC	43.5%	Energy, Agriculture, LULUCF, Waste, and industry

Source: Analyse by the authors from the UNFCC database and LSE Climate Policy Radar

As the Paris Agreement mandates, the ASEAN member states employ diverse understandings and standards to formulate their commitment to climate change mitigation. More advanced economies in ASEAN tend to have better formulation of NDCs and strategies to accomplish them through more diverse and comprehensive emission reduction strategies than less advanced member states that tend to depend on conditional financing from the international community and focus on forestry and other land use sectors. It highlights the capacity and commitment gap to address the region's pressing climate change issue. As regulated by the Paris Agreement, NDC targets are supposed to be increased by states continuously. However, as the above table shows, there has been relatively incremental change from the first NDC document to the latest, such as enhanced or updated first NDC target within the five-year execution.

Some less advanced countries in ASEAN still need to provide the actual NDC documents as their NDC 2017 stated, in which guidelines and strategies are provided without a specific target to deliver the first NDC target. Myanmar and Laos are considered countries that have yet to develop their NDCs as there are limitations to calculating the baseline information, inventory, and percentage for targets to accomplish. Meanwhile, more advanced NDCs in ASEAN, such as Indonesia, Thailand, Vietnam, and Singapore have provided more detailed NDCs. As developing countries, most ASEAN countries still perceive that the climate change mitigation responsibility should be the main target or responsibility of developed countries that lead to significant conditional target, such as Cambodia, only target dependent target on its NDCS, Vietnam target that highly disparate between unconditional and conditional (15.8% and 43.5%), and Myanmar. Regional coordination will address capacity disparities and help AMSs tackle climate change together.

According to the ASEAN Centre for Energy (ACE), the NDC targets submitted to the UNFCCC secretariat as of 30 August 2021 are still inconsistent with the needed pathways towards mitigating the increase of the planet's temperature above 1.5°C or 2°C. Even in the most ambitious scenario, the GHG emissions level target in 2030 that ASEAN member states could achieve is estimated to be at 3,294 MtCO2eq, and the emissions (energy-related GHG only) under the APS in 2040 are at 2,264

MtCO2eq. This condition is still well below the global GHG emission reduction of 22 GtCO2eq by 2030, which is needed to maintain a habitable global temperature.

The moderate NDCs that ASEAN member states submitted are also estimated to be unachievable within the current business-as-usual policies. ACE estimates that the region's per capita CO2 emissions would increase by 140% between 2015 and 2040. Even if energy and energy efficiency targets determined in 2015 were achieved, emissions per capita would still rise by 50% by 2040. Beyond energy, ASEAN has yet to work on many sectors that have never received attention from the regional elite and policymakers, such as waste and agriculture, contributing to significant GHG emissions. The region has yet to see significant target consolidation and consorted strategies to ensure the climate change issue is at the forefront of the ASEAN development agenda.

Conclusion and Recommendation

In summary, ASEAN must change the course of its economic development to keep the temperature goals within reach. The challenge here is to design actions to achieve the net-zero greenhouse gas emissions target that also promotes socio-economic development rather than becoming a constraint. Decoupling economic development from climate change is necessary; reducing the trade-off is a must and requires a systematic societal change in multiple dimensions of economy, politics, governance, technology, finance, and human development.

At the same time, this paper noted that the most critical issue compounding the developing countries in ASEAN is, without a doubt, access to technology and financing. Simultaneously, ASEAN member states still require much-needed economic development, while the urgency of GHG emissions reduction efforts has never been more paramount than before. Meanwhile, high-income countries still maintain a CO2 emission per capita rate far higher than developing countries, similar to the reality that the rich 1% person produces more emission compared to the 66% of poor people that mostly exist in the Global South based on the Guardian has worked with Oxfam, the Stockholm Environment Institute.

According to Financial Times economist Martin Wolf, developing countries must invest 4.1% of their GDP in sustainable infrastructure before 2025 and 6.5% of Gross Domestic Product (GDP) by 2030, up from 2.2% in 2019. This means radical policy reforms, significantly eliminating fuel subsidies and carbon pricing. One way to eliminate carbon pricing is to maintain fossil fuel prices at today's high prices even when world fuel prices are falling. At best, domestic funding can only meet half of what is needed for sustainable infrastructure, the other half from external government and private sector funding that allows capital flows to occur.

Concessional finance supports the private sector's capital flow to invest in renewable energy and sustainable infrastructure. Transformation towards net-zero emission in developing ASEAN countries requires acceleration of investments, an increase of external private capital, and an increase in the role of multilateral development banks. A consolidated target to reduce GHG emissions in Southeast Asia must be engaged and involve many partners to make it happen, including the potential Just Energy Transition Partnership (JETP) at the regional level - ASEAN JETP.

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