ASEAN BIODIVERSITY OUTLOOK 2

ASEAN CENTRE FOR BIODIVERSITY

POLICY BRIEF SERIES

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Climate Change and Biodiversity:

Seeking solutions to ensure resiliency

Photo by Raniel Jose Castañeda

Climate change is relevant to Target 10 (minimize the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification), Target 14 (restore and safeguard the ecosystems that provide essential services), and Target 15 (enhance ecosystems resilience and the contribution of biodiversity to carbon stocks).

It is now widely recognized that climate change and biodiversity are interconnected, particularly through changes in species to habitat and species to species interactions, reduced synchronicity between predators and availability of prey, migratory journeys and availability of food and other natural interactions that may be affected by changes in temperature, water and food availability and other climate driven factors. The functional biodiversity responsible for climate change resilience and sustainability needs to be identified and used for climate change mitigation and adaptation (Sajise, 2015).

Impacts of climate change in ASEAN

ASEAN is increasingly vulnerable to the impacts of climate change due to upward emissions trend, which indicates the need for strong policy and appropriate action plans at national, regional and international levels (UNEP, 2016). Incidences of prolonged droughts, destructive fires, excessive rains, and more extreme storms have been observed to increase in frequency in the ASEAN region. Settlements along coastlines and low-lying areas are at increased risk of flooding due to increasing rainfall, extreme weather events, and projected sea-level rise. Water scarcity is likely to be a challenge because of increasing water demand from population growth and consumption per capita with higher standards of living, and lack of good management. Climate change is expected to exacerbate the water scarcity situation such that low water resources lead to groundwater exploitation and increasing costs of supplying water for any use.

Impacts on biodiversity

Climate change is projected to become a major driver of biodiversity loss and ecosystem change by 2050 (SCBD, 2014). Such effects may include the radical shifting of geographical distribution of species and vegetation types, loss of regulating services of forests as carbon sinks, increased rates of coral bleaching, larger tidal variation, increased incidences of tropical cyclones, decline in seagrass meadows and seaweed beds, change in habitat characteristics and in distribution and abundance of species, and others. In terms of species, impacts of climate change include: 1) alterations of species densities; 2) range shifts; 3) behavioral changes, such as the seasonal timing of life cycle events; 4) changes in body size; and 5) reduction in genetic diversity that leads to inbreeding depression (decrease in growth rate, fecundity and survival) (Sodhi et al., 2009).

Regional trends in climate variability

- Increase in temperature at a rate of 0.14–0.20°C per decade since the 1960s, with a rising number of hot days and warm nights and a decline in cooler weather; and projected increase in regional temperature of around 0.5–2°C by 2030.
- Increase in sea levels of approximately 3–16 centimeters.
- Increased annual total wet-day rainfall by 22 millimeters per decade.
- Increased ratio of rainfall in the wet to the dry seasons between 1955 and 2005.
- Increased frequency of extreme events in the northern part of the region.

Impacts on protected areas and ASEAN Heritage Parks

According to the World Wide Fund for Nature (WWF), protected areas offer a limited defense against climate change and they should be improved to withstand impacts of climate change. Climate change, as one of the principal threats to biodiversity in protected areas, is likely to result in the expansion and migration of forests and extinction of many species and reduction in diversity of ecosystems. Climate change also adds to pressures of already vulnerable biodiversity hotspots because of the large number of species. Significant sea-level rise will affect all wetland and marine and coastal ASEAN Heritage Parks (AHPs).

AHPs that provide habitats to endangered plants and animals are the most vulnerable to climate change. Species existing in about 60 percent of AHPs are vulnerable to climate change due to decreasing niche space considering these AHPs are 1,000 meters above sea level (Bickford et al., 2010).

ASEAN initiatives

ASEAN Member States (AMS) have expressed their commitment to addressing climate change by playing an active role in regional and global efforts in climate change mitigation and adaption.

The ASEAN Working Group on Climate Change (AWGCC) was established in 2009 to oversee the implementation of relevant action lines in the ASEAN Socio-Cultural Community (ASCC) Blueprint and the ASEAN Climate Change Initiative.

The ASEAN Action Plan on Joint Response to Climate Change (AAP-JRCC) was developed to implement the ASEAN Leaders' Statement on Joint Response to Climate Change. The program of action includes adaptation, mitigation, finance and investment, technology transfer, and other matters of regional cooperation. The AAP-JRCC will be replaced by the AWGCC Action Plan in recognition of ASEAN 2025 Vision, ASCC Blueprint 2025, and the ASEAN Strategic Plan on Environment (ASPEN) 2016–2025.

The ASEAN and the United Nations agreed in 2015 to develop a joint work plan on environment and climate change for 2016–2020, which takes into account the key elements of the ASEAN 2025 Vision, ASPEN, and the 2030 Agenda for Sustainable Development.

On the ASEAN Cooperation on Climate Change with Dialogue Partners and other Sectoral Bodies, the ASEAN Centre for Biodiversity (ACB), in collaboration with the Federal Republic of Germany through *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), implemented the Biodiversity and Climate Change Project (BCCP) from 2010–2015. The BCCP supported the AHP Programme in addressing biodiversity and climate change. Other related projects being implemented by GIZ and its partners included the ASEAN-German Programme on Response to Climate Change.

Many climate-relevant activities are also being undertaken in the framework of ASEAN cooperation, which include both mitigation and adaptation actions under general environmental protections, disaster risk reduction, and natural resources management agreements and initiatives (Asia-Europe Environment Forum, 2014).

At the national level, AMS reflected their action plans on climate change through Nationally Determined Contributions (NDCs) indicated in the 2015 Paris Agreement. NDCs outline post-2020 climate actions that countries intend to undertake under the Paris Agreement, which will largely determine whether the world achieves an ambitious goal and is put on a path towards a low-carbon, climate-resilient future. The Paris Agreement came into force on 4 November 2018 and has been ratified by all AMS.

The National Biodiversity Strategy and Action Plans (NBSAP) and the Fifth National Reports (5NR) to the CBD also contribute to reduce the vulnerability of biodiversity. Climate change concerns have been integrated into NBSAPs through national targets in the framework of the Aichi Targets. The 5NRs identify vulnerable components and assess threats, and monitor the impacts of climate change.

Call for Action

ASEAN recognizes the vulnerability of the region to the impacts of climate change. There is a need to implement activities identified in the NBSAPs specific to climate change adaptation and mitigation such as local indicators that will contribute to the national status of Aichi Biodiversity Targets 10 (e.g. change in the population of migratory bird species and monitoring of impacts of climate change and ocean acidification to vulnerable local species and habitats across ecosystems) and 15 (e.g. population trends of forest-dependent flora and fauna).

AMS must continue to develop climate change adaptation and mitigation measures at the local, national, and regional levels. These include the following:

- Promote the understanding of biodiversity conservation as an effective mitigating measure against climate change impacts
- Promote new knowledge, practices, and technologies to adapt to climate change
- Increase collaboration, sharing of expertise, and public awareness of the interrelationship between climate change and biodiversity
- Adopt the strategic measures of ASCC Blueprint 2025
- Complement the ASCC Blueprint with the development and implementation of climate change adaptation and mitigation plans at the national and local levels
- Monitor impacts of climate change and ocean acidification to vulnerable species and habitats
- Enhance climate change mitigation measures consistent with the principles of ecosystem-based disaster risk reduction (Eco-DRR)
- Implement disaster risk reduction plan consistent with National Biodiversity Strategy and Action Plans
- Enhance projects and policies on Reducing Emissions from Deforestation and Forest Degradation (REDD+) and biodiversity conservation

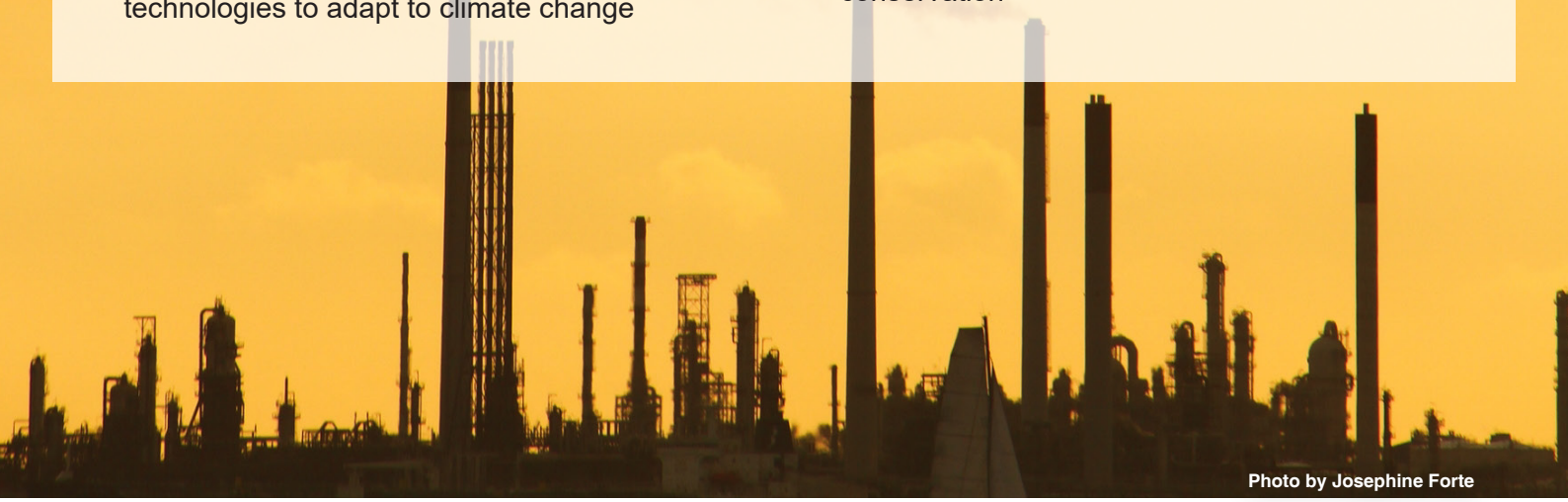

Photo by Josephine Forte

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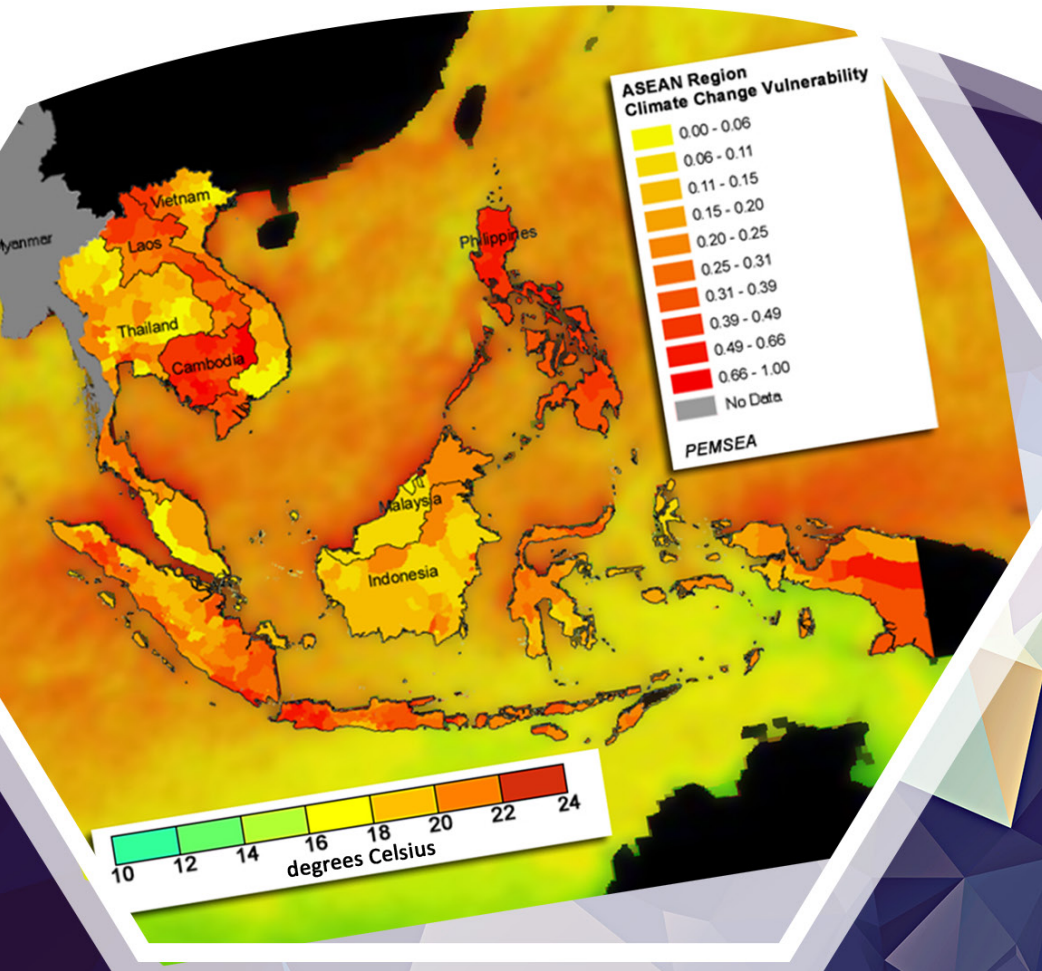
Climate Change and Biodiversity

Seeking solutions to ensure resiliency



Ways Forward

- Promote new knowledge, practices, and technologies to adapt to climate change
- Provide local and national action plans complemeting the ASEAN Socio-Cultural Community blueprint
- Enhance projects and policies on Reducing Emissions from Deforestation and Forest Degradation and biodiversity conservation
- Implement disaster risk reduction plan consistent with National Biodiversity Strategy and Action Plans
- Innovate to mitigate the negative impacts of climate change

Status and Trends

- Global temperature increase of 0.4° to 2.6°C by 2055 and 0.3° to 4.8° C by 2090
- 100% of terrestrial AHPs are vulnerable to climate change
- 100% of marine AHPs will be affected
- Industry and transportation increase carbon pollution levels
- Altitudinal migration of forests, extinction of many species, and reduction in diversity of ecosystems
- Distribution of plant and animal species shifts to higher altitude
- Adverse impact on terrestrial and marine ecosystems, food production, human health, and livelihood, among others