

Executive Summary

Since the last the publication of the Fourth ASEAN State of the Environment in 2009, the ASEAN region has undergone significant changes. These changes have happened not only in economic sense, but also socio-demographic and physical (environmental) aspects.

With Gross Domestic Product (GDP) of US\$2.4 trillion, today ASEAN is the sixth-largest economy in the world. Economic growth in ASEAN has been steady at about 5% annually since 2010, after recovering from the global and regional financial crisis in 2008. With an average annual growth rate of 7%, Cambodia, Lao PDR, Myanmar and Viet Nam (CLMV) outperformed ASEAN6 in economic development. The advance of the ASEAN Economic Community in 2015, where ASEAN is moving towards a globally competitive single market and production base, with a free flow of goods, services, labour, investments and capital across the 10 ASEAN Member States (AMS), has further increase trade and investment in the region.

On the demographic aspect, ASEAN has seen a general increase in population throughout the region. Collectively, the population of the ten AMS has grown from 544.4 million people in 2004, to 628.9 million people in 2015. This increasing population has been coupled with rapid expansion of urban areas. The current urban population in ASEAN accounts for about 47% of the total population and it is expected to reach 63% by 2050. Singapore, Brunei and Malaysia are already highly urbanised, with more than 75% of the population living in urban areas. While Indonesia and Thailand are usually considered to have a predominantly rural population, this has changed as both countries currently have almost half of their people now living in urban areas. All AMS except for Cambodia are expected to have more than half of their population living in cities by 2050.

ASEAN's regional climate is influenced by maritime wind systems, which originate in both the South China Sea and the Indian Ocean, therefore the ASEAN region is affected by the El Niño and La Niña phenomena that often alters the seasonal monsoon cycle and causes wide-ranging changes in weather patterns. Also given its location on the convergent boundaries of the Earth's tectonic plates and on the typhoon belt, the ASEAN region is also exposed to various natural hazards including earthquakes and tsunamis, volcanic eruptions and typhoons. The ASEAN region also experiences periodic and seasonal episodes of both floods and droughts. In fact, in ASEAN, the most common disasters are floods, tropical storms and landslides. During the dry summer season, the ASEAN region experiences intense smoke haze and air pollution that is heavily influenced by the monsoon wind patterns. The frequency and intensity of hydro, meteorological and climatological disasters has been increasing over the last 50 years particularly compared to geophysical disasters, at least in part due to the impact of climate change on disaster frequency and intensity. Economic losses have dramatically increased in recent decades, particularly in Thailand and the Philippines. For example, Thailand suffered over US\$ 45 billion in economic loss and damage as a result of the prolonged, nation-wide, flood in 2011. In 2013, Typhoon Haiyan (Yolanda) caused US\$ 10 billion in loss and damages.

These changes have posed significant pressures to various natural resources and environmental systems. The Fifth ASEAN State of the Environment Report (SOER5) attempts to capture these changes and its impacts to reflect on the state of the environment in this region. SOER5 follows the drivers-pressures-states and trends-

impacts-responses model (DPSIR). This model states that the pressure from human activities on the environment causes the state (condition) of the environment to change thus requiring a response that affects human activities and the state of the environment as well.

Analysis of the state of atmosphere in the ASEAN region reveals that air pollution levels are increasing in the region with the energy sector being responsible for the largest carbon dioxide emissions and it is predicted that energy-related CO₂ emission levels could rise in the ASEAN region by 61% from 2014 to 2025. As significantly urbanising region, cities are major sources of greenhouse gases, and therefore ASEAN cities need to urgently seek low-carbon economies, infrastructure and transport. There is also a need for improved air quality monitoring and standards which are consistent across all AMS, so that air quality trends can be more adequately observed and acted upon. Transboundary haze pollution resulting from land and forest fires in the ASEAN region is a persistent challenge, and impacts most of ASEAN Member States (AMS). Up to 90% of transboundary smoke haze in ASEAN is linked to peat fires related to expansion of large-scale commercial plantations. While responses are in place to tackle the haze pollution, more holistic measures are needed to address the issue at its source by improved land management and controls on the expansion of commercial plantations.

In the ASEAN's land system, between 1990 and 2012, most ASEAN Member States (AMS) experienced a decline in forest cover mainly due to the expansion into forest lands of commercial plantations, particularly for rubber and oil palm. Peat and mangrove forests are the most vulnerable forest types and are disappearing at a faster rate than other forest types. This is of significant concern for climate change mitigation due to the high carbon sequestration capacity of these forest types. Land erosion and soil fertility loss from forest conversion continues to be urgent concerns that need to be addressed in policy and therefore an updated study of soil status within the region is needed.

The ASEAN region is a major contributor to global biodiversity, containing four of the world's 34 biodiversity hotspots and three mega-diverse nations. Biota and ecosystems of all types are under threat in the region from various pressures including deforestation and other land-use changes, habitat degradation and alteration, invasive alien species, genetic erosion, and over-exploitation of certain wildlife species. The economic growth-driven development of the ASEAN Member States (AMS) is fuelling most of the increase in natural resource exploitation and ensuing biodiversity loss. Biodiversity loss and ecosystem degradation have substantial impacts on people's livelihoods, food security, and well-being in the region. The importance of ecosystem and biodiversity conservation is increasingly recognized in the region. AMS have taken measures at international, regional and national levels to respond to biodiversity loss and ecosystem degradation and have reported progress, nevertheless there remains much to do to counter current trends of biodiversity loss in ASEAN.

ASEAN's freshwater system experiences pressure as water demand is expected to increase by about one-third by 2025 and double during the latter half of the 21st century, resulting in increased water stress and water insecurity across the ASEAN region. Most ASEAN Member States (AMS) have made significant progress in improving access to safe drinking water and sanitation facilities, except Cambodia and Indonesia where about half of the population still lack access to safe drinking water. The main threat to water availability and water quality in most AMS is poor management, coordination and awareness. Rapid urban development and poor spatial planning leads to encroachment

of the built environment into flood-prone areas and serious degradation of catchments. Climate change adds a level of uncertainty to water availability and leads to increasing frequency and intensity of extreme flood and drought events in the region. It also causes alteration of river flow regimes, loss of wetlands and floodplains, and salinity intrusion in river deltas due to sea level rise. Low wastewater treatment levels for a growing population, as well as the dumping of personal and industrial wastes, are contaminating various water sources and considerably reducing the quality of freshwater, which is leading to increased exposure to human health and environmental risks.

Coasts and oceans in ASEAN region boast rich resources, however these resources are currently under pressure as they are overfished and degraded. Key ecosystems such as coral reefs, mangroves, and seagrass meadows are under threat from overexploitation and climate change. Coastal development is increasingly affecting the health of the seas; marine debris pollution is a serious issue alongside climate change and overfishing. Climate change and subsequent sea-level rise will have deep impacts on the productivity of coasts and oceans in ASEAN, affecting the well-being of coastal inhabitants while poverty among the rising coastal populations continues to be of significant concern. For preserving coastal resources, ongoing regional innovations in marine protected area management, no-take reserves and community-based coastal resources management can potentially reverse these trends.

As economy grows rapidly in ASEAN, the patterns of production and consumption show an increasingly unsustainable trend across the ASEAN region. Although efficiency and productivity are increasing, improved waste and chemicals management is needed across the ASEAN region. Resource use continues to rise upwards in line with rapid urbanization and industrialization. The rising amounts of waste and its management poses a serious challenge for most AMS, especially plastic bags, e-waste and food waste. Landfill is still the main disposal method, however 3Rs and waste-to-energy have become popular in the region. The use of pesticides continues to rise in the agricultural sector and is one of the biggest chemical management challenges in the ASEAN region. Some banned chemicals are still being used. There are already existing innovations to address issues in production and consumptions in ASEAN such as green/sustainable public procurement (GPP/SPP) and ecolabeling, and these need to be expanded and developed further for more sustainable consumption and production in ASEAN.

ASEAN Member States, both nationally and collectively under the ASEAN cooperation framework, made significant efforts in responding to the environmental challenges. However, a lot more could be done in order to achieve 'a sustainable community that promotes social development and environmental protection through effective mechanisms to meet the current and future needs of our peoples', as envisioned in ASEAN Community Vision 2025. The report recommends that it is very important for ASEAN and relevant stakeholders concerned with the state of the environment in ASEAN to ensure: 1) enhanced cross-sectoral/cross-pillar/integrated coordination mechanisms; 2) effective and timely monitoring and evaluation systems; 3) better prioritization and implementation mechanisms; 4) higher commitment and resource mobilization especially to have more systematic and timely collection and analysis of data and information; and 5) closer synchronization and increased synergy between SOER and ASEAN Strategic Plan on Environment.

This 5th ASEAN state of the environment report provides policymakers and relevant stakeholders with key information and facts to make informed decisions and develop

strategies on addressing pressures and impacts to environmental systems in respective context. It is also essential to realise that many of these pressures and impacts are interlinked, therefore a systemic view is deemed necessary to consider in important decisions. Addressing these pressures and impacts will also contribute to the achievement of ASEAN Community Vision 2025, Sustainable Development Goals under the 2030 Agenda for Sustainable Development, and many other global commitments.