This paper is part of a research series on the energy landscape in Southeast Asia.
INTRODUCTION

Southeast Asia comprises 11 countries, 10 of which form the Association of Southeast Asian Nations (ASEAN). ASEAN is a bloc focused on promoting economic growth and regional stability. With a combined population of about 667 million people, ASEAN represents about 10% of the global population (IMF, 2021). ASEAN has set the goal of obtaining almost a quarter of its energy needs from renewable energy by 2025, aligning the region with international commitments of the United Nations Sustainable Development Goals (SDGs) (United Nations, 2015a) and the Paris Agreement (United Nations, 2015b). This regional commitment translates the understanding of energy transition beyond its member-states’ environmental sustainability to focus on improving quality of life, including access to sustainable fuels.

However, fossil fuels (coal, gas and oil) still account for 66% of the regional energy mix in 2020, mainly from oil use and gas- and coal-fired power generation. In terms of renewables, hydropower still dominates the regional energy landscape at 63% of renewable energy sources, while solar and wind energy contributed only 9% to the ASEAN energy mix in 2029 (ASEAN Center for Energy, 2021). Oil, coal, and hydro are energy systems with negative consequences on climate, ecosystems, biodiversity, and the livelihoods of communities.

The COVID-19 pandemic, which continues to threaten lives and livelihoods, has revealed the critical role of energy in linking social and economic development with environmental sustainability. As countries locked down, for instance, it became crucial to push the digital economy and other public services toward sustainability. The global community has indeed started to search for sustainable energy pathways through the pandemic and its impact while pushing for more significant shifts toward a more sustainable future by “building back better”. Southeast Asian countries are also presented with the same opportunity to advance regional efforts towards sustainable energy transition. Beyond the shifts in energy systems, however, it is also essential to align energy transition with the principles of justice.

Some post-COVID national recovery plans have already highlighted environmental sustainability through their new commitments to reduce carbon emissions, as shown, for example, in the Malaysian National Recovery Plan (Yusof, 2021). Clearer policy directions for green recovery programs from other Southeast Asian countries, however, remain absent. A sustainability-directed plan is critical, especially given the findings from a United Nations report on the Asia-Pacific’s energy future, which glaringly noted that concrete measures to achieve sustainable objectives are unclear and that many stimulus packages announced to date have favored the use of fossil fuels (United Nations, 2021). A regional post-pandemic plan anchored to a just energy transition narrative offers one way forward for Southeast Asia.

The next section briefly describes some key background notes, highlighting the region’s energy profile, energy poverty, and climate change vulnerability.
Energy profile

Southeast Asia’s strong economic growth trends have its power demand growing at about 6% per year, the fastest globally (see Figures 1 and 2). Indonesia is the region's largest energy consumer, followed by Thailand and Malaysia. Vietnam's energy use is also fast increasing, overtaking Singapore in 2019. Cambodia, Myanmar, and Laos remain the countries in the region with the lowest energy consumption.
In 2019, 80% of the region's electricity came from fossil fuels (see Figure 3). Natural gas, another fossil fuel, is also increasing in rates. Over the decades, there has been very little change in the amount of renewable energy-based generation. Renewables account for only 10% of the mix, of which large hydropower is the major contributor. Solar, wind, and biomass-based renewable energy resources represent only a tiny portion of the generation.

The region's large hydropower capacity is contentious infrastructure. The dams in the Mekong River, for example, have been criticized for their impacts on downstream communities in Cambodia and Vietnam (Molle et al., 2012; Campbell and Barlow, 2020). Ecological, social, and cultural issues are expected to persist as more storage-based hydropower capacity is planned in the Mekong River. The same can be said with the planned hydropower facilities in Myanmar’s Salween River and the Philippines’ major rivers (Götz and Middleton, 2020; Delina, 2020).
Energy poverty

Despite Southeast Asia’s economic development, poverty rates are still high in some countries and some regions within countries. There are communities in the region struggling to access essential human services, most especially modern energy. In 2016, 47 million people in Southeast Asia did not have access to electricity (see Figure 4). Close to 23 million people in Myanmar, 10 million in the Philippines, eight million in Cambodia, and more than six million in Indonesia lack electricity access.

Figure 4: Number of people without access to electricity in Southeast Asia, 2016

Source: Drawn by the author from Sustainable Energy for All (SE4ALL) (2021)

Closing energy poverty, especially modern electricity, is a critical sustainable development target. If addressed, electrification offers several co-benefits to other sustainable development targets, including poverty alleviation, health, education, and gender empowerment (Jeuland et al., 2021). All five ASEAN countries with populations without access to electricity have set targets to close these access gaps (see Table 1).

Table 1: Electrification targets in Southeast Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Target Description</th>
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<tbody>
<tr>
<td>Cambodia</td>
<td>Electrification for all villages by 2020, and 70% electrification for households by 2030</td>
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<tr>
<td>Indonesia</td>
<td>Achieve an electrification ratio of 99.7% by 2025</td>
</tr>
<tr>
<td>Laos</td>
<td>Achieve an electrification rate of 98% by 2025</td>
</tr>
<tr>
<td>Myanmar</td>
<td>Achieve an electrification rate of 80% by 2030</td>
</tr>
<tr>
<td>Philippines</td>
<td>Achieve 100% electrification by 2022</td>
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Climate vulnerabilities

Southeast Asia is highly vulnerable to the impacts of accelerating climate change. Countries perched on the edge of the Pacific and Indian Oceans are particularly susceptible to storm surges, and frequent and stronger typhoons and cyclones. The Philippine typhoon belt regions have been particularly affected by strong typhoons (Holden and Marshall, 2018), intensified by a warming atmosphere that holds more moisture, and thus caused heavier rainfall. Stronger and more frequent typhoons have already been claiming lives and affecting vital livelihoods. These impact people’s survival and derail opportunities to have a quality of life.

Sea level rise also threatens several capital cities in the region. Manila, Bangkok, and Jakarta are already exposed to flooding. More precipitation volumes and poor infrastructure and planning will only increase the vulnerabilities of these cities. A large part of Jakarta, a city with 30 million people, for instance, is predicted to submerge by 2050 (Firman et al., 2011), prompting the Indonesian government to move its capital out to Kalimantan in Borneo Island at the cost of over USD 32 billion (Lyons, 2019). This money represents a lost opportunity for spending more on sustainable development.

Prolonged dry spells also impact the region’s agriculture sector, reducing crop yields (Shrestha et al., 2018) and directly affecting people’s livelihoods, health, and security. At the same time, droughts result in forest fires, leading to transboundary air pollution (Yamashita and Honda, 2018). For instance, Malaysian and Indonesian forest fires have affected nearby countries such as Singapore and even as far away as the Philippines.

Adapting to these extreme weather events requires resilient communities and energy systems (Delina et al., 2020). Energy access, especially during these times, is essential for survival. Modular renewable energy systems such as solar-powered emergency kits have been necessary for communication, illumination, warmth, and cooking during typhoon events. Community-scale renewable energy systems are also quick to rehabilitate compared with grid-based electricity systems.
REFERENCES


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