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Conference Paper

ACCELERATING ASEAN ENERGY TRANSITION

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Abstract.

Global growth over the past 50 years was underpinned by openness in trade, investment and skills. The digitalisation and the transition to renewable energy are the next phases. This paper examines the dynamics in the process of renewable energy in ASEAN in the context of changing global economic governance. The study is based on qualitative content analysis of policy narratives, industrial strategies, and regional cooperation initiatives that condition energy transitions. According to the findings, ASEAN's renewable energy direction has four primary objectives, that are to enhance energy security, to restructure industrial supply chains, to foster regional cooperation, and, to empower ASEAN with more agency in global forums. In the real world, there are opportunities as well as challenges. Asean has potential as the region is rich in renewable resources and already established initiatives, for example the Asean Power Grid and green finance facilities. But the region remain lagging from the world average in the use of renewable energy, with most of the energy demand met by fossil fuels. National and local-level commitments are vital in driving the use of renewable energy, with the example of the district-level industrial strategies in China providing a case in point. The study shows that renewable energy not only contributes to a cleaner environment but is also imperative to ASEAN's continued long-term growth and ability to compete globally in political and economic matters.

Keywords: ASEAN; economic diplomacy; energy security; industrial policy; renewable energy transition

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Introduction

The world economy has grown more than thirteen times in the last fifty years, from three trillion U.S. dollars in 1970 to 110 trillion U.S. dollars in 2024 (1,2). This large expansion has mostly been caused by the free flow of trade, investment, and talents (3). During this time, economic integration has been the most important factor in long-term economic growth. Digital transformation and artificial intelligence (AI) are likely to shape the next fifty years of growth (4). Digital skills, AI capabilities, and how these technologies are used in renewable energy will become very important factor of competitiveness

Literature Review

Theoretical Studies

Global economic governance has changed significantly with the arising of emerging economies (5,6). These shifts can be analysed in four major dimensions, that are share in global output, share in trade, contribution to manufacturing value-added, and foreign direct investment (1,2). Traditional economic leaders like the United States, the United Kingdom, Germany, Japan, France, Italy, and Russia have experienced declining shares of global output. Conversely, emerging economies like China, India, South Korea, Brazil, Australia, and Indonesia have steadily increased their share.

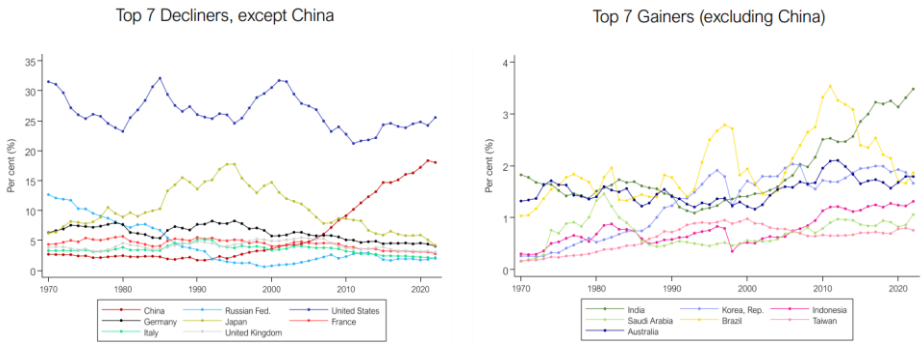

Figure 1. Share (%) in World's Nominal GDP, 1970-2024
Source: Ing (2025)

A central issue in global energy debates concerns the relationship between economic growth and carbon emissions (7,8). Developed economies often attribute rising global emissions to the expansion of developing economies. However, historical data show that carbon emissions began their exponential rise in the late nineteenth century, during the industrial expansion of developed nations (1,2). The challenge lies not in opposing developed and developing economies but in ensuring equitable responsibility for emissions while advancing renewable energy

transitions. Renewable energy is no longer only a strategic priority but also a geopolitical and economic imperative.

Empirical Studies

ASEAN is a great example of how to study changes in renewable energy (9,10). By 2030, energy demand in the area is expected to expand by 30-41%, which is a sign of how quickly the population and industry are growing (1,2). Electricity demand has gone up a lot in all member countries, but the reliance on fossil fuels has not altered much. As of 2024, just 26% of ASEAN's energy mix comes from renewable sources. This is much lower than the global average of 40%.

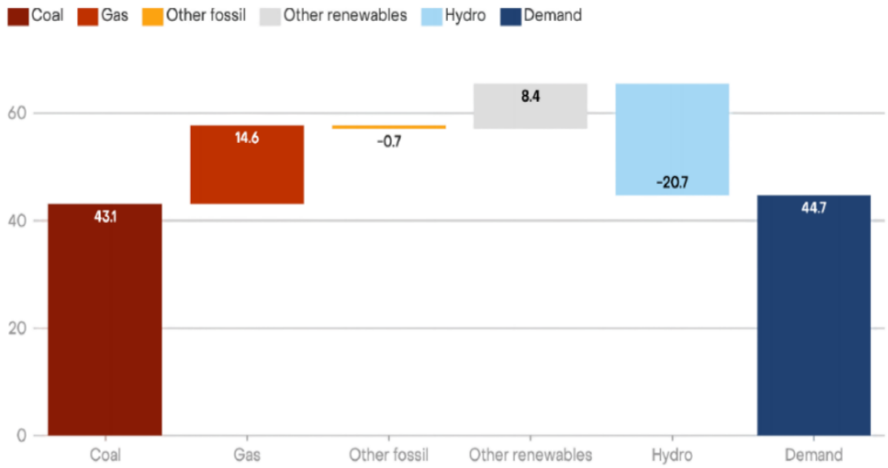

Figure 2. Growth in ASEAN's Fossil Generation and Energi Demand, 2022-2023
Source: Ing (2025)

There are a few structural reasons why renewable energy is so important for ASEAN (11,12). The region's economy is at risk since fossil fuel prices are going up and global energy markets are unstable. The fact that many states have set net-zero targets has made it even more important to diversify energy sources (13). There have also been chances to speed up the use of renewable energy because of international alliances and financial projects (1,2).

Empirical evidence also shows that ASEAN's energy transition is tied closely to industrial policy (13,14). Indonesia, for instance, has moved advanced down-streaming policy measures to make itself a hub to produce electric vehicles, batteries, and solar panels. Regional collaboration has facilitated integration initiatives, including the ASEAN Power Grid, eco-business facilities, and streamlined renewable energy rules. Furthermore, ASEAN countries have leveraged energy transition initiatives as instruments of economic diplomacy in climate negotiations, trade agreements, and investment promotion (1,2).

Methods

The study use a qualitative content analysis approach, a systematic method for deriving valid and replicable interpretations from textual materials (15,16). The analysis is focusing on the narratives of energy transition in regional level, industrial policies, and institutional cooperation frameworks within ASEAN. Primary sources include official ASEAN publications, regional agreements, government policy papers, international organization reports, and peer-reviewed academic research published within the last two decades. The selection is based on the alignment the projects with ASEAN's energy security goals, downstream projects, and cross-border cooperation, for example ASEAN Power Grid. The selection is also based on how the project aligns with the adoption of renewable energy, industrial upgrading, regional integration and economic diplomacy. The unit of analysis of this paper concerns the way that regional and national policies are shaping and responding to rising energy demand and increasing requirements to reduce carbon emissions. Triangulating between policy documents, institutional appraisals and comparative evidence from global energy transition cases can make data more credible.

Results and Discussion

The analysis demonstrates that ASEAN’s renewable energy transition serves multiple strategic objectives, that are strengthening energy security, reshaping industrial supply chains, deepening regional cooperation, and enhancing global bargaining power (1,2,17). Countries across the region possess diverse renewable resources, hydropower in Myanmar and Laos, solar and wind in Vietnam and Thailand, and geothermal and bioenergy in Indonesia and the Philippines (18). Regional interconnection projects like the ASEAN Power Grid can improve supply security and balance resource disparities (12).

At the same time, renewable energy provides ASEAN with a stronger platform in global negotiations (1,2). By reducing exposure to fossil fuel price shocks, the region can strengthen the position in climate and trade discussions. Free trade agreements and comprehensive economic partnerships with partners that are China, Japan, South Korea, Australia, and New Zealand already incorporate provisions for renewable energy cooperation and green economy projects (19). Nevertheless, implementation remains a key challenge. National commitments and district-level execution, as shown by China’s successful scaling of solar and battery industries, are decisive for long-term success.

Figure 1. ASEAN's FTAs and CEPAs
Source: Ing (2025)

Number	Free Trade Agreement	In Effect
1	ASEAN Free Trade Area	Jan 1993
2	ASEAN-China	July 2005
3	ASEAN-South Korea	June 2007
4	ASEAN-Japan	Dec 2008
5	ASEAN-Australia and New Zealand	Jan 2010
6	ASEAN-India	Jan 2010
7	ASEAN-Hong Kong	June 2019
8	Regional Comprehensive Economic Partnership (RCEP) ASEAN, Australia, China, Japan, South Korea, New Zealand)	Jan 2022

Conclusion

The growth of global economic for over the last fifty years has been underpinned by openness and integration, while upcoming decades will be formed by digital transformation and the transitions of renewable energy. Empirical evidence shows that ASEAN is vulnerable to renewable energy but capable to take a lead in the development of renewable energy. Region faces the demand of energy that keep rising, limited renewable penetration, and the dependences on fossil fuels. With all the challenges, regions still have potential as the regions possesses renewable resources, cooperation frameworks in the region level, and strategies to harness clean energy. ASEAN's future of renewable energy relies on their commitment on both local and national level. Effective policies, investment mobilization, and industrial upgrading will determine whether ASEAN can align economic growth with sustainability. Renewable energy must be treated not just as an environmental necessity but as a geopolitical and economic imperative that strengthens regional integration and global competitiveness.

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