Discuss the role of the government in the green transition. Suggest a policy agenda that can help accelerate the evolution to a sustainable, net-zero future. Your essay can include fiscal and monetary policies for green transition as well as macro and regulation policies.

Introduction: Defining Green Transition and Its Importance to the Economy

"Climate change is the defining issue of our time – and we are at a defining moment."

–António Guterres, Secretary-General of the United Nations

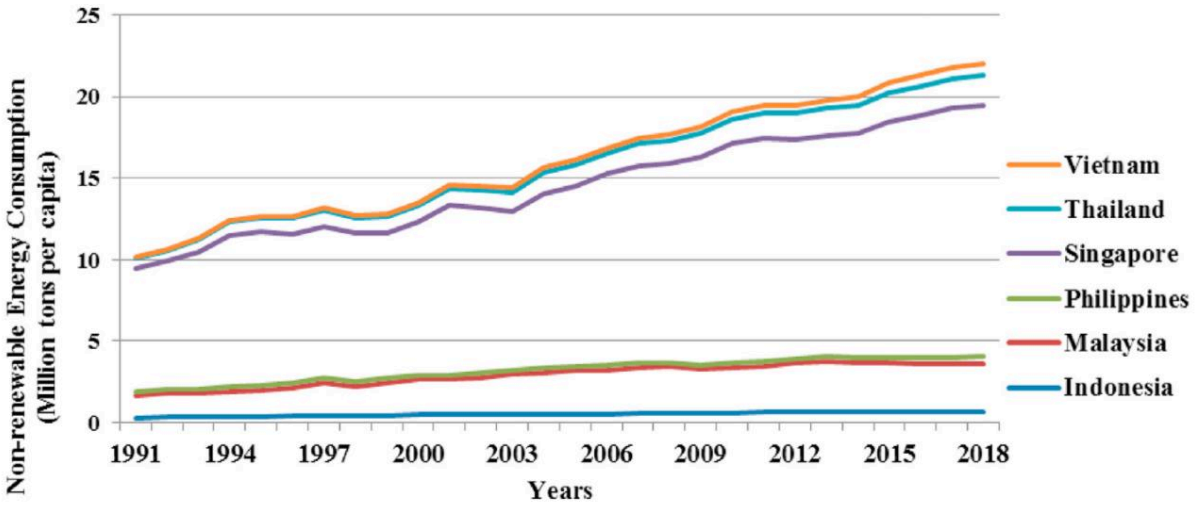
(United Nations Development Programme, 2021)

As greenhouse gas emissions blanket the Earth, global warming has exceeded the pre-industrial threshold with a global average temperature increase of 1.5° C for the first time in history, leading to an extreme climate change (Copernicus, 2024). Driven largely by the acceleration of industrialisation and human economic activities in the burning of fossil fuels, deforestation and many more, this reduction in overall economic welfare has led to an unintended social cost to the third parties, namely the environment and humanity owing to the decline of the Human Development Index (HDI) from the qualitative aspects of life expectancy, education, and living standards. Facing the pressing need to cut greenhouse gas emissions and combat climate change, the transition to green energy is no longer an option, but a must.

'Green Transition' signifies the shift from an economy heavily reliant on environmentally harmful practices to one that is sustainable, low-carbon, and eco-friendly (Terämä, n.d.). That being said, actions must be taken across all sectors, from industry and energy to transport and agriculture in order to promote a sustainable green economy. Towards this end, a critical question to ask is "What is the role of governments in providing for the future energy needs of the country, in a sustainable and carbon-neutral way?".

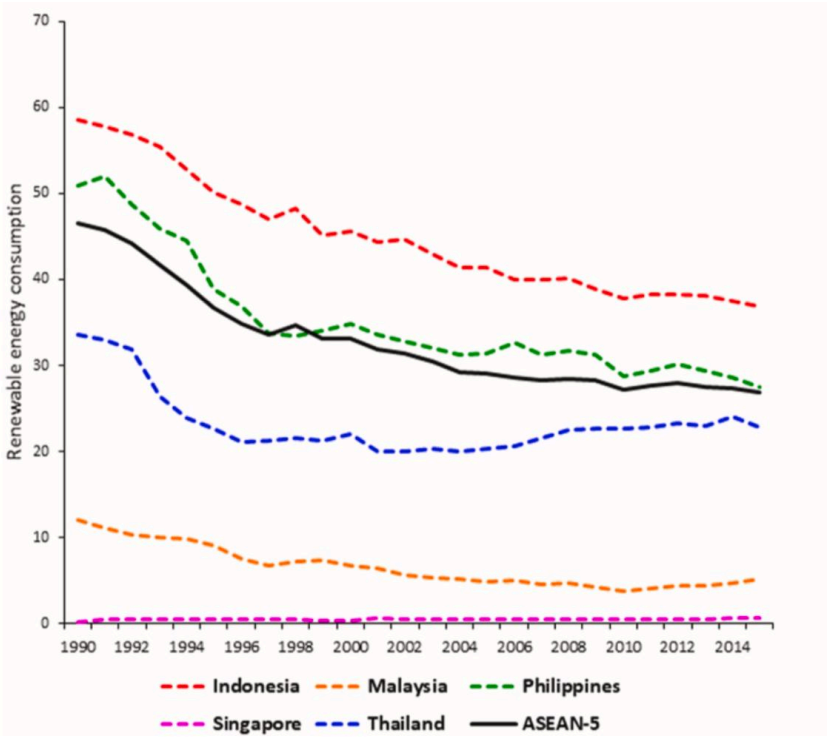
Section 2: Role of the government in the green transition

Non-renewable energy consumption (% of Total Energy Consumption)



(Diagram 1. Source: Anwar et al., 2021)

Renewable Energy Consumption (% of Total Energy Consumption)



(Diagram 2. Source: Tan & Uprasen, 2021)

Above assessments find that in contrast to encouraging energy transition, the Association of Southeast Asian Nations (ASEAN) economies show a persistently increasing reliance on non-renewable energy (Anwar et al., 2021) and a declining renewable energy supply trend (Tan & Uprasen, 2021). Since the industrial revolution, the world economy has grown at the expense of the environment. The way economic transactions are currently organised largely ignores the social cost of resource depletion and pollution. Natural resources have been exploited without allowing stocks to regenerate, ecosystems have been severely degraded and biodiversity has been lost at an alarming rate. Findings from Swiss Re Institute's Climate Economics Index warn that ASEAN, as a centre of global economic growth, could lose 37.4% of their current GDP by 2048, thus making it the most vulnerable market in the Asian region and jeopardising the basis for future economic development (EU-ASEAN Business Council, 2023). Hence, governments play a key role in recognising the importance of green transition in the environmental aspects.

Aside from the catastrophic impact on the environment such as depletion of natural resources and extreme weather events — failure to tackle these threats will heighten health and social inequalities, pushing millions into extreme poverty. Governments play a pivotal role in the social aspect by addressing climate vulnerability within the society, particularly in terms of developing economies. According to an analysis by the Organization for Economic Cooperation and Development, the impacts of environmental degradation have severely affected the standard of living of low-income households because they are directly dependent on natural resources and a stable environment for their income and employment in primary sectors (OECD, 2021). These individuals face limited access to quality healthcare and reduced capacity to invest in protective measures against widespread diseases, thereby worsening the susceptibility of low-income households to climate change (Galgóczi, 2023). Consequently, the government's responsibility to promote a just and inclusive transition stands out notably in improving the quality of life and societal well-being among these vulnerable groups.

In the economic aspect, governmental support in green transition helps to create the demand certainty needed to attract green investors in the production capacity. In line with the Paris Climate Agreement, investment decisions made by both domestic and international large companies will increasingly be driven by the availability of zero-carbon electricity

supply for factories, offices, and transport. If manufacturing industries in the ASEAN developing economies and emerging markets continue to rely on fossil fuel-generated electricity, they will face higher operating costs compared to renewable energy sources in the long run, thus experiencing a decline in the foreign direct investments inflows (EU-ASEAN Business Council, 2023). Therefore, the significance of governments in implementing a shift to renewable energy sources becomes mandatory, not only to achieve cost efficiency in their growing domestic energy supplies amid rising energy cost, but also to stimulate a sustainable economic growth as an investment destination with access to green energy supply.

Furthermore, for companies investing in green technologies, the private return lies significantly below the social return, resulting in underinvestment. With goals to rectify this market failure arising from the imperfect information of greenhouse gas externality, the government role lies in reducing information asymmetries through polishing their knowledge on the importance of green energies and offering guidance to firms on sustainable practices. Most importantly, this improves public awareness among the stakeholders and reflects the social costs of environmentally harmful production. The government will thus achieve both allocative and productive efficiency while promoting a circular green economy.

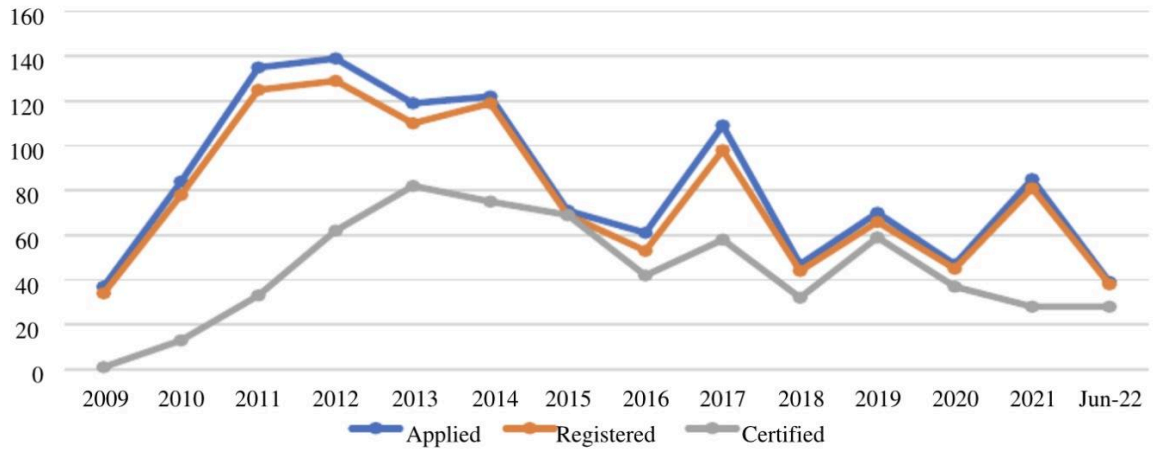
Section 3: Comparing existing policies and its effectiveness

In February 2021, Singapore initiated a national agenda called Singapore Green Plan 2030. Accounting for over 20% of Singapore's greenhouse gas emissions, infrastructure is one of the main barriers to Singapore towards green transition. To counter it, their first act is to launch Singapore Green Building Masterplan (SGBMP) under the 'Energy Reset' Pillar, which directly contributes to more efficient energy use with greener infrastructure. The SGBMP, also known as "80-80-80 in 2030" targets 80% of buildings by Gross Floor Area to be green, 80% of new developments to be Super Low Energy buildings and 80% improvement in energy efficiency for the best-in-class buildings by 2030 (Building and Construction Authority, 2022). Within two years after the launch, more than 4,600 buildings in Singapore have been certified under the Green Mark Certification Scheme, with more than 55% buildings in Singapore being green (Joannides, 2024). Driven by green growth, this

successful act alone made Singapore the leading nation in the ASEAN region towards green transition.

Singapore's neighbouring country, Malaysia, considered shifting into a greener country even before Singapore's agenda. Starting from 2017, the Malaysian government has imposed the Green Technology Master Plan (GTMP) in hopes of achieving ambitious targets such as reducing greenhouse gas emission and incorporating renewable energy sources by 2030. GTMP was developed to be a strategic roadmap that informs the intentions for the future development of green technology strategies and programmes, while addressing the six major causes of the nation's carbon emissions: energy production and supply, buildings, manufacturing, transport, waste management and water supply (Ministry of Energy, Green Technology and Water (KeTTHA), 2019). However, the outcome was not as effective as it was expected, as the percentage of total green buildings in Malaysia is comparatively low. Diagram 3 shows the overall green building development is uncertain and showing a down trend since the peak in 2012 (Chin et al., 2023).

Status of Green Building Development in Malaysia Since 2009 to June 2022



(Diagram 3. Source: Chin et al., 2023)

Despite efforts to transition towards a more sustainable future, Malaysia's reliance on non-renewable energy sources including coal, natural gas, and fossil fuels have hindered its green growth. This demonstrates the difficulties Malaysia confronts in achieving its green goals due to its current usage of non-renewable energy, a lack of public awareness and the

low level of education initiatives about green transition. This is evident in Malaysia's low ranking as the 59th country under the climate policy category of the 2024 Climate Change Performance Index (Parish, 2024). When comparing similar mitigation strategies within ASEAN, most strategies in Malaysia are still not in place, especially on climate legislation. Henceforth, environmental policies need to be designed with equity considerations at their core and accompanied by broader policy efforts.

Section 4: Suggesting policy agendas

Firstly, the government can accelerate by implementing fiscal policy through carbon pricing mechanisms or green taxation. For instance, carbon taxes can be imposed on high carbon emissions industries. By making it more expensive to emit greenhouse gases, a financial incentive can be created for both businesses and individuals to reduce their carbon footprint, thus internalising the environmental costs of carbon emissions (World Bank, 2023). Governments should also increase their spendings on green technologies. Subsidies to support the deployment of green options including green building materials, electric vehicles (EV) and energy-efficient technologies such as wind, solar, and hydroelectric power should be provided. Ultimately, not only will it cover the upfront costs of renewable energy projects, but it will also be easier for clean energy start-ups to secure funding, thus making green investment options more economically attractive to investors.

Secondly, the central bank can impose monetary policy through green quantitative easing (QE) in terms of green bonds. When the central bank issues and purchases a large quantity of green bonds, more issuers are encouraged to enter the market knowing there is a reliable demand for such securities. This high demand drives issuers to offer lower interest rates than the loans offered by the commercial banks, thereby lowering the borrowing cost to companies and investors. With an increasing focus of foreign investors towards green investments, the asset revenue generated could help to raise capital in funding environmentally sustainable projects especially to sunrise sectors. Therefore, while classical QE is a temporary scheme to stabilise a country's economy, green QE is intended for

long-term commitments by central banks, thus facilitating the economy's transition to sustainable development (Aloui et al., 2022).

Thirdly, macroeconomic policies such as interventionist supply-side policies (SSP) should be imposed. Specifically, governments can aid the speed of development and implementation in developing new green technologies with collaborative research and development (R&D) across ASEAN by cultivating an innovative culture. Countries with significant accomplishments in green transition can exchange novel ideas and viewpoints by pooling their resources, knowledge, and skills among specialists, thus fostering a diversified and skilled workforce (Fulga, M.S. & Chen, J., 2022). In doing so, nations with less developed green technologies can adopt these technologies more rapidly and increase their human capital and labour skills to improve energy efficiency, which in turn generate a win-win outcome in terms of improved environmental quality, job creation and reduced labour market inequalities.

Moreover, the government should implement SSP through market-based regulations. This can be done by issuing tradable permits, such as the Emissions Trading Scheme (ETS) in the European Union to relocate high-intensity carbon production across firms. Governments can set a maximum level of pollutant emissions allowed by producers thus enabling companies with low abatement costs to be incentivised to lower their emissions. In this regard, they are able to sell their excess permits to other companies that face higher abatement costs. This flexibility encourages them to find the most cost-effective way to reduce emission through innovation and efficiency, leading to overall environmental benefits whilst minimising economic impacts (International Labour Organisation, 2022).

Section 5: Limitation to the suggested policies

Reallocating resources to fund green investments on a large scale is, however, inherently challenging. Embarking on green infrastructure projects and low-carbon technologies typically involves continuous government funding. If the government faces a lack of financial and economic capacity, budget deficits may occur, thus leading to accumulation of unsustainable national debt and even bankruptcy of a country. Such

constraints are particularly prevalent in the private sector in emerging market economies due to the lack of reliable market intelligence on the green economy, macroeconomic fluctuations, and policy uncertainties.

The effectiveness of the policies suggested also depends on the market acceptance and susceptibility of public behaviour. This is because altering people's mindset and lifestyle takes time, and they may also be reluctant to change their consumption patterns. Hence, the implementation of these policies usually has massive time lags before they begin to have an impact in society.

Conclusion

In essence, the success of the green transition not only relies on the commitment leadership of governments, but also the willingness of the public to prioritise environmental sustainability alongside economic and social development. Accelerating green transition requires the collaborative effort of every individual and organisation in society to foster a mindset and behavioural shift towards a greener lifestyle at all levels. As responsible citizens, we must do our part to adopt eco-friendly behaviours in order to achieve a sustainable, net zero future that is more viable for future generations, thus achieving intergenerational equity.

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