Driving Renewable Energy Through Carbon Pricing: Malaysia's Path Toward Emission Trading System

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ABSTRACT

This paper explores emission trading systems (ETS) in promoting renewable energy through carbon pricing mechanisms, such as cap-and-trade. It examines how ETS has encouraged renewable energy in the European Union and California, and analyses changes in Malaysia's regulatory initiatives. The paper evaluates the effectiveness of ETS in improving the renewable energy industry, despite the absence of a fixed carbon price. It contends that an optimally structured ETS could lead to sustainable energy utilisation and align with the Paris Agreement. The paper presents policy measures to improve ETS effectiveness and safeguard the Malaysian energy sector.

Keywords: Carbon Pricing; Emission Trading Systems (ETS); Renewable Energy; Cap-and-Trade.

INTRODUCTION

An essential need for sustainable energy solutions has arisen in the global climate crisis with countries all around the world starting to implement tougher environmental and economic policies that will help decrease carbon emissions. In this transition, carbon pricing mechanisms in particular Emission Trading Systems (ETS) are now widely used tools to create incentives for both reduced carbon output and investments in renewable energy (The EU's Emissions Trading System: Free Allocation of Allowances Needed Better Targeting, 2020, 8-11). For instance, the EU and California are frequently pointed to as successful cases in which ETS mechanisms include Cap and Trade Program which encourage transitions toward more sustainable energy. Prices on carbon systems create economic incentives as they impose the cost of carbon emissions and incentivise industries to shift towards clean energy sources, therefore making carbon intensive activities unprofitable and renewable energies investments more attractive (California Air Resources Board, 2012, 12-14).

The Principle of the Protection of the Environment, Human Health, and Combating Climate Change as propounded by Heffron et al., (2018) highlights the inextricable link between energy systems and environmental consequences. Energy use from generation to consumption is inherently pollutive to the environment, health degrading, and contributes to climate change and the energy sector accounts for the largest proportion of CO2 emission. As fossil fuel availability is limited for most of us around the world, one main aspect of this principle is to transition to clean renewable energy resources, which are essential for the conservation of our ecosystem and the existence of human beings. That is why implementation of carbon pricing mechanisms (like for example Emissions Trading Systems, ETS) becomes crucial to reduce emissions and stimulate investments in renewable sources of energy. This approach addresses both the climate crisis and the detrimental human and environmental consequences associated with conventional energy practices.

Structurally, anthropocentrism and holism are two different ways of dealing with climate change and shifting to renewable energy. Carbon emissions and carbon pricing, renewable energy incentives are policy measures based on anthropocentrism which accentuates human needs. It obviously may fail to recognise dependencies between species on the Earth as members of ecosystems. Meanwhile, holism presupposes the interdependence of all the living and non-living systems and calls for systems to change in relation to energy transitions. National Policy on Environment and the Sustainable Energy Development Authority Act 2011 are doctrines that concentrate on economic motives and societal welfare, on the other hand, the concept of holism implies that energy policies must consider ecosystem health and biodiversity conservation as mentioned by Lazaroiu, (2024).

This means that energy justice in Malaysia can be best viewed through distributional justice, recognition-based justice and procedural justice perspectives. Firstly, distributional justice focuses on the fairness of energy system distribution of costs and gains such as the displacement of traditional fishing groups and cost increment in energy to the B40 income earner. Secondly, recognition-based justice concerns itself with gaps or marginalisation of some social categories within energy choices for example, the indigenous people and the disabled, poor and urban dwellers. Thirdly, procedural justice is a significant component of energy-related decisions due to the fair and inclusive processes applied to renewable energy projects and bauxite mining as pronounced by Trakic et al., (2024). The aforementioned cases illustrate the deficit of public confidence and understanding in energy development and hence the rationale for enhancing and promoting public participation in the decision-making processes. Filling these gaps is important to realising just energy transitions.

As an example of the above, the financial incentive to cut carbon production has been facilitated by the European Union Emission Trading System, where a ceiling on overall emission is set and industries are issued emission permits, further generating revenue as companies sell off surplus development allowances. This has enabled member states to properly decrease their emissions. Similarly to this, the California Cap-and-Trade program has demonstrated that the state is reducing greenhouse gas emissions while revenue from those programs are also helping finance environmental programs show that carbon markets can be an effective tool in the transition to a lower emission economy (California Air Resources Board [CARB], 2021).

Through its renewable energy policies, Malaysia, a member state of the Paris agreement, has also bound itself to sustainable development. With Malaysia's Renewable Energy Act 2011 and Sustainable Energy Development Authority Act 2011, Malaysia seeks to strive away from fossil energy (UN Framework Convention on Climate Change [UNFCCC], 2015) and seeks to increase the portion of clean energy in its energy mix. These acts underpin Malaysia's renewable energy schemes and facilitate the feed-in tariffs and other incentives for the development of renewable energy (Renewable Energy Act 2011; Sustainable Energy Development Authority Act 2011). However, in contrast with other developed regions with a materialised ETS, Malaysia lacks a stable carbon pricing system, which acts as a disadvantage for the renewable energy policies in the country.

Therefore, this study analyses Malaysia's regulatory environment for Renewable Energy (RE) and the interaction of Emissions Trading Systems (ETS) with current policies. It examines how an Emissions Trading System (ETS) interacts with existing policies to address various market failures, such as regulatory risks and inefficiencies in the market model as noted by MESTECC (2018) and SEDA (2020). The study examines established ETS trading mechanisms and compares them to illustrate how well-structured carbon markets can serve as complementary policy tools to resolve environmental and economic issues. Additionally, the research emphasises the importance of transitioning towards sustainable practices, highlighting the potential of ETS-based schemes to effectively bring environmental policy into action.

LITERATURE REVIEW

Carbon Pricing and Emission Trading Systems (ETS)

One of the primary functions of ETS is to propose a financial reward for lowering carbon emissions, which remains the major driving force for shifting to green energy sources. For example, Guan et al. argue that carbon markets have an important function of removing emissions through practices such as green certificates so that

renewable energy firms can be actively involved in carbon trading (Guan et al., 2022). The growing importance of global climate change and the need for its reduction have led to the search for and the use of market solutions, the use of which is concentrated around the mechanisms for pricing carbon emissions. Emission Trading Systems (ETS) have been found to be efficient in cutting carbon emissions and sustaining investments in renewable energy sources (Ellerman, Denny, et al., 2016; California Air Resources Board, 2021). For example, benchmark examples such as the EU-ETS and California's Cap and Trade program demonstrate that the carbon market is capable of the second best in pulling industrial action in line with internalising the costs of carbon emission (European Commission, 2020; California Air Resources Board, 2021). Hence, the techniques are supposed to integrate socio ecological activity that caters to sustainability goals (Stavins, 2020), whereby these approaches include incorporating endogenous costs related to carbon emissions.

As a signatory to the Paris Agreement, Malaysia has embraced climate sensitive development through its legislative instruments enacted including the Renewable Energy Act 2011 and the Sustainable Energy Development Authority Act 2011. Such statutes constitute a framework for feed-in tariffs and other incentive schemes for adoption of renewable energy. However, the pool of decarbonisation options for Malaysia is relatively limited by the neglected structured ETS and a reliable carbon price mechanism in the policy landscape as explained in other studies (Mohd Nor, 2020; Shamsuddin et al., 2021). Nonetheless, connecting these regulations with Malaysia's national economic goals, such as increasing energy security, promoting industrial growth, and guaranteeing equitable development, remains a significant problem.

Global Applications of ETS in Driving Renewable Energy

ETS findings have shown that significant cuts in greenhouse gas (GHG) emissions could be made by encouraging investment in renewable energy. Before its introduction, in 2005, the EU ETS became the world's largest and most established carbon market. In 2005 until 2020, it accomplished a 35% reduction in emissions from covered sectors which included 11,000 power plants and industrial sites (European Environment Agency [EEA], 2021),. The EU ETS relies on a cap-and-trade structure with relatively tight caps and broad trading flexibility, generating incentives for cost-effective emission reductions (Ellerman et al., 2016). The implementation of its was phased in, beginning with geodesic energy generation and heavy industries (as opposed to general product or service offering), enabling iterated refining of resilience and adaptability. The policy also highlights the need for market-oriented regulatory structures which can be moulded as per market dynamics and supplement the encouragement of renewable energy.

California's Cap-and-Trade augments the EU in both depth of reductions and inclusion of equity. In 2021, the California program (which was initiated in 2010) achieved its (2020) GHG reduction objectives, with revenue from allowance auctions being directed to clean energy and disadvantaged community initiatives (California Air Resources Board [CARB], 2021; Borenstein et al., 2019). Its hybrid environmental/social goals are reflected in the original design of the program. The studies emphasise the role of California's regulatory architecture, including its renewable portfolio standard and energy efficiency requirement, as complementary to the effectiveness of its ETS, allowing systemic change of the energy sector (Martin et al., 2014). It has established an important precedent between regulatory and market-based solutions by prioritising the integration of renewable energy regulation into this framework. It looks at how design and outcomes in ETS are shaped by each regional environment, and contrasts California's focus on equity and localisation with the EU's wider metrics. The analysis demonstrates these differences and highlights the need to design ETS implementation based on socio-economic and environmental context to have a real impact on the international debate on emission reduction strategy.

ETS takes varieties of forms and can be adapted for numerous economic and policy contexts. Asia's first statewide trading plan was South Korea's cap and trade program, which was launched in 2015. It specifically targeted high-emission industries to invest in industrial energy efficiency or renewable energy (Kim et al., 2019). Mixed forestry initiatives under the Northern ETS, like those in New Zealand's ETS, are both sequestration and emissions reductions. This program encourages sustainable land-use practices through its innovative approach and lead to more positive environmental outcomes (Leining, Susarrey, Langendoen, and Koh, 2020). These

examples had shown that regional goals can be integrated into the setting up of an ETS framework to help achieve global climate mitigation targets. This fusion of diverse uses solidifies ETS as the world leader in cleaner energy and emissions mitigation.

Theoretical Foundations of ETS

ETS has a conceptual foundation which is based on economic and environmental theories. Its design is based on the Polluter Pays principle by which an individual pollutant should pay to be polluted (Pigou, 1932). It does not only withstand industries to lessen emissions but also assists in the more equitable distribution of environmental costs. Stavins (2007) similarly states that natural and cost-effective flexibility as well as innovation incentive of market-based instruments such as ETF is better in comparison to command-and-control regulation. ETS is a clear price signal which fits the market incentives with the green goals to promote technological advancement and sustainable practices at the cost of reduced regulations. Adding more to the interconnection of both energy systems, environment health, and welfare of people, Heffron et al. (2018) establish ETS as one of the crucial means to resolve complicated issues. It is clear that the price of carbon helps reconcile the difference between fossil fuel and renewable fuels which compels the industry to find alternative options which are green.

Burtraw et al. (2015) argue that putting ETS revenues in publicly available projects, namely the implementation of renewable energy and skill training, will be more acceptable of the policy and add to the social welfare. By moving to the green sector not only in a faster manner but also by balancing with the most vulnerable population and providing them with green sector jobs, this mechanism of reinvestment increases the speed of the energy transition. The practice further involves the approach that connects economic theory and the environmental policy ETS with the proposal of the process-driven model of attaining the sustainability. Furthermore, energy transformation investments catalyze the transition, generate employment in the green economy and finance marginalised groups.

Challenges in ETS Design and Implementation

The development of this market mechanism for figuring out the appropriate amounts in the design and implementation can either help it achieve its transformative goal or hinder it. The initial EU ETS low-emissions targets were established due to their undermining of market integrity and reduced environmental performance (Lefevre, 2020). Efficacy and sound caps that achieve international climate goals necessitate program stability (Newell et al., 2021).

Price volatility also imposed challenge on ETS implementation. Varying allowance prices may discourage longterm investments in renewable energy and lose the predictability required to compete in the market. To address these risks, Meckling et al. (2015) advise a combination of price-stabilisation tools, i.e., floors, ceilings, and the like. Efficiency in the market through transparent and fair distribution, be it via auctioning or free distribution, will help raise income towards government investment. Therefore, permitting a system where permits are gained via auction means that resource allocation is made based on the genuine market worth without the inefficiency of free distribution. They also claim that auction loadings can be unfair to small enterprises and the process can be unpleasant and unequal. However, studies show that well managed reinvestment of auction revenue into renewable energy reduces economic inequality (Burtraw et al., 2015). This means the bipolar coexistence holds a rich potential for benefits, systemically pointing to important limitations of auction-based allowance allocation while suggesting an optimal approach suitable for certain economic conditions.

Further, the ETS has been troubled by a constant concern of carbon leakage. For example, the transfer of polluting industries to countries with relatively lenient legislation on emissions. BCAs and regional interconnections are especially important to reconcile global pass-through policies (Branger et al., 2015). According to Flachsland, one of such measures linking the EU ETS to the Swiss carbon market shows how combined efforts might contain leakage risks in terms of the Former while at the same time enhancing market Integrity, Liquidity and scalability (Flachsland et al., 2009).

Comparative Insights for Malaysia

Malaysia's Renewable Energy plan is under the Renewable Energy Act 2011 and the Sustainable Energy Development Authority Act 2011. These legislative measures included feed-in tariffs and quotas meant to promote investment into solar, biomass, and hydro power projects (SEDA, 2020). However, because the exercise does not contain all the elements of a stringency-adjusted global carbon price, the measures are partial and thus easily containable and pale in comparison. It is possible to eliminate these weaknesses by implementing an ETS, as the new procedure proposed an open and stable mechanism for carbon pricing and promotion of new renewable energy technology.

The practical efforts of the EU and of California to export and scale up the CDM to other scales reveal that policy transfer requires step by step implementation, with the active participation of relevant stakeholders. The iteration and review of ETS design assumed by the Design strategies offer an invaluable ability to adapt to market and environmental conditions (EEA, 2021). Proper interconnection of these strategies such as green technology funds, energy efficiency standarders established in California indicates positive results of comprehensive decarbonisation (CARB, 2021).

Similar to Ellis and Tangen (2017), and in order to encourage Malaysia to adopt an FPS ETS, they recommend that pilot projects should be a first step in high emission sectors which include electricity and industrial origins. It lowers risk and offers a framework for building stakeholder confidence for those who rely on successful experiences in refining system design. Still, ETS' effectiveness can be enhanced by combining it with definite perks for renewable energy sources, such as subsidies and tax credits.

Opportunities for Malaysia's Energy Transition

Malaysia is well-suited to an ETS transition to a low-carbon economy due to its abundant supply of renewable energy sources such as solar and biomass. (Alam et al., 2011). In terms of policy initiatives, Malaysia can learn from the experiences of the EU and California's regulatory frameworks, particularly since the EU was the first to experiment with a carbon trading scheme. Furthermore, the EU's methodical policy making through different stages in its carbon trading plan struck the crucial note of credibility and responsiveness to consumer feedback, resulting in a genuine and long-term feasible sort of corporate investment. Conversely, California has led in the field of environmental justice by distributing auction revenue and wild-rural electrification mechanisms that have ensured that clean technologies are affordable to the disadvantaged populations thus establishing a path of synergy between climate and sustainable development. The diversification of the emissions trading scheme in Malaysia has the potential to substantially increase its effect on decarbonisation on a wide range of industry sectors.

The EU Swiss interconnection is an example of how international cooperation can be very beneficial to Malaysia in integrating the ETS into regional carbon markets and therefore diversify its market exposure and save on the costs of compliance (Flachsland et al., 2009). International development organisations, as one of the stakeholders in the global climate fund, can offer both financial and technical support to propel the process of ETS implementation in Malaysia to allow countries to progress with their energy shift and be at the forefront of sustainable innovation in the region. In addition, it would strengthen the implementation of ETS in the neighboring industries like transportation and agriculture to ensure that the scheme is adopted as per the overarching climate goals of Malaysia.

Pathway to Sustainable Energy Transition

The Emission Trading Systems are efficient in enhancing the use of renewable energy as well as lowering emissions under a broad range of environments. Malaysia can develop a localised ETS, which could be adjusted to the specifics of local conditions, but at the same time, fulfilling climate and energy goals according to the international standards. To control the process of implementing the traditional power generation to sustainable options, ETS has to be incorporated in the current legislation on renewable energy, designed to meet the most critical needs, and realised in terms of international cooperation.

Accordingly, to adapt to world climate obligations and to have a chance to trigger economic growth in Malaysia, the use of ETS is a key factor. In this direction Malaysia might be able to mimic the successful model from other nations in order to fashion up ETS that would be effective for the country taking into mind the socio-economic structure as well as equity and policy efficiency. This is a strategic direction needed to incorporate Malaysia in the green transformation of the Southeast Asian region, a process necessitating holistic governance mechanisms that underscores the existing green energy programmes and lays a foundation platform to have Malaysia at the centre of green-related activities in the region.

With the goal of achieving national climate objectives and doing its part in the overall effort against climate change, ETS is in a good position to leverage both points of emphasis identified by governmental research, as well as bridging and using collaborative best-practice models. To hold a successful shift towards sustainable energy, the amalgamation of ETS with already implemented renewable energy policies, the adaptation of ETS to local requirements, and the support of cross-border collaboration are all to be utilised. The adoption of ETS allows Malaysia to meet international climate targets, encourage economic expansion, and create an ETS that suits the socioeconomic environment as well as focuses on legislation equality and efficiency via the introduction of global best practices.

METHODOLOGY

The methodology adopted in this analysis employs a doctrinal approach, focusing on an in-depth analysis of secondary data to explore the potential implementation of an Emissions Trading System (ETS) in Malaysia. In order to find parallels with the Malaysian situation and distinctions between the two samples, this research examines the highly established ETS arrangements of the European Union (EU) and California. In order to assess the relative benefits or drawbacks of the earlier laws, it compares the statutory interpretations, case law, regulatory frameworks, and international treaties. This study helps to understand how Malaysia can create an ETS that fits its socio-economic and regulatory context based on the information from the aforementioned sources. This approach, combined with the energy justice lens of analysis presented in this paper provides a layered understanding of how an ETS could potentially meet both the environmental and socio-economic challenge in Malaysia.

FINDINGS AND DISCUSSIONS

The Global Success of Emissions Trading Systems (ETS)

Market-based instruments in Emissions Trading Systems (ETS) have been applied to effectively lower the emission of greenhouse gases (GHG). The example of this success can be seen with the European Union Emissions Trading System (EU ETS) or the so-called largest and most developed carbon market. The reduction in the annual emissions in the energy and industrial sectors of the EU ETS had decreased by 3 percent between the years 2008 and 2016, revealing how economic growth and emission cuts can be achieved simultaneously. To a great extent, this result can be explained by the cap-and-trade system, according to which a gradual emission ceiling is set, and the trading of allowances is also allowed. The system has also enhanced the adoption of renewable power and energy-efficient technologies, bolstering as well as sending out strong signals on the market in a way that promotes innovation and long-term sustainable development (Ellerman et al., 2020; European Commission, 2020).

As it has been observed in California, ETS can be transformed to fit economies at any stage of development. The program has reduced GHG emissions by 13 percent and has diverted its earnings in community-based renewable energy projects. Focusing on both the environmental and socio-economic gains has always been one of the strengths in addressing equity and climate change agenda. The necessary guarantee to the target that emission reductions will not only occur in the covered sectors is provided by the offset mechanism thereby, broadens the overall achievement of the program (California Air Resources Board, 2021; Stavins, 2020).

Malaysia's Renewable Energy Framework and Challenges

Malaysia's main driving force towards sustainable energy is founded in the Renewable Energy Act of 2011 and the Sustainable and Economic Development Authority (SEDA) Act of 2011. Feed-in tariffs also encouraged investment for solar energy by exploiting Malaysia's source of sunlight. In 2030, solar energy would enhance the potential to provide as much as 20% of Malaysia's energy demand (Hosenuzzaman et al., 2015).

Nevertheless, fossil fuels remain Malaysia's biggest source of supply accounting for more than 80% of total final energy consumption. The subsidies on fossil fuel, which constitute about 18.6% of national emissions, distort the economics involved in both production and utilisation of electricity from renewable sources. Infrastructural gaps, insufficient financing, and the lack of technical capabilities pose additional challenges to the large-scale adoption of renewable energy (Ibrahim et al., 2018; Hasan et al., 2023).

Perspectives from Global Case Studies

The European Union Emissions Trading System (EU ETS) along with Californian Cap-and-Trade Program provide valuable insights into what Malaysia should do to transform into a low-carbon economy. Both models emphasize the significance of open and effectively implemented application of caps besides the introduction of tools like Market Stability Reserve (MSR) to stabilize the market price and market indicators. Notably, an ETS may be implemented at the same time to achieve the socioeconomic inequities and attain environmental goals, which is demonstrated by a fair distribution of allowances in the formula by California and revenue reinvestment into community-based projects (Ellerman et al., 2020; California Air Resources Board, 2021).

A pilot ETS in Malaysia would allow gradual adjustments, which would allow targeting the high-emitting industries like power generation and manufacturing. Developing more transparent cap-settings, flexible compliance mechanisms, and strategic reinvestment of revenues is necessary in order to make the system efficient, while also meeting Malaysia's international climate obligation. (World Bank, 2023, OECD, 2024).

Strategic Pathways for Malaysia

The transition towards a low-carbon economy in Malaysia includes gradual reforms to the fossil fuel subsidies and introduction of a predetermined carbon price before the mandatory ETS. The operation of policies over the long run may be achieved through enhanced compliance monitoring mechanisms and adaptable policy tools like real-time emissions monitoring.

In addition, ETS allowance revenues should be reinvested to finance renewable energy projects in less developed regions, as well as energy efficiency measures. These policies do more than alleviate energy poverty as it also enhances public trust and acceptance. ETS revenues' alignment with socioeconomic goals guarantees that the transition to renewable energy is inclusive and equitable (PwC Malaysia, 2023).

Alignment with Energy Justice Principles

Reinvestment of ETS funds in renewable energy infrastructure towards rural and underserved areas has the potential to close the energy gap between cities and rural areas. Furthermore, focused training and reskilling programs for individuals transferring from fossil fuel industries will open up new job prospects in the renewable energy sector (Sovacool et al., 2021; Walker, 2020).

Recognition-based justice on the other hand can require, in order to be done, to meet the needs of societies that are vulnerable such as indigenous groups and those who are on low incomes. Social legitimacy could also be enhanced by integration of indigenous knowledge in renewable energy and enhance fairness in the distribution of resources. Engagement and inclusive decision-making processes will also foster trust and accountability. (Heffron and McCauley, 2018).

ASEAN and the Emerging Carbon Markets

ASEAN provides Malaysia with significant lessons in developing a carbon pricing framework. The introduction of a carbon tax was implemented in Singapore since 2019 that shows that sector-specific policies can be useful in reducing emissions without affecting economic competitiveness (National Climate Change Secretariat Singapore, 2020; World Bank, 2023). Similarly, the Cap-and-Trade System introduced in Indonesia in 2023 includes the provisions related to renewable-energy, which are also aligned to the larger climate goals and promote the creation of clean energy (National Climate Change Secretariat Singapore, 2020; World Bank, 2023).

Therefore, the development of the Bursa Carbon Exchange (BCX) in Malaysia in 2022 is a major step in favor of a voluntary system of emission trading. Nevertheless, its effectiveness remains constrained by a fragmented regulatory framework and the voluntary nature of participation. An evaluation of the experience in Singapore and Indonesia shows that it is necessary to ensure regulatory clarity and clearly defined market structure. The institutional design of BCX and the implementation of related mechanisms could make Malaysia the top carbon forming mechanism (PwC Malaysia, 2023).

Regional Collaboration for Sustainable Energy Transition

Regional cooperation with ASEAN countries is necessary to align carbon pricing mechanisms and the overall increase of the climate mitigation efforts. Joint efforts to develop common databases, information exchanges and integrated technology and financial platforms can help in resolving shared challenges. Malaysia's collaboration with ASEAN's climate objectives will facilitate its leadership role and expand its resilience to climatic and energy issues. (OECD, 2024).

RECOMMENDATIONS AND SUGGESTIONS

Establishing a Legal and Policy Framework

Malaysia needs to have a properly organised and consistent strategy, supported by clear guidelines, to help transition to renewable energy through carbon pricing. It is important to have a strong legislative framework; the law would be used to define the enforcement mechanisms and be able to align with the environmental quality measures and renewable energy standards. The regulation system will allow the efficient carbon tax revenues to be allocated to renewable projects by incorporating it into the system. It should be noted that a gradual adoption of an Emissions Trading System (ETS) should include most important areas (power generation, manufacturing, transportation) where a company can sell capped emissions with considering carbon offset credits related to renewable projects and forest restoration plans (Stek et al., 2023).

Strengthening Institutional Frameworks

The Ministry of Natural Resources, Environment, and Climate Change (NRECC) needs to coordinate efforts with SEDA Malaysia and Tenaga Nasional Berhad (TNB) along with other agencies heading up climate change implementations. Under this new system a distinct agency called Carbon Pricing Authority will maintain control of all aspects of carbon pricing implementation including ensuring participants abide by the rules. Planned training programs and information trainings play a crucial role in the development of the long-term ends. Consultative forums and education are to be used to engage the stakeholders in a way that will lead to a smooth implementation of carbon pricing, whereas the benefits of carbon pricing to renewable energy generation and reduction of emissions should be explained in public consultations (Joshi et al., 2023).

Ensuring Economic Feasibility

Effective pricing of carbon is only viable when it is based on business abilities to take in the costs. Any revenue generated by the system must be diverted into renewable energy projects and energy transition programmes, alongside promotion of green technology adoption. A slow start up period helps firms transition while tax

benefits and project grants help businesses invest in cleaner technology. When the system brings reliable profits it becomes easier for businesses and customers to support it (Fiekowsky & Douglis, 2022).

Promoting Regional and International Cooperation

Regional partnerships between nations and our international climate funds reduce barriers to making carbon pricing more effective. The ETS will work better when we connect it to regional carbon markets including Singapore's carbon tax system. Malaysia can obtain money for renewable energy development through its participation with the Green Climate Fund (GFC). Linking Malaysia's carbon pricing system to international climate agreement guidelines such as the Paris Agreement will make trade and investments easier and strengthen Malaysia's climate change response (Cramton et al., 2017).

Implementing Monitoring and Private Sector Engagement

Strict surveillance device is essential to effective carbon pricing programs. With the use of the digital technologies, specifically blockchain, this will increase more accurate emissions tracking and transparency is to be maintained. It is possible to ensure reliability and flexibility by performing constant inspections and independent audits to maintain optimal system operation. Private sector involvement will boost progress on sustainability when they support carbon-neutral aims and take part in carbon pricing related funding initiatives. Through combined and coordinated measures Malaysia will boost its renewable energy shift and fulfill its climate targets by uniting its ministries, national entities, sectors, and global partners (Ivanova et al., 2024).

CONCLUSION

Malaysia should adopt rigorous carbon pricing methods to support the use of renewable energy systems toward its sustainable low-carbon economic targets. A properly designed ETS system in Malaysia will help meet worldwide standards as it promotes renewable energy growth while bringing down greenhouse gas levels. Malaysia shows its support for environmental protection and future growth by creating open carbon pricing programs while distributing emission limits fairly and actively tracking results.

Our new rules will make carbon pricing fair for everyone and will push the industry toward cleaner energy solutions. The strengthened framework will help Malaysia build a stronger energy market and eco-friendly economy that meets the nation's aims for sustainable growth and international climate targets. Malaysia can lead the region in renewable energy and climate policies while showing other Southeast Asian nations how to develop better environmental rules.

Malaysia needs a detailed framework to monitor how effective the ETS remains. The system should receive continuous oversight from an environmental commission or independent auditor who checks its performance and environmental results. The policies will better reflect the needs of the Malaysian energy sector and international climate objectives through continuous input from various groups.

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