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A Review of Renewable Energy Laws in Malaysia: Comparing solar energy policies in Malaysia, United States, and China

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Abstract

There is concern over Malaysia's policy not being able to properly address issues concerning the ability to meet domestic energy demands and over the incomprehensive implementation of energy justice. Thus, an investigation to explore the policy, especially of those concerning solar energy, is conducted as part of renewable energy alternatives adopted by the country. This comparative study analyses the solar policies of three countries, namely Malaysia, the United States and China, to determine which implementation would be the most practical and efficient. Some recommendations to strengthen or improve the current solar energy policies in Malaysia will be shared as an outcome of the study.

Keywords: Energy justice, Solar energy, Policies, Malaysia

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1.0 Introduction

Malaysia plays a role to combat climate change and ensuring sustainable living, and this includes energy policies that cater to the people. This is due to Malaysia's dependency on fossil fuels to generate electricity (Afrouzi et al., 2021). Lately, there is a greater push globally not just for green energy but also for equitable and inclusive energy policies which Malaysia has not fully considered. A study of these policies to measure Malaysia's progress with the developed countries were made years ago, thus providing unreliable data on Malaysia's current position especially concerning energy policies (Fayaz et al., 2011).

2.0 Literature Review

Vaka et al. (2020) discusses the booming use of solar in Malaysia along with reviewing the policies with regard to the application of RE in Malaysia. Obvious weaknesses that impacted the country include the lack of project funding and public investments in solar technologies, the lacklustre solar market creating problems of pricing and supply, the lack of oversight and etcetera. Malaysia has also introduced a solar PV roadmap 2010-2020 with the aim of making Malaysia a solar PV leader, and incentives such as the Feed-In-Tariff was introduced

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under the Renewable Energy Act to boost its application (Bakh et al., 2014). Malaysia also developed several Solar PV plants and has proven to be one of the leaders in solar energy generators with the help of the Large Scale Solar plants (LSS) (Afrouzi et al., 2021).

However, Malaysia is still shy of being a great exponent of solar technology implementation. Various groups, including the industry, are still reluctant about the high cost of solar PVs. The practice of Malaysians that are still energy wasteful poses an immediate need to further enhance reliability and increase solar technology usage (Teoh et al., 2020). Numerous issues are yet to be discussed and addressed by Malaysia, such as securing and guaranteeing energy access and equality and energy reliability, especially in rural areas where Malaysia is still behind; the new policy has not been introduced in time with current problems such as accelerating climate change which recently has been upgraded to a climate crisis based on the consensus of world's scientists. Furthermore, there is still a lack of resonant participation from various private actors and countless more variables hampering the progress. A few examples are the availability and usage of the solar panel in each household, the Large-Scale Solar Project that is not widely adopted across nations, especially in rural areas, based on observation and more research and development needed to be developed in solar energy in Malaysia (Afrouzi et al., 2021).

3.0 Research Methodology

This research is library-based research to gather and review the solar energy policies in Malaysia, China, and the United States according to several categories. Various statutes, policies, action plans, articles and other available written materials were collected, examined, and analysed to obtain a greater view of the existing policies in those countries and the gaps that need to be filled.

4.0 Research Findings

4.1 Administration of Energy Policy

Similarly, in all countries under this study, the government is the leading authority that implements the energy policies in Malaysia, the United States and China. Government-linked companies and government agencies would be the starting point of Malaysia's energy policies which is later pursued and effected by non-state actors, namely, but not limited to, companies, small and medium-sized industries, and domestic consumers. As the authoritative body that governs solar policy in Malaysia is currently Malaysia's Sustainable Energy Development Authority (SEDA), it represents a clear distinction between the body of authorities for the various types of energy in addition to the National Energy Efficiency Action Plan and Renewable Energy Policy (Yatim, 2016). The Malaysian government, albeit conscientiously trying to improve the implementation of energy policy, is still lacking in its practical aspects, unlike the US and China, which are highly driven by economic thirst.

The implementations in the USA are more advantageous to the economic sector as industries have a larger capacity in participating in solar technology distribution. However, similarly, in Malaysia, the government's policies and reforms is the contributing factor to the high engagement by the industries. For example, the Office of Energy Efficiency and Renewable Energy administers the Solar Energy Technologies Office and funds opportunities for solar thermal powers and systems integration, among many others (Rannels, 2000).

If flexibility is preferential, then China's mandated implementation of its energy policies will be deemed as jarring. Its enforcement is not mere incentives but instructions by the government that must be implemented (Huang, 2021). China even goes to the extent of establishing bodies to oversee said implementations, such as the National Energy Commission (NEC), assisted by the National Energy Bureau (NEB) and the National Energy Administration (NEA) (Su, J.H., 2010). China is strictly more economic-centric compared to the US as it directly includes the involvement of the banks such as China Agriculture Development Bank (CADB) and China Development Bank (CDB), providing loans to fund solar energy projects. To round up, having a solid and clear authority is crucial to be the driving force of energy transition policies and programs (Geall et al., 2018 & NAP).

4.2 Policies Implemented and Components

In Malaysia, the government, has introduced both financial and non-financial solar policies such as the Large Scale Solar Programme (LSS3), Net Energy Metering 3.0 (NEM 3.0), Green Incentive Tax Allowance (GITA) Project and etcetera (Saleheen et al., 2021). On the other hand, there is a heavy reliance by the United States on financial policies such as Federal Financial Incentives, State Incentives and Financial Considerations but not on non-financial policy. One considerable non-financial policy tool is only the Renewable Portfolio Standard (RPS), adopted by states throughout the country to enhance solar energy implementation (Joshi, 2021). Nonetheless, there is a lack of uniformity among states as the RPS operates differently across the states, thus making it a mediocre example for Malaysia to employ.

China employs various policy tools encompassing various areas, including financial and non-financial. China also employs specific policies, such as the Solar Energy Poverty Alleviation Program, addressing the issue of energy access and equality as opposed to the United States and Malaysia, which still lack such tools (Geall et al., 2021). Malaysia's policy is still lacking as it does not address the bigger issues, such as energy outages, especially in rural areas, in particular, the states of Sabah and Sarawak (McAlpine, 2019).

Regardless of it, the implementation of solar policies in Malaysia is adequately balanced between the financial tools and non-financial tools as compared to the United States and just a tad behind China. Despite the advantages held, it is noticeably apparent that Malaysia needs immediate improvement of its policy tools to cater for the fresh blooming problems as what has been done by China with their policies implementation.

4.3 Relevance of Policy over Time

Assessing the relevance and comparing it between these three countries, despite that the policy in Malaysia has produced effectiveness overtime on the awareness using renewable energy (Afrouzi et al., 2021). China, in comparison, has shown its policy relevance to hold better than the policy in Malaysia and the United States. This is caused by its methods of implementation that are always in time with the current challenges in the timeframe. Within the working of the policy, China has actively phased out any projects that are unviable and ineffective to abide by the policy and overcome challenges (Lewis, 2021).

Malaysia, on the other hand, focuses on what can be done in the present time and then assesses the effectiveness of the policy after the projects are finished. Furthermore, the policies will cease to be relevant if Malaysia has reached the 20% electricity generation mix under the policy.

In contrast with the United States, they emphasize the varying operations depending on the states that produce different programs on the structure, mechanisms, sizes, and its application (Lewis, 2021). Thus, sustainability will be relevant to states' adoption and implementation as it provides a minimum standard to be achieved. But it will cease to be relevant if the states fulfil the minimum requirement standards of electricity supply wholly based on what has been set by the policy and the minimum requirement needs to be raised for better implementation.

In a more critical view, the policies that are created within a timeframe like Malaysia and China will lapse after the timeframe, showing that its relevance is meant to cater any issue and considerations within the provided period to ensure the effectiveness of the policy and construct a better policy in the future.

4.4 Effectiveness of Policy Implementation

There have been mixed results regarding each country's effectiveness in the implementation of its policies. On the positive end of the spectrum, Malaysia's LSS3 program has increased overall investment and is producing approximately 15GW of electricity from solar energy. Electricity tariffs have also been slowed due to the implementation of the NEM policy.

The United States through its RPS has decreased the price of solar energy equipment while also increasing its supply, directly assisting the economy. The RPS has been so effective in some of these states until it may no longer be needed as much as before as these states have already achieved their designated interim targets.

China's Township Electrification Program in 2002 greatly boosted the Solar PV market in China. Also, the Golden-Sun program which provided subsidies for installation of solar photovoltaics also led to various new installations nationwide.

Conversely, Malaysia has been projected to be unable to reach its target of having 20 percent of its electricity produced from solar energy by 2025 after investments have slowed since 2017 (Petinrin, J. O., & Shaaban, M., 2015 and Vaka et al., 2020). Malaysia's policies have also been hindered by general market failures and unstable prices of renewable energy equipment (Vaka et al., 2020).

Problems such as bureaucratic gaps, and criticism regarding China's policies have also hindered its effectiveness, coupled with complaints regarding its solar panels being of low quality which were attributed to poor policy designs (Wang, et al., 2017 and Tang et al., 2018). Despite this, China has tried to circumvent these problems by sanctioning failing suppliers which has reduced the curtailment rate, thus improving overall solar energy equipment implementations (Lewis, 2021).

In short, each country has and currently is facing challenges which are hindering the effectiveness of its policies. However, policies such as the RPS should be adopted in Malaysia to solve issues regarding unstable prices of renewable energy equipment and to encourage more installations of consumer grade solar panels nationwide.

4.5 Integration of Energy Justice

China is the leader when it comes to the implementation of energy justice. Higher percentage of application of the concept was observed as opposed to Malaysia and the United States. All three states have taken intermediary actions of transitioning from non-renewables to greener sources, eliminating harms to humans and the environment. China takes it a step further to include more social and economic justice programs in their energy transition process (Geall et al., 2018). An example is the Solar+ Projects by the Chinese government that integrates the transition process to green energy and deeper integration of clean energy in fields such as fisheries and agricultures to enhance energy equality and access (Shen et al., 2021). The Solar Energy for Poverty Alleviation Program is an exemplary project for Malaysia and the United States for enhanced effectuation of energy justice concepts where renewables are used to generate income to the geographically displaced, alleviates them from poverty and accomplishes wider energy access and equality outside the normal electrical grid (Geall et al., 2018).

Despite the advancement of the strengthened shift to solar renewables, Malaysia and the United States lags on the comprehensive realisation of energy justice since their focus is placed on the objective of increasing the solar utilisation rate and towards the carbon reduction goals that are pursued by countries across the globe. In addition, Malaysia still needs to tackle energy access issues that are exceptionally prominent in Sabah and Sarawak (McAlpine, 2019). Both Malaysia and the United States should learn from China to put more focus on social impacts as well and depart from the traditional philosophy in transitioning to solar energy. It won't only encourage more solar usage but solidifies the viability of these renewable sources and achieves the true meaning of energy justice.

5.0 Discussion

Based on the findings earlier, it is deduced that China is the most up and running in its implementation of solar energy policies considering the large-scale policies that they must enforce. The United States is a good example of having balanced governmental and industrial-led policies, and this may be adopted by Malaysia as the country cannot opt to merely rely on the government. Having a uniform version of the RPS may be a good start in Malaysia. In addition to administration, Malaysia should also follow China's footsteps in ensuring their policies regarding solar energy are continuously contemporary and au fait to ensure efficient development and enforcement in the long

run based on the needs of our country. The need for up-to-date policies must be met so that laws can soon be legislated. To sum up, all countries have their own strengths and weaknesses in their policies. Nevertheless, Malaysia should adopt alternatives that are applicable to the scale and resources of the country.

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