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## **WIND ENERGY LANDSCAPE IN MALAYSIA**

### **INTRODUCTION**

In recent years, the Malaysian Government has attempted to enhance the utilisation of renewable energy (“RE”) which aims to conserve the non-renewable sources from being depleted and to ensure the sustainability of energy supply. RE is included in the Fifth Fuel Policy which was implemented under the 8th and 9th Malaysia Plan as the fifth component along with hydro, coal, gas and oil.[1] Currently, the recognised sources of RE in Malaysia are biogas, biomass, small hydropower and solar photovoltaic (“PV”).[2] Unlike the aforementioned RE, wind energy has yet to be approved as a source of the nation’s RE, as will be elaborated further below.

Nonetheless, the Government has begun to look at the potential of including wind energy as one of the eligible energy for generating electricity in Malaysia. In 2017, the former Minister of Energy, Green Technology and Water, Datuk Seri Dr. Maximus Ongkili (Datuk Seri Dr. Maximus) said that the Government sought to explore wind energy to lessen carbon footprint and to reduce greenhouse gas emissions.[3] This is also supported by the statement made by Tun Dr. Mahathir Mohamad in 2019, who was the Prime Minister of Malaysia at the time, in a dialogue session in Beijing, where he proclaimed that the Government has proposed to build wind turbines in the sea on the East Coast of Malaysia.[4]

However, the implementation to include wind energy as one of the nation’s RE is not as straightforward as it may seem. Hence, this article will cover the wind energy landscape in Malaysia including the current regulatory framework and factors contributing to the development of wind energy in Malaysia.

### **REGULATORY FRAMEWORK OF WIND ENERGY IN MALAYSIA**

The regulatory body who is responsible for the development of the regulatory framework for wind energy in Malaysia is Sustainable Energy Development Authority (“SEDA”) which was formed under the Sustainable Energy Development Authority Act 2011 with key responsibilities for the promotion and implementation of RE, and the implementation and management of feed-in tariff scheme (“FiT”)[5] which is mandated under the Renewable Energy Act 2011.

Under the existing framework, SEDA is to work along with:

(a) Ministry of Energy and Natural Resources (“**KeTSA**”)

KeTSA is the ministry that is responsible for matters relating to, among others, energy and natural resources.

(b) Energy Commission (“**EC**”)

EC was established under the Energy Commission Act 2001 that is responsible for regulating energy sector, including but without limitation to the supply of electricity, in Peninsular Malaysia and Sabah.

### **Legislations and Regulations**

Relevant legislations for wind energy are listed down as follows:

(a) Renewable Energy Act 2011 (“**REA**”)

REA is the main legislation that governs the legal framework for RE in Malaysia. In addition to REA, there are subsidiary rules, regulations and guidelines administered by SEDA pursuant to REA through the implementation of FiT.

However, as previously mentioned, wind energy is a RE resource that has yet to attain recognition as an eligible RE under the REA. **Section 2** of the REA defines ‘renewable energy’ as electricity generated or produced from renewable resources. ‘Renewable resources’ is further defined under the same section as follows:

*“the recurring and non-depleting indigenous resources or technology as set out in the first column of the Schedule”*

It is observed from the first column of the Schedule of the REA that wind does not fall within the category of renewable resources under the REA. The Schedule only recognizes biogas, biomass, small hydropower and solar PV as renewable resources.

This may be due to the fact that the wind energy has yet to be fully examined and verified.[6] The Government is still assessing to determine the possibility of including wind energy in its FiT scheme under the REA.[7] The deliberateness of wind energy development in Malaysia may be caused by various factors including lack of incentives from the Government in promoting wind energy, the absence of strong political will, lack of robust regulatory framework and the location of Malaysia which is situated in a low wind speed region[8], as will be further explained below.

## (b) Energy Commission Act 2011 ("**ECA**")

Though REA is the principal statute governing RE in Malaysia, there is another relevant legislation named ECA which governs the technical, safety and implementation of regulations related to electricity sector.[9]

Unlike REA which confines the resources of RE to biogas, biomass, small hydropower and solar PV, 'renewable energy' is given a broader meaning under **Section 2** of the ECA as follows:

*"energy which is not depleted when used and includes energy obtained from energy sources such as biomass, hydro power, solar power, geothermal power, wind power, waves and tides"*

Therefore, wind energy is one of the resources for RE in general, and thus may potentially be one of the eligible RE for generation of electricity in Malaysia.

## (c) Electricity Supply Act 1990 ("**ESA**")

Apart from REA and ECA, ESA is also relevant to the RE sector. The ESA regulates a number of aspects of the electricity supply industry, including:[10]

- (i) the supply of electricity at reasonable prices;
- (ii) licensing, registration and control of any electric installation, plant and equipment with respect to matters relating to the safety of persons; and
- (iii) efficiency use of electricity.

## **DEVELOPMENT OF WIND ENERGY IN MALAYSIA**

Malaysia is generally known to experience a low wind speed area as compared to other countries. As Malaysia's mean annual wind speed is low at no more than 2 m/s, wind energy has not been successfully harnessed since most of wind turbines need a minimum speed of 4 m/s for electricity generation.[11]

Though many areas in Malaysia are not suitable for wind energy, the general assumption is that some locations may have good potential for wind energy generation especially at the coastal area and windier places. Studies conducted at Kuala Terengganu, Mersing and Kudat exhibited wind energy potential.[12] However, the implementation of wind energy in these areas might not be as straightforward as it

would seem, as the wind speed varies significantly from season to season due to the monsoons.[13]

### Wind Study Projects in Malaysia

Wind turbines in Malaysia have been installed for educational and research purposes only as the Government is still assessing to determine the wind energy potential as one of the nation's RE. To date, there are no wind energy projects that have been executed for electricity generation in Malaysia. The list of wind turbines installed in Malaysia are as follows:

(a) 150 kW of wind turbine at Pulau Terumbu Layang-Layang, Sabah, the first wind turbine in Malaysia was installed by Tenaga Nasional Berhad (“**TNB**”) in 1995. It was discovered that Pulau Terumbu Layang-Layang possesses the greatest wind energy potential compared to other places in Malaysia;[14]

(b) 100 kW of wind turbines hybridized with 100 kW solar PV and 100 kW diesel at Perhentian Island, Terengganu. However, findings showed that it was not convincing enough for wind energy to be successfully generated there.[15] Moreover, it has been reported that the turbines have stopped working due to some issues;[16]

(c) 3.3 kW to 25 kW of wind turbines at Kudat, Kuching, Kuala Perlis and Terengganu. However, the results of these projects were never published;[17] and

(d) 3.3 kW of wind turbine in Setiu, Terengganu conducted by Universiti Malaysia Terengganu. Findings showed the application of the wind turbine to supply electricity had been expected to help a shrimp farm industry in reducing the high operation cost. [18]

In 2009, TNB collaborated with Argentina's giant utility firm, Industrias Metalurgicas Pescarmona S.A (“**IMPISA**”) to explore the wind energy potential in Malaysia. IMPISA became part of a Malaysian committee that was formed to develop a wind energy programme in Malaysia. IMPISA had estimated that Malaysia has the capacity to generate between 500 to 2,000 MW of power from wind energy. Unfortunately, the arrangement did not materialised.[19] Subsequently, several studies and researches were conducted to study the potential of wind energy but many of the studies were not sufficiently comprehensive.[20]

Despite the shortcomings in the research projects and proposed collaboration, the Government is still continuing its effort to study the potential of wind energy in Malaysia. In 2017, Datuk Seri Dr. Maximus Ongkili mentioned that Sabah, in particular, Kudat and Kota Marudu have been identified for wind energy development

based on studies conducted by Universiti Malaysia Terengganu and other power agencies in China and Thailand. It was noted that 300 MW of wind energy could be generated. Plans have been made to set up a research centre for RE in Kudat, which would be supported by local universities and Asean energy institutes.[21]

### **Lack of Government's Support and Initiative**

As mentioned earlier, the FiT scheme that was introduced in 2011 to aid RE development in Malaysia does not offer support for wind energy, as the Fit scheme has yet to recognise wind as a renewable resource.

The Government provides other incentives in the form of investment tax allowance for the purchase of green technology assets and income tax exemption for the use of green technology services and system.[22] However, it is noted that 'wind' as a source of RE is not recognised under the qualifying activities for the purposes of application for the said incentives.[23]

The only financing support for wind power plant projects granted by the Government is Green Technology Financing Scheme 2.0 ("**GTFS 2.0**"). GTFS 2.0 was provided as a special financing scheme to support the development of green technology in Malaysia for energy supply and utilisation sector including wind energy plant. For this, the Government allocated RM2.0 billion for the period of January 2019 until the end of 2020. The scheme offers a 2% p.a interest/profit rate subsidy for the first 7 years and 60% Government guarantee of green component cost. Wind energy plants have been listed as one of the projects that are eligible to apply for GTFS 2.0.

Unlike the other incentives by the Government, GTFS 2.0 is the only incentive which is available for wind energy projects.[24] This may be due to the reason as discussed above, that is, the geographic location of Malaysia which seems to be unfavourable for developing wind energy. In addition, the absence of strong political will could also be the reason as to the lack of regulatory framework and incentives for wind energy. It is worth noting that China has the most installed wind energy capacity of 114,609 MW in the world and is also aiming to develop wind energy in lower wind speed areas. The success China has made in the wind energy sector was possible due to the strong political support received by their government.[25]

In Malaysia, there has been strong political bias particularly on fossil fuels as those are still heavily subsidised. The economy and politics of fossil fuels seem to dictate the future of RE development in Malaysia for the worse.[26] A clear dependence on political will similar to China must be observed in Malaysia.

Nonetheless, Malaysia is deliberately progressing towards the growth of RE and its industry in Malaysia. SEDA is currently working on the nation's Renewable Energy Transition Roadmap 2035 ("**RETR 2035**") to include the strategic roadmap to support

the current government's aspiration in achieving 20% RE target in the national installed capacity mix by 2025 as well as to determine the future of the electricity scenario at 2035.[27] The outcome of the RETR is to be part of the 12th Malaysia Plan (2021-2025).[28]

## CONCLUSION

Malaysia is actively progressing towards transitioning into RE. However, the regulatory support for RE in Malaysia is at an early stage, particularly for the wind energy sector, since the FiT scheme for wind energy is yet to be included and recognised as one of the RE resources. Currently, GTFS 2.0 is the only financial support that is available for wind energy projects in Malaysia. This could be due to the fact that Malaysia is situated in a low wind speed region and therefore faces greater challenges in developing wind energy.[29] Although it has been suggested that wind turbines could potentially be generated in the East Coast, such suggestion is still at development stage and has yet to be approved, as the Government is still assessing the wind energy potential in Malaysia.

Careful assessment of wind map and research on energy harnessing technology should be conducted further. However, this would require greater support from the Government to enable the potential of wind energy to be explored with success in Malaysia. Another effort that can be considered is by reviewing the existing legislations and regulations for RE in order to prioritize the development of wind energy nationally. A starting point for this may be for the recognition of wind as one of renewable resources under the REA as well as making the FiT scheme available to wind energy projects in order to make it more viable in Malaysia.

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1. Lim Chin Haw, Elias Salleh and Philip Jones, Renewable Energy Policy and Initiatives in Malaysia, ALAM CIPTA, Intl. J. on Sustainable Tropical Design Research & Practice, Vol. 1, (Issue 1) December 2006, pp 33-40.
  2. Section 2 and Schedule of the REA.
  3. Sabah looks to wind and solar energy to reduce carbon footprint, The Star, 30 June 2017 retrieved from <https://www.thestar.com.my/news/nation/2017/06/30/sabah-looks-to-wind-and-solar-energy-to-reduce-carbon-footprint>.
  4. Wong Ee Lin, Malaysia mulling setting up wind turbines in the East Coast – Dr. Mahathir, The Star, 25 April 2019.
  5. FiT scheme was first introduced on 1st December 2011 in peninsular Malaysia whereby it obliges Distribution Licensees (“DLs”), which are companies holding the license to distribute electricity such as TNB to buy from Feed-In Approval Holders (“FIAHs”), which could be an individual or a company who holds a feed-in approval certificate issued by SEDA. The holder is eligible to sell RE at the FiT rate. The DLs will pay for renewable energy supplied to the electricity grid for a specific duration. The FiT ensures RE becomes a viable long-term investment for companies and individuals.
  6. National Renewable Energy Policy and Action Plan 2011.
  7. Lip Wah Ho, Wind energy in Malaysia: Past, present and future, January 2016.
  8. Ibid.
  9. Section 14 of the ECA.
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  13. Firdaus Basrawi, Izwan Ismail & ors, A study on the Power Generation Potential of Mini Wind Turbine in East Coast of Peninsular Malaysia, AIP Publishing, 28 March 2017.
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24. Retrieved from <https://www.gtfs.my/page/project-eligibility-criteria-energy-sector>.
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27. Retrieved from <http://www.seda.gov.my/2020/01/seda-malaysia-a-report-card-2019-strengthens-the-growth-of-renewable-energy-and-its-industry-in-malaysia/>
28. Energy Commission, Towards a World-Class Energy Sector, Vol. 18, 4 March 2019.
29. Ibid.

## **Important Information**

**Azmi & Associates has set up Azmilaw Task Force to look into all issues arising from COVID-19 and MCO. Clients are welcomed to contact their usual Partner who will bring their issues to Azmilaw Task Force for our further action.**

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We hope that the above discussion is of assistance to you and your company. If your operations or contractual obligations are affected by the COVID-19 outbreak, we are ready to assist you on any queries you have.

## **Corporate Communication**

**Azmi & Associates**

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