

## Barriers and challenges for developing RE policy in Malaysia

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**Abstract.** Although Malaysia has implemented some incentive-led policies and projects in terms of renewable energy, and some progress of renewable energy (RE) has occurred, comparing target plans reveals a huge discrepancy. This study explains four main barriers that prevent developing RE policy in Malaysia: Financial, Market, Administrative, and Sociocultural. This study will suggest that the Malaysian government should offer sufficient incentives to investors in the RE field. The government must also give guarantees to the private sector to show that investment in renewable energy is beneficial enough to attract investment. Another activity that could affect the renewable energy industry is explaining the importance of this kind of energy to the general public.

**Keywords:** Renewable energy, energy policy, Malaysian developing plan

### 1. Introduction

The continuing depletion of fossil fuels and the environmental hazards posed by the needs of future development are gradually shifting the path of development toward sustainability, better sociability and environmental responsibility which in turn emphasize the need of renewable energy sources (Tiwari & Ghosal, 2007). In Malaysia, the Economic Planning Unit (EPU) and the Implementation and Coordination Unit (ICU) develop and control Malaysian energy policy. The Ministries of Energy, Water and Communications regulate the non-oil and gas energy and security sectors. The Energy Commission of Malaysia regulates the energy supply activities and enforces energy supply laws. In the 8th Malaysia Plan (2001-05) energy policy was formulated by including aims for a safe, cost-effective, secure energy supply which meant promoting renewable, cogeneration, diversification, efficiency and using auditing, financial and fiscal incentives, technology development, and labeling. Originally the four fuel diversification policies focused on oil, gas, coal and hydro, but in the 8th Plan it was broadened to include renewable energy as a fifth fuel in the new Five Fuel Strategy and it was a target that RE would contribute 5% of the country's total electricity demand by the year 2005 (that is, by the end of the Eighth Malaysia Plan period). With this objective in mind, greater effort was undertaken to encourage the utilization of renewable resources, such as biomass, biogas, solar and mini-hydro, for energy generation (Ölz & Beerepoot, 2010). In the 9th Malaysia Plan (2006-10) the energy policy of the 8th Plan was continued which provided a more conducive environment to support renewable energy projects. Additionally, the 9th Plan announced a target of 350 MW of grid-connected renewable electricity generation by 2010. Although Malaysia applied acceptable efforts to develop renewable energy the government goal was not achieved. The 10th Malaysian Plan clearly declared that “Malaysia is blessed with multiple RE resources, such as biomass, biogas, mini-hydro and solar, that will be leveraged to ensure a more sustainable energy supply. However, despite rigorous initiatives, the renewable target set out under the Ninth Plan period was not achieved” (10th Malaysian Plan).

It is important that we notice that Malaysia has abundant resources of renewable energy, and according to the Ministries of Energy, Green Technology and Water, a recent study identified the renewable energy resource potential in the country, in ringgit value, as follows:

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Table 1-1: Renewable energy resource potential in Malaysia

| RENEWABLE ENERGY RESOURCE | ENERGY VALUE IN RM MILLION(ANNUAL) |
|---------------------------|------------------------------------|
| FOREST RESIDUES           | 11,984                             |
| PALM OIL BIOMASS          | 6,379                              |
| SOLAR THERMAL             | 3,023                              |
| MILL RESIDUES             | 836                                |
| HYDRO                     | 506                                |
| SOLAR PV                  | 378                                |
| MUNICIPAL WASTE           | 190                                |
| RICE HUSK                 | 77                                 |
| LANDFILL GAS              | 4                                  |

### 1.1. RE policy in Malaysia

In line with the energy demand increase, the Malaysian Government has taken several measures to explore and promote the use of renewable energy as an alternative fuel source. These measures include the Fifth-Fuel Policy under the 8th, 9th and 10th Malaysia Plans, and Energy Efficiency in Commercial Buildings (MS1525), The Kyoto Protocol, the Malaysian Building Integrated Photovoltaic Programme (MBIPV), and Biomass. These will be briefly discussed subsequently (Haw, Salleh, & Jones, 2006). Before we go further it is important to mention the energy policies that have been applied in Malaysia. The energy related policies which have been created so far are given below:

- Establishment of Petroliaam Nasional Berhad (PETRONAS) 1974
- National Petroleum Policy (1975)
- National Energy Policy (1979)
- National Depletion Policy (1980)
- Four-Fuel/ Diversification Policy (1981)
- Fuel Mix in Electricity Generation, 1995-2005
- Renewable energy as the Fifth Fuel Policy (2000)
- Energy Efficiency (EE) Eighth Malaysia Plan, 2001-2005
- Incentives for the Energy sector
- Ninth Malaysia Plan, 2006-2010 (M. R. Islam, 2009)

The energy policies in Malaysia are formulated by the Energy Section of the EPU under the Prime Minister's Department. It is renewed every five years as part of the Five Year Malaysia Plan (Jalal & Bodger, 2009).

In 2000, the Four Fuel Policy was amended to become the Fifth Fuel Policy (Eighth Malaysia Plan 2001-2005). During that period, the strategy expanded to include Renewable Energy as the fifth fuel to supplement energy supply from conventional energy resources. The 8th Malaysian plan had a target to generate 5% (600MW) of the country's electricity from RE by 2005, but despite various incentives given by the government, only 2 plants with a total capacity of 12MW were commissioned (Mustapa, Peng, & Hashim, 2010).

The 9th Plan strengthened the initiatives for energy efficiency and renewable energy put forth in the Eighth Malaysia Plan that focused on better utilization of energy resources. An emphasis to further reduce the dependency on petroleum provides for more efforts to integrate alternative fuels. Various tax exemptions were introduced for energy efficiency implementers and renewable energy generators (Jalal & Bodger, 2009).

The launch of the new National Green Technology Policy in April 2009 by the current Prime Minister, Datuk Seri Najib Tun Razak, aimed to provide guidance and create new opportunities for businesses and industries to bring a positive impact to the economic growth (M. R. Islam, 2009). In this period the government set a target of 300MW in Peninsular Malaysia and 50MW in Sabah for power generation by 2010 to promote and provide more conducive environments to support the implementation of RE projects (Mustapa, et al., 2010).

The 10th Malaysian Plan (2011-2015) talks about the creation of Stronger Incentives for Investments in Renewable Energy. According to Tenth Malaysian Plan, Malaysia is blessed with multiple RE resources, including biomass, biogas, mini-hydro and solar, and these will be leveraged to ensure a more sustainable energy supply. However, despite rigorous initiatives, the renewable energy target set out under the Ninth Plan period was not achieved. In Malaysia, there seems to be renewed impetus in promoting the growth of an indigenous “green economy.” Not only does the country face the threat of climate change and pollution but the government also has to find new sources of growth and move up the value chain (Oh et al., 2010). It is estimated that the economic impact of RE Policy in Malaysia includes:

- RM 6.5 billion savings on CO2 mitigation;
- RM 28 billion of RE project;
- RM 90 billion of RE generation revenue; and
- 100,000 new jobs (Lalchand, 2009).

## **2. Barriers and challenges**

Malaysia has a high potential to increase renewable energy and reduce consumption in other energy sources without impeding productivity and economic growth. Although renewable energy policy has been in implementation for only a decade, the growth percentage is slow due to the following barriers:

### **2.1. Financial barriers**

When it is said that RE resources have not developed rapidly because of financial barriers, it is primarily meant that this is happening due to the cost. The current business environment in Malaysia does not support adoption of RE technology and thus renewable energy technology is not commercially viable in Malaysia. The high initial price and lack of suitable support mechanisms mean that RE technology is economically unattractive. In this regard it is important to note that lack of experience and understanding of RE among financial institutions and investors leads to low participation of national financiers and may increase the cost of capital for RE projects with foreign investors and raise the risk for investing in RE projects. It is clear that when applying RE for ordinary users, and subsequently charged high prices, these users find no reasons to use RE. All in all, the high cost of capital, lack of experience/trust among financiers and/or investors, lack of access to capital, lack of access to consumer credit, and the absence of appropriate financing are considered as the main financial barriers.

### **2.2. Administrative and political barriers**

This barrier encompasses political, institutional and regulatory conditions. A power structure is considered important in ensuring success in achieving RE targets. The political environment should lead to and encourage more practical regulations, in which the regulation is applicable in “moving toward the renewable energy”. Without a supportive political environment, no lower level of regulation can be established. The current problem in the administrative perspective is related to a lack of attention given to the maintenance factor by the government, which causes more costs in the long run to rectify defects in buildings. With adaptations of advanced technologies, it would help build up to the maintenance activity. Another issue that is worthy consideration is the lack of cooperation among organizations involved in implementing RE policy. The high administrative burden of achieving RE targets, with long delays in authorization and the absence of standardized access conditions, can influence RE policy in Malaysia. These challenges often lead to a heightened sense of regulatory and political risk on the part of investors and a consequent higher reluctance to invest in those environments. In terms of administrative barriers to achieve RE goals in Malaysia, the key problems in this aspect include:

- A large number of organizations involved in permitting procedures and a lack of coordination among involved authorities
- Absence of powerful implementation of RE policy that is mentioned in the Malaysian Development Plan
- Lack of RE specialists among decision makers meaning that policy makers are seen not to be fully aware of the characteristics and benefits of RE.

### 2.3. Socio-cultural barriers

The following socio-cultural barriers are indicated as having an impact on the development of renewable electricity projects in Malaysia: limited public awareness of RE technologies; limited public awareness of RE advantages in daily life; public feeling about having adequate fuel sources for ever; accessing low cost energy for Malaysian residents; lack of awareness of social and/or environmental impact of non-renewable energy sources; high risk perception related by using RE; perception of unrealistically high costs of RE.

## 3. Conclusion

Malaysia is a nation with limited indigenous conventional energy resources while it is blessed with multiple RE resources. These resources, such as biomass, biogas, mini-hydro and solar, should be leveraged to ensure a more sustainable energy supply. Although renewable energy is starting to emerge as fifth fuel energy in Malaysia, it is not considered as a significant power source yet and RE is still a niche industry within the country. The Malaysian energy sector is still heavily dependent on non-renewable fuels, such as fossil fuels and natural gas, as sources of energy. In line with the objective of diversifying the sources of energy, renewable energy has been identified as an alternative source of energy which could have been promoted since the 8th Malaysian Plan, and while the Malaysian government has stimulated a variety of energy related policies and tried to sustain the energy demand the result is so far disappointing. In the 8th Malaysia Plan the Malaysian government fixed a target of 5% renewable energy of total energy in 2001-2005 but achieved only around 1%. Again in 2006, the government declared the 9<sup>th</sup> Malaysian Plan having the target of 5% renewable energy of total energy, but this target was not achieved either. The 10th Malaysian Plan has pointed out that “several new initiatives anchored upon the Renewable Energy Policy and Action Plan will be undertaken to achieve a renewable energy target of 985 MW by 2015, contributing 5.5% to Malaysia’s total electricity generation mix.” This target is approximately the same as the 8th Malaysian Plan target, which means that although Malaysia has implemented some incentive-led policies and projects in terms of renewable energy, and some progress of renewable energy has occurred; comparing target plans reveals a huge discrepancy.

This study explains four main barriers that prevent developing RE policy in Malaysia as follow:

- Financial barrier that related to business environment which does not protect adoption RE technology and as result RE is not commercially feasible in Malaysia.
- Administrative barrier that related to political, institutional and regulatory conditions. And generally Power structure .This barrier according to research respondent consider as crucial obstacle for achieving RE target in Malaysia.
- Sociocultural barrier that include Malaysian context and culture. Public awareness and people perception about having fuel energy forever, category in this barrier.

## 4. References

- [1] Haw, L. C., Salleh, E., & Jones, P. (2006). Renewable Energy Policy and Initiatives in Malaysia. *ALAM CIPTA, International Journal on Sustainable Tropical Design Research & Practice*, 1(1), 33-40.
- [2] Lalchand, G. (2009). Brainstorming Session on RE
- [3] Jalal, T. S., & Bodger, P. (2009). National Energy Policies and the electricity sector in Malaysia.
- [4] Eight Malaysian plan (2000-2005)
- [5] M. R. Islam, R., Saidur, N. A. Rahim, and K. H. Solangi. (2009). Renewable Energy Resource In Malaysia *Engineering e-Transaction*, Vol. 4, No. 2, December 2009, pp 69-72.

- [6] Mustapa, S. I., Peng, L. Y., & Hashim, A. H. (2010). Issues and challenges of renewable energy development: A Malaysian experience.
- [7] Oh, T. H., Pang, S.Y,&Chua, S.C. (2010). Energy policy and alternative energy in Malaysia: Issues and challenges for sustainable growth. *Renewable and Sustainable Energy Reviews*, 14(4), 1241-1252.
- [8] Ölz, S., & Beerepoot, M. (2010). Deploying Renewables in Southeast Asia: Trends and potentials. *IEA Energy Papers*.
- [9] Tiwari, G., & Ghosal, M. (2007). *Fundamentals of renewable energy sources*: Alpha Science.
- [10] Tenth Malaysian Plan. . (2010).