



Renewable energy policies and initiatives for a sustainable energy future in Malaysia

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ARTICLE INFO

Article history:

Received 28 February 2011

Accepted 5 July 2011

Available online 20 October 2011

Keywords:

Renewable energy (RE)

Malaysia

RE policies

RE programmes

RE incentives

RE funding and schemes

ABSTRACT

Effective policies and incentive on renewable energy (RE) is critical to promote low carbon economy and society in the future. RE was first introduced in the country's energy mix through the Fifth-Fuel Policy which was formulated under the Eighth Malaysia Plan (2001–2005) to reduce dependency on fossil fuel and to address the rising global concern on climate change. This paper addresses the RE progress and achievement over the past 10 years, and discusses the key policies for RE programmes, funding, schemes, and incentives that has been introduced by the government of Malaysia to develop and promote the utilisation of RE. The recent RE mechanisms under the Tenth Malaysia Plan (2011–2015) will also be highlighted.

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Abbreviations: RE, renewable energy; SREP, small renewable energy power programme; SMP, Eighth Malaysia Plan; BioGen, biomass generation and demonstration project; GoM, Government of Malaysia; 9MP, Ninth Malaysia Plan; MBIPV, Malaysia building integrated photovoltaic; CETREE, Centre for Education and Training in Renewable Energy and Energy Efficiency; 10MP, Tenth Malaysia Plan; FiT, feed-in tariff; 7MP, Seventh Malaysia Plan; EE, energy efficiency; KeTTHA, the Ministry of Energy, Green Technology and Water; SIRIM, Standards and Industrial Research Institute of Malaysia; GT, green technology; PV, photovoltaic; SCORE, Special Committee on Renewable Energy; REPPA, Renewable Energy Power Purchase Agreement; TNB, Tenaga Nasional Berhad; GHG, greenhouse gas; UNDP, United Nation Development Programme; GEF, global environment facility; PS, pioneer status; ITA, investment tax allowance; MIDA, Malaysian Industrial Development Authority; SEDA, Sustainable Energy Development Authority; REBF, Renewable Energy Business Fund; GTFS, Green Technology Financial Scheme; PTM, Pusat Tenaga Malaysia; BPMB, Bank Pembangunan Malaysia Berhad; MESITA, Malaysian Electricity Supply Industry Trust Account.

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1. Introduction

Initiatives on sustainable development are currently aggressively pursued throughout the world. The Malaysian government has developed key policies and strategies for over 30 years to achieve the nation's policy objectives which are designed to mitigate the issues of security, energy efficiency and environmental impact to meet the rising energy demand. Malaysia's current focus is on developing effective policies on renewable energy (RE) in order to reduce dependency on fossil fuel and contribute towards mitigating the effects of climate change. Presently, renewable energy project in Malaysia have been slow to materialize. However, concerted efforts such as the government's policies and initiatives are currently undertaken by the government to develop and promote the utilisation of renewable energy resources.

In order to address the concern of energy security, Malaysia introduced the "Four-Fuel Diversification Strategy" in 1980 and started to develop more hydropower and encouraged the use of natural gas and coal to reduce complete dependency on oil in the wake of the energy crisis of the 70s. In 8th Malaysia Plan (8MP – 2001–2005), the fifth-fuel strategy was introduced to promote the use of RE as well as to address rising global concern on climate change. A year after the introduction of the Fifth Fuel Policy, the Small Renewable Energy Power (SREP) Programme was launched in May 2001. A target of 350 MW of electricity generation from RE such as biomass, biogas, municipal waste, solar and mini-hydro as alternatives to fossil fuel was set but has so far not been achieved. In order to ensure the development during 8MP, Biomass Generation and Demonstration (BioGen) Project was launched and various incentives were given by the government to realize this target but only two RE power plants were commissioned with a total capacity of 12 MW [1]. Despite the slow progress, Government of Malaysia (GoM) persevered in the notion to increase the utilisation of RE under the 9th Malaysia Plan (9MP – 2006–2010) by enhancing the use of RE and biomass resources from oil palm, wood, rice husks residue for the purpose of heat and electricity generation and biomass co-generation systems. In addition, under the 9MP, the National Biofuel Policy 2006 and the National Green Technology Policy 2009 were launched in effort to promote RE resources. Addition of two RE programmes was also launched under the 9MP, namely Malaysia Building Integrated Photovoltaic (MBIPV) and Centre for Education and Training in Renewable Energy and Energy Efficiency (CETREE). MBIPV is mainly for solar energy developments and CETREE is mainly to increase the awareness of the importance of RE to the public through education and training

However, by the end of the 9MP, RE contribution towards the country's total energy mix through grid-connected power generation from SREP only achieved 56.7 MW [1]. Due to this scenario, Malaysia aggressively continues its goal to promote and increase the share of RE in the country's energy mix under the 10th Malaysia Plan (10MP – 2011–2015) which begin in year 2011. In the 10MP, the new energy target to achieve is of 985 MW by 2015 contributing to 5.5% of Malaysia's total electricity generation mix. In order to achieve its target, the National Renewable Energy Policy 2010 is recently launched. Several new initiatives anchored upon the Renewable Energy Policy 2010 and Action Plan will be undertaken [2]. Among the measures taken includes; the introduction of a Feed-in Tariff (FiT) and establishment of a RE fund from the FiT [2]. Furthermore, two acts, Renewable Energy Act and the Act for a FiT

implementing agency, are expected to be launched by 2011 [3]. This paper discusses the progress and achievement on RE, key policies for RE programmes, funding, schemes, and incentives that has been introduced by the government of Malaysia to develop and promote the utilisation of RE over the past 10 years. New recent policies and initiatives under 10MP will also address.

2. Initiatives and action plans for renewable energy

Since the Seventh Malaysia Plan (7MP – 1996–2000), emphasis has been based on sustainable development while RE was stressed upon since the 8MP. Over the 15 years (7–9MP), RM 154 million for 176 projects has been funded for RE research and developments to universities, research institutes and industries focusing on developing technologies to harness energy from biomass, solar, mini-hydro, winds and oceans [4]. Up to now, even with the target of 300 MW in Peninsular Malaysia and 50 MW for Sabah and Sarawak, but only 56.7 MW of energy in Malaysia is produced from RE sources [1]. Currently, as of year 2011, Malaysia is currently under the 10MP where aggressive initiatives are put into RE developments. Table 1 shows the Malaysia's key emphasis from 7MP to 10MP for energy development.

2.1. Energy policies

National Energy Policy is the first Malaysia's energy policy emphasising on oil and gas resources to serve the need of energy in Malaysia. The main purpose of the policy is to ensure the availability of the energy supply and that the supplies are reasonable in price to support the nation's economy developments. Under this policy, the Ministry of Energy, Green Technology and Water (KeTTHA) has identified three principal energy objectives that would be instrumental in guiding the development of its energy sector [6].

The three principals of National Energy Policy [6]:

- (1) *Supply*: To ensure the provision of adequate, secure and cost-effective energy supplies through developing indigenous energy resources both non-renewable and RE resources using the latest cost options and diversification of supply sources both from within and outside the country.
- (2) *Utilisation*: To promote the efficient utilisation of energy and discourage wasteful and non-productive patterns of energy consumption.
- (3) *Environmental*: To minimize the negative impacts of energy production, transportation, conversion, utilisation and consumption on the environment.

In order to promote the utilisation of RE, GoM further introduce several other policies such as the Fifth Fuel Policy 2000, National Biofuel Policy 2006, National Green Technology Policy 2009 and the latest, yet to be launched National Renewable Energy Policy 2011.

2.1.1. Fifth Fuel Policy 2000

Fifth Fuel Policy (8MP – 2001–2005) – In the 8MP, RE was announced as the fifth fuel in the energy supply mix. RE is being targeted to be a significant contributor to the country's total electricity supply. With this objective in mind, greater efforts are being undertaken to encourage the utilisation of renewable resources,

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