ANALYSIS OF RENEWABLE ENERGY POTENTIAL IN MALAYSIA

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Abstrak

Tenaga boleh baru adalah satu sumber terkemuka dalam penjanaan elektrik global. Kecenderungan ke arah penjanaan tenaga ini adalah disebabkan oleh ketidakhabisannya walaupun digunakan sepanjang masa berbanding dengan menggunakan bahan api konvensional. Faktor lain adalah kerana ia tidak menghasilkan gas rumah hijau dan pencemaran kepada persekitaran. Malaysia, salah satu daripada negara sedang membangun di Asia Tenggara juga di dalam proses menggunakan sumber-sumber yang ada. Objektif laporan ini ialah bagi mengenalpasti sumber-sumber tenaga boleh baru yang berpotensi dan boleh didapati di Malaysia. Pelbagai sumber dan bahan bercetak seperti jurnal antarabangsa, persidangan, maklumat yang dikeluarkan oleh badan-badan tertentu kerajaan dan sumber-sumber sebagainya telah digunakan untuk menentukan potensi yang ada. Daripada analisis yang dibuat, dapat disimpulkan bahawa di Malaysia, biojisim merupakan tenaga yang mempunyai potensi paling tinggi untuk dijana memandangkan kepada kelimpahannya dalam sektor pertanian terutama sekali dalam industri minyak sawit. Berikutnya adalah tenaga suria, yang juga mempunyai potensi besar yang menyumbang ke arah penjanaan elektrik boleh baru. Tenaga lain yang boleh diperbaharui juga turut menyumbang ke arah penjanaan elektrik, walaupun hanya di skala yang kecil. Dasar-dasar kerajaan memainkan peranan yang sangat penting dalam menggalakkan pembangunan tenaga boleh baru. Kerajaan telah mewujudkan sejumlah dasar berkenaan dengan tenaga boleh baru ini untuk menggalakkan lagi penggunaannya. Walau bagaimanapun, dasar-dasar sekarang masih tidak cukup untuk memastikan keberkesanannya. Ianya penting bagi Malaysia untuk menyeimbangkan dasar-dasarnya sekaligus meningkatkan pembangunan tenaga boleh diperbaharui demi menjamin masa hadapan yang cerah dan gemilang.

Abstract

Renewable energy sources are important for energy production in the world. The trend toward renewable energy sources is because they will never be exhausted even it is repeatedly use, contrary with the conventional fuels. Another important factor is that the emission of greenhouse gases and air pollutants is little or no production to the environment. Malaysia, developing countries in Southeast Asia is also in the process of using available resources and discovering its potential. The purpose of this report is to determine the potential of renewable energy sources available in Malaysia, as well as the current version of renewable energy. It also includes the current renewable energy policies in Malaysia. Various sources and documents published in international journals, conferences, information distributed by some government agencies and other measures used to determine this potential. This analysis shows that for Malaysia, most of the biomass can be used because of its abundance availability in agriculture, especially in palm oil industry. The next is solar energy, which also contribute to a significant potential for renewable electricity. Other renewable energy sources also can contribute to the electricity mix, although at a lesser extent. The laws also play an important role in promoting development of renewable energy. The government has ordered a few policies of renewable energy to be executed in the system. However, current policies are not sufficient to ensure their survival. It is important to strike Malaysia with a balance in policies manner and as a result development projects will continue to use renewable energy for sustainable development in the future.

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TWh	Tera watt hour
W	Watt
°C	Degree Celsius
Km^2	Kilometer square
U.N	United Nations
OIC	Organization Islamic Conference
MW	Megawatt
IPP	Independent power producer
CO_2	Carbon dioxide
PV	Photovoltaic
PJ	Petajoule
LNG	Liquid natural gas
PDA	Petroleum Development Act
RE	Renewable energy
SREP	Small Renewable Energy Power
REPPA	Renewable Energy Power Purchase Agreement
TNB	Tenaga Nasional Berhad (National Power Utility)
US	United States
BioGen	Biomass Power Generation and Demonstration Project
GHG	Green house gases
EFB	Empty fruit bunches
POME	Palm Oil Mills Effluent
MBIPV	Malaysia Building Integrated Photovoltaic Project
GC-BIPV	Grid-connected Building Integrated Photovoltaic Project
MSW	Municipal Solid Waste
PTM	Pusat Tenaga Malaysia (Malaysia Energy Center)
Kton/year	Kilotones per year
CPO	Crude Palm Oil
FFB	Fresh Fruit Bunches

MC	Moisture Content
CHP	Combined Heat and Power
GEF	Global Environment Facility
ESCO	Energy Services Company
MTDC	Malaysia Technology Development Center
EE	Energy Efficiency
USD	United States Dollar
DSM	Demand Site Management
EAGB	Energy Audit in Government Building
MIEEIP	Malaysian Industrial Energy Efficiency Improvement Project
SCORE	Special Committee on Renewable Energy
HAWT	Horizontal Axis Wind Turbines
VAWT	Vertical Axis Wind Turbines
WECS	Wind Energy Conversion System
CEB	Central Electricity Board
NEB	National Electricity Board
OPP	Outline Perspective Plan
GDP	Gross Domestic Product
FiT	Feed-in-tariff
RPS	Renewable Portfolio Standard
SEDA	Sustainable Energy Development Authority
DANCED	Danish Cooperation for Environment and Development
CDM	Clean Development Mechanism
MIDA	Malaysian Industrial Development Authority
UNDP	United Nation Development Program