

**FINANCING MECHANISMS FOR SMALL SCALE
RENEWABLE ENERGY PROJECTS IN MALAYSIA**

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**FINANCING MECHANISMS FOR SMALL SCALE
RENEWABLE ENERGY PROJECTS IN MALAYSIA**

By

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**Dissertation submitted to the Othman Yeop Abdullah,
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Fulfillment of the Requirement for the Degree of
Master of Business Administration (Technology Management)**



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ABSTRAK

Kertas ini bertujuan mengkaji secara analitikal mengenal pasti isu-isu berkaitan mekanisme pembiayaan projek-projek tenaga boleh diperbaharu di peringkat global dan Malaysia serta mengenal pasti potensi penggunaan sisa sawit secara efisien dalam industri tenaga boleh diperbaharu khususnya oleh stesen jana kuasa berskala kecil di Malaysia.

Status terkini dan rumusan isu-isu berkaitan pembangunan tenaga boleh diperbaharu di peringkat global dan di Malaysia khususnya dari mekanisme pembiayaan dan teknologi akan diberikan kupasan lanjut dalam kertas ini. Selain itu, cadangan-cadangan dari segi pembiayaan dan potensi biomass berasaskan sawit dalam pembangunan projek tenaga boleh diperbaharu berskala kecil berdasarkan kajian-kajian sebelum ini oleh agensi antarabangsa dan penyelidik tempatan juga dikemukakan.

Memandangkan Ini adalah kertas kajian secara analitikal maka penulis mencadangkan supaya kajian lebih lanjut mungkin diperlukan dalam membandingkan pengalaman industri tenaga boleh diperbaharu tempatan dari segi pembiayaan dan penggunaan teknologi hijau.

ABSTRACT

The purpose of this analytical research paper is to find some feasible measures regarding financial issue faced in Malaysia's renewable energy project and globally, and to promote biomass technology to the industrial development of Malaysia's small scale renewable energy projects.

The paper summarizes the status and studies the problems of renewable energy development (financing gap), and then puts forward some proposals for the financing mechanism and potential of palm's biomass in Malaysia's small scale renewable energy project based on international report and local research.

As this is only a analytical research paper and many of its suggestions require rigorous testing and previous secondary data. The authors would suggest that further research is needed to compare experience of local industry in financing mechanism and technology used in small scale renewable energy project.

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DEDICATION

This dissertation is dedicated to my son and daughter, Imran Danish Shafi and Iman Raeesa Qistina, my family and my colleagues in Bahagian Kabinet, Perlembagaan dan Perhubungan Antara Kerajaan, Jabatan Perdana Menteri for their encouragement, concerns, moral support, love and care that makes me fully understood what life take and able to achieve what seems impossible.

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LIST OF ABBREVIATIONS

BASE - Basel Agency for Sustainable Energy

BioGen - The Biomass-based Power Generation and Cogeneration Project

CHP – combined heat and power (also co-generation)

EFB - empty fruit bunches

FSM – Full Scale Model

IEA International Energy Agency

kW – kilowatt

kWh – kilowatt-hour

MW – megawatt

MWh – megawatt-hour

POME - palm oil mill effluent

PV - Photovoltaic

REPPA - Renewable Energy Power Purchase Agreement

RPS – renewable portfolio standard

SREP - Small Renewable Energy Programs

TWh - terawatt-hour (billion kilowatt hours)

UNDP - United Nations Development Programme

UNEP - United Nations Environment Programme

VAT - value-added tax

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CHAPTER 1: INTRODUCTION

1.1 Background of the Study

This chapter represents the introduction and overview of the study in which generally highlights the issue of renewable energy globally and in Malaysia. The need for sustainable energy use has become more and more evident. As such, renewable energy is envisaged to become an increasing share of Malaysia's electricity generation. With abundant sources available, such as biomass, the palm oil industry is likely to become ever more prominent in adopting renewable energy.

Rising oil prices, growing energy security concerns and the human and environmental devastation caused by adverse weather events that might be attributed to climate change are main factors of increasing the attractiveness of alternatives to conventional fossil-fuel based energy sources and adding more reason of government in many countries to rethink the world's energy future. Investment is at the core of the transition to a sustainable energy future, as massive amounts of new capital will be required to cover the world's growing energy demand and to meet commitments to deep carbon emissions reductions.

Renewable energy has to supply a greater share of the world's energy requirements. Renewable confer a number of major benefits compared to other energy pathways such as energy security, a stable climate, cleaner air, and new employment opportunities and the resources are truly vast. It is estimated that the market for clean energy technologies could be worth \$1.9 trillion by 2020 (UNEP, 2005). The financial sector has a key role to play in developing and promoting this market. Renewable energy is both a solution and a business opportunity. However, there are still some significant barriers to capturing this promise. The most important thing that policymakers can do is create confidence in the long term future of the renewable

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