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ESTABLISHING MELAKA SOLAR VALLEY PROJECT FOR RENEWABLE ENERGY SUPPLY BY KUMPULAN MELAKA BERHAD

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DECLARATION

"I admit that this report is the result of my own, except certain explanations and passages where every of it is cited with sources clearly."

Signature :
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DEDICATION

I would like to dedicate the appreciation to my family members especially my parents Mr. Lim Boon Kee and Mdm. Pang Yuit Yin, and my lover Mr. Lee Yee Chern, who supported me from spiritually and financially, beloved supervisor and panel who guided me throughout the research, teammates and housemates that assisted me through the journey of research.

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ABSTRACT

Nowadays, global warming are the worst consequences of burning fossil fuels, aggravated by ever increasing energy demand due to improved living standards and geopolitical tensions over oil resources. This research discusses about the establishing Melaka Solar Valley Project for renewable energy supply by Kumpulan Melaka Berhad. In order to investigate the significance and contributions of solar energy to Malaysia, the research focuses on two important issues which are, (1) The factors rendered Kumpulan Melaka Berhad in establishing Solar Valley Project in Melaka, and (2) The activities involved in Melaka Solar Valley Project Establishment. In this study, the researcher will conduct the case study in qualitative research method, which includes the semi-structured interview to investigate the relation and importance of establishing Melaka Solar Valley Project for renewable energy supply. Innovative solutions will be proposed to foster the Solar Valley Project Establishment for renewable energy supply in Malaysia. As a conclusion, the establishment of Solar Valley Project would be greatly embraced in the near future.

Keywords: Solar Valley Project, Renewable energy supply, Project Management, Sustainability, Malaysia

ABSTRAK

Masa kini, pemanasan global adalah akibat yang paling teruk daripada pembakaran bahan api fosil, diterukkan lagi permintaan tenaga yang semakin meningkat kerana taraf kehidupan yang lebih baik dan ketegangan geopolitik ke atas sumber minyak. Kajian ini membincangkan tentang projek pewujudan Lembah Solar Melaka untuk bekalan tenaga boleh diperbaharui oleh Kumpulan Melaka Berhad. Untuk menyiasat kepentingan dan sumbangan tenaga solar ke Malaysia, kajian ini memberi tumpuan kepada dua isu penting iaitu, (1) Faktor-faktor yang mendorong Kumpulan Melaka Berhad untuk membangunkan Projek Ladang Solar di Melaka, dan (2) aktiviti yang terlibat dalam Pembangunan Projek Ladang Solar Melaka. Dalam kajian ini, penyelidik akan menjalankan kajian kes melalui kaedah penyelidikan kualitatif, termasuk temu bual separa berstruktur untuk menyiasat hubungan dan kepentingan pembangunan Projek Ladang Solar Melaka untuk bekalan tenaga boleh diperbaharui. Penyelesaian inovatif akan dicadangkan untuk memupuk Pembangunan Projek Ladang Solar untuk bekalan tenaga boleh diperbaharui di Malaysia. Kesimpulannya,Pembangunan Projek Ladang Solar seharusnya digalakkan dalam masa terdekat.

Kata kunci: Projek Ladang Solar, Bekalan Tenaga boleh diperbaharui, Pengurusan Projek, Sustainability, Malaysia

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ABBREVIATION	MEANING
PV	Photo-voltaic
IEA	International Energy Agency
PPA	Power Purchase Agreement
GBI	Green Building Index
INSEL	Integrated Simulation Environment Language
SCADA	Supervisory Control and Data Acquisition
EPC	Engineering Procurement & Construction
SEDA Malaysia	Sustainable Energy Development Authority of Malaysia

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Nowadays, the world's main source of generated energy is produced from fossil fuels, coal, petroleum liquids, and natural gas. However, the burning of fossil fuels caused the global warming, aggravated by ever increasing energy demand because of improved living standards and geopolitical tensions over oil resources, we are facing an energy crisis at the global scale. According to Jha (2010), there is a non-polluting renewable energy sources such as solar power, wind power, hydropower, or conversion of fast-growing crops into ethanol. These are renewable energy sources which are readily available to be harvested. These renewable sources are clean energy and highly potential to help in the effort to combat against global warming and reducing carbon footprint. Walker (2013) states the sun has always been an obvious source of energy. Then, there is a technology which converts sunlight into electricity through photovoltaic semiconductors, which is the cleanest, most worldwide, and possibly the most reliable alternative (Jha, 2010).

McLamb (2011) states development of industrial capability has always been relying on the energy demands or the amount of energy available for use. It is the creation of the steam engine which sparked the industrial revolution and the following evolution of energy economy based on wood and coal. Ever since, energy sources such as nuclear, wind, water, oil and gas has received great development in

the continuous development of the energy economy. However, the drawback of these electrical energy power sources is that they require large finance investments and extensive scheduled maintenance to be safe and reliable. Luckily, there is the alternative solar energy source which provides non-polluting, self-sufficient, reliable, long-term, low maintenance, continuous supply and limitless operation ready to be harvested at moderate costs (Jha, 2010).

The nobility of solar power is that the environment can be preserved in our mission to pursue low-cost clean energy. Sunlight is delivered to the most remote locations for free; therefore solar project saves the cost of fuel, delivery costs and operation cost of energy plant. Besides, solar plants have no risk of explosion or large emission of toxic contaminants due to leakage or mishandling (Walker, 2013).

1.2 Problem Statement

In the aspect of solar powered energy generation and capacity, Malaysia with 160MW is currently lagging far behind in term of cumulative installed capacity when compared to developed country that has been at the front-end of solar energy such as Germany with 38.2GW, China with 28.1GW, Japan with 23.3GW, Italy with 18.5GW and United States with 18.3GW (Wheeland, 2014). Tan (2015) claims that solar energy currently contributes 67% of the 270MW of renewable energy generated in Malaysia.

According to Jha (2010), global photovoltaic market grew by 19 percent with 1750MW power-generation capacity in year 2007. Europe continues to lead the world in solar energy capacity as countries such as Germany, Italy and Spain allocated huge sums for solar panels installation. The issue of installation of sustainable development and renewable energy is addressed constantly, yet only a minority of Malaysia's population that have capitalized on the benefits of solar energy. This is due to the high initial cost of investment as installation of solar panels and there are only a few specialists or professionals who surely understand and know how to effectively save energy using solar in the long term. Besides, there is a lack of

concern by the public towards environment and energy issues whereby they thought that the government will propose a solution when the problem arises. Therefore, in the study the researcher should focus on the establishment of Solar Valley Project and foster the Solar Valley Project Establishment for renewable energy to develop Melaka Green Technology City. Towards Melaka Green Technology City State 2020, Malaysia must achieve breakthrough in reducing the solar energy technology and capacity gap between our nation and the solar-developed countries.

1.3 Research Questions

The question intended to be answered in this study are based on the research objectives:

i. What are the factors rendered Kumpulan Melaka Berhad in establishing Solar Valley Project in Melaka?

ii. What are the activities involved in Melaka Solar Valley Project Establishment?

iii. What are the innovation solutions to foster the Solar Valley Project Establishment for renewable energy supply in Malaysia?

1.4 Research Objectives

The objective of the study is to determine the reason why the company is establishing Solar Valley Project in Melaka. Besides, the study also investigated a collection of activities or tasks designed to achieve Melaka Solar Valley Project. According to Stephen Hartley (2009), it is the management of project activities that lead to the successful completion and output of a project. The project requires the program of support management principles in planning, organizing, controlling and

leading the resources of the organization to realize a singular specific goal. Furthermore, the study also suggested innovative solutions to foster the Solar Valley Project Establishment for renewable energy supply in Melaka.
The objective of the study are stated as below,

i. To determine the factors rendered Kumpulan Melaka Berhad in establishing Solar Valley Project in Melaka.

ii. To investigate the activities involved in Melaka Solar Valley Project Establishment.

iii. To suggest innovative solution to foster the Solar Valley Project Establishment for renewable energy supply in Malaysia.

1.5 Scope, Limitation and Key Assumptions of the Study

This research scope of this project is to focus in renewable energy development and deployment. The study is conducted in Kumpulan Melaka Berhad in Melaka to gain required information.

There are a few limitations and assumptions that the researcher has set for this research case study. Firstly, the case study is to examine the factors rendered Kumpulan Melaka Berhad in establishing Solar Valley Project in Melaka. Therefore, the result and outcome of the study could be generalized to companies that establish Solar Valley. Secondly, the researcher assumed that all respondents provide honest and correct answers during the interview.

1.6 Importance of the Study

This study discusses about the establishment of Melaka Solar Valley Project for renewable energy supply by Kumpulan Melaka Berhad. Throughout the study, researcher would find out the significance and contributions of solar energy to Malaysia. The contributions include aspects such as environment preservation, reduction of carbon dioxide emission, cost savings, and technological advancement. According to Walker (2013), every unit of solar heat or electricity delivered keep a corresponding amount of fossil fuel burned. It also retains losses generating and delivering energy to the point to use.

According to TenagaLink (2014), Prime Minister Dato' Sri Najib Tun Razak announced that Malaysia was committed to cutting carbon dioxide emission by 40% of 2005 levels by the year 2020 during the 2009 conference of Parties (coP15) to the United Nations framework convention on climate change (UNfccc) held in Copenhagen, Denmark. Chief Minister Datuk Seri Mohd Ali Rustam (2012) said the solar power generation will bring contributions to Tenaga National Berhad (TNB) by a supply of 17MW per day directly channeled to the national power grid. Based on The Star (2012), the Melaka Solar Valley Project planned to the electricity generated to Tenaga National Berhad under the 21 years renewable energy power purchase agreement. It is essential that adequate sources of energy supply are maintained in an efficient and sustainable manner to support the continued growth and development of Malaysia.

In conjunction with the Melaka state's vision "Towards Green City 2020", the researcher believed that results obtained from this research will ultimately benefit not only the communities in Melaka, but citizens in throughout the other states of Malaysia with a reliable and consistent supply of energy.

1.7 Summary

As a summary, early research has shown that there is a huge gap between Malaysia and other developed countries, where most of the developed countries had implemented solar valley in their country. However, Malaysia is still lagging behind in the efforts to produce solar energy. Therefore, the researcher had examine the factors rendered Kumpulan Melaka Berhad in establishing Solar Valley Project in Melaka in order to foster the Solar Valley Project Establishment for renewable energy supply in Malaysia. It is also to encourage other states in Malaysia to build a green technology city that utilizes green energy, notably solar energy.

The objective of this study is to examine the factors rendered Kumpulan Melaka Berhad in establishing Solar Valley Project in Melaka, to investigate the activities involved in Melaka Solar Valley Project Establishment, and to provide innovation solutions to foster the Solar Valley Project Establishment for renewable energy supply in Melaka. The research scope of this project is to focus in renewable energy development and deployment. Therefore, the study is conducted in Kumpulan Melaka Berhad in Melaka to gain adequate information. Lastly, the limitation of case study that the result and outcome are only applicable on the similar industry and it is assumed that all respondents have provides honest and correct answers.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter discusses about the definition of project management. Theoretical concepts of renewable energy supply and Solar Valley Project are explained as well. The project management consists of five process groups which are initiating, planning, executing, monitoring and controlling, and closing. Factors that are involved in the establishment of the Solar Valley such as cost, carbon emission, environmental pollutions, social sustainability, ecology and nature conversation, operation and maintenance, sustainability policy, storage, space, environmental benefits, construction, economic benefits, land and landscape, secure energy supplies, financial and technological are explained in detailed.