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**THE OPERATIONAL, TECHNICAL
AND SOCIAL (OTS) FRAMEWORK
FOR FELDA COMMUNITIES:
TOWARDS ENGAGING
SUSTAINABLE ELECTRICITY
FROM SOLAR TECHNOLOGIES
DURING FLOOD DISASTER**

SITI JAMIAH TUN BINTI JAMIL

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ABSTRACT

The limited access to sustainable electricity during a flood disaster has led to negative implications to local community. The problem always occurs since this electricity may be interrupted and has to be shut-down due to the affected energy infrastructure at the flood areas. It simply cannot be solved by providing portable diesel generator set at the flood areas due to many aspects of environmental and logistic issues. Therefore, there is an urgent need in engaging sustainable electricity during the disaster period, by adopting solar PV technologies that has a wide potential in Malaysia. This research has achieved the objective by producing a significant working framework that can engaged solar PV technologies with the targeted case studies, which is FELDA communities during a flood disaster. This framework has developed a strategy to mitigation and prevention, preparedness, response, recovery and redesign process in establishing the link between the solar PV technologies and FELDA communities during a flood disaster in order to provide a self-sufficient electricity. Two case studies have been selected, namely FELDA Seberang Tayor, Terengganu and FELDA Chiku 3, Kelantan which always experienced flood disaster. Data has been obtained from mixed method approaches that involved site visit, survey research, load profile system analysis and SWOT analysis. The results from the research have suggested that through a significant working framework, namely the The Operational, Technical and Social Framework, solar PV technologies can be engaged with the FELDA communities in order to provide sustainable electricity during a flood disaster within specific timeline through operational, technical and public engagement approaches.

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CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This chapter introduces the background of the research and the exploration of the problems involved in the research. The gap of knowledge will stipulate from the current literatures and the research progress, followed by the development of research questions, research aim, research objectives, scope and limitation of the research. This will continue with the research methodology design that meets the objectives and aims of the research. Finally, the research will end with the structure of the thesis and concludes with the summary of the thesis.

1.2 Background of the Research

Since after the national independent in 1957, Malaysia has rely on fossil fuels resources for the national energy needs (Suruhanjaya Tenaga, 2015b; Majlis Keselamatan Negara, 2017; Ahmad et al, 2019). Energy production industry is considered a catalyst for the rapid economic development of Malaysia. However, the strong relationship between the availability of energy resources and stable economic progression have create an overdependence on fossil fuel-based electricity in this country (Majlis Keselamatan Negara, 2017). This may significantly trigger issues of energy threat, such as depletion of fossil fuel, price hikes on the electricity bills and inconsistent supply in the near future (Kassim et al., 2015; Khan & Arsalan, 2016; Energy Malaysia, 2017; Ahmad et al., 2020) especially during natural disaster.

This is supported by Shafie et al., (2011) that stated “*almost 94.5% of electricity is generated by using fossil fuel such as natural gas, coal and oil. The majority energy generation in Malaysia is dominated by fossil fuel*”. This problem has also been highlighted by Tlili (2015) which highlight that “*80 % of the present energy use is based on fossil fuels. Not only are oil prices increasing but also pollution continues to rise due to the burning of fossil fuels, and the probability of oil supply depletion remains.*”

This situation may leads to people’s vulnerability on energy resources,