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**LEGISLATION AND ENERGY POLICY FOR
GREENING ELECTRICITY IN MIDDLE EAST
COUNTRIES.**

(Case study: United Arab Emirates)

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**This Thesis was submitted in Partial Fulfilment of the Requirements
for the Master's Degree of Engineering Project Management**

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COMMITTEE DECISION

This Thesis (LEGISLATION AND ENERGY POLICY FOR GREENING ELECTRICITY IN MIDDLE EAST COUNTRIES, (Case study: United Arab Emirates)) Was Successfully Defended and Approved on -----

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Table of Contents

COMMITTEE DECISION	I
ACKNOWLEDGMENT	II
TABLE OF CONTENTS.....	III
LIST OF TABLES	V
LIST OF FIGURES	VI
LIST OF ABBREVIATIONS OR SYMBOLS.....	VII
ABSTRACT	IX
CHAPTER ONE: INTRODUCTION	1
1.1 INTRODUCTION	1
1.2 LITERATURE REVIEW	5
1.3 METHODOLOGY	11
1.4 STRUCTURE AND OUTLINE.....	13
CHAPTER TWO: LEGISLATION AND POLICIES FOR RENEWABLE ENERGY IN THE MIDDLE EAST COUNTRIES	15
2.1 THE HASHEMITE KINGDOME OF JORDAN	15
2.2 KINGDOME OF MOROCCO	20
2.3 PALESTINE.....	25
2.4 SUMMARY	30
CHAPTER THREE: UAE'S LEGISLATIVE FRAMEWORK FOR RENEWABLE ENERGY.....	32
3.1 INTRODUCTION	32
3.2 POPULATION	33
3.3 CLIMATE	33
3.4 TOPOGRAPHY AND ECOSYSTEMS	34
3.5 ECONOMY	37
3.6 UAE'S RENEWABLE ENERGY RESOURCES	38
3.7 DUBAI'S RENEWABLE ENERGY	39
3.8 ABU DHABI'S RENEWABLE ENERGY	41
3.9 ELECTRICITY OF ABU DHABI	44
3.10 REGULATORY FRAME WORK OF RENEWABLE ENERGY IN ABU DHABI	51
3.11 SUMMARY	60

CHAPTER FOUR: SITE SELECTION FOR THE LARGE-SCALE CSP PROJECTS.....	61
4.1 INTRODUCTION	61
4.2 GIS AND AHP TECHNIQUES	62
4.3 METHOD	67
4.4 EXCLUSION (UNSUITABLE) AREAS.....	69
4.5 RANKING SUITABLE AREAS.....	79
4.6 APPLYING MULTI - CRITERIA DECISION TECHNIQUE TO RANK SUITABLE AREAS	82
4.7 SUMMARY	87
CHAPTER FIVE: COMPARISON AND SUMMARY.....	89
5.1 INTRODUCTION	89
5.2 COMPARATIVE STUDY OF REGULATORY SYSTEM OF RENEWABLE ENERGY IN JORDAN, PALESTINE, MOROCCO AND ABU DHABI.....	91
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATION	98
REFERENCES.....	102

List of Tables

Table 3-1: International Renewable Energy Policies and Recommendations for Abu Dhabi.....	58
Table 4-1: Ratio scale for pair wise comparison of importance	64
Table 4-2: matrix containing weights	65
Table 4-3: Value of RI index	67
Table 4-4: AHP metod to decision main critiron (factors):The pairwise comparison matrix.	84
Table 4-5: AHP metod to decision sub- critiron (factors)-Proximity	84
Table 5-1:legal instruments, economic instruments, policies and objectives	96

List of Figures

Figure 1: UAE Population by Sex 2016.....	33
Figure 2 : UAE Electricity	36
Figure 3: Electricity consumption By sector.....	41
Figure 4:Typical IWPP structur.	46
Figure 5: electricity vision in 2020 – 2030.	50
Figure 6: AHP Hierarchy.	63
Figure 7:Methodology Process	68
Figure 8: Protected Areas Map.	70
Figure 9: land cover map.....	71
Figure 10:Elevation and slope maps.	73
Figure 11: Water bodies map.	74
Figure 12 : monthly Avg. of GHI , DHI in KWH/m ²	75
Figure 13: UAE annual sum of DNI.	76
Figure 14: Annual sum of GHI.	77
Figure 15:Exclusion map	78
Figure 16: Roads Map.....	80
Figure 17:Power lines map.....	81
Figure 18: Suitability map.....	86

LIST OF ABBREVIATIONS OR SYMBOLS

GIS	Geographical information system
GDP	Global domestic product
EMRC	Energy & Minerals Regulatory Commission
MEMR	Ministry Of Energy and Mineral Resources
GWh	Giga watt hour
EPA	United States Environmental Protection Agency
MCDM	Multi-Criteria Decision Method
DNI	Direct normal irradiance
CSP	Concentrated solar power
PV	Photovoltaic
OPEC	Organization of the Petroleum Exporting Countries
IEA	International Energy Agency
UNFCC	United Nations Framework Convention on Climate Change
toe	Tonne of oil equivalent
GHG	Greenhouse gas
ADEREE	Agency for the Development of Renewable Energies and Energy Efficiency
MASDAR	Future Energy Company
mtCo2e	Metric tons of carbon dioxide equivalent
IPP	Independent Power Producer
DEWA	Dubai electricity and water authority
ADPC	Abu Dhabi Power Corporation
RSB	Abu Dhabi regulation and supervision Bureau
IWPP	Independent water and power producers

ADWEA	Abu Dhabi Water and Electricity Authority
SBM	Single Buyer Model
ADWEC	Abu Dhabi Water and Electricity Company
BOO	Build Own Operate
PWPA	Power Purchase Agreements
IWPP	Independent water and power producers
TRANSCO	Abu Dhabi Transmission and Dispatch Company
ADDC	Abu Dhabi Distribution Company
LCOE	levelized cost of energy
AADC	Al-Ain Distribution Company
ADNOC	The National Oil Company
JV	Joint Venture Model
FIT	Feed-in-Tariff

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ABSTRACT

In recent years, countries have begun to reduce the consumption of fossil fuels and replace them with renewable energy sources in an effort to mitigate the effects of fossil fuels on the environment and save money as well as increase energy security. There is no doubt that the regulatory component represented by policies and legislation are the most important means to achieve the desired goals and strategies. The UAE does not yet have a renewable energy law and is still working on the Electricity law No.2 of 1998, which did not address the issue of electricity production from renewable sources and treat with electricity generated from sustainable sources as electricity produced from fossil fuel sources and what implies high cost compared to non-renewable source in short term. As besides, the UAE did not produce a map representing the best locations for installing large-scale renewable energy projects. There are few studies that touched on renewable energy legislation in the Arab world and in the UAE in

particular. During this study, the Electricity Law of the UAE was analyzed and special recommendations were made for renewable energy legislation in the light of these analyzes. The experience of the State of Jordan, Palestine, Morocco and some Western countries such as Germany in the field of renewable energy policies was used as recommendation for UAE's policy makers. It was concluded that the UAE does not encourage the private sector to join renewable energy projects due to its application of the joint venture model with the private sector, and government subsidies on household sector are not an incentive for individuals to implement renewable energy projects. The proposed solution is the implementation of some incentives and mandatory policies in the field of renewable energy such as Feed-In-Tariff , Wheeling policy and Net-Metering in conjunction with the quota policy, as well as the exploitation of the lands of the Empty Quarter to establish renewable energy projects and through the establishment of free zones, exempted from taxes and customs duties, allowed the activates of generating green electricity inside and wheeling it outside. The thesis has developed the suitability map for the installation of large- scale CSP projects among United Arab Emirates using GIS data and Multi-Criteria Decision Method (MCDM) technique. the suitability map is composed of multi-maps (layers) of solar irradiation (Direct Normal irradiance (DNI) component), land slope, protected areas, land use, proximity to water bodies and power grid as well as the roads. This thesis has highlighted the most-suitable location as well as the non-suitable location among UAE to install CSP projects using ArcGis software. The study has shown that UAE have multi-hotspot locations that can be used for CSP projects installation as well as great solar energy potential that could attract more investments in the same sector.