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International Renewable Energy Agency

Evaluating Renewable Energy Manufacturing Potential in the Arab Region

Jordan, Lebanon, United Arab Emirates

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Lebanese Center for Energy Conservation (LCEC)

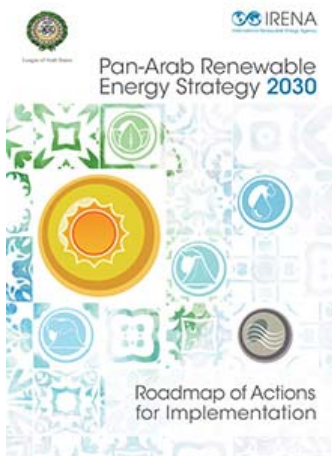
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Background

Pan-Arab RE Strategy 2030 by IRENA and LAS: Current state of RE, targets, market, incentives, gaps, AREF & NREAP

IRENA Study: RE Manufacturing Potential in Egypt, Morocco, and Tunisia (North Africa)

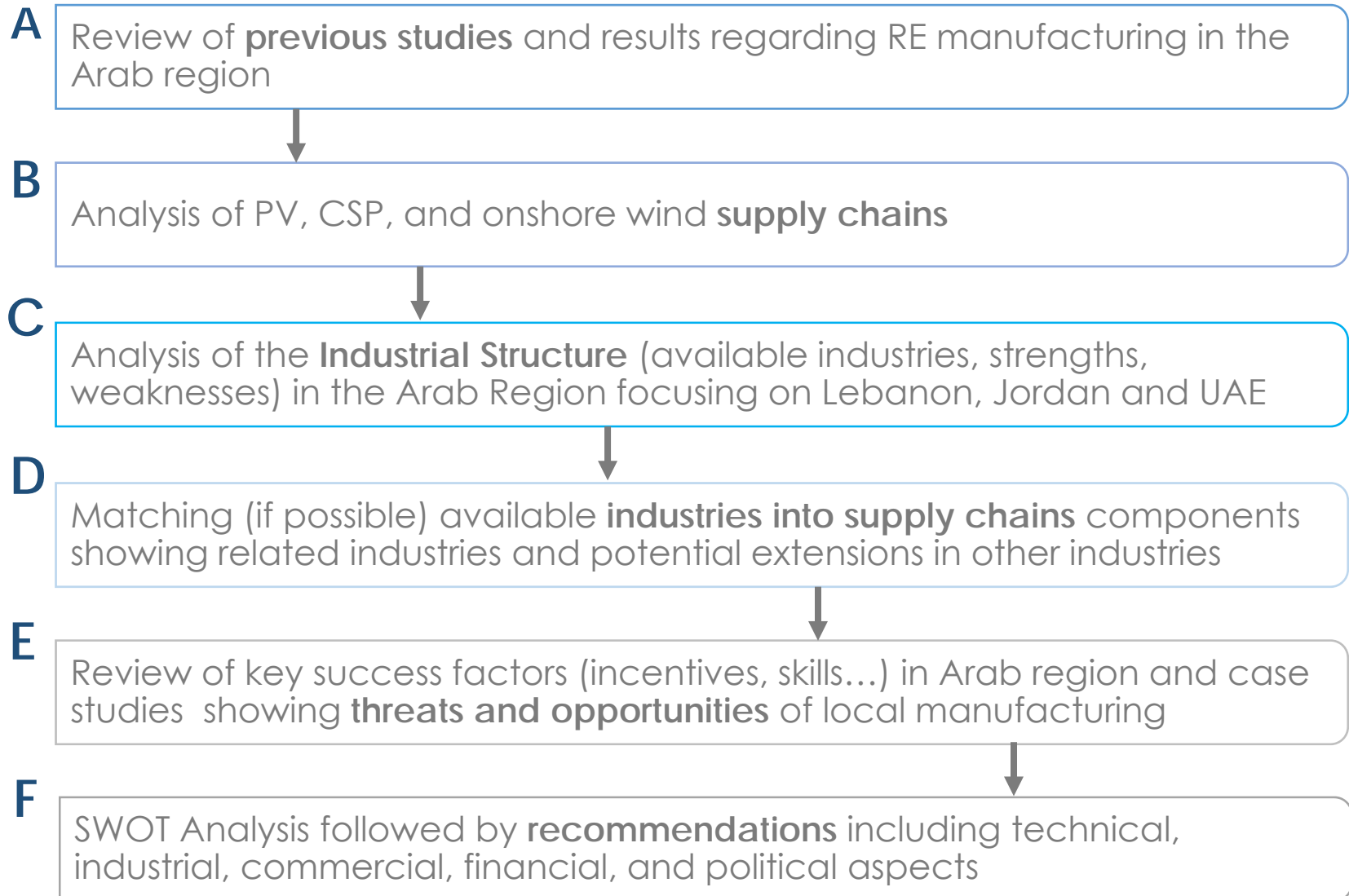
MoU between IRENA and UN-ESCWA: RE manufacturing potential in Jordan, Lebanon, UAE



Study Objectives

1. **Positioning of Potential Manufacturing of RE Technologies: Supply Chains, Export Opportunities, Industrial Structure, Regional Cooperation**
2. **Identifying Gaps: Technical skills, manufacturing processes, extension in industrial capacity, political support** and incentives, local and regional markets, investments and **financing infrastructure**
3. **Providing Recommendations and Action plans** to support RE local manufacturing

Study Methodology



Study Content

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1. Introduction

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Overview of local renewable energy manufacturing potential in the selected countries

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Selection of Pilot Countries | Jordan, Lebanon, UAE

- Ambitious national **targets**
- Support **policies**
- **Progress** recorded
- Potential for **market** growth
- Local **industrial assets** and the level of **investment** dedicated to RE



Selection of Technologies | PV, Onshore Wind, CSP

Selected countries have strong advantages in terms of

- Natural **resources** or **market** size or potential or track record of **related industries**

Study Content

2. Assessment of the Local Manufacturing Potential in the Selected Countries

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2. Assessment of the Local Manufacturing Potential in the Selected Countries

- Total installed **capacity of RE** (without Hydro) = 550 MW
- **10% RE target** from generation by 2020 (1,850 MW)
- **REEEL** was issued in 2010 and adopted in 2012
- **Custom** exemption
- **Net-metering**
- **Power wheeling**
- **JREEEF (2013) + subsidies** for industrial enterprises
- **Mandatory 20% local contribution** in RE bids

2. Assessment of the Local Manufacturing Potential in the Selected Countries

- 150 MW solar farms, 200 MW wind, 50 MW CSP
- 12% RE target from demand by 2020
- Net-metering for wind and PV
- NEEREA financing mechanism
- Subsidized loans for industrial projects
- Tax exemption for industrial investments in rural areas

2. Assessment of the Local Manufacturing Potential in the Selected Countries

- Global carbon agenda, **30% reduction in CO2 by 2030**
- **Abu Dhabi: 1.5 GW** of renewable power by 2020
- **Dubai: 5 GW** of renewables by 2030
- **Lack of a complete outline of policies and incentives** for a RE scheme
- **Net-metering** in Dubai
- **Dubai Green Fund** established in 2016 + **Abu Dhabi Fund for Development (ADFD)**
- IPP scheme adopted in UAE
- **No corporate or income tax**
- **Free zones**

2. Assessment of the Local Manufacturing Potential in the Selected Countries

	RE Plans	Market Potential	Industrial Assets
Jordan	<ul style="list-style-type: none"> Target 10% generation by 2020 RE and EE Law 	<ul style="list-style-type: none"> Implemented RE projects leading to O&M value creation Net-metering Feed-in tariff Wheeling application and direct proposal submission 	<ul style="list-style-type: none"> Well established sector Expertise in numerous basic components
Lebanon	<ul style="list-style-type: none"> Target 12% demand by 2020 NREAP RE and EE Law under development 	<ul style="list-style-type: none"> Well established financing mechanism Rapid development of decentralised solar PV Large-scale solar PV Net-metering scheme expected by 2020 	<ul style="list-style-type: none"> Expertise in the real estate sector Expertise in control and automation
UAE	<ul style="list-style-type: none"> Dubai Target 25% generation by 2030 Abu Dhabi Target 7% generation by 2020 	<ul style="list-style-type: none"> Implemented large-scale projects Net-metering for rooftop PV Strategic location offering promising export potential 	<ul style="list-style-type: none"> Proven-track record in infrastructure Well established, fundamental industries Experience in the oil & gas industry

Overview of the national policy framework

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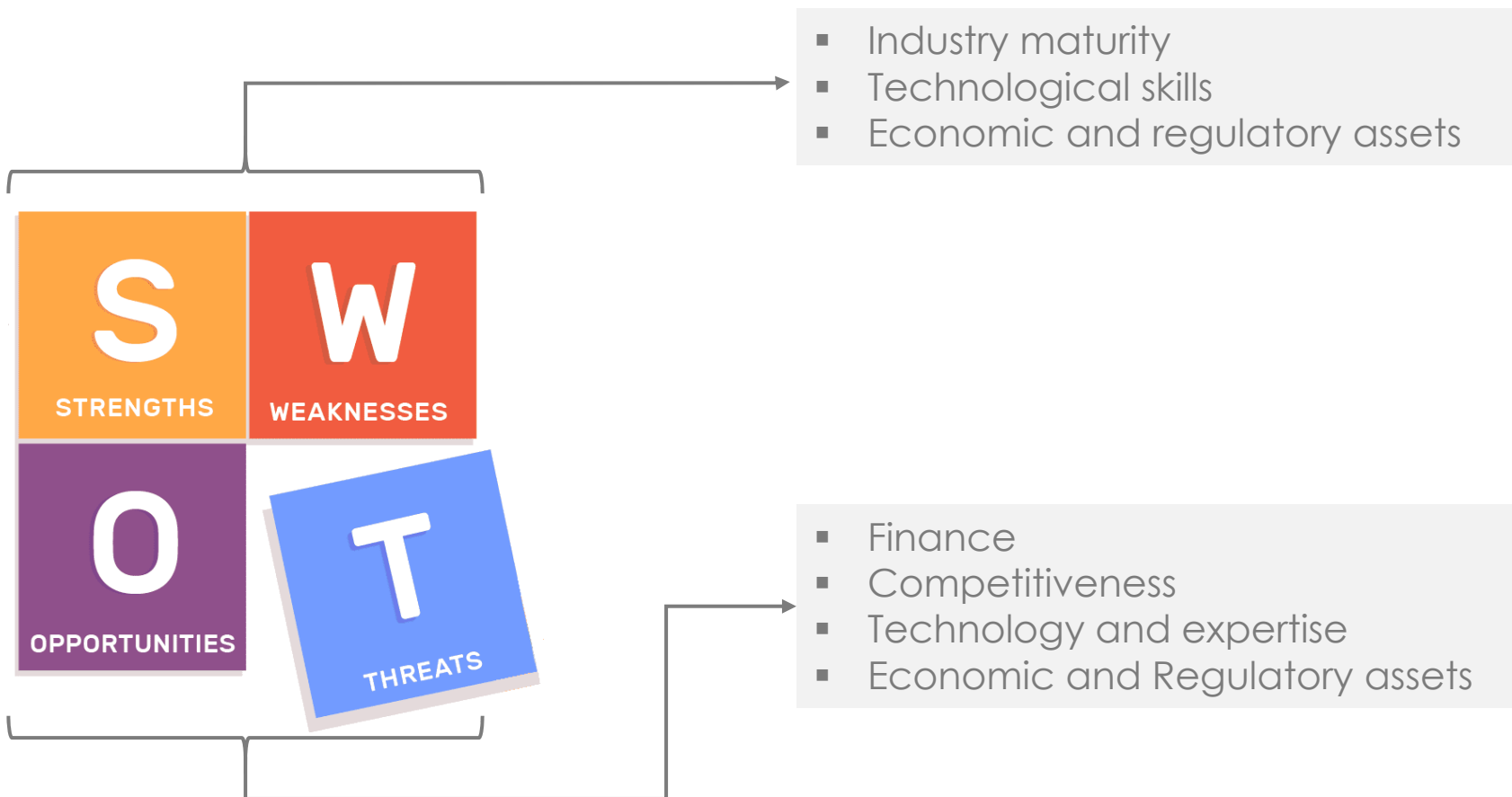
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2. Assessment of the Local Manufacturing Potential in the Selected Countries



2. Assessment of the Local Manufacturing Potential in the Selected Countries



- **Local PV Manufacturing** in Jordan
- **Existing** electronic, electric, steel, concrete, aluminum and plastic **industries** in Lebanon
- PV and CSP are **mature technologies** installed in large capacity in UAE
- **R&D** activities in UAE

2. Assessment of the Local Manufacturing Potential in the Selected Countries



- Lack of expertise in manufacturing CSP and Wind components in Jordan and UAE
- Lack of raw material and industrial capabilities in Lebanon

2. Assessment of the Local Manufacturing Potential in the Selected Countries



- **Mandatory local contribution of 20%** in the bidding process in Jordan
- Local certification system and **testing facilities** in Jordan
- **Financial incentives for industrial investments** in Lebanon
- Ease in issuance of **permits for foreign investors** in UAE

2. Assessment of the Local Manufacturing Potential in the Selected Countries



- Very strong international manufacturing competition
- Rapid technology development worldwide
- Lack of minimum threshold of local content in any project in Lebanon
- No prioritisation of local product usage in UAE

Opportunities for local manufacturing

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Solar PV - Opportunities for local manufacturing in Jordan

Table 3. Local manufacturing assets - Solar PV - Jordan

Key assets of local industries	Industry maturity			Technological skills			Economic assets			Conclusion on local manufacturing assets
	Presence of active local companies	Level of industry structuring	Presence of local suppliers	Skilled workforce availability	Product quality	R&D capacity	Manufacturing cost competitiveness	Regulatory framework	Financial health	
Raw materials	●○○○	●●○○	●○○○	●○○○	○○○○	○○○○	●○○○	●○○○	●○○○	Low
Solar module manufacturing										
- Wafer production	○○○○	○○○○	○○○○	●○○○	○○○○	○○○○	○○○○	●○○○	●○○○	Very Low
- Solar cell production	●○○○	○○○○	○○○○	●○○○	○○○○	●○○○	●○○○	●○○○	●○○○	Low
- PV-module manufacturing	●●○○	●●●○	●●○○	●●○○	●●○○	●○○○	●●○○	●●○○	●●○○	Medium
PV plant										
- Electronics & cables	●●●○	●●●○	●●●○	●●●○	●●●○	●●○○	●●●○	●○○○	●○○○	High
- Steel support structures	●●○○	●●●○	●●●○	●●○○	●●○○	●●○○	●●○○	●○○○	●●○○	High
Construction	●●●○	●●●○	●●●○	●●●○	●●○○	●○○○	●●○○	●●○○	●●○○	High

Recommendations

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5. Enhancing Regional Collaboration for Industrial Development

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- Define a national plan for renewable energy equipment manufacturing
- Restructure electricity tariff for industrial sector
- Conduct feasibility and marketing studies in order to begin developing local components based on existing industries
- Upgrade existing production lines
- Establish national collaboration and partnerships for R&D
- Support mechanisms for industries

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