Regional policy spotlights for solar PV development in Africa: The Case of North and Arab African Countries

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“We, the Regional Center for Renewable Energy and Energy Efficiency, are the strategic partner for the Arab countries driving energy transition for the prosperity of all our people.”

Intergovernmental Organization with 17 Member States

The technical arm of the League of Arab States

A leader in clean energy policy dialogues, strategies, technologies, investments promotion, and capacity development

The first regional renewable energy and energy efficiency center across the world

Secretariat in Cairo, Egypt with regional antennas and a pool of short-term experts

Work in the Pan-Arab Region… know how to navigate your way
Arab Region RE Progress (2008 - 2018)

Arab Region Operational RE Projects (Excluding Hydro)

- **2008**
  - ~0.5 GW
  - Only 4 Arab Countries (Egypt, Morocco, Tunisia and Jordan)
  - ~$1.2 Billion
    - EPC, Public Gov. Balance Sheet Financing

- **2012**
  - ~1.1 GW
  - 12 Arab Countries
  - ~$3.5 Billion
    - EPC, Net-metering, and IPP Competitive Bidding (Auctions)

- **2018**
  - ~7.2 GW
  - All 22 Arab Countries
  - ~$15 Billion
    - EPC, IPP Competitive Bidding, Direct Proposals, and Net-metering

Source: AFEX, 2019
RE in the Arab Region: Operational Capacities (Dec. 2018)

- Wind Capacity: ~3 GW
- PV Capacity: 3.2 GW
- CSP Capacity: 0.7 GW
- Other (W2E, geothermal, etc): 0.32 GW

Total new RE Capacities: ~7.2 GW

Hydro Capacity: 11.1 GW

Total RE Capacities: ~18.3 GW

Source: AFEX, 2019

Share of RE in Installed Capacity

%6 RE-based
%94 Fossil-based
Operational Capacities – African Arab Countries (Dec. 2018)

- **Wind Capacity**: ~2.7 GW
- **PV Capacity**: 1.5 GW
- **CSP Capacity**: 0.58 GW
- **Other (W2E, geothermal, etc)**: 0.26 GW

**Total new RE Capacities**: ~5 GW

**Hydro Capacity**: 6.9 GW

**Total RE Capacities**: ~11.9 GW

65% of total Arab Region RE Capacities

Source: AFEX, 2019
Arab Region Progress Highlights (2010 - 2018)

Market transformation from wind to PV technologies

~1.1 GW  ~2.3 GW  ~7.2 GW

Source: AFEX, 2019
Financing Instruments

- Solar PV projects in the Arab region have been financed using a **variety of instruments**, from grants to concessional debt and equity to purely commercial debt and equity.

- Various financing instruments can be distinguished by both:
  - the **level of risk** assumed by the entity funding the instrument concerned,
  - The **level of leverage** (the extent to which public funding mobilizes private finance) involved.
Financing instruments to support scaling up PV can be broadly grouped into those used to:

- **overcome financing barriers** (e.g. as for underdeveloped financial markets)
- **to address the specific risks of PV investments**,  
  (e.g. When financial markets are not offering risk management instruments suitable for RE).

The cost of PV electricity is highly sensitive to financing terms.
Enabling Frameworks

Legal Framework:
• Defines supporting policy, development schemes and responsibilities

Regulatory Framework:
• Details the parties commitments and technical and contractual requirements

Tariff Framework:
• Defines both tariff structure and values

Contractual Framework:
• Provides standard templates for contracts

Supplementary Frameworks:
• Contains supporting mechanisms including; resource assessment, technology transfer, soft finance funds, etc.
Policies for RE

Main policies
- Quantitative policies
  - Competitive bids
  - Auctions
  - Quota (RPS)
  - Green Certificates

Pricing policies
- Feed-in Tariff
- Added Premium
- Net-Metering

Supporting policies
- Financial
  - Soft concessional loans
  - Public purchases
- Taxes and customs incentives
  - Related to production
  - Related to consumption
- Contractual
  - Power Purchase Agreements
  - TPA and dispatch priority

Supporting policies
- Contracts
  - Power Purchase Agreements
  - TPA and dispatch priority

Related to production
- Related to consumption
- Related to tariffs

Policies Adopted to Support RE
The preferred policy option for utility scale projects in the region is the public competitive bidding and lately the process is adapted towards “Auctions” in many countries.

Feed-in tariffs are phasing out for utility scale projects towards auctioning and bidding.

The adoption of direct proposal submission proved to be successful for the development of large-scale RE projects in some countries.

FiT and net metering are emerging for decentralized RE systems.
Policies for Mobilizing Private RE Investments in Arab Countries

RE Supporting Policies in Arab Region
IPP FiTs and Bids

• Pre-defined FiT rates were adopted in many countries including North-Africa (Egypt, Algeria)

• In some cases projects faced difficulties to reach the financial closure under FiTs/Bids due to a host of reasons:
  • Readiness of associated documents such as the PPA, Grid Connection Agreement, Land Usufruct Agreement, Direct Agreement, etc.
  
  • Clarity of the administrative process and the large number of entities involved
  
  • Securing foreign currency lending and arbitration have been reported as subject of long discussion
Institutional Capacity

National institutional frameworks for RE deployment varies widely based mostly on

- **Political commitment** to RE
- Power sector **structure**
- Mandate and **relative influence** of different actors (ministry of energy, regulators, RE agency, utilities)

Main focus of existing RE related institutions:

- Barriers removal/ risks mitigation (investors confidence) ➔ Resources assessment, zoning and land allocation, permits, etc.
- Quality assurance and certification
- Financial mechanisms and incentives
- Competitiveness of markets
- Technological advancements
- Socio-economic / environmental problems related to energy
Financial Resources/Instruments

Examples of Sustainable Energy Funds

EDF
FNMEERC
FTE
Revolving Fund
NEEREA, GEFF, ...
JREEEF
DGF
Solar PV Fund
GEFF, IEE
Morocco, Egypt, leads North Africa RE competitive markets, other countries are following with sizable project calls such as Tunisia and Algeria.

The region has worldwide flagship solar and wind projects, with very competitive electricity prices, especially in Morocco and Egypt.

Such prices are possible because of the excellent solar and wind energy resources, backed by some concessional finance coupled with policy measures to reduce the various risks and encourage investment.

Tunisia leverages decentralized investments with pioneering financial solutions.

International funding institutions are active in the region (WB, KfW, AFDB, EIB, IFC, EBRD, JICA, etc.)

Three countries created state-backed private sector companies to invest in RE projects Masen/SIE in Morocco, SKTM in Algeria, and lately Libya.

Public private partnerships and corporate sourcing of RE (captive markets) are getting increasing interest.

Most countries directed national oil companies to launch investment programmes in RE.

Several factors are not typically considered in the “announced” project costs:

- Network upgrade, transmission, congestion or other integration-related costs;
- Significant permitting or other development costs, unless otherwise noted;
- Costs of complying with various environmental regulations (e.g. carbon emissions offsets or emissions control systems);
- Potential social and environmental externalities
- Import tariffs;
- Capacity value vs. energy value
Union of Arab Banks and representatives of central banks pledged at their forum on 26-29 July 2018, Egypt, to work together to develop a regulatory framework to encourage the Arab financial sector to actively contribute to financing sustainable development projects. The meeting, organized by Union of Arab Banks (UAB), in cooperation with the Central Bank of Egypt, was held under the topic: Green Banking- the Road to Sustainable Development.

Lebanon and Morocco issued green bonds to help to finance the country’s development of clean technologies. Egypt is developing also a green bond targeting several sectors.

The Arab’s first corporate green Sukuk was launched in UAE.
### MENA Region: Climate Finance

#### Examples of Funds supporting MENA region (2003-2018)

<table>
<thead>
<tr>
<th>Fund</th>
<th>Amount approved (USD millions)</th>
<th>Projects approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Technology Fund (CTF)</td>
<td>864.8</td>
<td>10</td>
</tr>
<tr>
<td>Green Climate Fund (GCF)</td>
<td>287.8</td>
<td>6</td>
</tr>
<tr>
<td>Global Environment Facility (GEF4, 5, 6)</td>
<td>108.6</td>
<td>47</td>
</tr>
<tr>
<td>Adaptation Fund</td>
<td>48.7</td>
<td>10</td>
</tr>
<tr>
<td>Special Climate Change Fund (SCCF)</td>
<td>43.6</td>
<td>10</td>
</tr>
<tr>
<td>Least Developed Countries Fund (LDCF)</td>
<td>35.1</td>
<td>8</td>
</tr>
<tr>
<td>Adaptation for Smallholder Agriculture Programme (ASAP)</td>
<td>23.0</td>
<td>4</td>
</tr>
<tr>
<td>Global Energy Efficiency and Renewable Energy Fund (GEEREF)</td>
<td>16.6</td>
<td>1</td>
</tr>
<tr>
<td>Partnership for Market Readiness</td>
<td>11.0</td>
<td>6</td>
</tr>
<tr>
<td>MDG Achievement Fund</td>
<td>7.6</td>
<td>2</td>
</tr>
<tr>
<td>Global Climate Change Alliance (GCCA)</td>
<td>3.4</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Climate Finance Regional Briefing update: MENA
Charlene Watson, ODI and Liane Schalatek, HBS, Feb 2019
Engagement of Local Banks is a must ...

Additional measures for funds operations

1. Provision of (free) technical support to banks and clients through different initiatives
2. Using **web-based tools** to support decision making process
   - “Eligible”/“Qualified” solutions
   - Supplier’s info
   - Service providers
   - Financial tracks (fast-normal!)

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Tunisian Prosol-elec Success story (ANME, 2018)
Renewable energy business opportunities throughout the Arab region... estimated at over 30% of the global solar and wind growth! > 190 GW
Announced targets by 2035
RE Targets in the Arab Region

Renewable Energy Targets in the Arab [MW]

<table>
<thead>
<tr>
<th>Country</th>
<th>2018 RE Capacity</th>
<th>Target [MW]</th>
<th>Distant to Target [MW]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi Arabia</td>
<td></td>
<td>30% by 2030</td>
<td>58.7 GW</td>
</tr>
<tr>
<td>Egypt</td>
<td></td>
<td>42% by 2035</td>
<td>54 GW</td>
</tr>
<tr>
<td>Algeria</td>
<td></td>
<td>37% by 2030</td>
<td>10 GW</td>
</tr>
<tr>
<td>Morocco</td>
<td></td>
<td>52% by 2030</td>
<td>10 GW</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td></td>
<td>44% by 2050</td>
<td>6.56GW (2030)</td>
</tr>
<tr>
<td>Sudan</td>
<td></td>
<td>22% by 2030</td>
<td>4.6 GW</td>
</tr>
<tr>
<td>Libya</td>
<td></td>
<td>15% by 2030</td>
<td>4.2 GW</td>
</tr>
<tr>
<td>Syrian AR</td>
<td></td>
<td>30% by 2030</td>
<td>3.8 GW</td>
</tr>
<tr>
<td>Kuwait</td>
<td></td>
<td>2030</td>
<td>30%</td>
</tr>
<tr>
<td>Tunisia</td>
<td></td>
<td>20% by 2030</td>
<td>1.8 GW</td>
</tr>
<tr>
<td>Jordan</td>
<td></td>
<td>100% by 2035</td>
<td>1GW</td>
</tr>
<tr>
<td>Iraq</td>
<td></td>
<td>10% by 2035</td>
<td>0.7 GW</td>
</tr>
<tr>
<td>Qatar</td>
<td></td>
<td>10% by 2020</td>
<td>0.5 GW</td>
</tr>
<tr>
<td>Lebanon</td>
<td></td>
<td>30% by 2030</td>
<td>3.8 GW</td>
</tr>
<tr>
<td>Djibouti</td>
<td></td>
<td>2030</td>
<td>30%</td>
</tr>
<tr>
<td>Yemen</td>
<td></td>
<td>2030</td>
<td>30%</td>
</tr>
<tr>
<td>Bahrain</td>
<td></td>
<td>10% by 2035</td>
<td>0.7 GW</td>
</tr>
<tr>
<td>Palestine</td>
<td></td>
<td>10% by 2020</td>
<td>0.5 GW</td>
</tr>
</tbody>
</table>

Source: RCREEE-AFEX, 2019
RE Targets in 7 African Arab Countries

Renewable Energy Targets in the Arab [MW]

- Egypt
- Algeria
- Morocco
- Sudan
- Libya
- Tunisia
- Djibouti

2018 RE Capacity
Target [MW]
Distant to Target [MW]

> 100 GW
Announced targets by 2035

Source: RCREEE- AFEX, 2019
Key factors for a compelling RE business in the Arab region are:

- Political commitment. Investors’ confidence in the national market.
- Effective engagement (partnership) of utilities and state-backed private RE companies (equity)
- Clear set of bankable project contractual documents and efficient administrative and licensing processes.
- PPA in foreign and/or local currency (actual and deemed). Tenor (20-25 years)
- Project support (grid connection, zoning/allocation of land, fiscal incentives, concessional finance)
- Securities (senior creditor claims are covered in all termination events)
- Credit support through the government for off-takers
Mobilizing RE Finance: Linkages

- Production
- Transmission (bottle neck in many cases!!)
- Distribution (readiness for prosumers concept!!)
- Collection and tariffs
Mobilizing RE Finance: Linkages

- Although many RE technologies have reached a reasonable degree of maturity, however, adequate finance is still needed to:
  - improve its integration with the current power systems
  - improve its reliability
  - reduce the need for balancing energy
  - improve energy storage techniques
  - transition to wider deployment of green “power to X” solutions.

thus support is needed for boosting different solutions as well as to ensure the necessary cash flow for development.

https://www.cleanenergywire.org/factsheets/sector-coupling-shaping-integrated-renewable-power-system
Conclusions

There is clear commitment to **embrace strong forward thinking policies** and capture the immense **value of the RE business**.

RE development depends on establishing a conducive investment environment. Accordingly, it is the role of the government is to establish **the conducive investment environment more than investing public money in RE**.

The **market response** to the RE business has been **overwhelmingly positive**, demonstrating **market confidence** in the vast RE potential and **investment environment**.
“The best way to predict your future ... is to create it.”

Peter Drucker
1909-2005
Thank You

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