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Renewable Energy Policies Case Study For Lebanon

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Country Brief

- 10452 km²
- 5,882,562 capita
- Palestinian refugees (more than 0.5 Million)
- 1.1 Million Syrian refugee
- GDP at current prices of 47.103 Billion USD
- An estimated increase of 1.5% in 2015
- Lebanon is at the eye of the hurricane hitting the region with effects showing in different fields from economy to energy
Energy Sector Characteristics

During the base year, the total fuel imports amount to 5,768,269.94 toe consumed in the different sectors in Lebanon.
Energy Sector Characteristics

Total consumption in 2010 amounts to 6,069 ktoe, out of which 96.8% were imported from outside Lebanon and the remaining (3.2%) was locally produced.
Energy Sector Characteristics

EDL Generation 12,089 GWh

Private Generators 2,950 GWh

Total Generation 15,039 GWh

Electricity Demand 15,934 GWh

Deficit ~ 900 GWh
Renewable Energy Potential

Geographical Constraints

Urban Constraints

Agricultural Constraints

Financial Constraints
Renewable Energy Potential

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<tr>
<th>Type</th>
<th>MW</th>
<th>GWh</th>
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<tbody>
<tr>
<td>Wind</td>
<td>5,408</td>
<td>12,139</td>
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<tr>
<td>PV Farms</td>
<td>87,600</td>
<td>146,130</td>
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<td>CSP</td>
<td>8,065</td>
<td>18,275</td>
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<td>Distributed PV</td>
<td>170</td>
<td>280,500</td>
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<td>Hydro</td>
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<td>1,363</td>
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<td>SWH</td>
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<td>1,105</td>
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<tr>
<td>Geothermal</td>
<td></td>
<td>109</td>
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<tr>
<td>Biomass</td>
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<td>606.5</td>
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Total feasible RE potential equivalent to a generation of more than 460 TWh in both direct use or for electricity generation
Prior Policy Status

• 12% 2020 target announced in 2009
• No definition nor baseline for this target
• MEW main stakeholder
• LCEC national energy agency
• EDL solely controlling generation, transmission and distribution
Prior Policy Status

• Law 462 was presented in the objective of reforming this structure of this sector.
• It introduced the ERA to grant licenses for IPP to generate electricity and feed it to the grid.
• It has been in force since 2002, it was never actually implemented.
• Accordingly, there is no regulatory body to issue licenses for new generation.
Prior Policy Status

• No privileges for renewable energies on the legal level under law 462 and its amendments.
• Law 288: delegation of the ERA authority to LG
• Meanwhile, most of the renewable energy projects are being limited in size essentially because of this legal barrier
• Some light drifting from the lately organized wind farm tender by LCEC that can constitute a precedent for such tenders.
Economic, Environmental and Policy Analysis

Reduction of more than 2,206 ktCO2eq/year of equivalent GHG
Policy Design Considerations

- Electricity reform paper in 2010
- NEEAP 2011-2015 in 2011
- AREF in 2012
- Template of NREAP to be adopted by the Arab Countries in 2014
- Imports of electricity from Egypt and Syria became very unstable following the situation in those countries
- 2015 INDC 15% of heat and electricity from RE in 2030
Barriers and Challenges

- No clear contracting procedure (PPA)
- Clear taxation policy
- Licensing schemes for installers – open market
- Monopoly of EDL (law 462)
- EDL, already suffering from an aging staff and administration and from a severe financial deficit
- No licenses under law 288
- Proposal for licensing should come from 2 ministries
- Absence of a clear grid code for RE
Conclusions

• **RE projects are very important for the Lebanese situation ameliorating the energy security**
• **Most of the studied RE technologies have a lower LCOE than the generation cost**
• **Implementing the whole plan will:**
  • Need between 1.3 and 3.1 Billion USD
  • Save 319 Million USD per year
  • Reduce GHG emissions by 2,206 ktCO2eq/year
  • Supply approximately 1,890 extra hours of electricity
Recommendations

• Adoption of a clear licensing procedure for large scale RE projects
• Opening the way for RE IPPs
• Isolate RE licensing from political problems
• Stable long term strategy for integrating RE into the grid
• Adoption of a grid code for the integration of RE into the grid
• Training of specialized engineer especially O&M of large scale projects
• Vocational training in the specialized fields of each of the RE technologies
THANK YOU!
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