Adapting regulated markets – How far to go with liberalisation?

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Global leadership in RES development
FY 2014

NORTH AMERICA
Capacity: 2.1 GW
Production: 6.7 TWh

EUROPE
Capacity: 5.8 GW
Production: 20.7 TWh

LATIN AMERICA
Capacity: 1.7 GW
Production: 4.4 TWh

Installed Capacity = 9.6 GW
Production = 31.8 TWh
In execution = 2.0 GW

1. Capacity and production as of December 31, 2014
Evolution of incentive schemes in areas of interest

2010 – EGP Countries

2014 – EGP Countries/Areas of Interest

16 EGP countries of which 6 Tender/PPA

42 EGP Countries of Interest of which 30 with Tender/PPA

Fixed Incentive Schemes (GC, Tariffs)
Competitive Incentive Schemes (tender/PPA)

Note: analysis based on EGP countries. Remuneration mechanisms refer to RES Utility-scale plants. The following countries are classified based on the remuneration mechanism selected by EGP: Costa Rica, Panama, El Salvador, Mexico. In Brazil also FiTs exist for small hydro projects established under a distributed generation regime and they are currently being phased out.
# RES Remuneration mechanisms

**FIT vs. Competitive mechanisms**

<table>
<thead>
<tr>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Attractive mechanism also for <strong>low-risk investors</strong></td>
<td>✓ Non meritocratic approach</td>
</tr>
<tr>
<td>✓ Support significantly the <strong>acceleration of the installed capacity</strong></td>
<td>✓ <strong>Mismanagement of tariffs</strong> may lead to an under / over development of RES compared to the objective set</td>
</tr>
<tr>
<td>✓ Simple structure, ideal for the mass market. <strong>Eg: Distributed Generation</strong></td>
<td>✓ <strong>Limited flexibility</strong>: in case of rapid evolution of technology, many changes are required</td>
</tr>
</tbody>
</table>

### Feed in Tariffs

- **eg.:**
  - Germany
  - Greece
  - France
  - Turkey

### PPAs through competitive process

- **eg.:**
  - US
  - Brazil
  - South Africa

- ✓ Efficient use of **economic resources**
- ✓ Possibility of setting **specific capacity target**
- ✓ **Meritocratic mechanism** (cheaper and more efficient projects are selected)
- ✓ **Learning effect** for both parties through practice

- ✓ With no prequalification criteria, risk of under-bid and **distortion of the competitive mechanism**
- ✓ Remuneration strongly linked to the **level of competition**
- ✓ Remuneration uncertainty when entering into a new country
- ✓ **Not suitable for small-scale projects**

- Two different approaches to deploy renewable technologies that impact in different ways the national electricity system
Investments\(^1\) and Installed Capacity 2010-2014

### Investments by Area (€/Bn)\(^1\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
<th>Europe</th>
<th>North America</th>
<th>New Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2010(^2)</td>
<td>€1.2 Bn</td>
<td>75%</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>FY 2011(^2)</td>
<td>€1.7 Bn</td>
<td>76%</td>
<td>19%</td>
<td>5%</td>
</tr>
<tr>
<td>FY 2012(^2)</td>
<td>€1.5 Bn</td>
<td>61%</td>
<td>10%</td>
<td>29%</td>
</tr>
<tr>
<td>FY 2013(^2)</td>
<td>€1.3 Bn</td>
<td>35%</td>
<td>11%</td>
<td>54%</td>
</tr>
<tr>
<td>FY 2014(^2)</td>
<td>€1.6 Bn</td>
<td>24%</td>
<td>19%</td>
<td>57%</td>
</tr>
</tbody>
</table>

Since 2010 over €7.3 Bn of CAPEX, of which €2.2 Bn in New Markets and €1.1 Bn in North America.

### Installed Capacity by Technology (MW)

<table>
<thead>
<tr>
<th>Technology</th>
<th>Capacity</th>
<th>Wind</th>
<th>Hydro</th>
<th>Geo</th>
<th>Solar</th>
<th>Biomass</th>
<th>Cogeneration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>6.102 MW</td>
<td>13%</td>
<td>42%</td>
<td>1%</td>
<td>1%</td>
<td>0.3%</td>
<td>43%</td>
</tr>
<tr>
<td>Hydro</td>
<td>7.079 MW</td>
<td>11%</td>
<td>36%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>50%</td>
</tr>
<tr>
<td>Geo</td>
<td>8.001 MW</td>
<td>10%</td>
<td>33%</td>
<td>2%</td>
<td>1%</td>
<td>0.5%</td>
<td>54%</td>
</tr>
<tr>
<td>Solar</td>
<td>8.883 MW</td>
<td>9%</td>
<td>29%</td>
<td>3%</td>
<td>1%</td>
<td>0.3%</td>
<td>58%</td>
</tr>
<tr>
<td>Biomass</td>
<td>9.626 MW</td>
<td>9%</td>
<td>27%</td>
<td>3%</td>
<td>1%</td>
<td>0.3%</td>
<td>59%</td>
</tr>
<tr>
<td>Cogeneration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.4%</td>
<td>(Biomass)</td>
<td></td>
</tr>
</tbody>
</table>

1. Including maintenance capex.
2. Net cash grant