Egyptian
Renewable Energy plan

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Current Status of the Egyptian Grid
Egyptian Grid 2017 Indicators

- Installed capacity: 45,192 MW
- Max load: 30,400 MW
- Transmission grid: 45,000 Km
- Generated energy: 186,320 GWh
2016 Generation Mix

- **Hydro**, 7%
- **Renewable**, 3%
- **Steam**, 38%
Current Status of Renewable Energy

- Wind power
- Hydro power
- Solar power
Wind Power Indicators

Installed capacity
750 MW

Generated energy
12600 GWh

Fuel savings
2.7 Mtoe

CO2 Reductions
6.8 Million tons
Wind Power Potentials

Potential Capacities
More than 30000 MW

Wind speed reaches 10.5 m/sec at 50m high
Hydro Power

Installed capacity
2842 MW

9%
Of 2016
Generation Mix

- Currently, 32 MW Hydro Power Project in Assuit governorate is under implementation.
- It’s planned to establish pumping & storage plant with 2400 MW in Attaqa - Suez to be operated by 2022
Solar Power Indicators

CSP Installed capacity
140 MW

PV Installed capacity
≈ 80 MW
Solar Power Potentials

Direct Solar Radiation
2000-3000 kWh/m²/year

Sun Shine Duration
9-11 hours

Potential Capacities
>50000 MW
3 Egyptian Generation Strategy
2016 & 2035 Generation Mix

2016 Generation Mix
- Gas: 20%
- Steam: 38%
- Combined cycle: 32%
- Hydro: 7%
- Renewable: 3%

2035 Generation Mix
- Nuclear: 8.80%
- Coal: 34.0%
- Oil production: 0.50%
- CSP: 7.60%
- PV: 11.80%
- N. Gas-oil dual fuel plants: 19.40%
- Hydro: 3.20%
- Gas: 38%
- Renewable: 3%
Egyptian Renewable Energy Plan
RE Generation plan

- The New & Renewable Energy strategy aims to increase the share of generated energy from renewable energy to 20% out of the total generated energy in Egypt by 2022,

- out of which 6% from hydro sources, 12% from wind energy and 2% from other renewable energy sources especially the solar energy.

- The strategy includes the construction of wind projects with the participation of the private sector to bring the total installed capacity to 7200 MW by 2022.

The Egyptian Electricity Holding Company is coordinating with the New and Renewable Energy Authority (NREA) in Generation planning considering the share of renewable energy in the generation mix and Network planning needed for the evacuation of the generated power from renewables.
Renewable Energy Development Scheme

Framework for RE Development Mechanisms

- Competitive Bidding
- Merchant
  - IPP since 2012
- Fit/Quota since 2014
  - 2000 MW Wind
  - 2000 MW PV
  - 300 MW PV (rooftop)

NERA*
EPC contracts since 1993
- 750 MW
- Solar (PV) ≈ 80 MW

EETC+ (BOO)
a) Wind (PPA signed)
  - 250 MW @ Gulf of Suez
b) Tendering Phase
  - 250 & 100 MW, Wind & CSP, respectively
  - 2 x 200 MW PV Projects

* NREA: New and Renewable Energy Authority
+ EETC: Egyptian Electricity Transmission Company
RE Competitive Bidding Projects

**EPC Projects**

- 2 grid connected PV projects, around 20 MW each, in Hurghada & Kom Umbo
- 264 off grid small scale PV projects
- 40 MW of Wind power expansion of Gabal Elzeit (1)
- 220 MW of Wind power Gabal Elzeit (2)
- 120 MW of Wind power Gabal Elzeit (3)
- 200 MW of Wind power in Suez Gulf
- 2000 MW (Siemens wind power projects)
RE Competitive Bidding Projects

**BOO Projects**

- 250 MW of Wind Power in Suez Gulf
- 250 MW of Wind power in the west of Nile
- 200 MW of PV in the west of Nile
- 200 MW of PV in Kom Ombo
- 100 MW of CSP in the west of Nile

500 MW Solar
500 MW WIND
RE Feed in Tariff Projects

- Wind power
  - 2000 MW
- Solar power
  - 2000 MW
- PV Rooftop
  - 300 MW
Feed in Tariff Scheme

- In 2014, The Cabinet has approved the Feed-in Tariff scheme for PV & wind with capacity less than 50 M.W.
- The Regulatory Agency (Egypt ERA) finalized the regulation rules.
- In the first phase 3 contracts were signed with total capacity 150 MW.
- In 2016, A second phase of the Feed-in Tariff scheme for PV & wind has been announced and applied.

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<thead>
<tr>
<th>Plant Installed Capacity</th>
<th>FiT / kwhr</th>
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<tbody>
<tr>
<td>Residential</td>
<td>102.88 pt.</td>
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<tr>
<td>Non Residential Less than 500 KW</td>
<td>108.58 pt.</td>
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<tr>
<td>500 KW – 20 MW</td>
<td>7.88 $ cent</td>
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<tr>
<td>20 MW – 50 MW</td>
<td>8.40 $ cent</td>
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Contract Period 25 years
## Feed in Tariff Scheme

### Wind FIT

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<tr>
<th>Operational Hours</th>
<th>FIT $ cent / kwhr</th>
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<tr>
<td>2500</td>
<td>7.96</td>
</tr>
<tr>
<td>2600</td>
<td>7.65</td>
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<td>2700</td>
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<td>2800</td>
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<td>3000</td>
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<tr>
<td>3200</td>
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<td>3300</td>
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<td>3500</td>
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<td>3900</td>
<td>5.10</td>
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<tr>
<td>4000</td>
<td>4.97</td>
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<table>
<thead>
<tr>
<th>Operational Hours</th>
<th>FIT $ cent / kwhr</th>
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<td>4900</td>
<td>4.06</td>
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<td>≥ 5000</td>
<td>4.00</td>
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**Contract Period 20 years**
The Governmental support to RE
The Governmental Support to RE

- Land allocation and permits, (7650 km² are already allocated),
- Availability of the related information,
- Long-term PPA,
- Governmental guarantees,
- Custom duties are 2%,
- Environmental Impact Assessment studies and others,
- The governmental Guarantee of financial obligations has been issued.
6 Laws, Codes and Specifications
1) Constitution / Article 32
   To get optimum benefits from renewable energy, promote its investments, and encourage R&D, in addition to local manufacturing.

2) Law No. 203 of Year the 2014
   To Motivate Production of Electricity from Renewable Energy Sources.

3) Electricity Law, July 2015
   It governs the electricity sector in Egypt.

4) Cabinet Decree No. 1947 of the Year 2014 on Feed-in Tariff -1st Round
   It establishes the basis for Feed-in Tariff for energy produced from renewable energy projects and encourage investment in renewable energy.

5) Prime Ministerial Decree No. (2532) of the Year 2016 on Feed-in Tariff-2nd Round
   Regulations to Avail Land for renewable Energy Projects

6) Prime Ministerial Decree No. (37/4/15/14) of the Year 2015
   Regulations to Avail Land for renewable Energy Projects.
Laws & Regulations

7) Investment Law No. 8 of the Year 1997
   *On Investment Guarantees and Investments*

8) Presidential Decree No. 326 of the Year 1997

9) Law 4 for the Protection of the Environment
   *The law formulates the general policies for protecting and promoting the environment.*

10) Law No. 102 of the Year 1986
    *Establishes the New and Renewable Energy Authority, NREA. NREA has the primary role in promoting and developing renewable energy in Egypt.*

11) Companies Law No. 159 of the Year 1981
    *It establishes the requirements for incorporation of an SPV and the general rules for its management.*

All documents are available on Egypt ERA Website
www.egyptera.org
1. Egyptian Electric Power Grid Code
2. Solar Energy plants Grid connection codes for HV &MV
3. Wind Farm Grid Connection Code
4. Small Scale PV Connection To Low Voltage Code
5. Technical Specifications for Grid Connected PV

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www.egyptera.org
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