



Renewable Energy in Egypt

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Renewable Energy Strategies in Egypt

Vision, Strategy, and Policies

Vision

Increase Share of renewable energy in the energy sector.

Strategy

Satisfy 20% of the generated electricity by renewable energies by 2022.

Policies

- a) Competitive Bidding
- b) Merchant Scheme
- c) Feed-In Tariff, FiT



Renewable Energy Sector

New and Renewable Energy Authority, NREA

Established in 1986



The national focal point to develop and introduce renewable energy technologies to Egypt on a commercial scale together with implementation of related energy conservation programs

Legal Framework

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) Announcement of the Second Round of FiT, Oct 2016.

5) 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.

6) Prime Ministerial Decree No. (2532) of the Year 2016 on Feed-in Tariff-2nd Round

Regulations to Avail Land for renewable Energy Projects.

Legal Framework

- 7) Prime Ministerial Decree No. (37/4/15/14) of the Year 2015
Regulations to Avail Land for renewable Energy Projects.
- 8) Investment Law No. 8 of the Year 1997 (as amended)
On Investment Guarantees and Investments
- 9) Companies Law No. 159 of the Year 1981 (as amended)
It establishes the requirements for incorporation of an SPV and the general rules for its management.
- 10) Law No. 102 of the Year 1986 (as amended)
Establishes the New and Renewable Energy Authority, NREA. NREA has the primary role in promoting and developing renewable energy in Egypt.
- 11) Presidential Decree No. 326 of the Year 1997 (as amended)
It establishes the Electric Utility and Consumer Protection Regulatory Agency, affiliate of the Ministry of Electricity and Renewable Energy, responsible of the issuance of permits and licenses for generation, transmission and distribution.



Renewable Energy in Numbers

30

**Years of
Experience**

+750 MW

**Installed
Capacity**

**+ US\$ 1.7
billion**

Total investment

**+ 5000
MW**

**In the development
Phase**

+400 MW

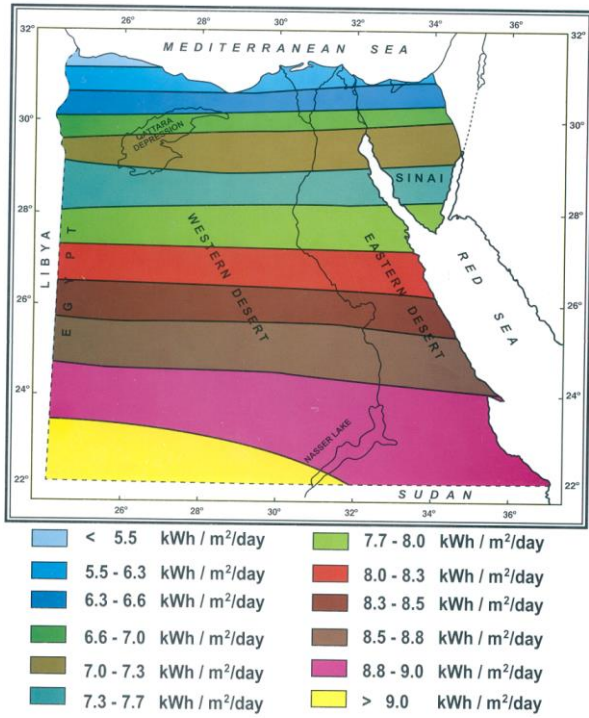
**Capacities under
construction
(wind + PV)**

**≈US\$ 500
million**

**Total Invest. In
2015-2016**

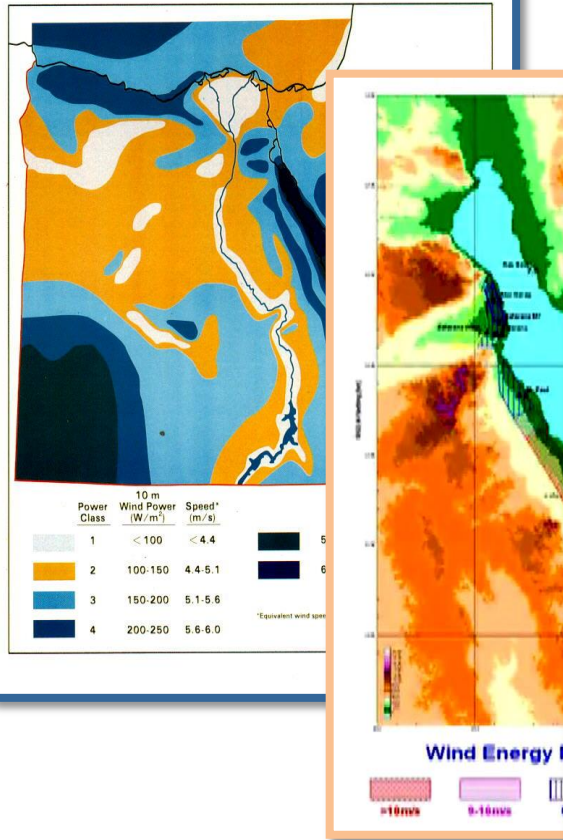
Resource Assessment

Egypt Annual Average Of
Direct Solar Radiation

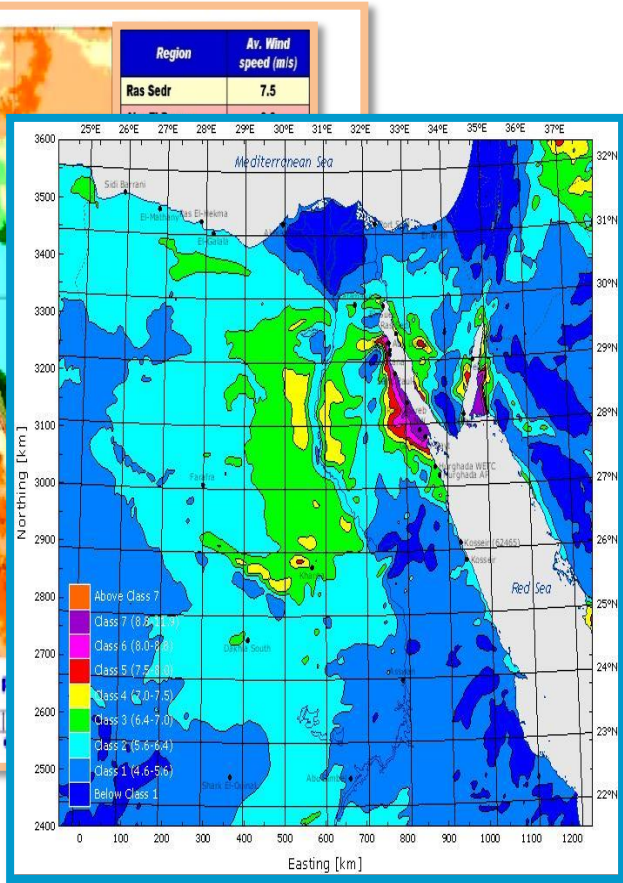


Solar

Egypt Annual Average Wind Power Estimates



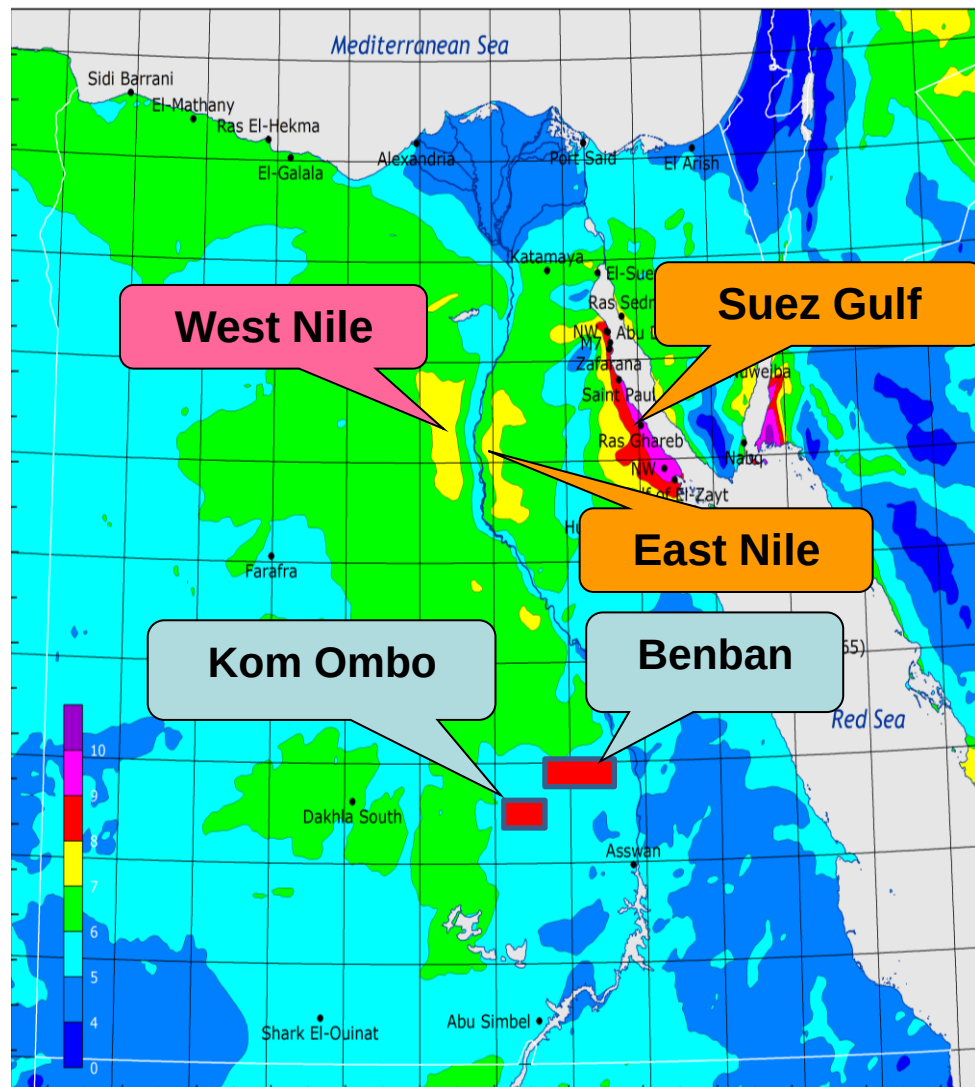
Wind



Lands Allocated for Renewable Energy

Areas		
Zone		Areas (km ²)
Suez Gulf (wind)		1220
East Nile	Wind	841
	Solar	1290
West Nile	Wind	3636
	Solar	606
Benban (Solar)		37
Kom Ombo (Solar)		7
TOTAL		7637

Total Capacities ≈ 56 GW (Wind + Solar)



List of Permits for NREA's Land

- 1) The Armed Forces;
- 2) The Ministry of Petroleum;
- 3) The Civil Aviation Authority;
- 4) The Ministry of Agriculture and Land Reclamation;
- 5) The Antiquities Authority;
- 6) The National Centre for Land Reclamation;
- 7) The Ministry of Communications and Information;
- 8) The Ministry of Electricity, Utilities and Urban Development;
- 9) The Ministry of Planning and Economic Development;
- 10) The Governorate of Suez; and
- 11) The Ministry of Investment and Planning.

Presidential Decrees already obtained



Renewable Energy Schemes in Egypt

Renewable Energy Development Schemes

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 → 1890 MW
- Solar (PV) ≈ 80 MW

EETC⁺

- a) Wind (Contractual Phase)
 - 250 MW @ Gulf of Suez
- b) Tendering Phase
 - 250 & 100 MW, Wind & CSP, respectively
 - 200 MW and 200 MW PV Projects

+ EETC: Egyptian Electricity Transmission Company

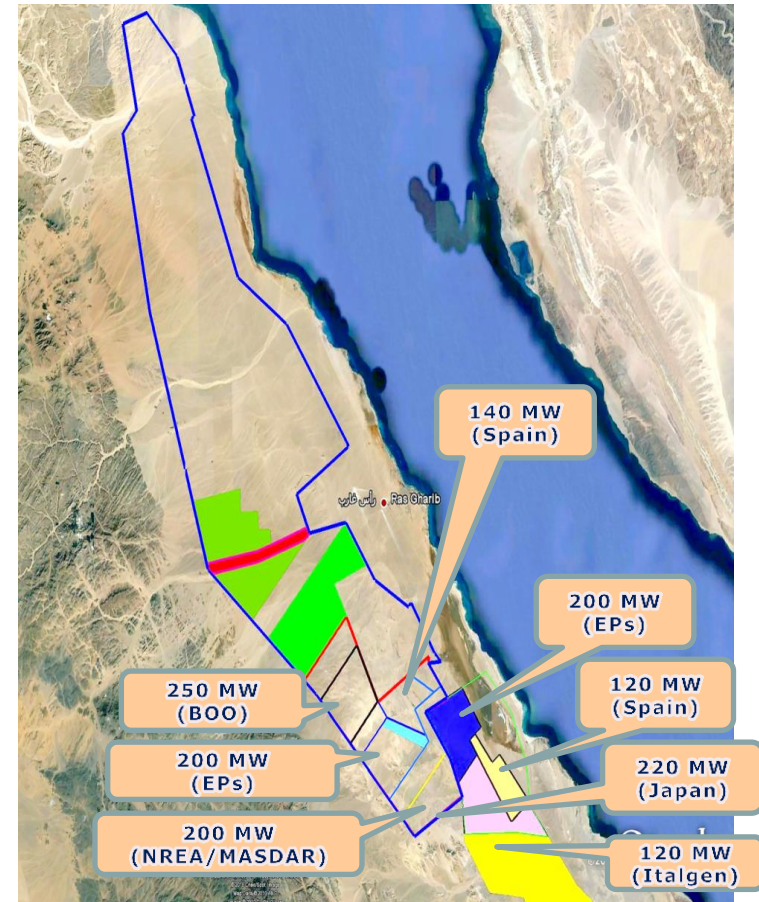
* NREA: New and Renewable Energy Authority



Projects Planned to be established through Competitive Bidding

Wind Projects Under Development

- a) 200 MW, NREA/MASDAR
- b) 200 MW, in cooperation with French Agency for Development, Afd.
- c) 200 MW, in Cooperation with Germany, EU, Afd
- d) 200 MW, in Cooperation with Japan (on the Nile Western Bank).



Feed-in-Tariff, 2nd Round

Due date: Oct. 28, 2016

A) Wind Energy

A-1) Tariff

Ranges from US\$ 7.6 Cents/ kWh to US\$ 4.0 Cents/kWh, according to the full operating hours in the site, from 2500 h to more than 5000 h, respectively.

A-2) Maturity: 20 Years

A-3) Payment conditions: 40% at EGP 8.88 and 60% pegged to the USD at the rate applicable on the due date

A-4) Project components: 60% foreign and 40% Egyptian.

A-5) Arbitration: Will be governed by the Rules of the Cairo Regional Centre for International Commercial Arbitration (CRCICA). The seat of arbitration will be offshore (exact location not announced).

A-6) Eligible Developers: Only the pre-qualified developers under Round 1.

A-7) Financial Closure: within 1.5 years for wind projects

A-8) Targeted Capacity: 2000 MW

Feed-in-Tariff, 2nd Round

Due date: Oct. 28, 2016

A) Photovoltaic > 500 kw

A-1) Tariff

US\$ 8.4 Cents/ kWh to projects range from 20 – 50 MW

US\$ 7.99 Cents/kWh to projects more than 500 kW

A-2) Maturity: 25 Years

A-3) Payment conditions: 30% at EGP 8.88 and 70% pegged to the USD at the rate applicable on the due date

A-4) Project components: 70% foreign and 30% Egyptian.

A-5) Arbitration: Will be governed by the Rules of the Cairo Regional Centre for International Commercial Arbitration (CRCICA). The seat of arbitration will be offshore (exact location not announced).

A-6) Eligible Developers: Only the pre-qualified developers under Round 1.

A-7) Financial Closure: within 1.0 year for wind projects

A-8) Targeted Capacity: 2000 MW

Feed-in-Tariff, 2nd Round

Due date: Oct. 28, 2016

A) Photovoltaic < = 500 kw

A-1) Tariff

1.0288 EGP/ kWh for residential sector

1.0858 EGP/kWh to projects less than 500 kW

A-2) Maturity: 25 Years

A-3) Payment conditions: EGP

A-6) Eligible Developers: Open.

A-7) Targeted Capacity: 300 MW



Energy Efficiency



Energy Efficiency Laboratories for home Appliances

- ❑ The Center is entrusted to serve the Egyptian energy efficiency standards & labeling program through specialized laboratories for refrigerators, washing machines, electrical water heaters, air conditions and lighting units.
- ❑ It plays an important role through the cooperation with the Egyptian Organization for Standardization and Quality (EOS), General Organization for the of Exports & Imports Control (GOEIC), to ensure the Egyptian standard specification commitment to paste the energy efficiency label on household electrical appliances before posed in the Egyptian Market to the consumers.
- ❑ The labs are accredited from Egyptian Accreditation Council (EGAC) according to the international standard 17025 from the year 2007 .





Energy Efficiency Laboratories for home Appliances



**Refrigerators
Lab**

► 3162 Local and imported production



**Air Condition
Lab.**

► 1291 Local and imported production



**Washing
Machine Lab.**

► 2008 Local and imported production



**Electric heater
Lab.**

► 490 Local and imported production



Lighting Lab.

► 1309 Local and imported production

**Energy Efficiency Laboratories
for home Appliances**



Potential Co-Operation Areas



Potential Co-Operation Areas

- **Solar Energy**
 - **CSP + Desalination**
 - **Coupling both Renewable Energy and Energy Efficiency**
 - **Experiences**
 - **Manufacturing of solar systems; SWHs, PV, .. etc.**
 - **Feeding Jordanian/Egyptian Cos with renewable electricity.**

 - **Standards and Tests of Home Appliances**
 - **Twining between both entities in Jordan and Egypt**

 - **Electricity Interconnection and possibilities to Export green electricity**
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ملاقة المتجددة في مصر والأردن موقع وإمكانيات مستقبلية



FRIEDRICH
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A Guide to Renewable Energy in Egypt and Jordan

Current Situation and Future Potentials



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Thank You