

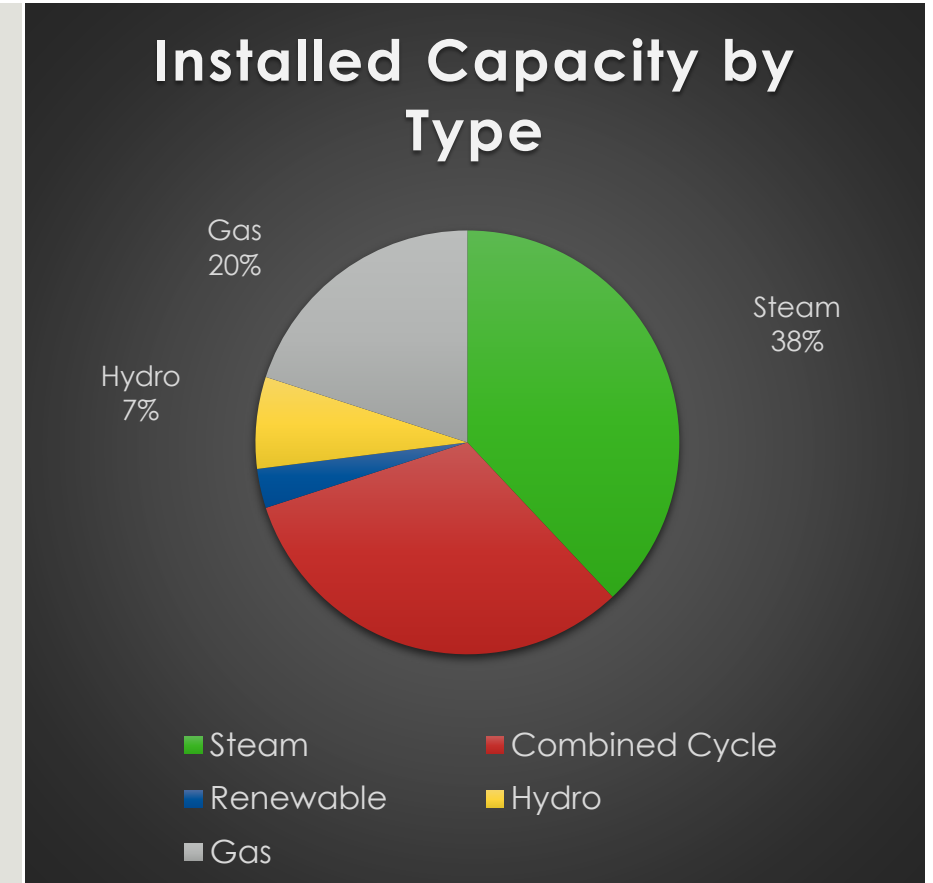
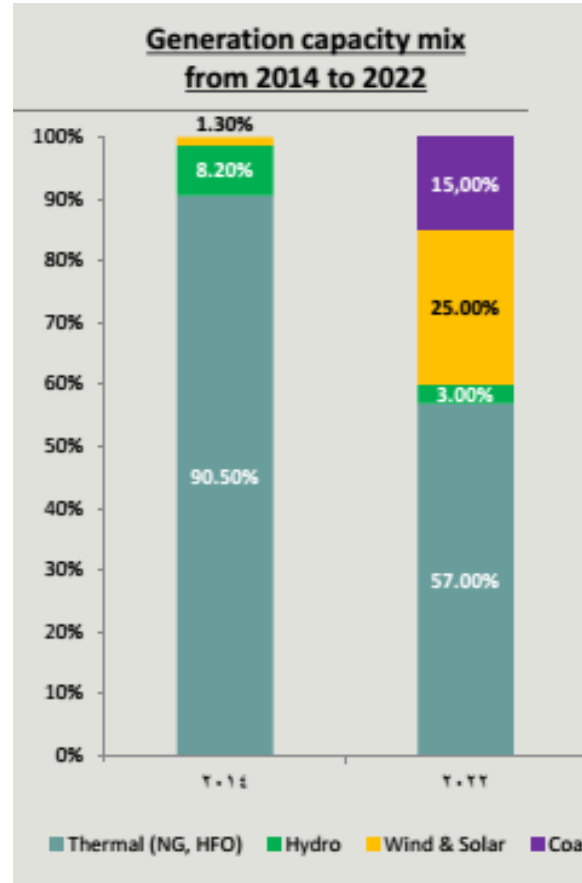
April 2018

## Table of Contents

1. Power Sector in Egypt and Energy Mix
2. Legislative Framework Attractive for Investors
3. Solar Resources in Egypt
4. Solar Energy Opportunities in Egypt Market
5. Socio-Economic Benefits of Solar Energy
6. Power Projects Business Models

# 1. Power Sector in Egypt and Energy Mix

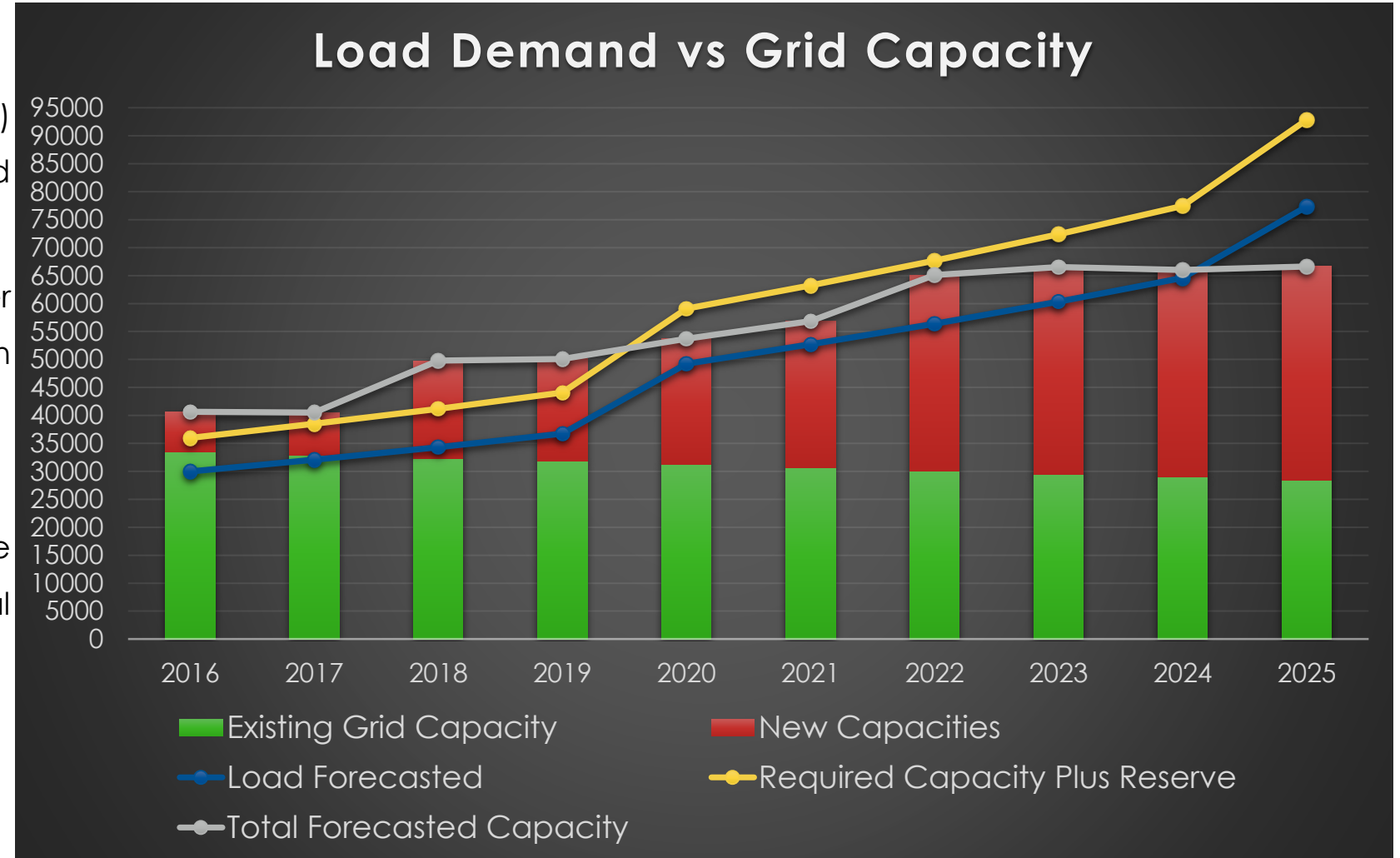
- Installed Capacity in Mid-2016 (based on EEHC Annual Report) is ~ 39 GW
- Peak Load ~ 29 GW
- The expected load demand by 2022 is **65 GW** (45 "Load Growth" + 20 "Industrial Projects") while Grid Installed capacity expected to reach 70 GW with 15% of RE which is non-dispatchable.



# 1. Power Sector in Egypt and Energy Mix – Load Profile and Growth

- Assumptions:

1. All projects (Thermal, Coal and RE) in pipeline will be completed successfully before 2025.
2. 50% of Dabaa Nuclear Power Station to be operational and in service before 2025.
3. Load Growth Rate of 7% per year.
4. All large industrial projects will be fully completed and operational before 2025 (~ 20 GW).



## 2. Legislative Framework Attractive for Investors – Cont.

- Egypt has established a robust regulatory framework, built around the Renewable Energy which was issued in **December 2014**, the RE Law promotes RE resources and ratifies the four mechanisms for establishing RE projects and regulates land allocation for RE projects.
- In **July 2015**, New Electricity Law was issued followed by its Executive Regulations "ER" in **May 2016**, which stipulates segregating Egyptian Electricity Transmission Company "**EETC**" from EEHC to be independent Company acting as **Off-taker and Transmission System Operator "TSO"**.
- In **May 2017**, New Investment Law was issued followed by its ER in **October 2017** which supports DFI and provide among other benefits:
  - ✓ Protection against suspension or termination of any license and/or allocation of properties granted to any investor.
  - ✓ The right to freely **repatriate profits**, allows the local currency to be converted into freely usable currency **without delay**.
  - ✓ Further fiscal and structural incentives to investors, such as deduction of 30% - 50% of investment cost from taxes of electricity generation and renewable energy projects.

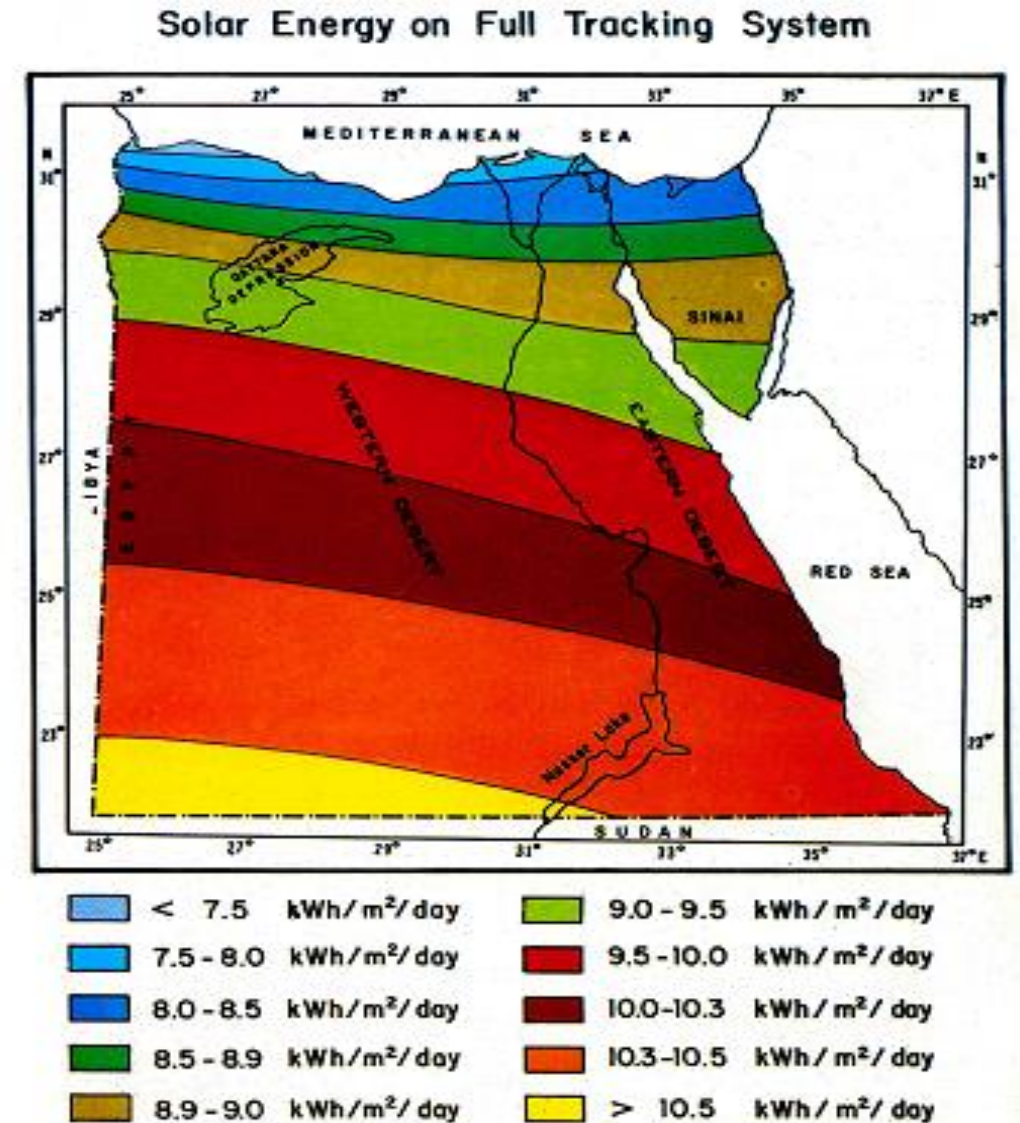
## 2. Legislative Framework Attractive for Investors – Cont.

- On **18<sup>th</sup> October 2016** The Supreme Energy Council approved, "**Integrated and Sustainable Energy Strategy till 2035**", to find out the necessary approach to restructure the supply mix of electricity which is least expensive, as a part of the national energy strategy "Technical Assistance to Reform the Energy Sector "TARES", EU supported Project" **which concluded among other scenarios in the base scenario that target PV projects should be 2% of the grid capacity.**
- USD exchange rate floatation in November 2016, which made the exchange rate stable so far and improved the USD availability and make it easier for dividends repatriation.
- Gradual **removal of electricity subsidies**, where 42% of electricity subsidies was lift on **June 2017** and a substantial cut in electricity subsidies next year to eliminate electricity subsidies totally by FY2020-2021.
- Subsidies is expected to be completely lift by FY20/21.
- When the subsidy decreases, the tariff for conventional energy increases, this would allow grid- tied PV systems to be attractive to normal clients as well, like households and Egypt would reach grid-parity.



### 3. Solar Resources in Egypt

- High intensity of direct solar radiation ranging between 2000 – 3200 kWh/m<sup>2</sup>/year from North to South. (giving it significant potential for utilizing this form of renewable energy).
- The sun shine duration ranges between 9-11 h/day from North to South, with very few cloudy days.
- Moderate temperature and humidity levels also makes Egypt of the most appropriate climatic conditions for PV plants which yields high performance ratios.



## 4. Solar Energy Opportunities in Egypt Market

- **Feed-in Tariff (FiT):**

- ❑ In October 2014, Egypt launched one of the world's largest solar projects for privately owned projects (IPP) of up to 50 MW with a total target of 2 GW of Solar (PV) capacity, and attracted significant interest from the private sector (~ 60 companies qualified for PV)
- ❑ Actual projects that reached the financial closure in Solar projects are around **1,465 MW** capacity in FiT program Rounds 1 & 2 with expected **commercial operation H1 2019**. EBRD financed 750 MW of capacity across 16 project.

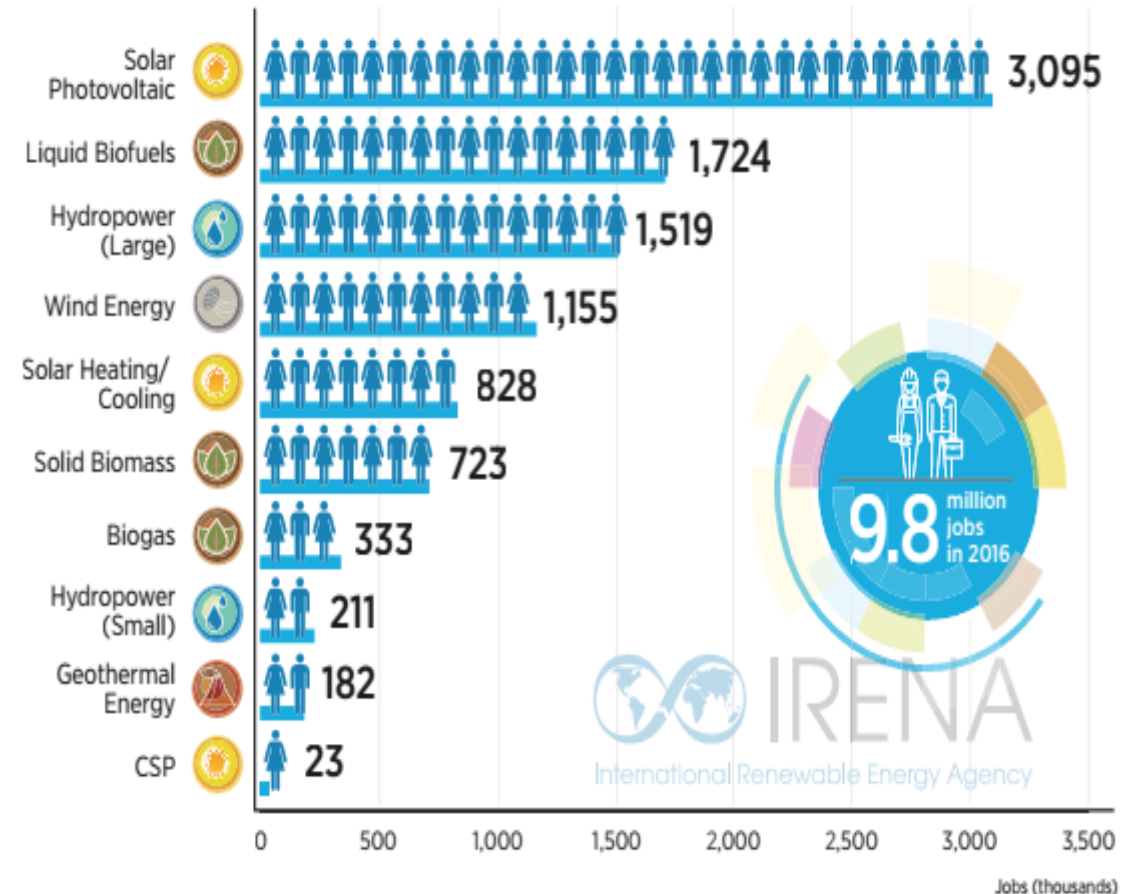
- **Competitive Tenders for Large-scale Build-Own-Operate (BOO) Projects:**

- ❑ There are currently four BOO tenders for which procurement has already commenced:
  - a. **Kom Ombo 200 MW<sub>AC</sub>** Solar photovoltaics (**PV**) facility: RFP issued, Bid Submission Date 1<sup>st</sup> July 2018.
  - b. West of Nile area Renewable Energy Projects where prequalified shortlist was announced and waiting RFP to be issued:
    - i. **200 MW<sub>AC</sub>** Solar **PV** Project.
    - ii. **250 MW Wind** Project.
    - iii. **100MW** Concentrated Solar Power (**CSP**) plant. "this would be the first CSP plant under BOO scheme in Egypt"



## 5. Socio-Economic Benefits of Solar Energy

- Solar (PV) Projects significantly participated in job creation by 3.9 million jobs in 2016, Worldwide.
- Solar (PV) Projects opened the door for small, medium and large scale companies to start their business in Egypt. (~160 company applied for qualification in FiT)
- FiT Projects reached financial close (**1.4 GW**) will secure job opportunities for almost **11,000** Egyptian persons (both White and Blue Collars) over **1.5-2** years period (during construction) and for almost 300 people for 25 years (during operation).
- FiT Project will build local solar (PV) expertise which will make it easier for those people to secure competitive jobs in the future.
- Social development of the project area is a key aspect which is being fostered and looked at as a cornerstone for Ben Ban projects for example.



## 6. Power Projects Business Models - IPP vs EPC

- The SPV ( Project Co.) is fully dedicated to the project.
- Thorough due diligence and oversight from the lenders to ensure the investment on track and successful.
- IPP takes additional risks than conventional model such as technology risks, construction risks, schedule risk, performance risks and O&M risks.
- The risk allocation between the parties (lenders/investors/off-taker, etc.) force all parties to perform its obligations which means more robust check and balance system than the conventional model.
- Reward is linked to performance otherwise serious LDs or termination will be applied.

## 6. Power Projects Business Models – Why IPP?

- Risk is skewed towards the developer.
- Accelerate construction of a key project with positive externalities to the economy
- Changing the role of government from provider to that of a facilitator and regulator.
- Innovation brought by private sector in procuring a target output.
- Skill transfer from private to the public sector.

#	Risk	Public	Shared	IPP
1	Demand and Revenue		X	
2	Design and Construction			X
3	Operating and Maintenance			X
4	Financial			X
5	Political Risk	X		

## 6. Power Projects Business Models – Benefits to Off-taker

- The financial structure (high leverage) contribute to the lowest long term purchase cost. Debt is cheaper than the equity.
- Lower Project Costs:
  1. Private Expertise is more dedicated
  2. Transfer Risk
  3. Long term planning
- Third party due diligence
- Attract investment in public sector
- Transparency & Technology transfer
- Community development

## For Further Questions:

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Je vous remercie Danke obrigado  
mihi koe рақмет cizre  
Teşekkürler شكرا  
நன்றி Asante  
謝謝  
धन्यवाद  
Terima kasih Ngiyabonga  
Tak  
ありがとう  
አመሰግናለሁ  
cảm ơn bạn  
Дзякую  
спасибо  
**Thank you**

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