



# Egyptian Renewable Energy Action Plan



# **Institutional framework: Establishing NREA (1986)**



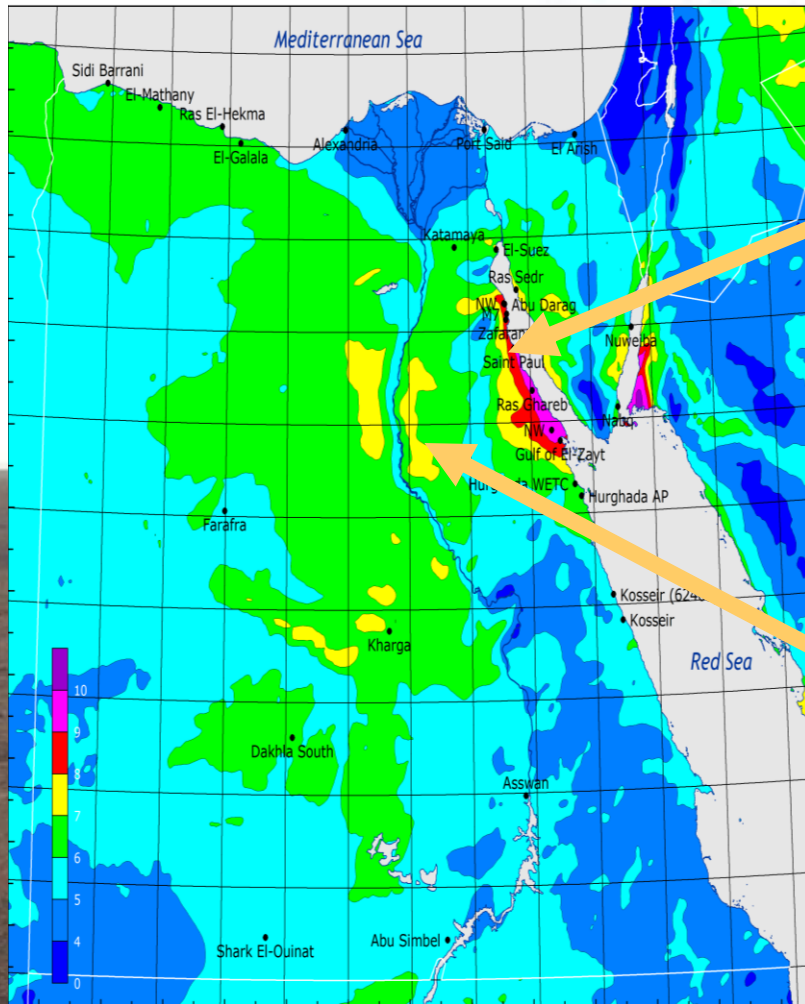
**The national focal point to develop and introduce renewable energy technologies to Egypt on a commercial scale together with implementation of related energy conservation programs**



# **Why Renewable Energy important for Egypt?**



# Wind Atlas of Egypt, 2005

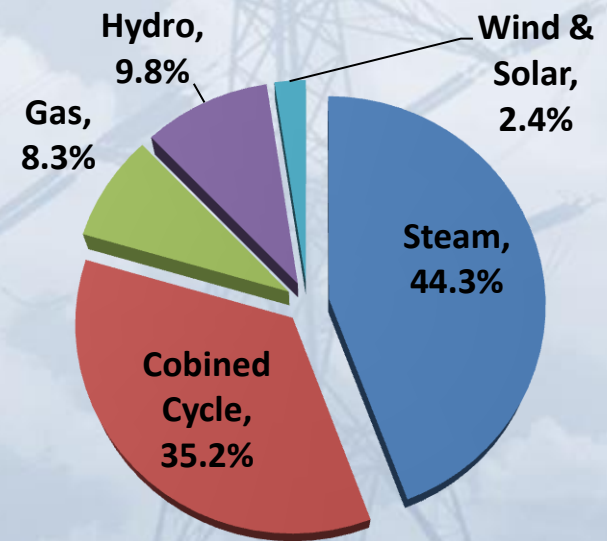


Egypt enjoys excellent wind regimes, particularly in the Suez Gulf where the average wind speed reaches 10.5 m/sec.

The wind energy resource is available in large regions on the Nile banks in the Eastern and Western Deserts and parts of Sinai.

# The Current Situation

- ✓ Egypt is now **struggling** to meet its own energy needs.
- ✓ The availability of Natural Gas for current and future power plants **has turned into a real constraint** and that the power sector is forced to increase the amount of heavy oil for power generation and RE power plants.
- ✓ The Total installed capacity reached to **31090 MW at the end of 2011/2012** but it was insufficient to meet the prevailing evening peak demand in this summer and it is expected **to be continued in the next years.**
- ✓ The new energy intensive industries **will not receive electricity supply from the national grid** i.e they should build power plants or buy electricity from the private sector.



# **Renewable Energy Strategy 20 x '20**





## National Strategy up to 2020

• In February 2008, the Supreme Council of Energy approved an ambitious plan to:



**Satisfy 20% of the generated electricity by renewable energies by 2020, including:**

- **12% from wind energy**, i.e., reaching more than 7200 MW grid-connected wind farms.
- **6% from Hydro,**
- **2% from solar energy (CSP & PV)**

# Egyptian Solar Plan

✓ in July 2012 an Egyptian Solar Plan has been approved by the Cabinet which targeting to install **about 3500 MW by 2027**

:-

✓ **(2800 MW CSP + 700 MW PV)**

with private investment share of **67%**  
including enhancement of relevant local industry.





## RE Current Situation

- Since 2001, series of large scale wind farms were established with capacity of 550 MW in cooperation with Germany (KFW), Denmark (DANIDA), Spain and Japan (JICA) through soft loans.
- The 1st CSP plant is 140 MW including solar field of **20 MWe** based on parabolic trough technology and 120 MW combined Cycle. It has been operated since July 2011.



# **The Road Map of Implementing RE Strategy**

# Polices of Implementing RE Strategy



A policy to foster the increasing of wind energy contribution consists of **two phases**:

Phase 1,

- **Competitive Bids** approach through issuing tenders internationally requesting private sector to supply power from wind energy projects.

Phase 2,

- **Feed-in-tariff** system will be applied taking into consideration the prices achieved in phase 1.

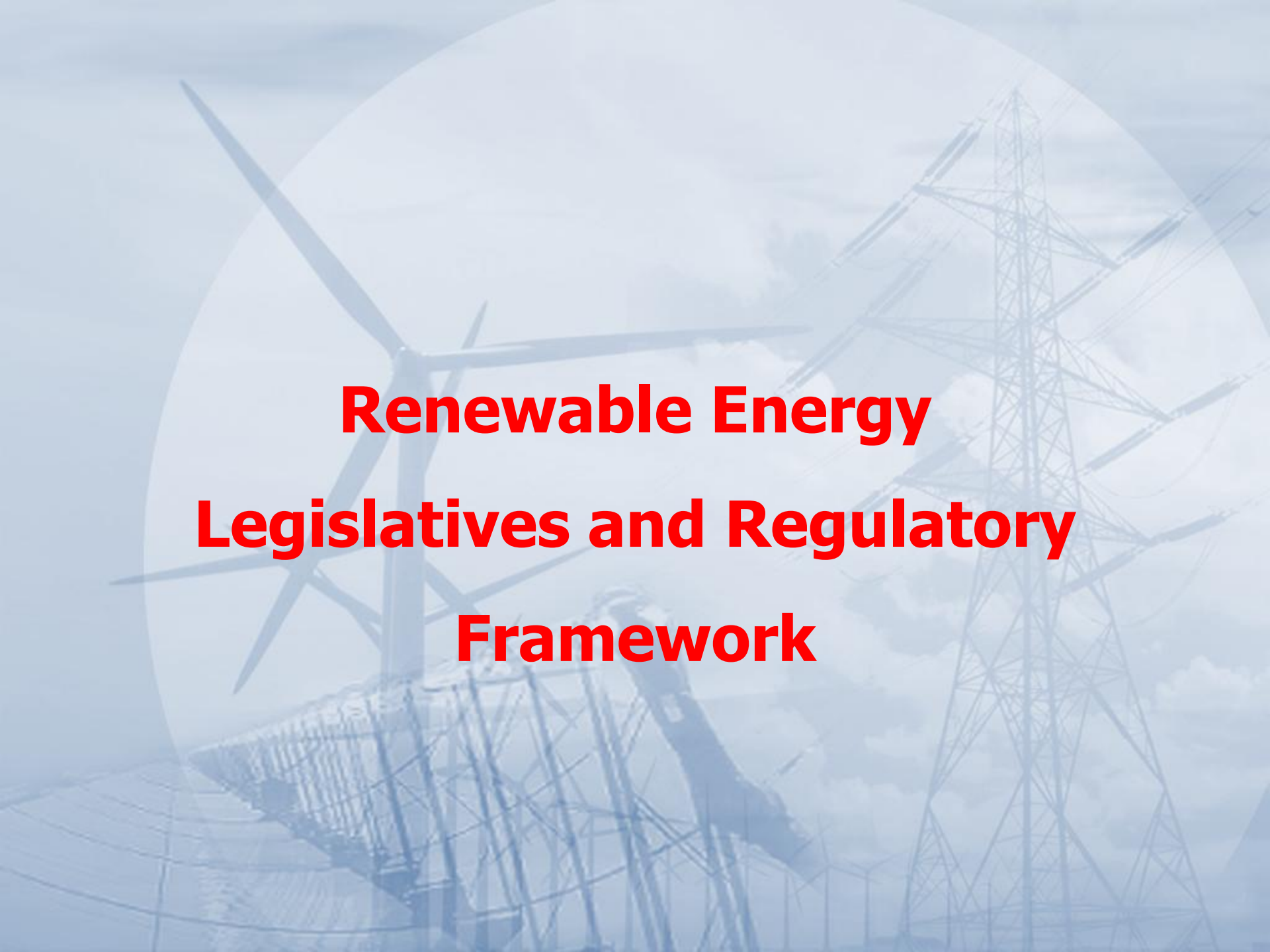


## Polices of Implementing RE Strategy (Cont.)

### Third Party Access:-

- Investors are allowed to build & operate renewable energy power plants to satisfy their electricity needs or to sell electricity to other consumers though the national grid.
- NREA will allocate the land of the project to developer(s) through Auction Approach and will sign USUFRUCT Agreement with the winning developer(s) with a certain capacity about 100 MW.





# **Renewable Energy Legislatives and Regulatory Framework**

# Support of Egyptian Government

## 1. Lands Availability:-

- More than 7600 square kilometers of desert lands have been allocated for implementing future projects.
- All permits for land allocation are already obtained by NREA.
- EIA including Bird migration study has been prepared by NREA in cooperation with international consultant and financed by KfW.
- Signing land use agreement with the investor against payment equivalent to at least 2% of the annual energy generated from the project or its value.
- The project company shall get license for power generation from Egyptian Electricity Regulatory Agency.

## 2- Custom Duties:-

- Exempting all renewable energy equipment and spare parts from the customs duties.



# Support of Egyptian Government (Cont.)

## 3- Power Purchase Agreement :-

- Signing long term Power Purchase Agreement (PPA) ( 20-25) years .
- Central Bank of Egypt will guarantee all financial obligations of EETC under the PPA.

## 4- Carbon Credit:-

- The project will benefit from carbon credit .

## 5- Renewable Energy Fund:-

- Establishing a renewable energy fund that will help through:-
  - Bridging the gap between cost of electricity from conventional and renewable energies.
  - Addressing the risk of the Foreign currency exchange
  - Contributing in financing RE pilot projects.
  - Supporting R & D activities in renewable energy field.
  - Enhancing Local manufacturing of RE equipment.



# **The Recent Developments in Implementing the Action Plan**

# Governmental projects

( **1340 MW** )





# Wind Energy Projects under implementation by NREA

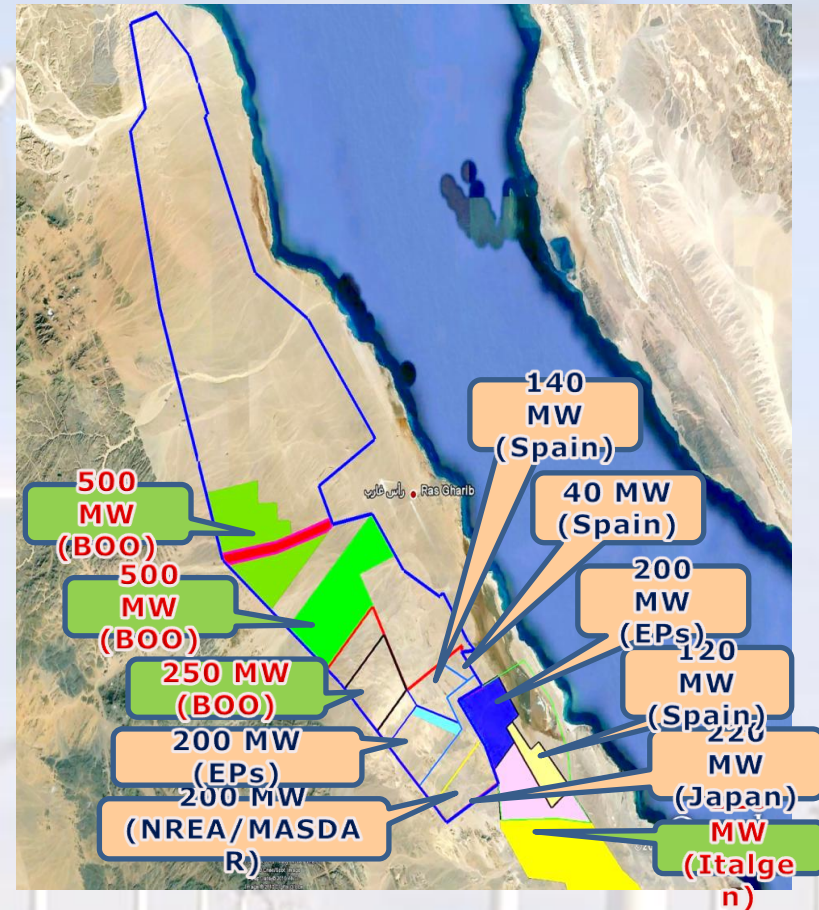
- **200 MW**, in Cooperation with **Germany & EU & EIB**

## Projects in the Pipeline

- **220 MW**, in Cooperation with **Japan (JICA)**
- **120 MW**, in cooperation with **Spain**.
- **200 MW**, with **MASDAR**

## Projects under preparation

- **200 MW**, in cooperation with **Germany, AFD, EIB, EU**.
- **200 MW**, in Cooperation with **Germany, AFD**
- **200 MW**, in Cooperation with **Japan (on the Nile Western Bank)**.



# Private Sector projects

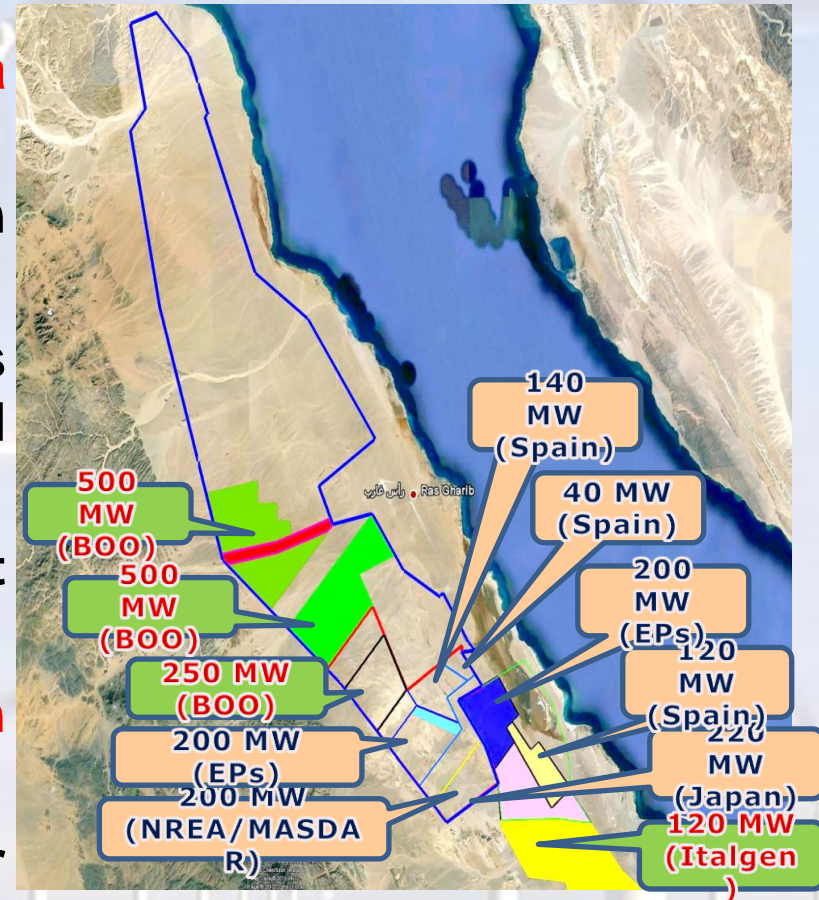
## (1370 MW)





## Wind Energy Projects under implementation by the Private Sector

- **120 MW**, in cooperation with Italian Company to supply electricity for its owned factories in Egypt.
- **250 MW wind farm (private Sector) on a BOO basis in the Gulf of Suez:**
  - 10 developers were short listed in Dec., 2009.
  - The measurements campaign has been started and will be completed by mid 2013.
  - It is planned to operate the project by Mid of 2015.
- **1000 MW wind farm (private Sector) on a BOO basis in the Gulf of Suez**
  - The prequalification documents for the 2nd competitive bid **for 1000 MW** wind farm, in 4 phases (4x250 MW), will be announced during the next few months.





# Solar Energy



## Solar Energy Projects under implementation by NREA

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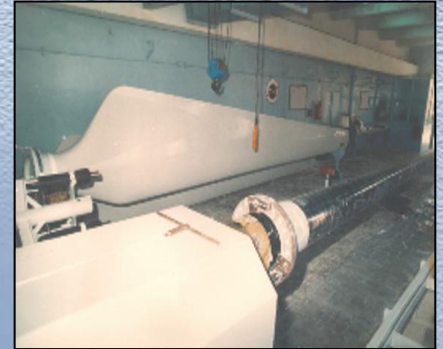
The background of the slide is a light blue gradient with a faint, semi-transparent image of an industrial facility, possibly a refinery or power plant, featuring tall distillation columns and complex piping. A horizontal rectangular box with a thick purple border is centered on the slide. Inside this box, the text "Local Manufacturing" is written in a large, bold, yellow, 3D-style font with a slight shadow effect.

# Local Manufacturing



# Wind Energy Equipment :

- ✦ **30%** of the wind energy equipment are locally manufactured.
- There is a plan for the private sector participation to raise manufacturing of wind energy equipments to **70%** at the end of 2020.



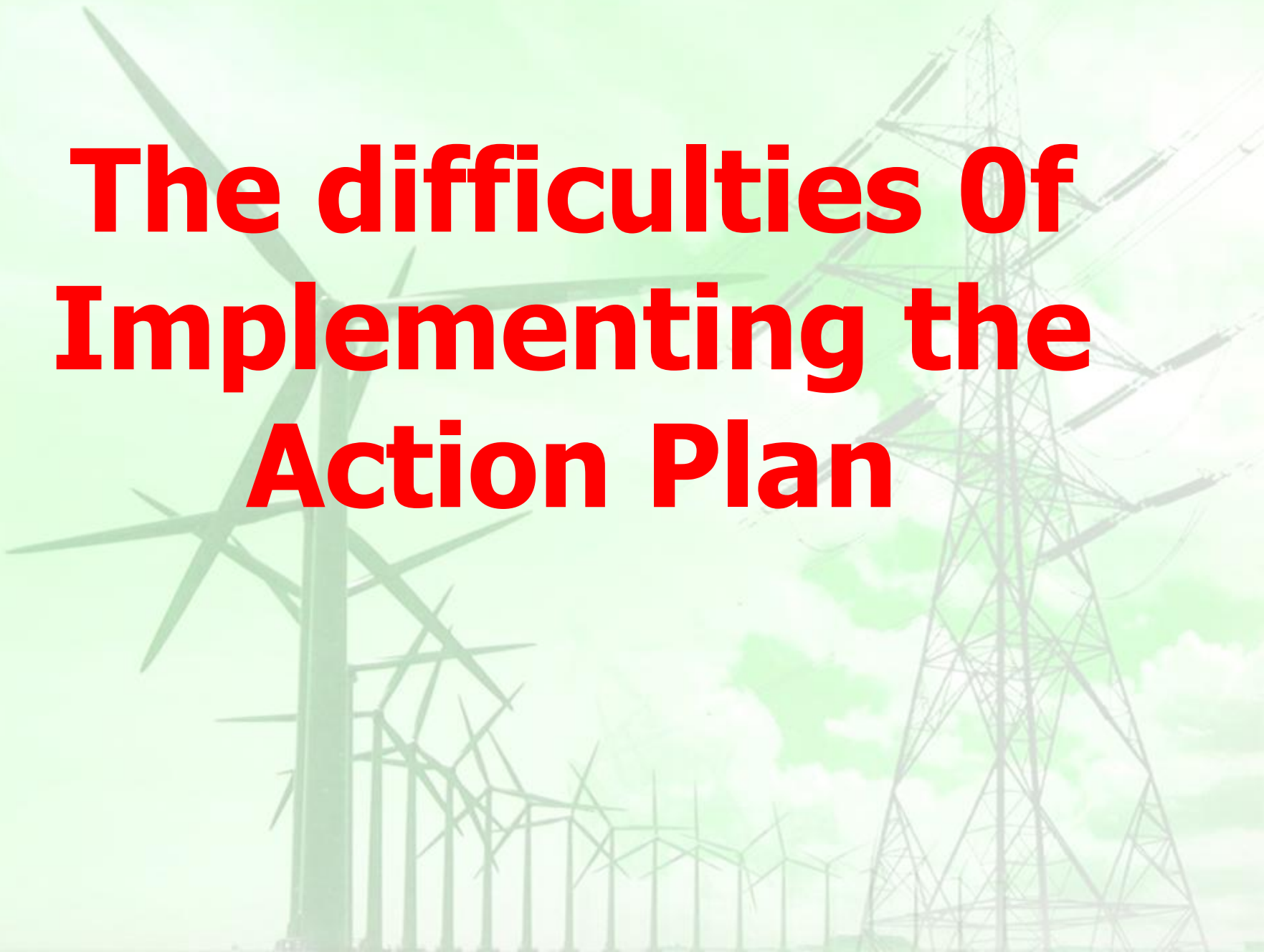
# Solar Energy Equipment :

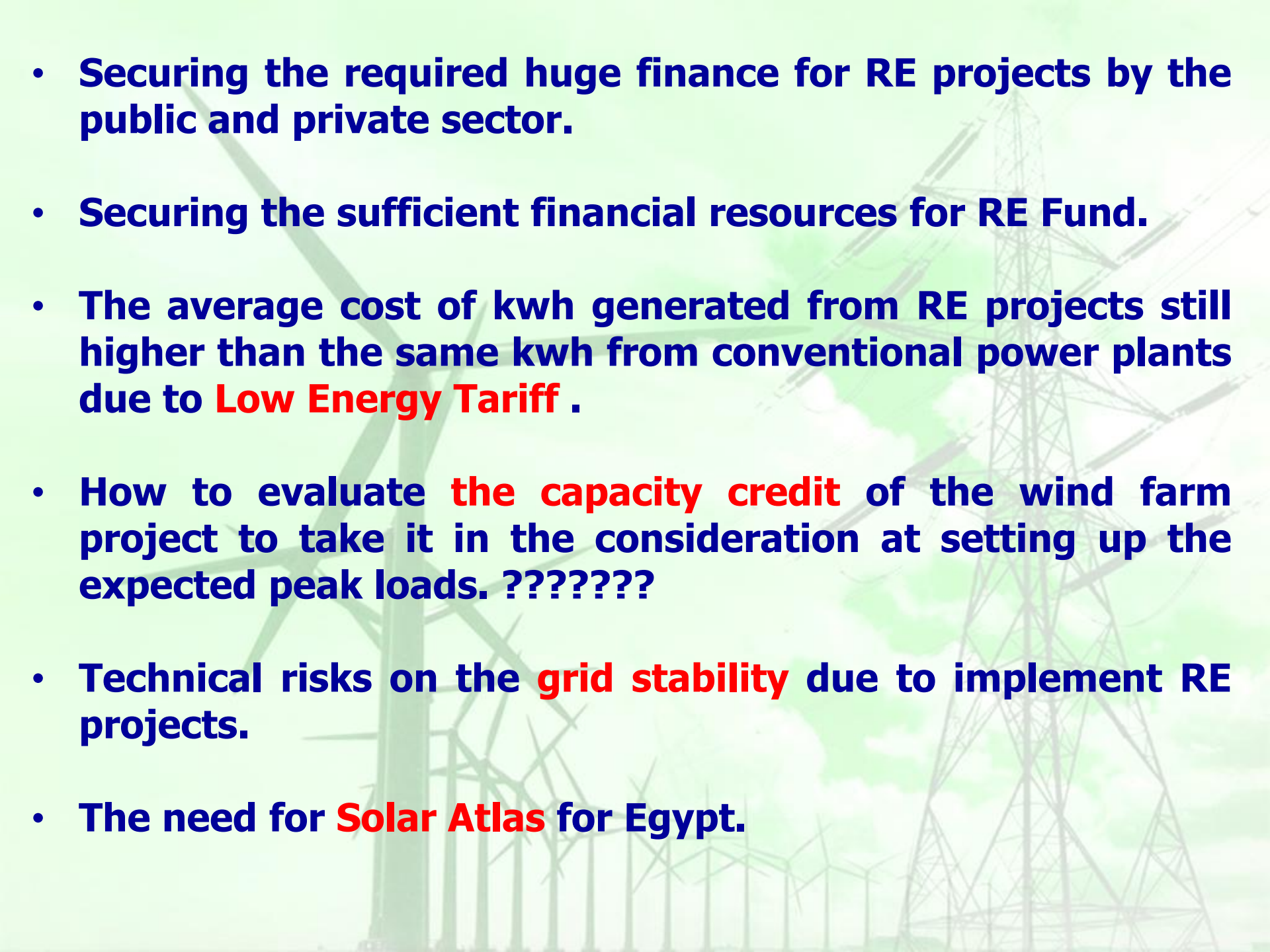
The local share in the **1<sup>st</sup>** solar thermal power plant project is **50%**



**The industrial base established in Egypt can be adapted to serve in building a robust the renewable energy industry and fulfill locally and regionally needs.**

# **The difficulties Of Implementing the Action Plan**




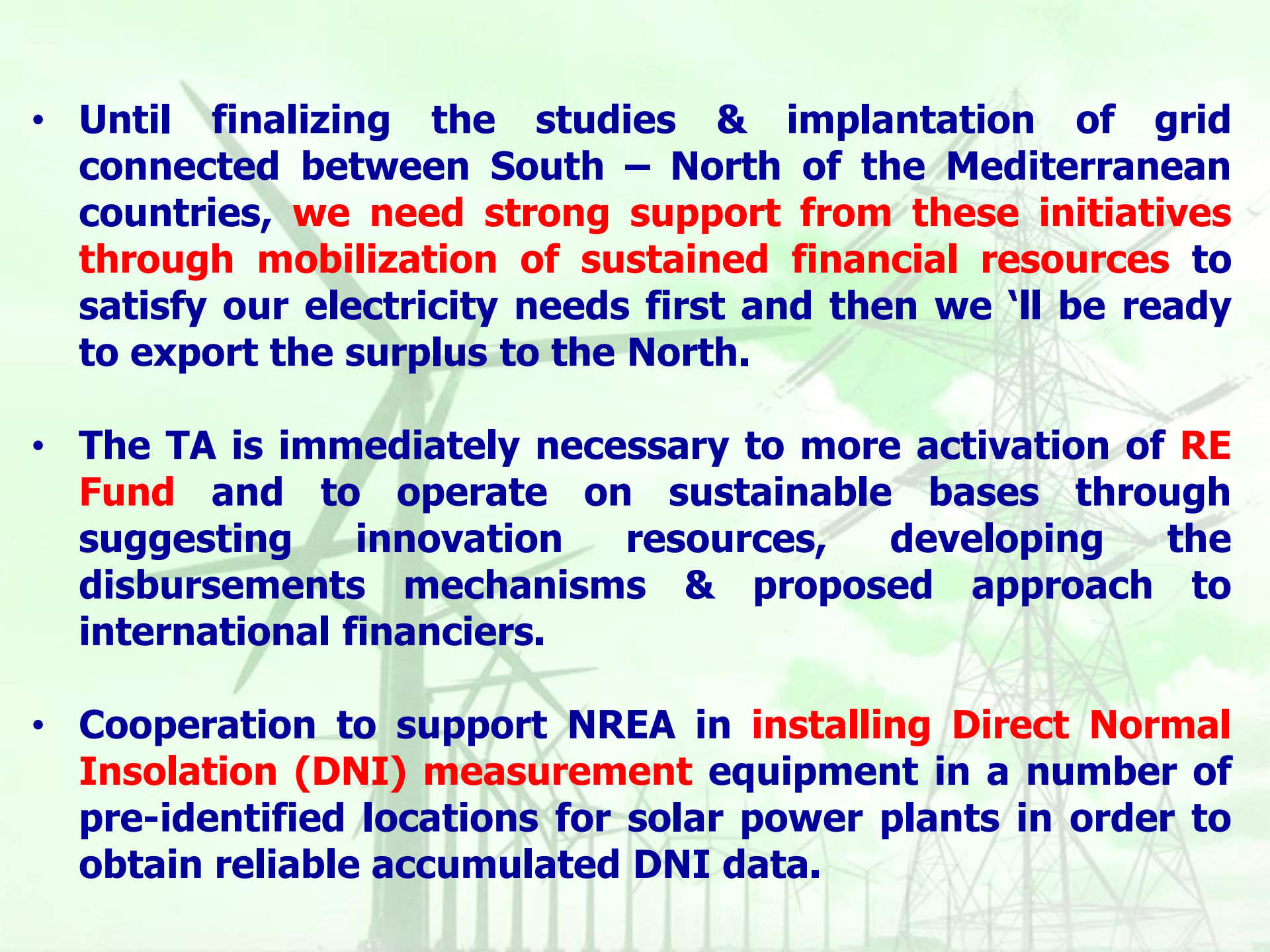
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- **Securing the required huge finance for RE projects by the public and private sector.**
  - **Securing the sufficient financial resources for RE Fund.**
  - **The average cost of kwh generated from RE projects still higher than the same kwh from conventional power plants due to **Low Energy Tariff** .**
  - **How to evaluate **the capacity credit** of the wind farm project to take it in the consideration at setting up the expected peak loads. ????????**
  - **Technical risks on the **grid stability** due to implement RE projects.**
  - **The need for **Solar Atlas** for Egypt.**





# **Cooperation with Regional & International Initiatives**

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- Egypt is very keen to continue as an active player in supporting the widespread utilization of renewable energy.
  - Egypt through the Union for Mediterranean is providing support to the ambitions **Mediterranean Solar Plan (MSP)**, and working closely with the Secretariat as well as Egypt submitted 3 projects proposals to be financed through MSP initiative.
  - We consider the emerging initiatives such as the **MSP**, the **DESERTEC** and other similar initiatives as catalysts to expand the cooperation across regions in terms of reducing the high upfront costs through improved R&D as well as transferring and localizing the technology.

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- Until finalizing the studies & implantation of grid connected between South – North of the Mediterranean countries, **we need strong support from these initiatives through mobilization of sustained financial resources** to satisfy our electricity needs first and then we 'll be ready to export the surplus to the North.
  - The TA is immediately necessary to more activation of **RE Fund** and to operate on sustainable bases through suggesting innovation resources, developing the disbursements mechanisms & proposed approach to international financiers.
  - Cooperation to support NREA in **installing Direct Normal Insolation (DNI) measurement** equipment in a number of pre-identified locations for solar power plants in order to obtain reliable accumulated DNI data.



***Thank You***

