Capacity Building Workshop on: "Integration of RES In Transmission and Distribution Networks in the Arab Region

Approach and Requirements for Integration of RES with the Electricity Grid in the Arab region: Legislative, Regulatory and Economic Considerations

Eng. Marwa Mostafa

Egyptian Electric Utility and Consumer Protection Regulatory Agency (EgyptERA)

Amman – Sep. 2015

Contents

- Introduction .. Where are we?
- Regional initiatives to promote RE in the Arab region
- Process Outlines
- RE Policy Making

  I. Legislative Considerations

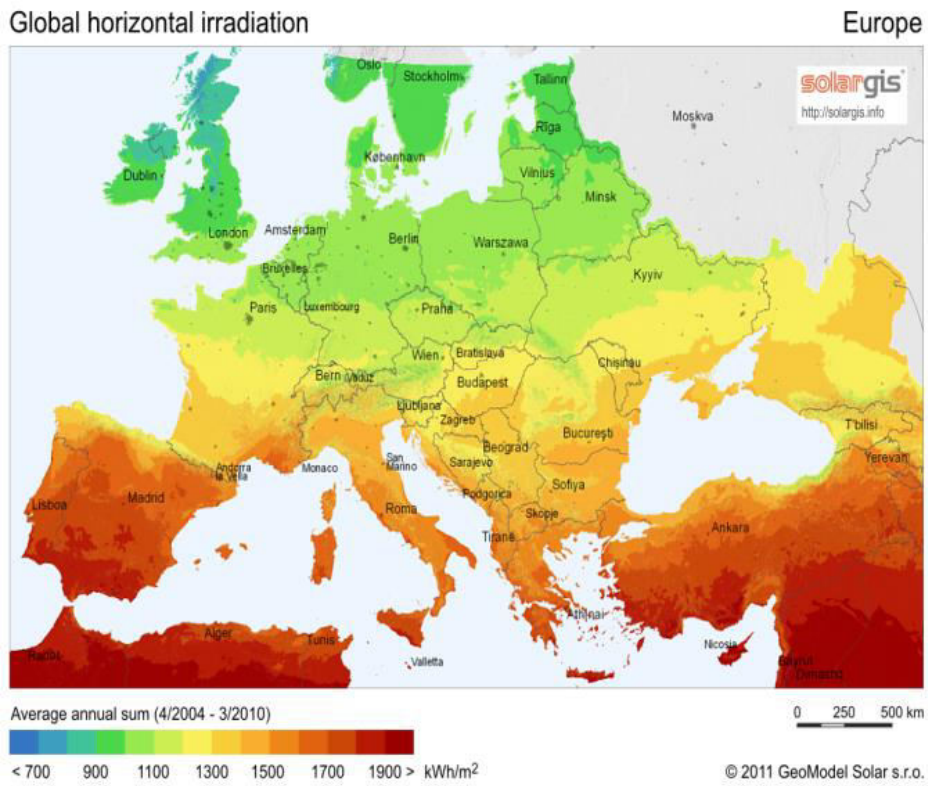
  II. Regulatory Considerations

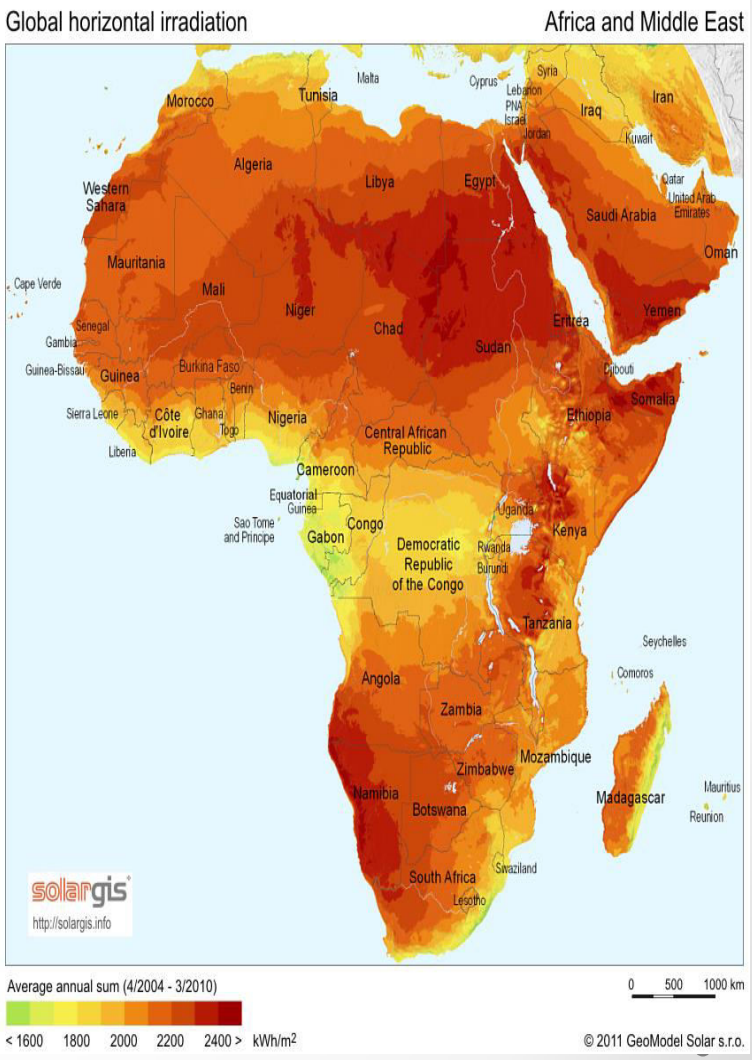
  III. Economics considerations

  IV. The Egyptian Case: Dealing with challenges

Introduction

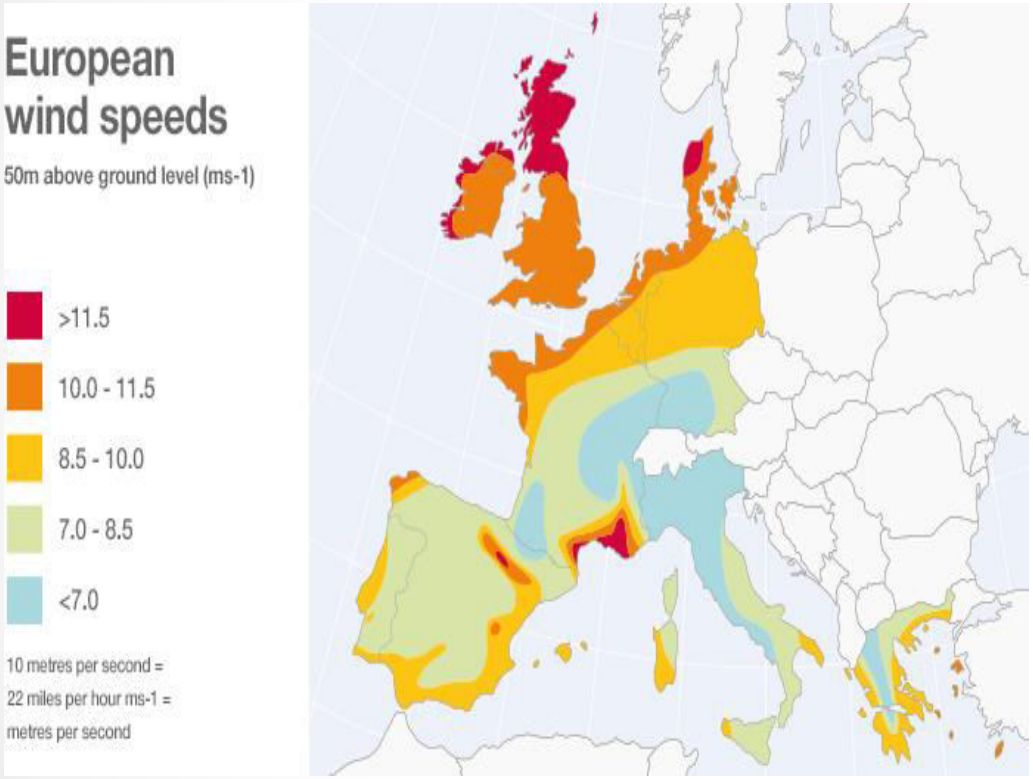
RES potential - Solar

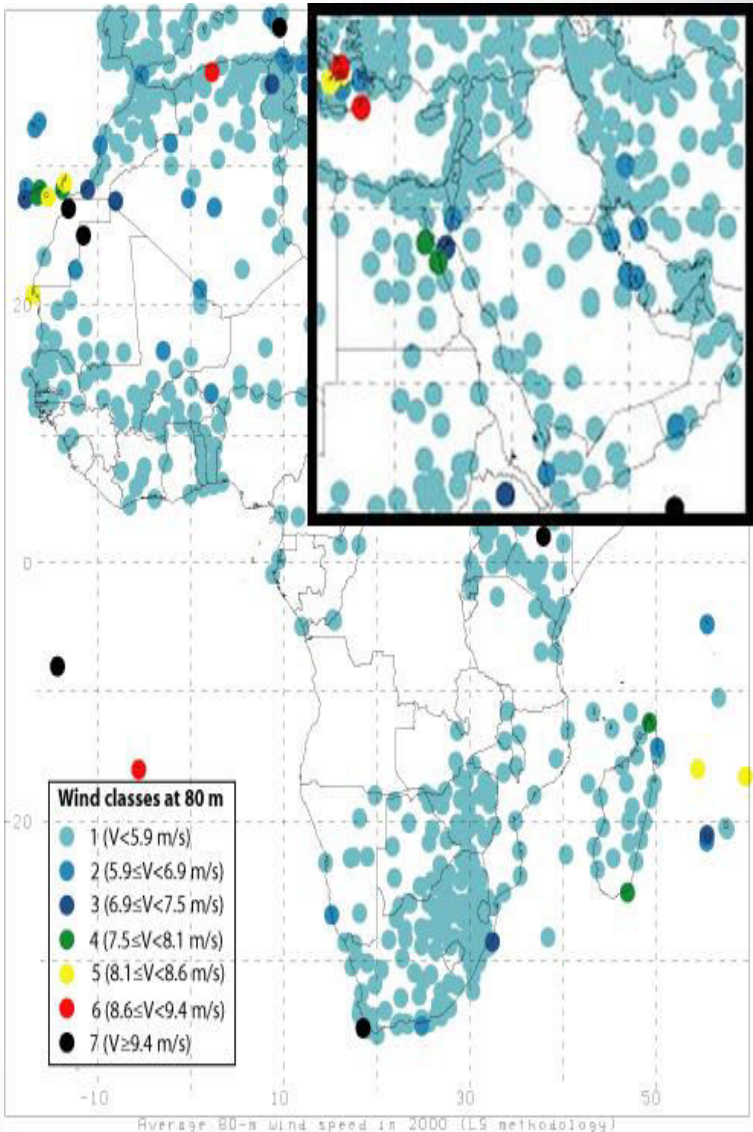




Introduction

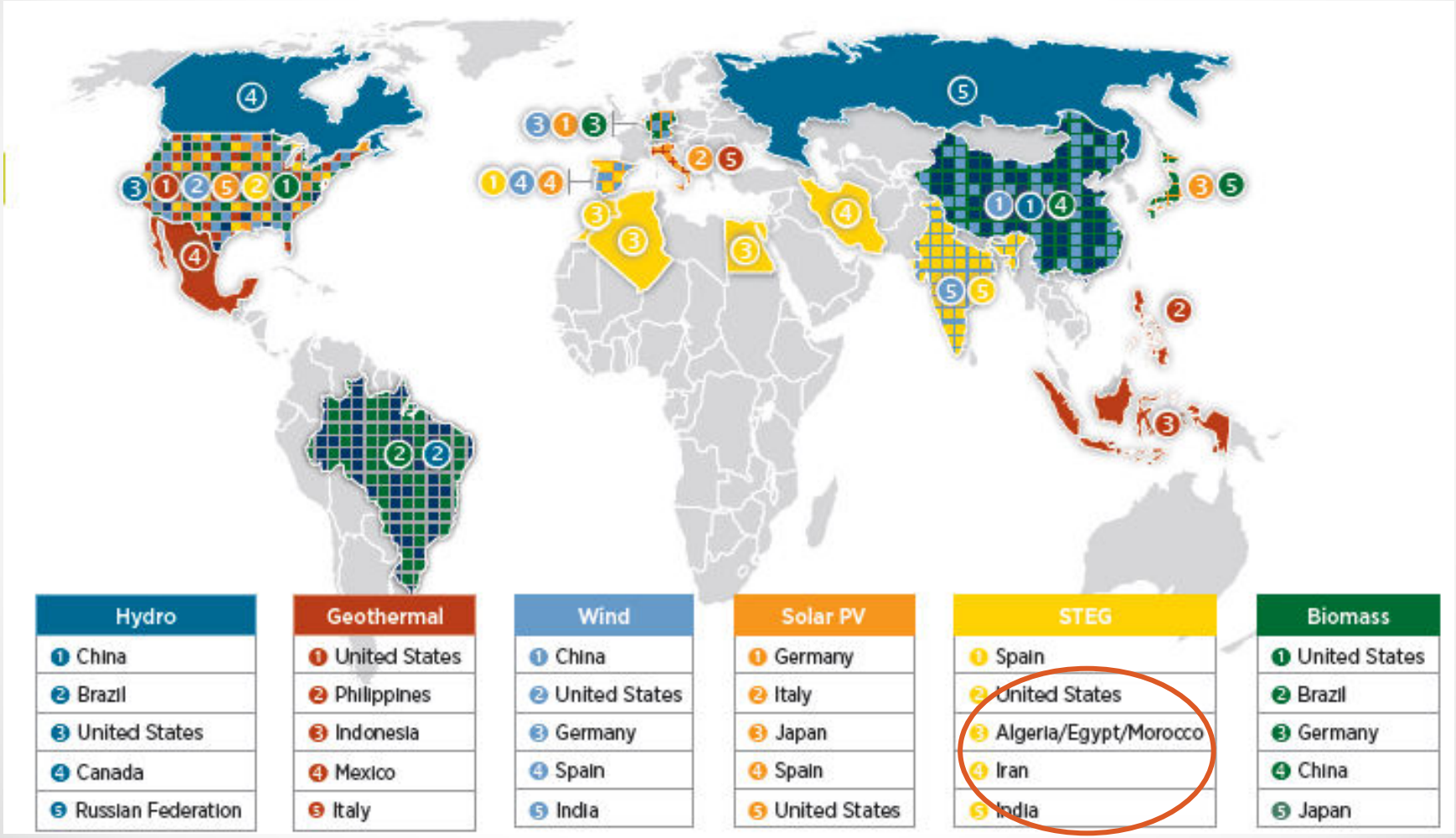
RES potential - Wind





In 2011

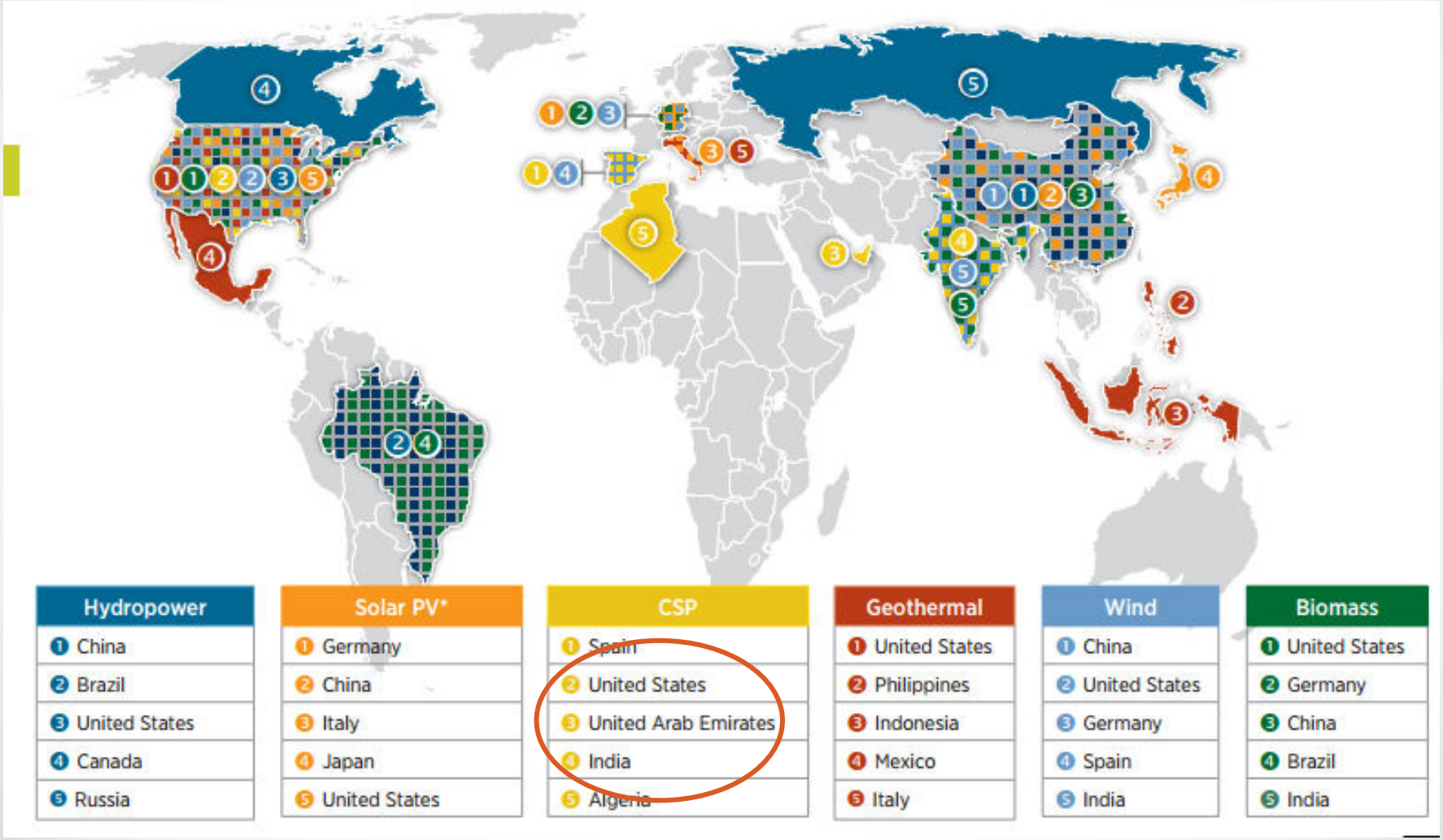
Top countries in RE installations



Source EIA, Bloomberg New Energy Finance, revised 2013

In 2013

Top countries in RE installations



Sources: REN21 *Grid-connected

Regional Initiative to promote RE

Pan-Arab Strategy for the Development of RE Applications: 2010 – 2030

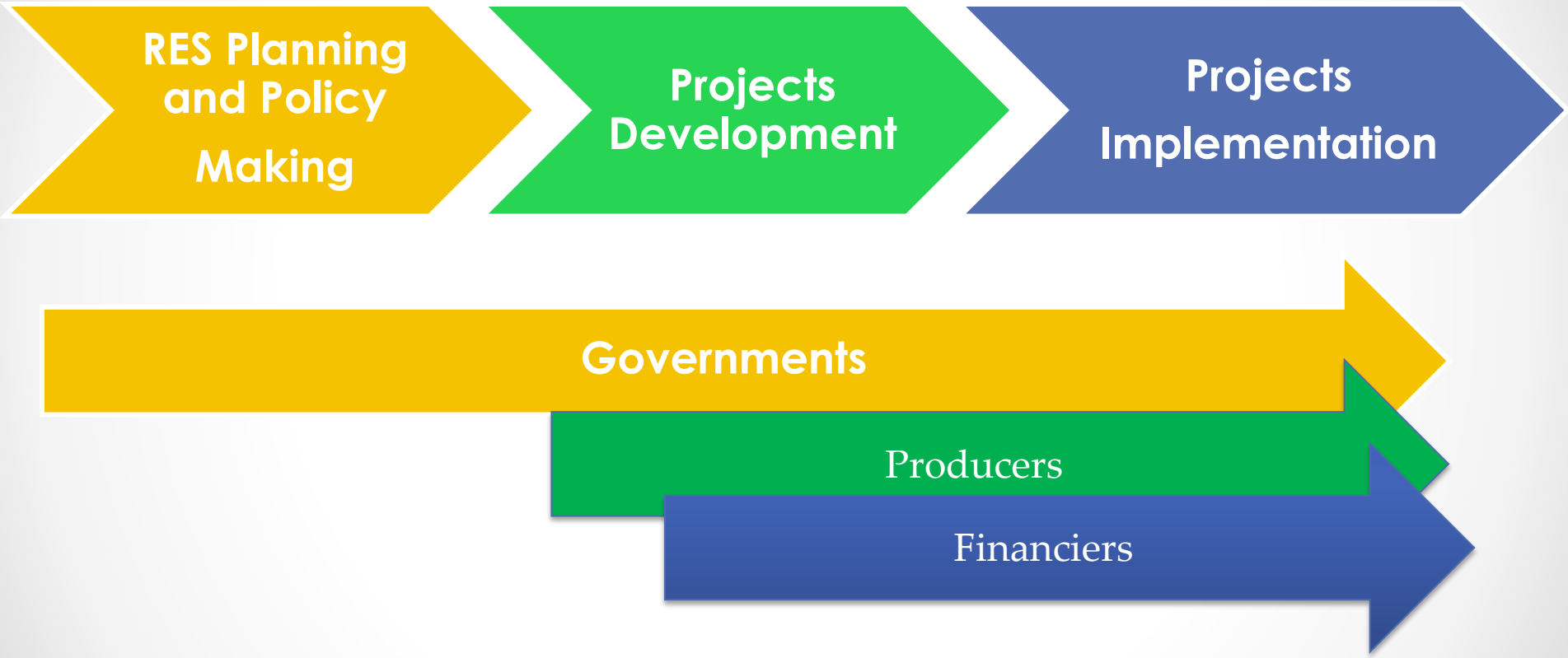
- **Objective:**
  "tap into the region's significant RES to supplement the existing electricity supply"[1].

- **Scope**:
  The electricity sector.

- **Implementation:**
  The Arab Renewable Energy Framework (AREF) provides guidance to the Arab countries in developing their medium to long-term national RE action plans (NREAP).

[1] Pan Arab Renewable Energy Strategy

Process Outline ….



RE Policy Making

RE Policy Making

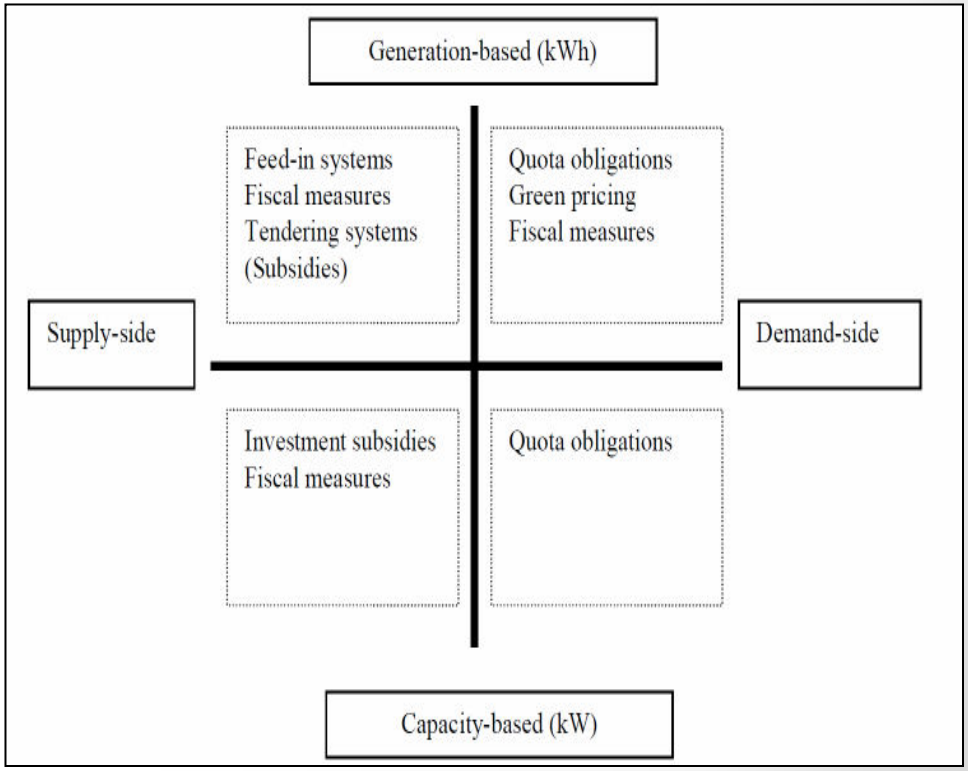
Definition of Targets	Definite target as % of the electricity from RES by certain year

RE Policy Making

Definition of Targets

↓

Choice of policies / instruments



RE Policy Making

Definition of Targets

↓

Choice of policies / instruments

↓

Concrete design of instruments

Getting the prices right:

- Details on cost . Tax levels
- Tariff levels . Inflation rates

Inappropriate instrument design either leads to failure in achieving the targets or – if the support level is too high – targets could possibly be met at the expense of welfare losses for the whole economy.

RE Policy Making

Definition of Targets

↓

Choice of policies / instruments

↓

Concrete design of instruments

↓

Implementation

- Institutional setup
- Drafting of laws and regulations
- Assignment of responsibilities

•

RE Policy Making

Definition of Targets

↓

Choice of policies / instruments

↓

Concrete design of instruments

↓

Implementation

↓

Administration, monitoring, and adjustment

- Monitoring of actual developments
- Measuring contribution to target achievement
- Re-assessing policies
- Adjustment of targets, strategies, policies and instrument design

Legislative, Regulatory & Economic Considerations

There are different considerations that need to be considered in setting up the different strategies that support the chosen policy

- Legislative
- Regulatory
- Economic

Further more:

- Technical
- Financial
- Risk Assessment

I. Legislative Considerations

Setting adequate legislations is a major success factor. The following considerations must be cogitated:

- Legislations must have clear objective and scope
- A law is not a detailed document, it determines and reinforces basic principles .. bylaws and regulations are detailed and explanatory
- Cross cutting legislations must be neither be scattered nor overlapping

I. Legislative Considerations

- Interrelated issues between multiple legislations must be clearly stated, referred to, or at least concerted to avoid confusion and contradiction
- Possible interrelated issues usually occur between Investment law, Taxes law, ..etc.
- Reconciliation articles are often very useful especially when implementation of some schemes precedes issuance of the legislations

I. Legislative Considerations

Legislations are not targets in themselves, they must reflect the market needs,

thus

Legislations must not only be in place but also they have to be enforced

II. Regulatory Considerations

- Regulations are basically the way the legislation is enforced by regulators
- Regulations are specific, informative, transparent, and non discriminating
- They are more subject to change than laws; being easier to adapt to new market conditions
- Although regulations are binding, they are not necessarily of legal nature. Examples of different RE regulations include;
    - Licenses (legal aspects)
    - RE pricing (Financial and economic aspects)
    - Power Purchase Agreements, contracts (contractual aspects)
    - Technical codes (Technical specifications)

II. Regulatory Considerations

The following are crucial issues for consideration:

- RE planning is an integral part of the power system planning (not imposed on it)
- Long term planning is crucial because RE projects have long economic life
- Electricity sector/market structure, Electricity prices
- Lack of stakeholder involvement in decision making
- Insufficient coordination between relevant authorities
- Monitoring of actual developments and measuring achievements against certain benchmarks

III. Economic Consideration

- The levelized cost of electricity produced (LCOE) is a key metric that measures the economic feasibility of RE projects (in addition standard economic metrics, such as installed rated power, the market price of energy and the interest rate)
- It is considered a major criteria for RE policy selection, namely the choice of the type of technology.
- The LCOE is calculated as the present value of periodical costs of an RE power plant divided by the present value of the respective periodical electricity generation from the plant.

III. Economic Consideration

- The LCOE of a power generation technology reflects multiple factors:
  - resource quality,
  - equipment cost,
  - capacity factor,
  - the balance of project costs,
  - fuel costs (if any),
  - operation and maintenance costs,
  - the economic lifespan of the project,
  - and the weighted average cost of capital (WACC).

III. Economic Consideration

- In proving their economic feasibility, RE projects are assessed with respect to either the retail cost of electricity or the wholesale market (utility scale).
- Providing RE fiscal incentives shall add to the economic advantage of the RE projects.

IV. The Egyptian Case: Dealing with challenges

- Legislative challenges
- Regulatory challenges
- Economic Challenges

Thanks for your attention

Marwa Mostafa Mohamed
Head of Planning Dept.
Egyptian Electric Utility and Consumer Protection Regulatory Agency(***EgyptERA***)
Phone + (202) 23421475 Ext. (139)
Fax + (202) 23423482
E-mail marwa.mostafa@egyptera.org,
marwa_mostafa75@yahoo.com
Website www.egyptera.org