



RENEWABLE ENERGY SOLUTIONS
FOR THE MEDITERRANEAN



Building a bridge for public - private efforts for deploying renewables in the Mediterranean region and Africa

ROBERTO VIGOTTI

Secretary General RES4MED

*EUROSUNMED Roadmap Workshop
Brussels, April 14th 2016*

1. Association profile

Renewable Energy Solutions for the Mediterranean is a not for profit association created in 2012 with the mission **to contribute to the deployment of renewable energies**, both large scale and distributed energy, facilitating their integration in domestic and regional markets **to satisfy local energy needs**

Strategy

- **Platform for public-private dialogue** on renewable energy issues in the Mediterranean in light of the partnerships with selected international stakeholders
- **Advisor and facilitator** to regional institutions, local Governments and regulatory bodies
- **Awareness and institutional advocacy** through dialogue with Southern and Eastern Mediterranean countries (SEMCS) governments and regulators
- **Capacity building and training**, disseminating best-practices and procedures on RES regulation, policies, standardization, operation

Membership

- Network of leading **utilities, industries, TSO, agencies, technical service providers and academia**, actively engaged in the Southern and Eastern Mediterranean Countries (SEMCS)
- **Involvement of financial actors within a Stakeholders Committee** aiming at providing advice, sharing analysis, market intelligence

RES4MED members and partners



RES4MED CORE MEMBERS



SOUTHERN MED PARTNERS



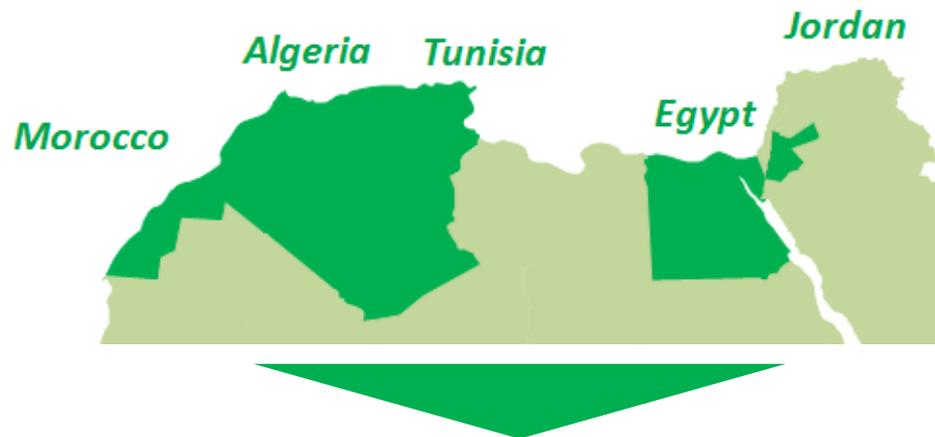
REGIONAL NETWORK



2. Main activities in MPCountries

Survey 2016 on the main barriers to RE investments in MENA countries

- **Rating the main risks** related to the investments and the main barriers for the specific target market
- **Identifying risks which are commonly perceived** as hampering factors for developing RE investments
- Defining the scope of a wider analysis bringing to **risk mitigation solutions** and policy recommendations



**Results to be discussed in the RES4MED Annual Conference
to be held in Rome on May 19th 2016**

Country profiling

EGYPT

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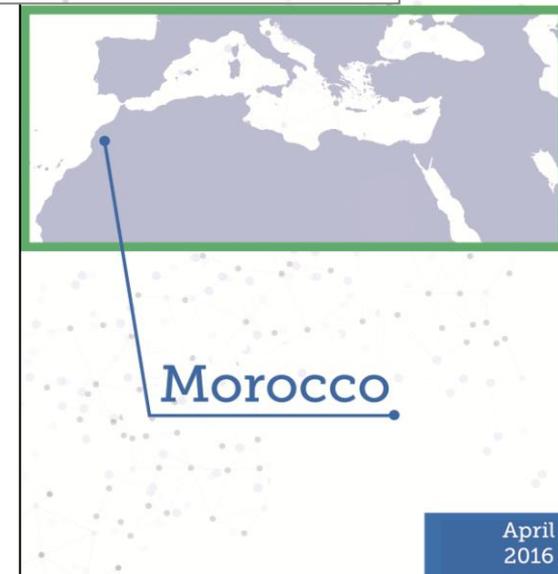
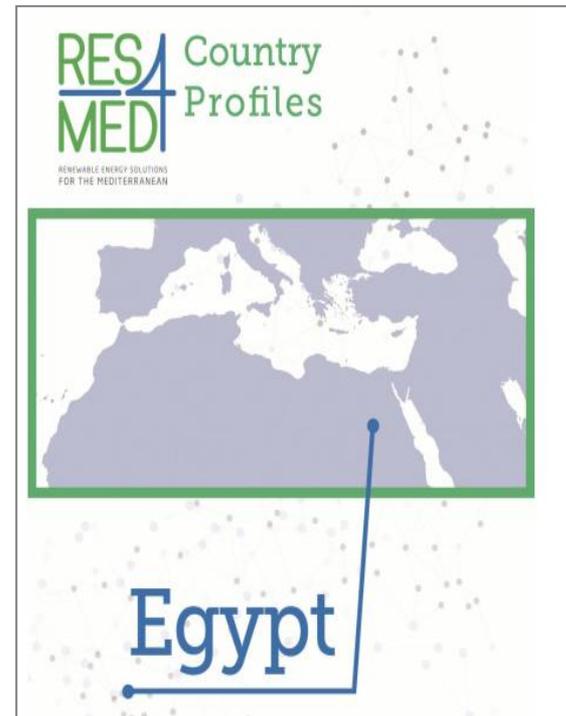
REFERENCES

ANNEX 1 - FIT PROCESS FOR PROJECTS > 500 KW

ANNEX 2 - LIST OF COMPANIES IN THE LAND

ALLOCATION PHASE OF FIT PROCESS

**Available on
RES4MED website**



Local high level conferences and Italian events



RES4MEDI DAY: One-day local workshop fostering the dialogue between local stakeholders and RES4MEDI's members to generate a deeper understanding of local needs and propose a set of solutions to match them



Morocco, Rabat (Sept 2014)/(Mar 2016)



Egypt, Cairo (Sept 2015)



Conference
(May 2014)



Conference
(Apr 2015)



Università Commerciale
Luigi Bocconi

Conference
(Jun 2015)



Appropriate policies to assure sustainability of large scale integration of RE into electric grids

On going analysis on “**Integration of Renewable Generation in the National Electric System of Algeria**”

- ***Objective***

- Provide an **assessment of the maximum amount of non-dispatchable renewable generation** that is possible **to install in Algeria** ensuring the reliability, integrity and efficiency of the power system
- **Execute reliability and market based analyses to assess the benefits** for the Algerian system due to the integration of the new renewable generation and the impact they will have on the cost of energy
- **Evaluate the adequacy of the transmission and sub-transmission system** to transport the power generated by the new power plants to the identified local and regional demand centers

- ***Time scale and next meeting***

- Within 4 months, performed by RES4MED, CESI, EnelGreenPower experts in dialogue with Sonelgaz and CREG
- Next meeting April 27-18 April in Algiers at Sonelgaz Headquarter

Energy Efficiency Training Course

RES4MED organizes the training course “*Enhancing energy efficiency solutions in the Mediterranean Region*” on **May, Monday 16th – Friday 20th**

- **Organization**

- Jointly financed by Asja and Iren; Res4Med in charge of Project Management while PoliTo contributes by providing lecturers, facilities and logistics
- Lectures on **technical, regulatory and financial features by qualified experts and academics; visits to innovative laboratories and facilities**

- **Objectives**

- **Strengthen the capacity** of the key regional stakeholders and decision makers to develop effectively energy efficiency programs
- **Fostering Public Private Partnership** to generate a positive climate for opportunities and investments

- **Target audience** consists of 40 professionals:

- 10 professionals from Southern and Eastern Mediterranean countries (Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Tunisia and Turkey) – *full scholarship*
- 5 professionals from Balkan countries (Albania, Kosovo, Montenegro and Serbia) – *full scholarship*
- 5 professionals from Public Institution of Piedmont – *free tuition fee*
- 10 professionals from RES4MED members – *free tuition fee*
- 10 Ph.D. students and Researchers from Italian Universities – *free tuition fee*

RES4MED organizes the third edition of the **Advanced Training Course on “Renewable Energy Solutions”** on **November, Monday 7th – Friday 18th**

- **Organization**

- Financed by Enel Foundation; Res4Med in charge of Project Management while PoliMi contributes by providing lecturers, facilities and logistics
- Lectures on technical, regulatory and financial features by qualified experts, academics and highly skilled technicians, matched with visits to innovative laboratories and power plants

- **Objectives**

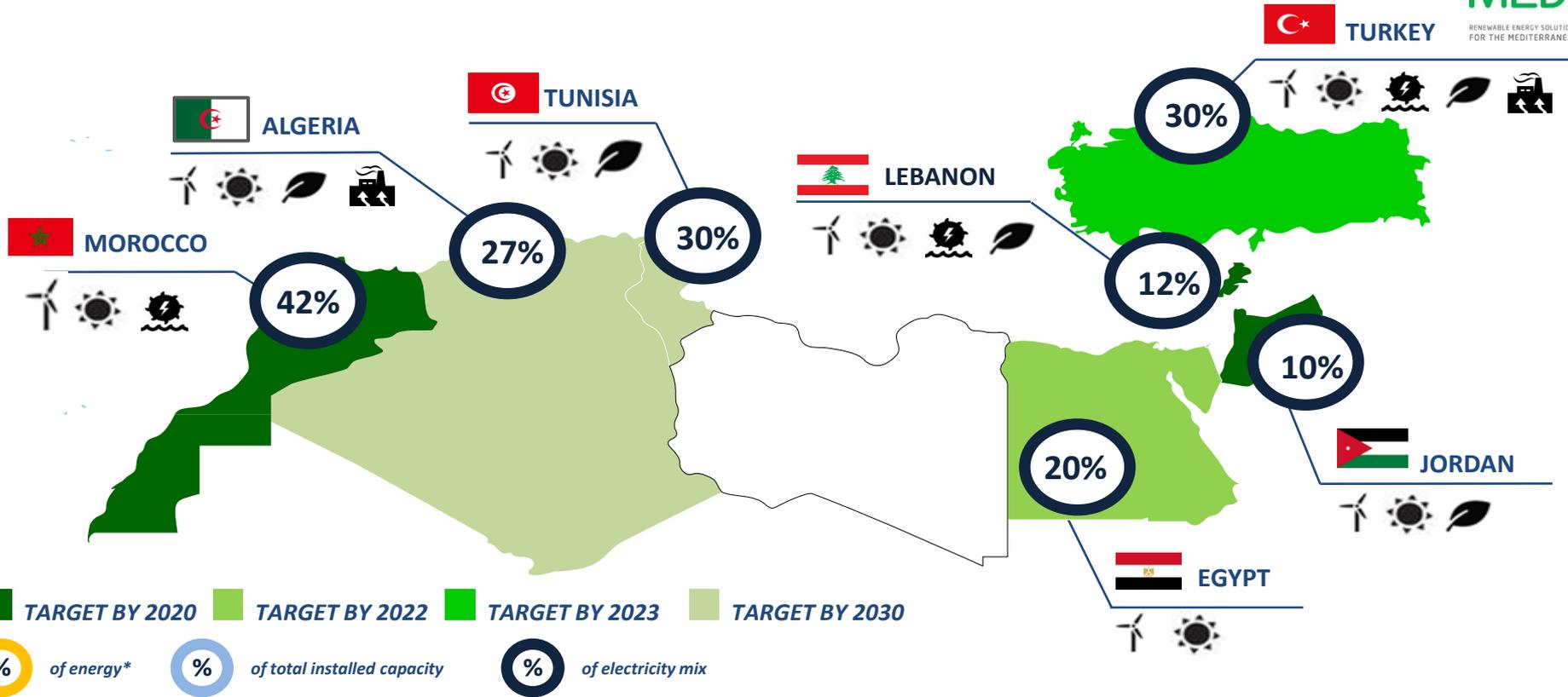
- Provide participants **with technical, economical and regulatory tools to assess the most appropriate solutions in different energy contexts** for an efficient and effective integration of renewables in the electricity market
- Favoring the setting up of **an international network of experts.**

- **Target audience** consists of 50 professionals:

- 25 professionals from Southern and Eastern Mediterranean countries – *full scholarship*
- 5 professionals from Sub-Saharan African countries – *full scholarship*
- 10 professionals from RES4MED members – *free tuition fee*
- 10 Ph.D. students and Researchers from Italian Universities – *free tuition fee*

3. RES in the MENA Region: what is missing to accelerate deployment

Renewable energy targets* in SEMCs area



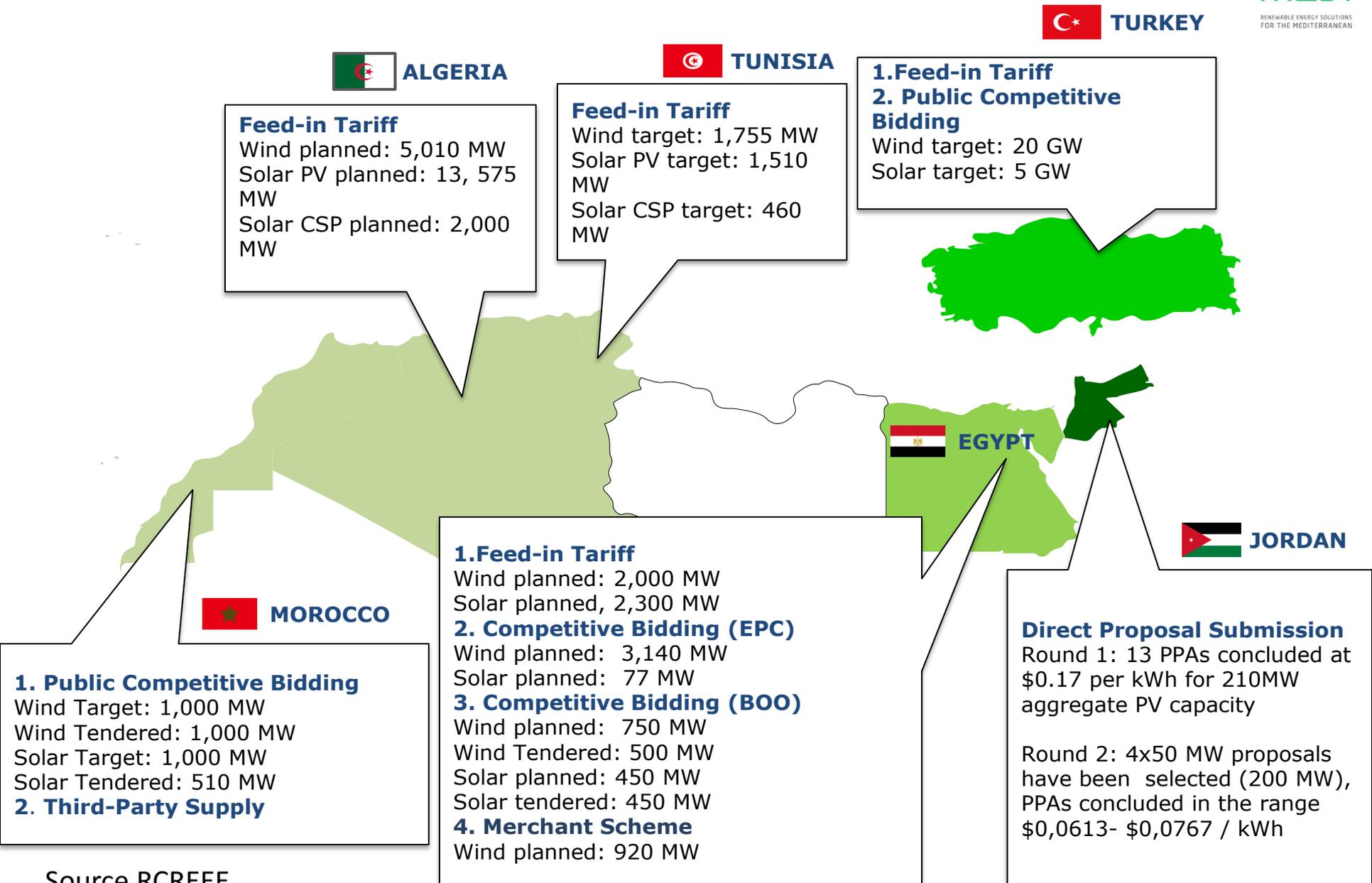
RENEWABLE ENERGY INVESTMENTS**

Cumulative public and private investments in RES power plants to reach country targets



*Target as % of: total electricity and thermal energy (Lebanon); primary energy (Jordan), RES4MED elaboration. Investment figure for Tunisia (STEG data)

Supporting Policies for Large-scale Projects



 **ALGERIA**

Feed-in Tariff
 Wind planned: 5,010 MW
 Solar PV planned: 13, 575 MW
 Solar CSP planned: 2,000 MW

 **TUNISIA**

Feed-in Tariff
 Wind target: 1,755 MW
 Solar PV target: 1,510 MW
 Solar CSP target: 460 MW

 **TURKEY**

1. Feed-in Tariff
2. Public Competitive Bidding
 Wind target: 20 GW
 Solar target: 5 GW

 **MOROCCO**

1. Public Competitive Bidding
 Wind Target: 1,000 MW
 Wind Tendered: 1,000 MW
 Solar Target: 1,000 MW
 Solar Tendered: 510 MW
2. Third-Party Supply

 **EGYPT**

1. Feed-in Tariff
 Wind planned: 2,000 MW
 Solar planned, 2,300 MW
2. Competitive Bidding (EPC)
 Wind planned: 3,140 MW
 Solar planned: 77 MW
3. Competitive Bidding (BOO)
 Wind planned: 750 MW
 Wind Tendered: 500 MW
 Solar planned: 450 MW
 Solar tendered: 450 MW
4. Merchant Scheme
 Wind planned: 920 MW

 **JORDAN**

Direct Proposal Submission
 Round 1: 13 PPAs concluded at \$0.17 per kWh for 210MW aggregate PV capacity
 Round 2: 4x50 MW proposals have been selected (200 MW), PPAs concluded in the range \$0,0613- \$0,0767 / kWh

RES Regulatory Framework Overview

Feed-in-Tariffs vs. Market-based mechanisms

Advantages

Disadvantages

Feed in Tariffs

- Attractive even for **low-risk investors**
- Impressive **capacity boost** generated by this solution
- Simple structure, applicable to mass market technologies: E.g. **decentralize energy**

- **No meritocratic approach**
- **Wrong tariff setting** can lead to RES under- or over- development vs. target
- **Limited adaptability:** in case of technology rapid evolution, many changes required
- In case of large premium offered, **high system cost**

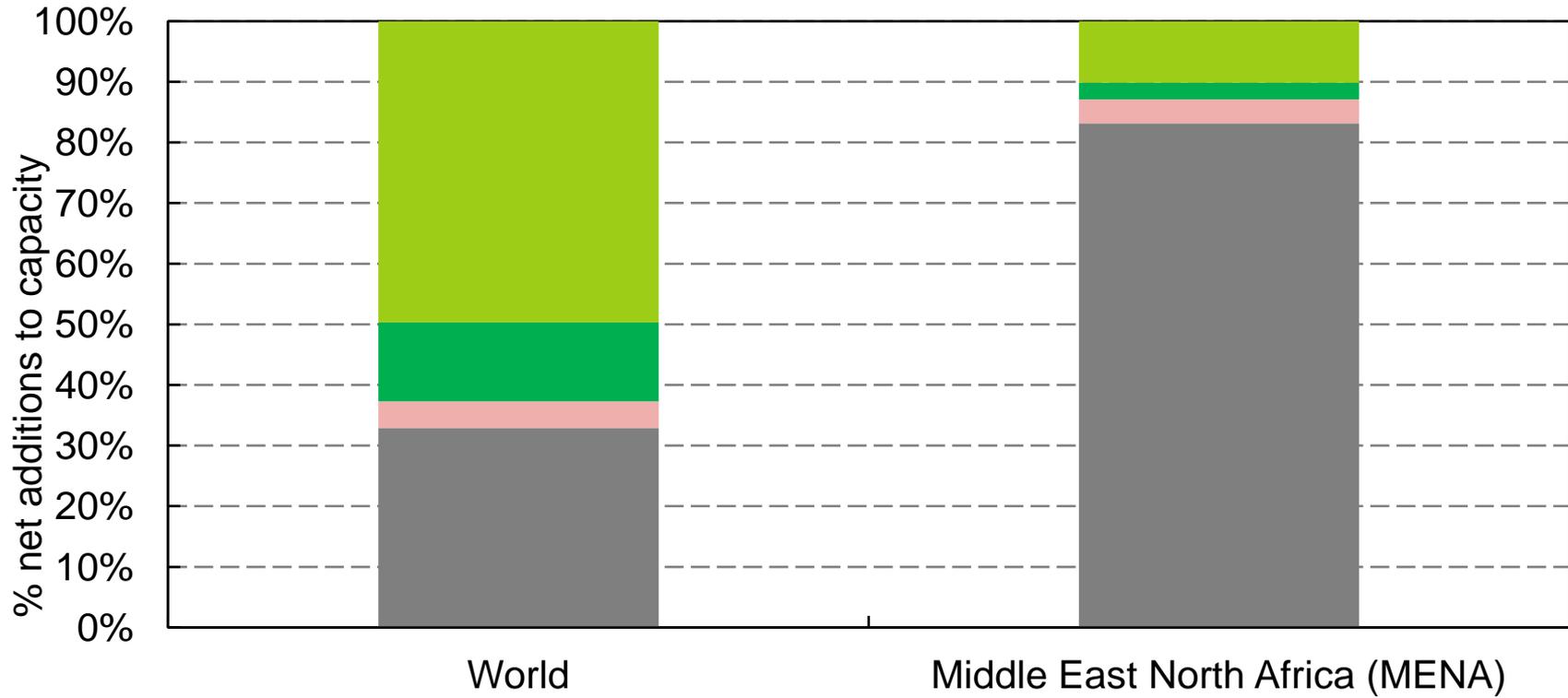
Market-based mechanisms

- Effective use of **budget**
- **Specific capacity targets** can be set in short span of time
- **Meritocratic mechanism** with cheapest and higher quality projects selected
- **Learning effect** over time for both parties

- **Risk of not prequalified players** to under-bid disrupting competition
- Remuneration value strongly linked to **competition level**
- **Not pre-defined** when a player decides to enter
- **Not** adequate for **small size** projects

Renewables to dominate new global generation capacity.. but progress is slower in MENA

Net additions to power capacity 2014-20, world vs MENA region



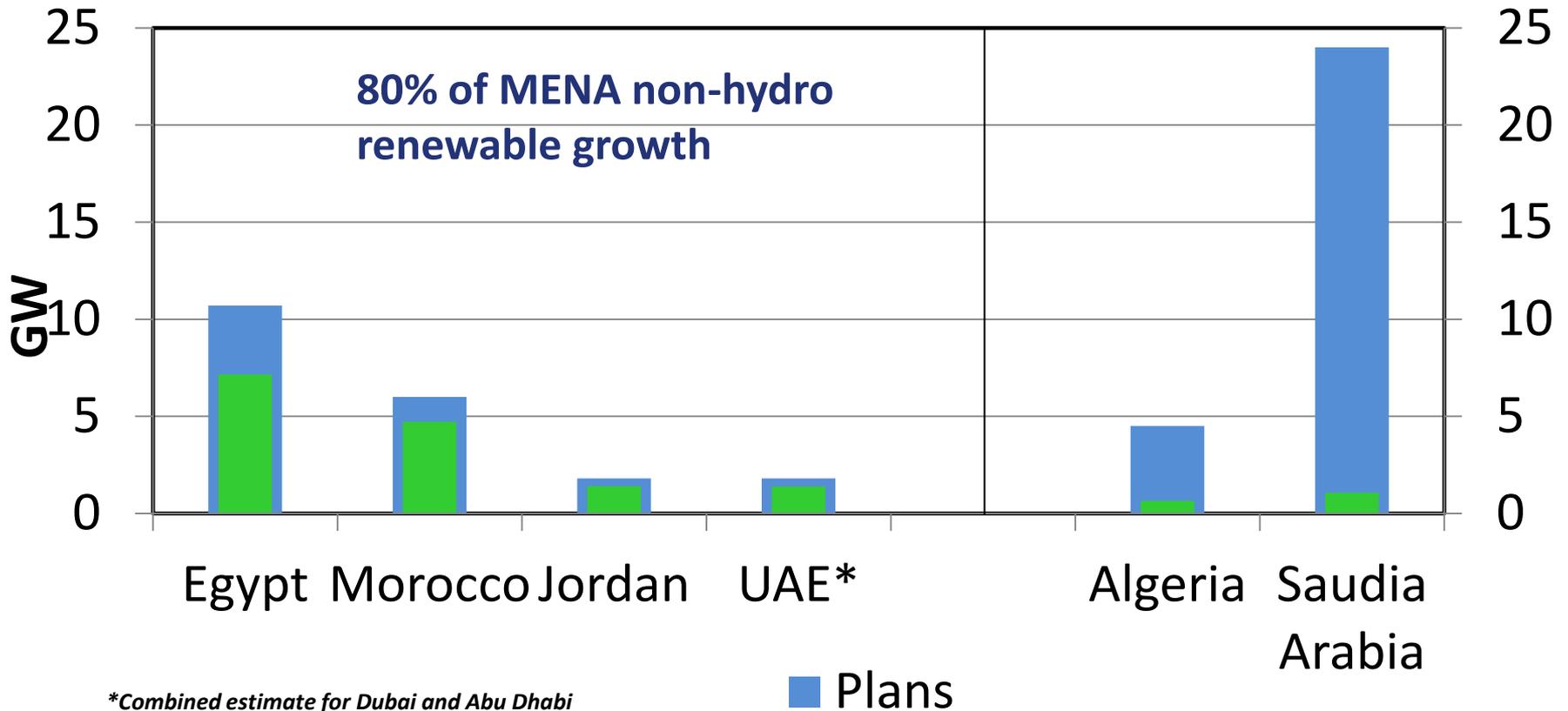
■ Fossil fuels ■ Nuclear ■ Hydropower ■ Non-hydro renewables

Analysis from the IEA *Medium-Term Renewable Energy Market Report 2015* and the *New Policies Scenario* of the *World Energy Outlook 2015*.

Renewables set to account for almost two thirds of global net capacity growth over the medium-term, but in MENA they comprise less than 15%

In MENA RE progress concentrated in a few key markets

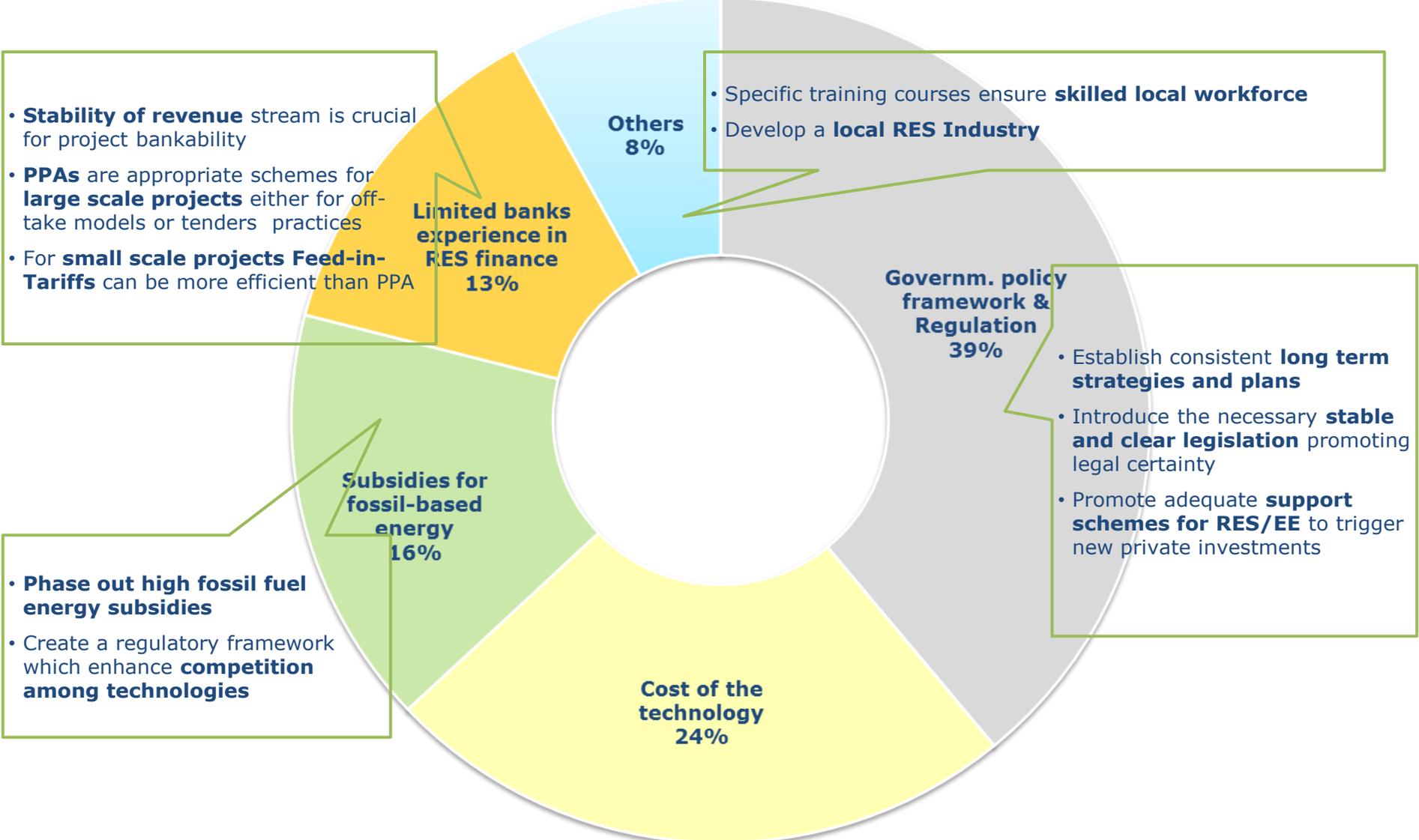
Forecast additions (2014-20) versus growth under renewable power plans



Countries where meeting power demand relies on imported fuels have been the first-movers in creating a supportive enabling environment for renewables

Industrial perspective to address RES growth

Main barriers to the deployment of RE in MENA



- **Stability of revenue** stream is crucial for project bankability
- **PPAs** are appropriate schemes for **large scale projects** either for off-take models or tenders practices
- For **small scale projects** **Feed-in-Tariffs** can be more efficient than PPA

- Specific training courses ensure **skilled local workforce**
- Develop a **local RES Industry**

- Establish consistent **long term strategies and plans**
- Introduce the necessary **stable and clear legislation** promoting legal certainty
- Promote adequate **support schemes for RES/EE** to trigger new private investments

- **Phase out high fossil fuel energy subsidies**
- Create a regulatory framework which enhance **competition among technologies**

- **Governments can address directly most of the key identified barriers.**
- **The RE industry is reducing Capex and O&M costs, and in dialogue with institutions proposes business models, jobs and local value chain, training**

Source: EY, MENA Cleantech Survey

1. Public private partnership

Public-Private Partnership

to implement national programs for achieving renewable energy targets

1. to encourage the setting-up of **partnership formulas** (e.g. Business Forum, Industry Board, etc.) aiming at providing decision makers with the viewpoint of the private sector;
2. to **stimulate investment opportunities** along the entire supply chain through networking activities among market operators, industry associations and other key stakeholders;
3. to promote **innovative business models** and to facilitate the implementation of demonstration and sustainable renewable energy projects;
4. to promote incentive mechanisms intended to **enhance local industrial capacity and enterprise culture**, to realize industrial districts and innovation technology centers.

2. Policy and regulations

Policy and Regulation

to create a business-friendly environment is the pre-requisite for RE deployment.

1. to encourage **clear, consistent and visible long-term strategies** that define the proper incentives for both producers and consumers and provide the necessary guarantees for investors;
2. to promote the adoption of instruments aiming at **assessing the socio-economic benefits** generated by investments in renewable energy projects in terms of jobs creation and enhancement of competitiveness;
3. to endorse "**Euro-Mediterranean**" **partnership** aimed at stimulating and enhancing the development of specific activities related to local supply chain and contributing to increase employment rates;
4. to promote supporting mechanisms - both institutional and financing - addressing **jobs creation and training programs**.

3. Training and capacity building

Training and Capacity building

to contribute to local economic and social development and to create the best conditions for attracting investments

1. to promote **training programs** focusing on the workforce to create jobs that meet industrial local needs;
2. to facilitate the **dialogue and the exchange of experiences** between professionals coming from regulatory, financing and industrial contexts;
3. to support actions aimed at strengthening the **institutional and administrative capacity**, defined as the ability of institutions to define objectives and create the best conditions to achieve those objectives;
4. to promote **empowerment mechanisms** for tertiary education and vocational training, aimed at facilitating knowledge transfer.



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Thanks for your attention!

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RES4MED activities

Key areas

Policy and regulation

- Engagement with regional institutions and national stakeholders to assess **mitigation measures to de-risk investments**
- Organization of high level dialogue conferences and country specific workshops, "**RES4MED Days**", to strengthen institutional relations and investment friendly framework

Business models and financing

- **Survey on investment risks in renewable energy** in Southern and Eastern Mediterranean Countries (SEMCs)
- Enhancing **public-private dialogue** by promoting supporting activities on **innovative business models and financing**, disseminating the best practices in the region

Training and capacity building

- **Advanced Training Course "Integration of renewable energy sources in the Mediterranean electricity markets"** II Edition
- **Training Course "Enhancing energy efficiency solutions in the Mediterranean"** to disseminate best practices and applications I Edition

Socio-economic benefits

- Supporting the analysis on **socio-economic benefits of RE investments**
- **Evaluation of RE impacts along the value chain** in economic and social terms as guidance policy makers, local stakeholders and institutions

Market Observatory

- Forum where to find **the most up-to-date news** about RE and EE in the Southern and Eastern Mediterranean markets
- **Monitoring information** and filtering it accordingly, collecting only contents that really matter to companies and presenting it in an easy and accessible manner
- **News and articles are uploaded on a daily basis**, ensuring that the general structure and quality of the information remains intact through regular reviews

18 Jan 2016

Algeria adds 268 MWp of solar power in 2015

By marketobservatory | Solar PV, Algeria, Projects & Industry, Market & Finance | 0 Comment



Posted on SeeNews Renewables on 18 January 2016 Fourteen photovoltaic (PV) power plants with a combined capacity of 268 MWp have started operation

17 Jan 2016

New low for wind energy costs: Morocco tender averages \$US30/MWh

By marketobservatory | Wind, Morocco, FIT & Tenders | 0 Comment



Posted on Renew Economy on 17 January 2016 The north African country of

18 Jan 2016

TAQA ready to break ground on 140 MW wind farm in Morocco

By marketobservatory | Wind, Morocco, Projects & Industry | 0 Comment



Posted on Seenews Renewables on 18 January 2016 Moroccan power company TAQA Morocco, owned by Abu Dhabi National Energy Co (ABD-TAQA), on Friday said it will soon start construction of a 140 MW wind farm near Tanger. Having secured all permits needed to operate as independent power producer (IPP) under the 13-09 law on renewable energy.

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20 Jan 2016

New expo to promote energy efficiency

By marketobservatory | Energy Efficiency | 0 Comments



Posted on Gulf News on 19 January 2016 Abu Dhabi: Energy Efficiency Expo, a new exhibition to connect industry experts to promote energy efficiency in the building, transportation and manufacturing sectors, will be organised alongside the World Future Energy Summit in 2017, it was announced today during the Abu Dhabi Sustainability Week. The expo will become an

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MENA region to attract \$35bn renewable energy investment

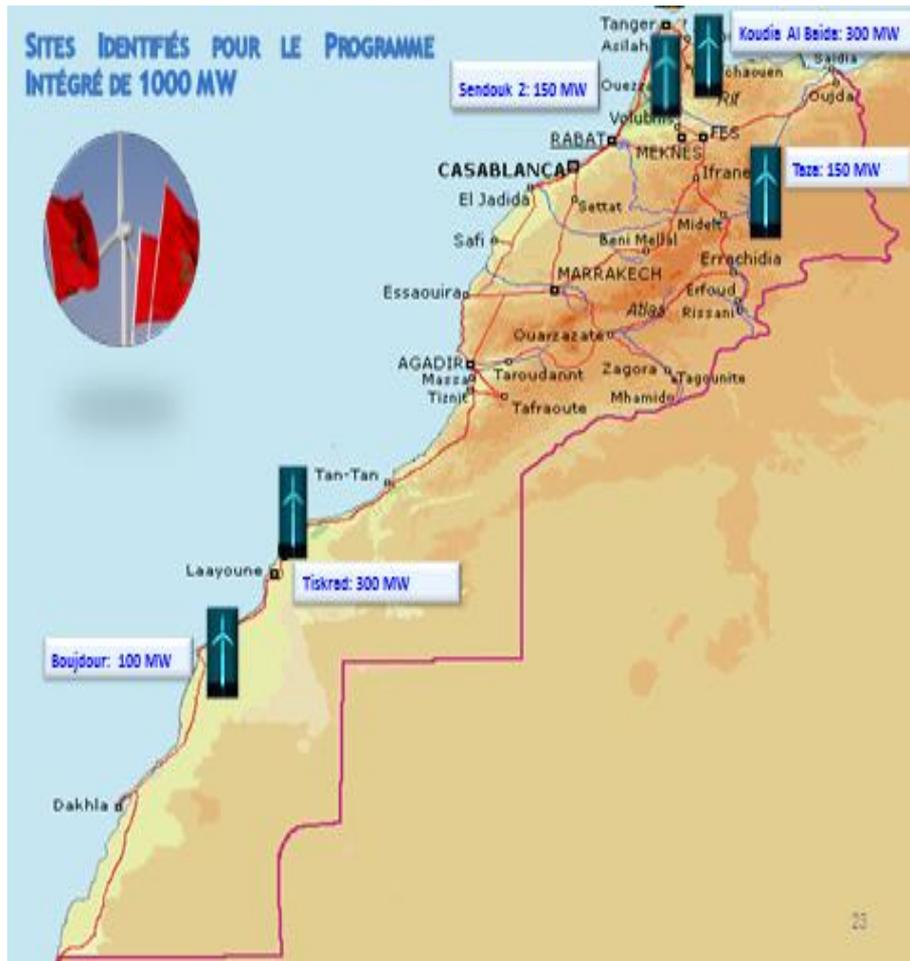


New low for wind energy costs: Morocco tender averages \$US30/MWh

Enhancing the socio-economic effects of large scale RE developments in MENA

Case Study of the Moroccan Wind Program

The study was conducted by **RCREEE** and coordinated by **RES4MED**



Key elements

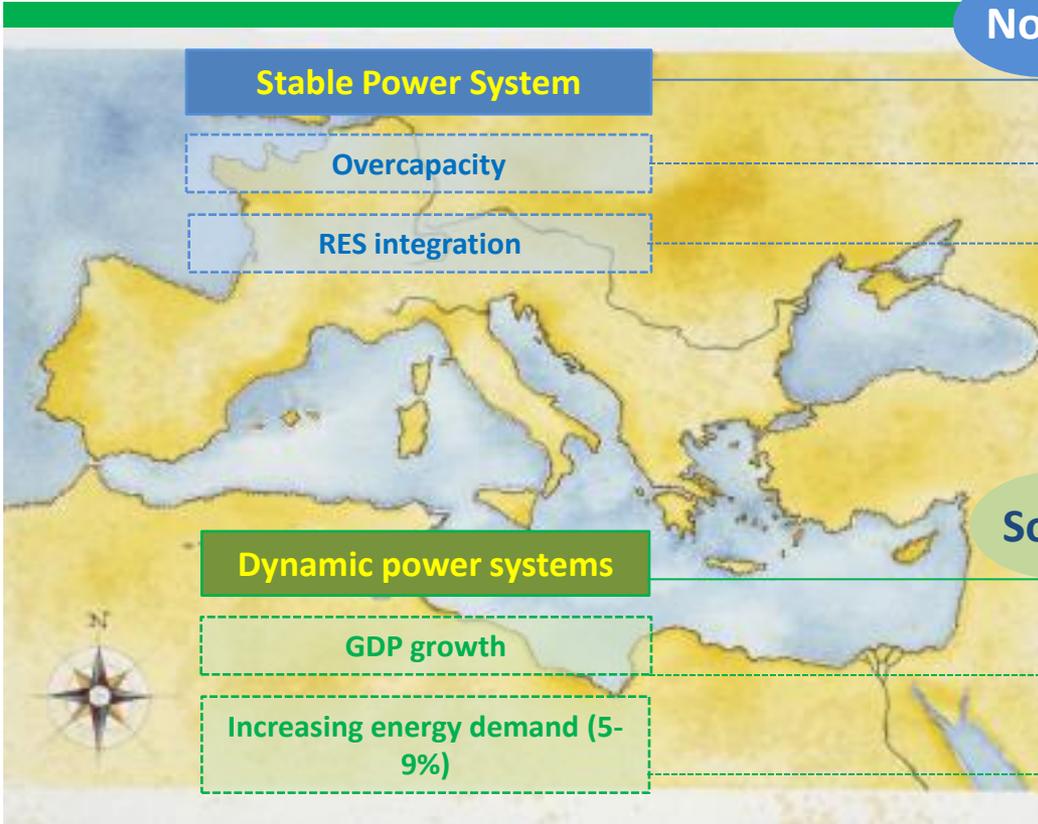
- **Socio-economic enhancement initiatives** per community/location
- **Strategic conversation** with local stakeholders
- **Integrated approach** incorporating location specific conditions, technology value chain characteristics

Objectives

- Gain deeper understanding of the associated **socio-economic impacts** from utility scale wind power projects **on local communities** specific to the wind program of Morocco

The Mediterranean energy context

The **two shores of the Mediterranean Sea** will have to respond to **different sets of challenges**



North

Economic downturn and energy efficiency measures slowed power demand increase

Key Elements

- Sluggish demand growth
- Little investment needed in new additional capacity
- Decommissioning inflexible surplus capacity will require very high investments in the long run

South

SEMCs in a phase of political transition; rapid rising electricity demand requires solutions

Key Elements

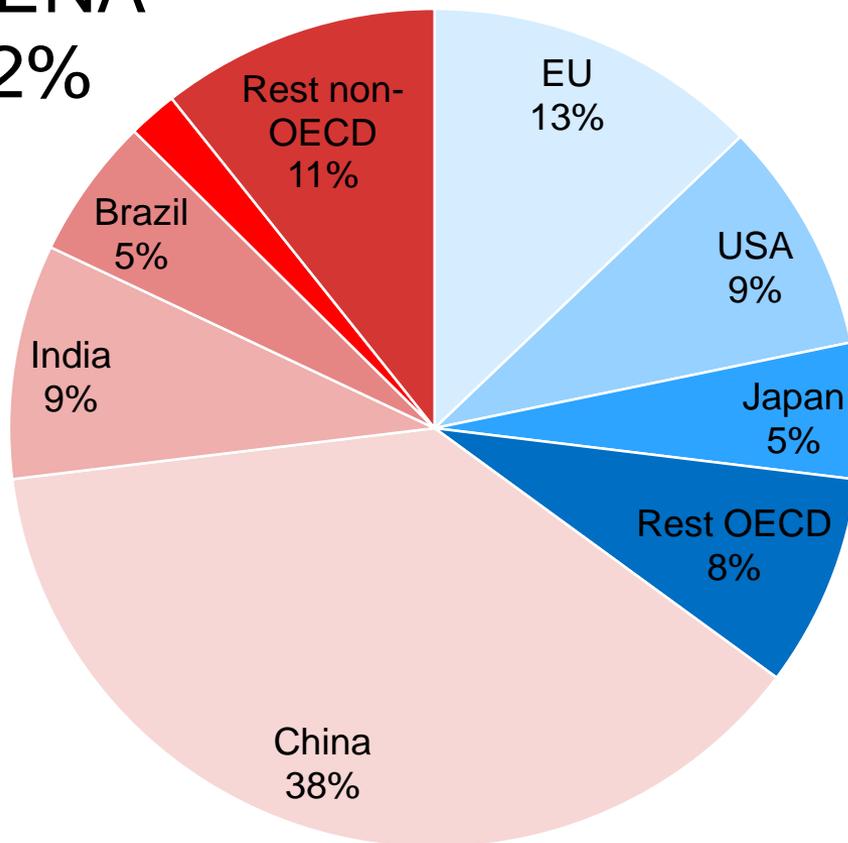
- Strong energy demand growth (increase by 81% for 2010 to 2050)
- Population boom
- Large general investment needed in the short term

RE growth shifting to emerging markets and developing countries

Shares of net additional renewable power capacity, 2014-20

MENA

2%



As the OECD slows, non-OECD countries account for two-thirds of renewable growth, driven by fast-growing power demand, diversification needs and local pollution concerns