

AREI Events on the Margin of The UNITED NATIONS GENERAL ASSEMBLY and AREI BOARD of DIRECTOR

THE IMPORTANT ROLE OF REGULATION TO SCALE-UP RE DEVELOPMENT IN AFRICA TO ACHIEVE SDGS: LESSONS FROM NORTH AFRICA AND MIDDLE EAST

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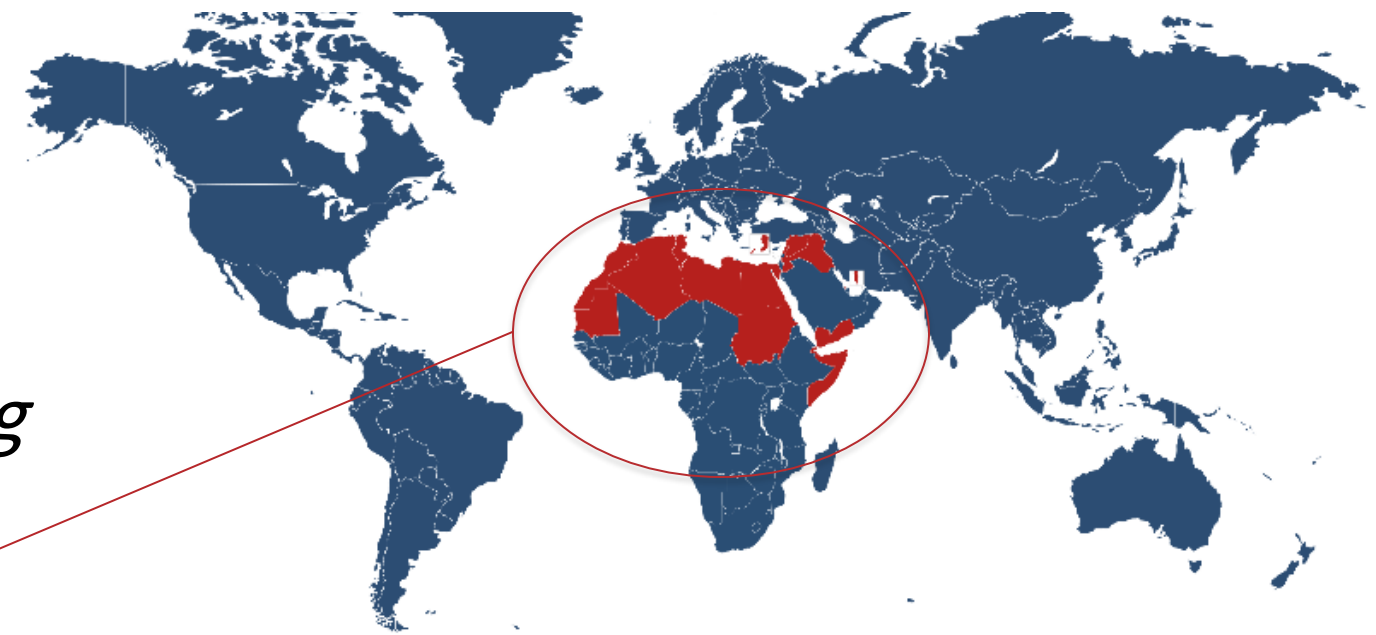
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19 September, 2023

10:00 - 11: 00 (New York Time), 2:00 – 3:00 GMT

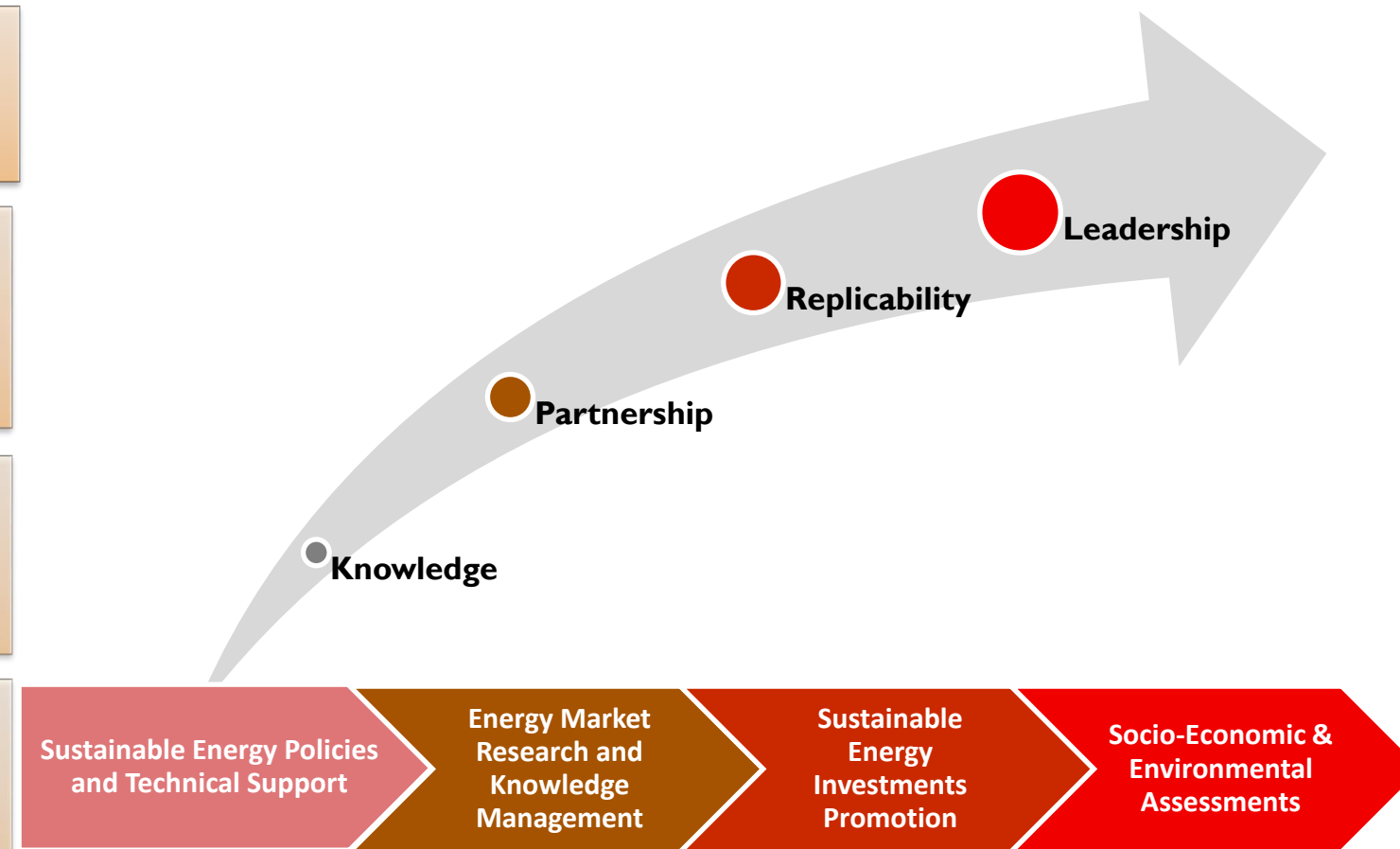
RCREEE – Who we are

*“We, the Regional Center for Renewable Energy and Energy Efficiency, are the **strategic partner** for the **Arab countries** driving **energy transition** for the **prosperity of all our people.**”*

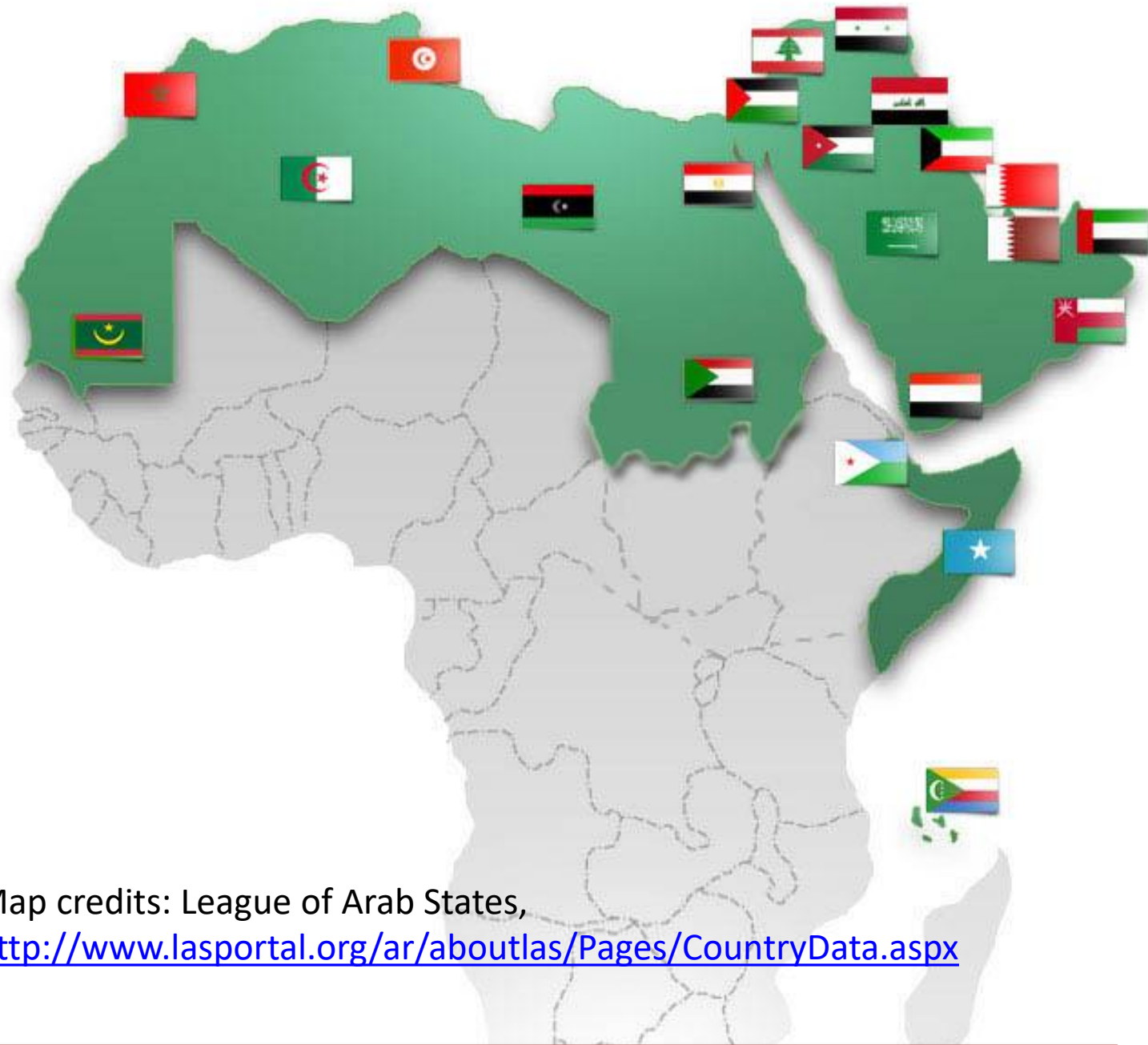


**Work in the Pan-Arab Region...
know how to navigate your way**

-  Intergovernmental Organization with 17 Member States
-  The technical arm of the League of Arab States
-  A leader in clean energy policy dialogues, strategies, technologies, investments promotion, and capacity development
-  The first regional renewable energy and energy efficiency center across the world
-  Secretariat in Cairo, Egypt with regional antennas and a pool of short-term experts



Energy in The SEMC/Arab Region



Map credits: League of Arab States,
<http://www.lasportal.org/ar/aboutlas/Pages/CountryData.aspx>

Some Arab countries are under colossal political and economic challenges that are exacerbated by the Covid-19 pandemic.

- **437 million** inhabitants (5.6% of world population)
- **90%** of its territories are in arid, semi-arid and dry sub-humid zone
- **55%** of oil reserves and **24%** of gas reserves worldwide!
- **6.3%** annual electricity demand growth (15 years average)
- **4.9%** annual primary energy growth (15 years average)
- **4.5%** annual GDP growth (15 years average)
- **3%** annual population growth
- **3%** of the region GDP are required to keep up with the annual electricity investments needed to meet the demand
- **1.9%** expected annual growth of primary energy demand in the region through **2035**
- **55 million** people receiving humanitarian aid
- **74 million** people are of high risk of Covid-19 due to lack of basic handwashing facilities

The Arab Sustainable Energy Strategy 2030 (LAS, 2018)

Increasing the share of RE

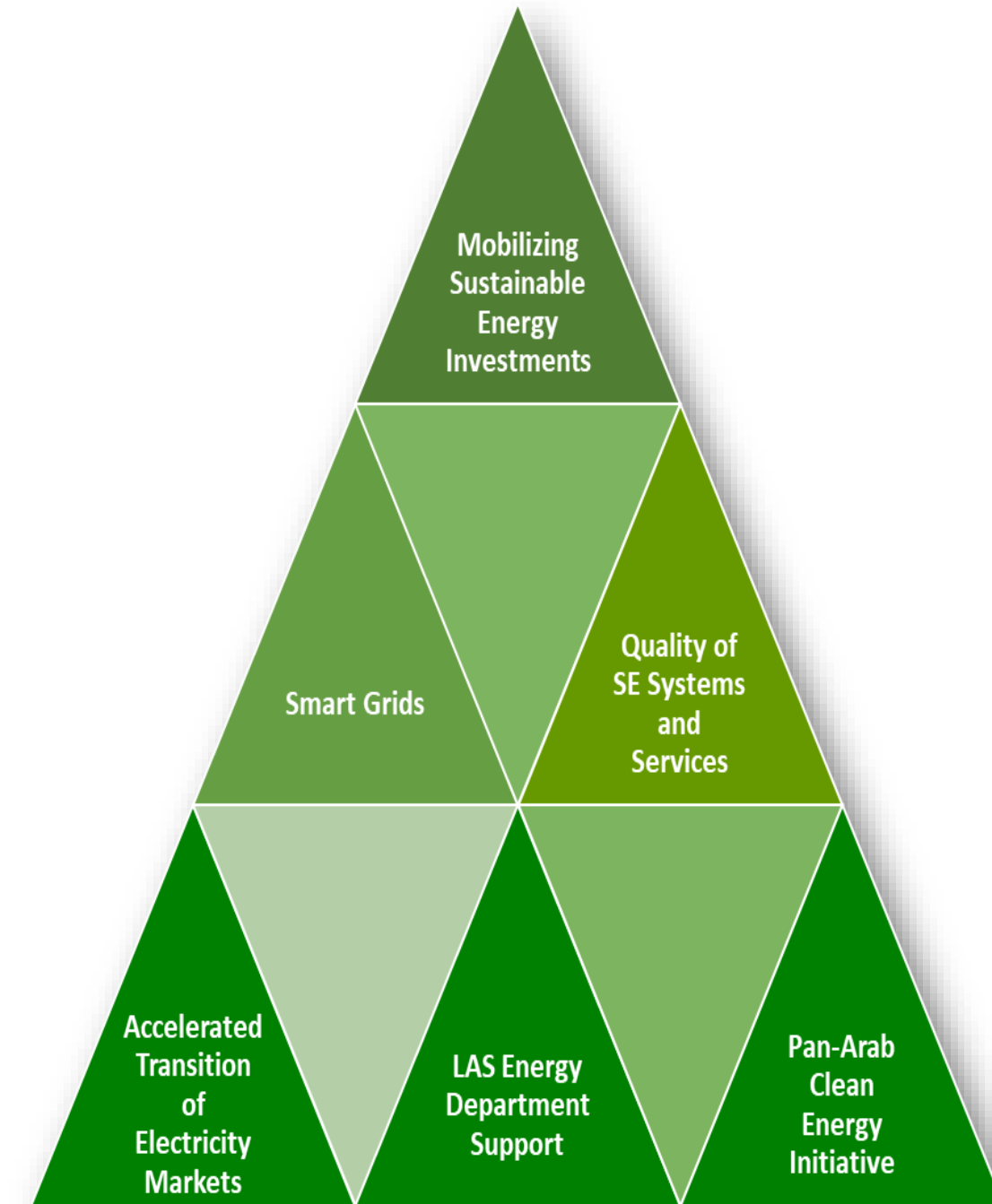
The share of RE will reach **12.4% of the electricity generated**, and its share in the total final energy will reach **2.8%**.

Improve energy efficiency

The **primary energy intensity will improve more than 30%** compared to 2014 levels from 0.29 to 0.22 kOE/ USD, and the average **efficiency of the power plants will increase** significantly from 36% **to 49%**, while the electricity **transmission and distribution losses will decrease from 16.5 % to 9%**.

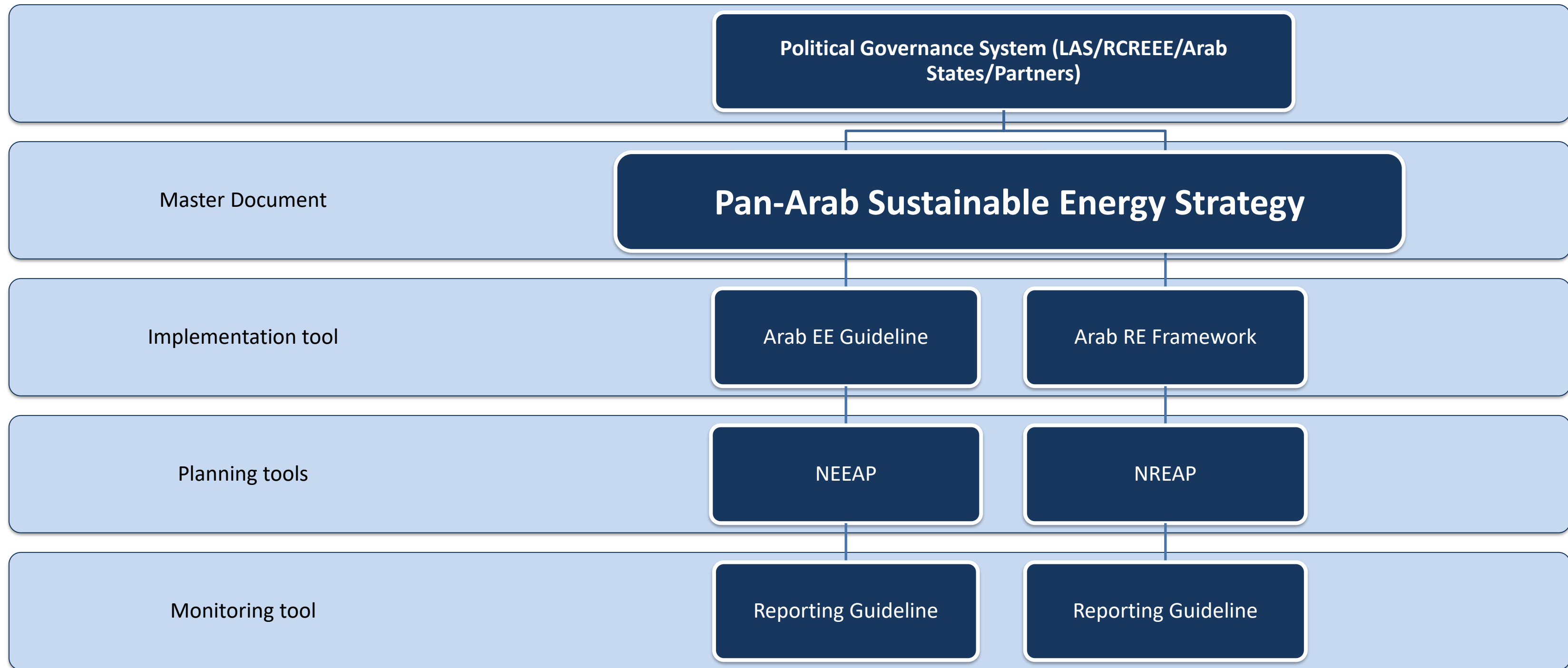
Ensuring access to modern energy services

The **entire Arab population will have complete access to the electricity grid**, and the per capita share of electricity will increase to 3500 kWh, and the per capita share of final energy will increase to 1.4 million TOE.



Regional Areas of Action

Regional and National Policy Making Process



NREAPs: Translating targets into policies and implementation mechanisms

Part I:
Renewable
Energy Indicators



Part II: Policies
and Mechanisms



Part III: NREAP
Progress
Assessment

Regulated targets and obligations

RE support schemes

Administrative procedures

Technical specifications and installers' certification schemes

Policies for renewable energy's integration in buildings

Access to and operation of the grids

Joint projects with other Arab States, foreign countries or/and third parties

Heating and cooling projects' support schemes

Awareness raising campaigns

Feed-in tariffs

Tendering procedures

RE Fund/ capital grants

Low interest loans

Tax exemptions or reductions

Tax refunds

Tender schemes

Voluntary schemes

Tradable certificates



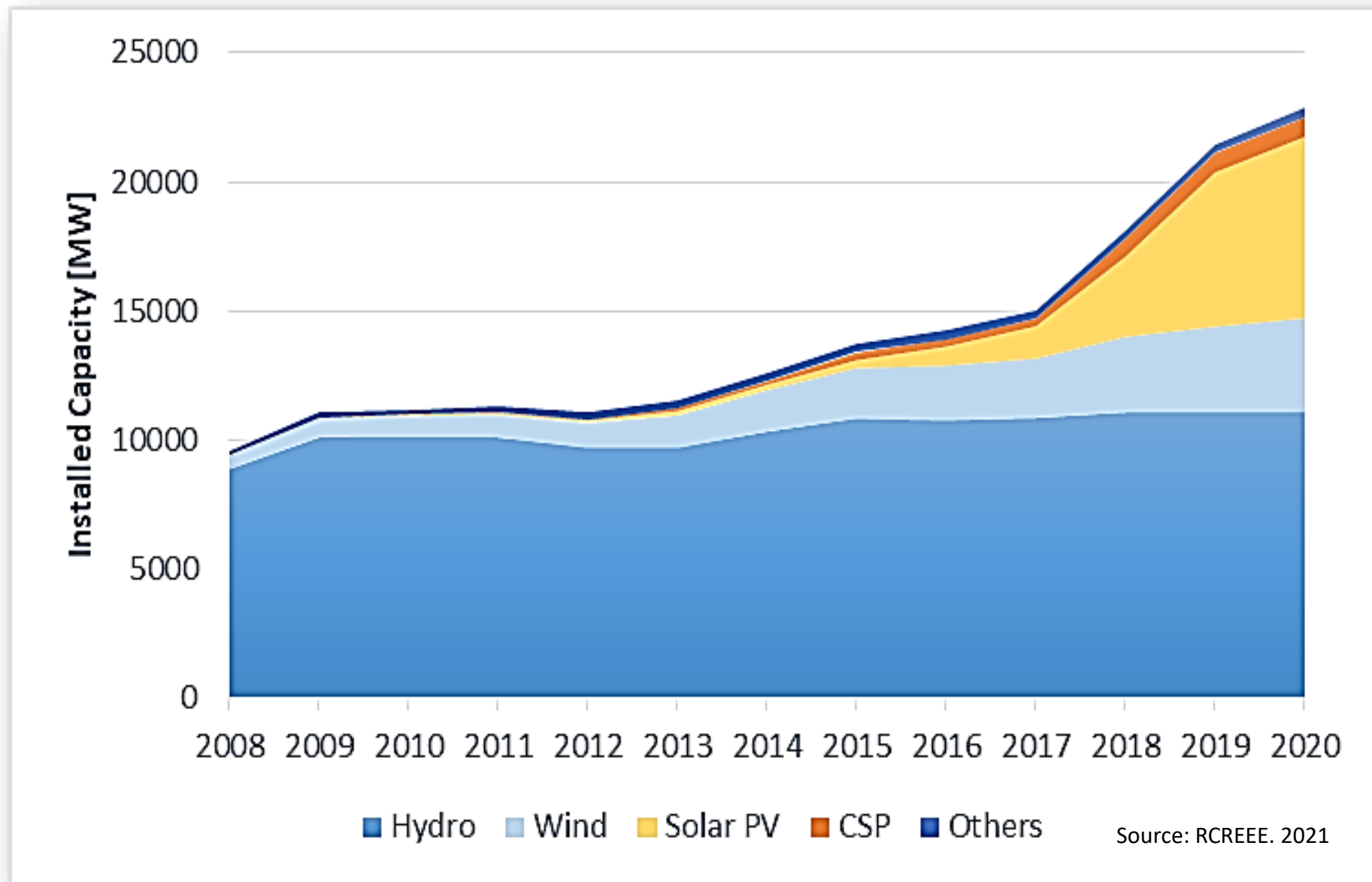
ARAB FUTURE ENERGY INDEX™ (AFEX™)

- The Arab Future Energy Index™ (AFEX) is the first native Arab index dedicated to monitoring and analyzing sustainable energy competitiveness and governance in the region. Since its launch in 2013, AFEX™ became a policy assessment and benchmarking tool.
- It offers both quantitative and qualitative analysis for key renewable energy and energy efficiency market dimensions.
- 20 Arab Countries are ranked under more than 30 indicators that illustrate key energy market aspects including policies, institutional and technical capacities, strategies, socioeconomic data and investments.

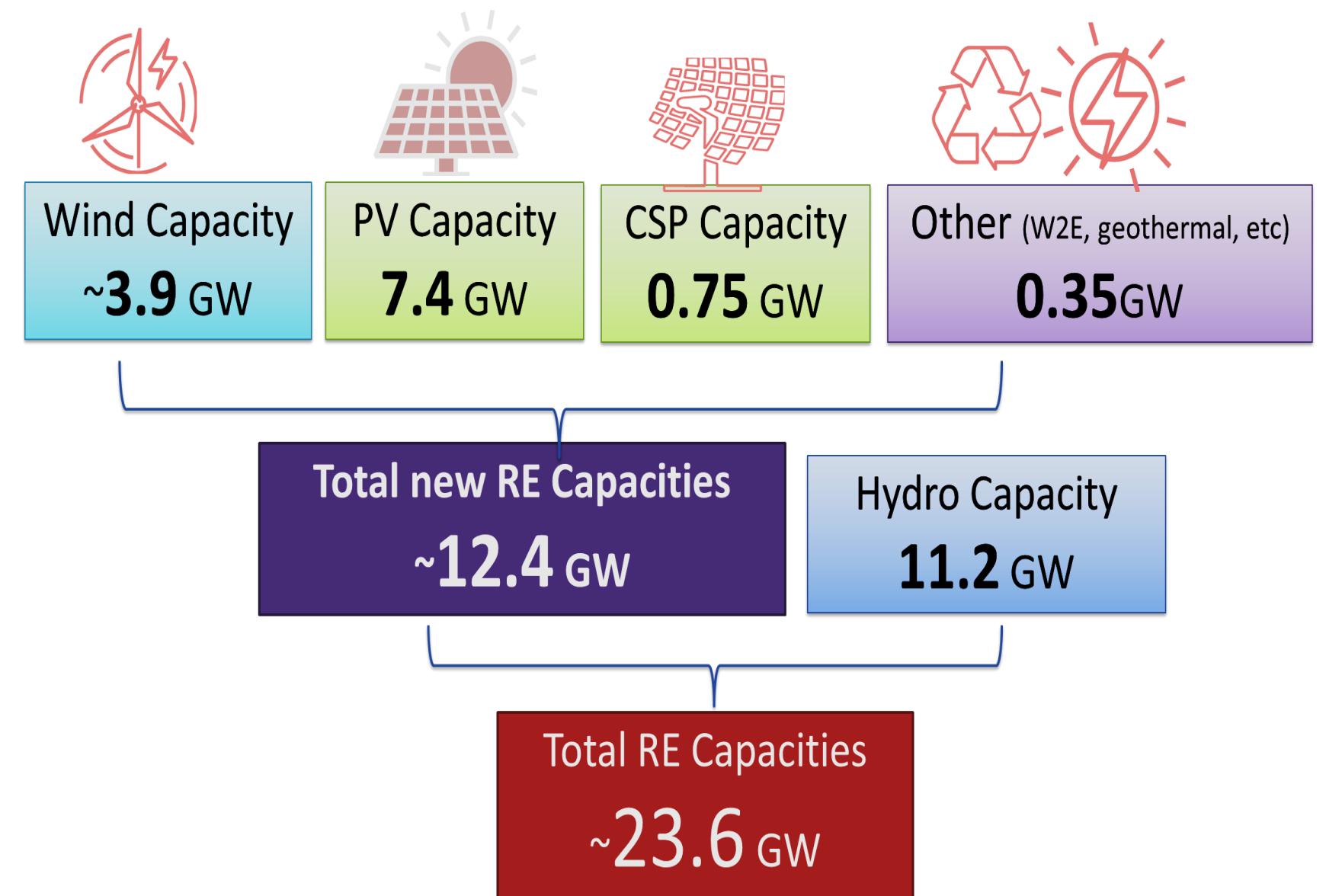
For the first time, AFEX 2023 will cover the 3 pillars of sustainable energy in one publication; Renewable Energy and Energy Efficiency and Energy Efficiency.



RE Installed Capacities



RE in the Arab Region: Operational Capacities Growth 2008-2020 [RCREEE, 2021]

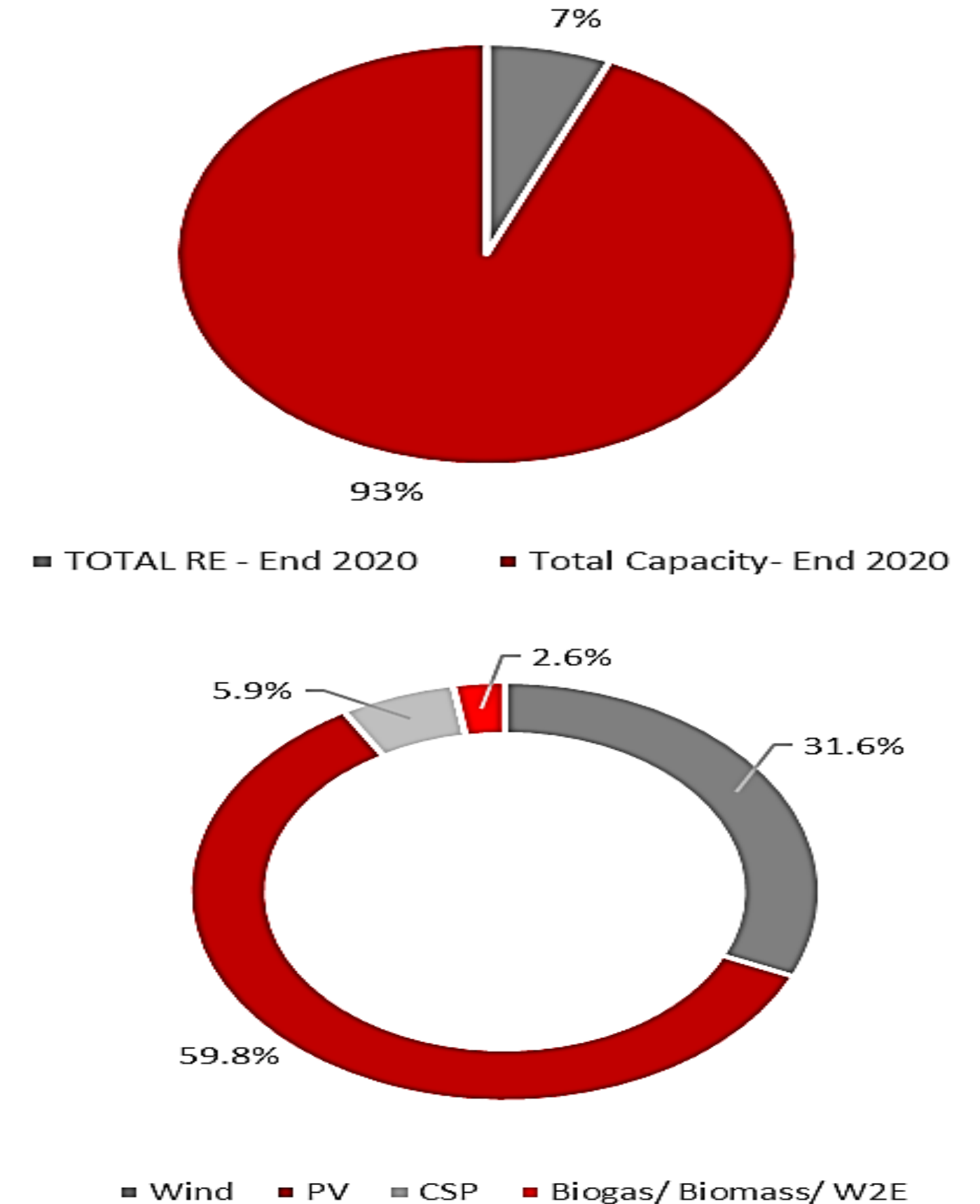


RE in the Arab Region: Operational Capacities as of Dec. 2020 [RCREEE, 2022]

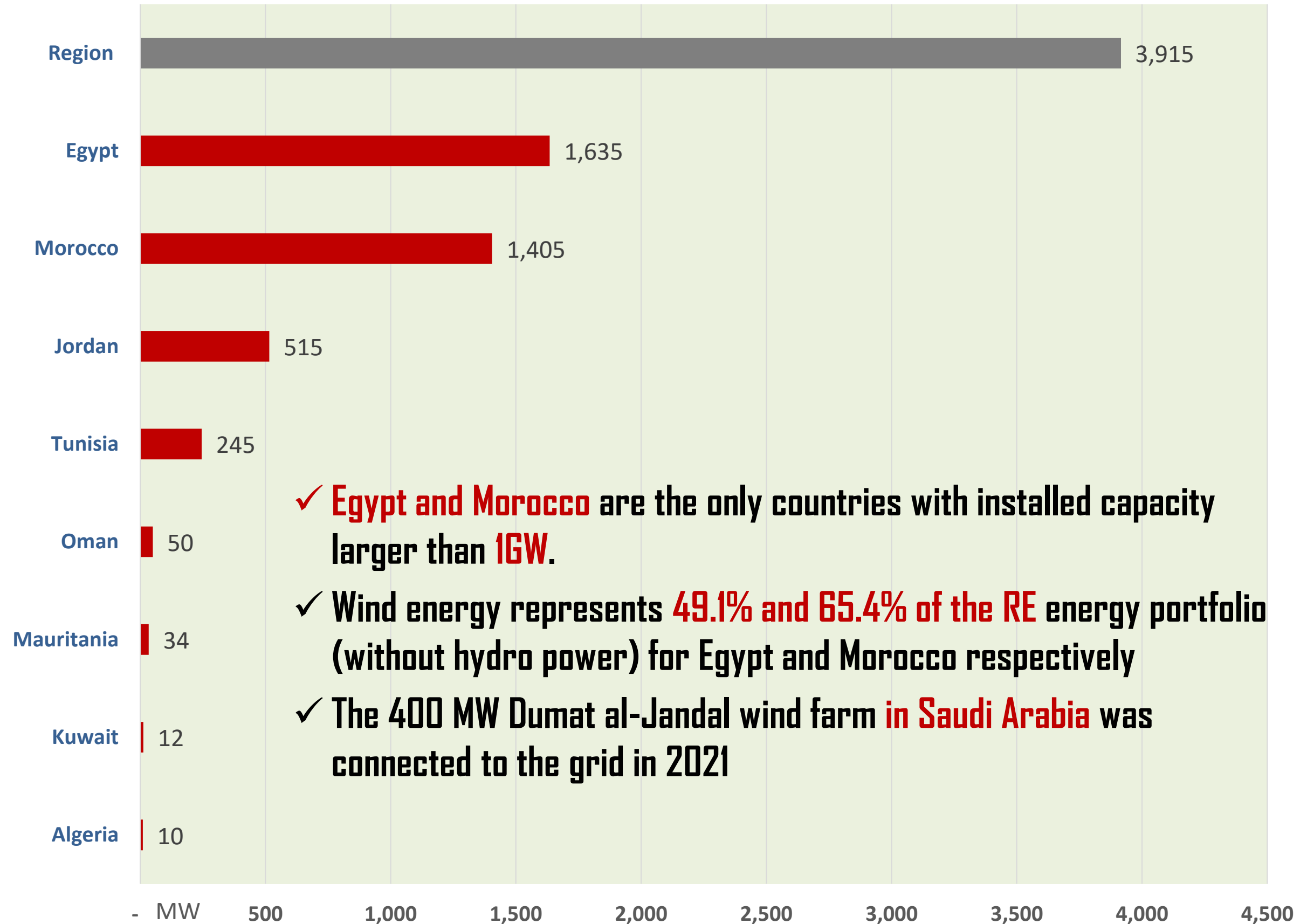
RE Share

- ❑ The RE share reached approximately **7%** in installed capacities.
- ❑ The dominated technology is still **photovoltaic followed by wind energy; ~60% and 32% respectively** (without accounting hydro power capacity).
- ❑ Hydro power has the largest installed capacity with approximate capacity of 11.1 GW. **Other technologies combined capacity** has surpassed the installed hydropower capacity for the first time in 2020.
- ❑ The installed capacity by 2020 is 12.4 GW, compared to the 7.2 GW in 2018. **Around 5 GW were added in 2 years.**
- ❑ PV capacity increased **from 3.2GW by the end of 2018 to 7.4GW** by the end of 2020.

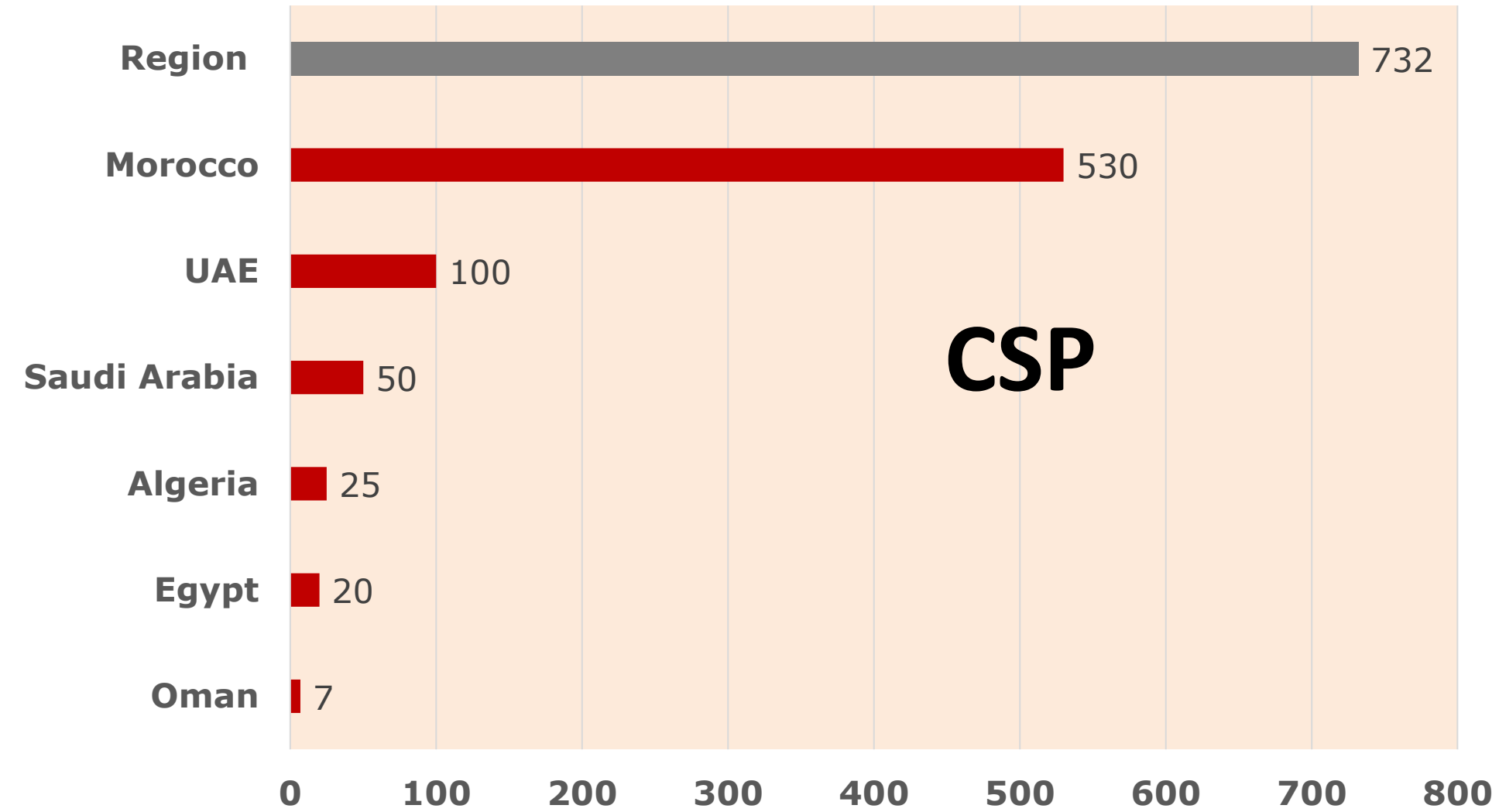
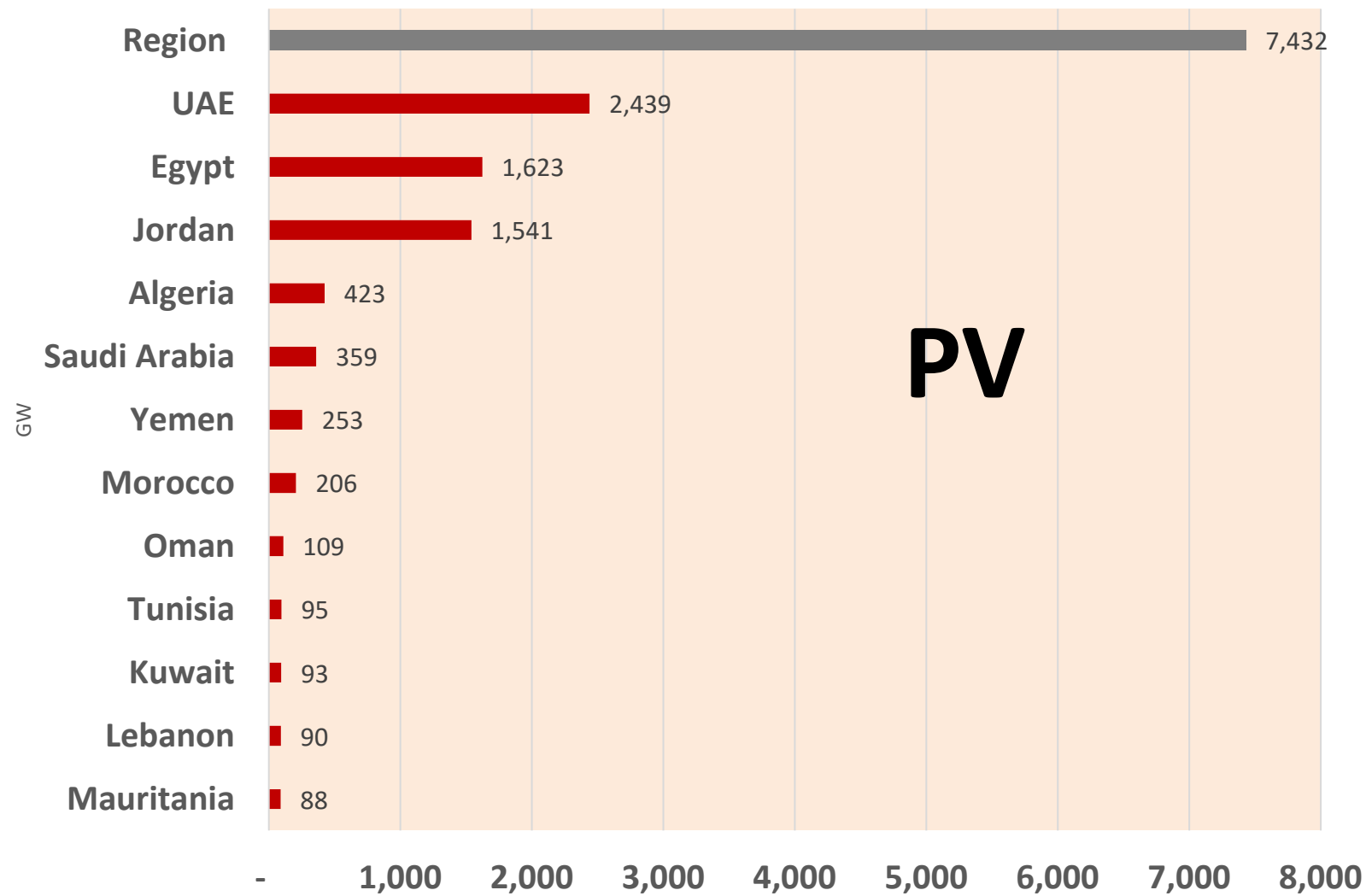
Share of RE in Installed Capacity



Wind Energy



Solar Energy



- **UAE leads** Arab countries when it comes to the PV installed capacity (2.4GW). This represents 96% of the RE portfolio in UAE.
- Egypt holds the second place with installed capacity of 1.6GW representing also 48.7% of the total installed renewable energy.
- Jordan with a 1.54GW accounting for 74.7% of the total installed RE projects.
- **UAE, Egypt, and Jordan** are the only countries having PV capacities **more than 1 GW**

- Only **six countries** have installed CSP technology.
- The highest installed capacity is in **Morocco (530MW)**, representing **72%** of the total regional capacity
- UAE holds the second place with 100MW. Saudi Arabia has 50MW.
- **Morocco, KSA, and UAE** account for **93%** of the regional CSP capacity in the region.

Requirements for RE Business Conducive Environment

Market size and profitability

Developed and transparent legal and regulatory system

Developed infrastructure

Stability and strength of local currency

Political and economic stability

Ease of setting up a business / local licensing

Allowance for foreign ownership of property / business

Country's foreign investment track record

Presence and readiness of solid financial institutions

Presence of high quality partners

Capital Markets history – level of maturity

Bi/multilateral investment treaties in place

Available and competitively priced fuel /subsidy reforms

Clear safety and environmental standards and labor laws

Liquidity/exit strategy

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Enabling Frameworks



Legal Framework:

- Defines supporting policy, development schemes and responsibilities



Regulatory Framework:

- Details the parties commitments and technical and contractual requirements



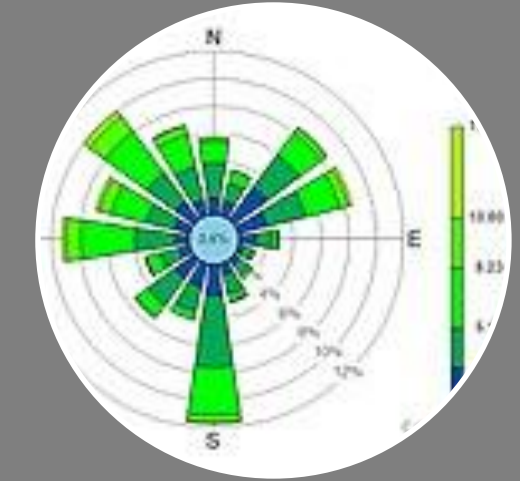
Tariff Framework:

- Defines both tariff structure and values



Contractual Framework:

- Provides standard templates for contracts

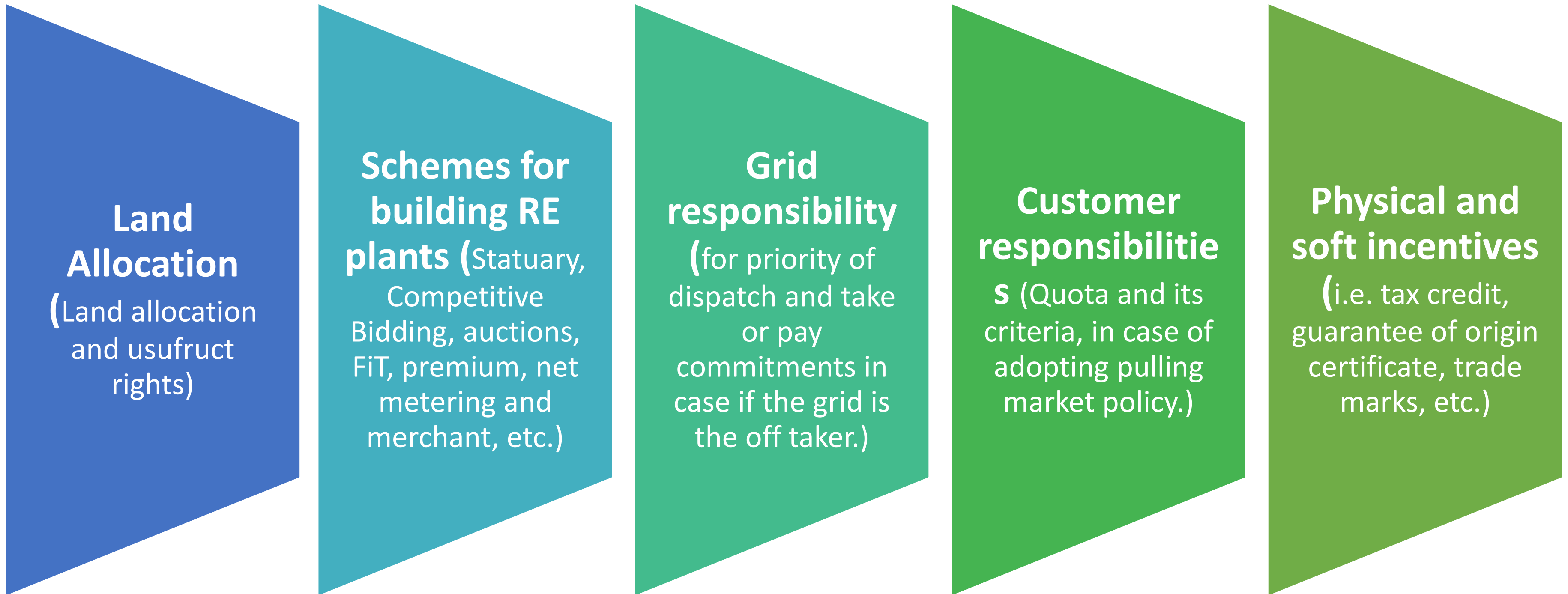


Supplementary Frameworks:

- Contains supporting mechanisms including; resource assessment, technology transfer, soft finance funds,...etc.

Legal Framework

The Legal framework usually stands on a primary law. This may include:



Regulatory Framework

Installed Capacity

License the RE suppliers

Prequalification requirements for developers and small system integrators.

Public land allocation procedures

Dispute Resolution

Transmitting

Interconnection with the grid

Grid Code

Priority on Dispatching

TPA Right

Distribution and Trading

Quota for Consumers

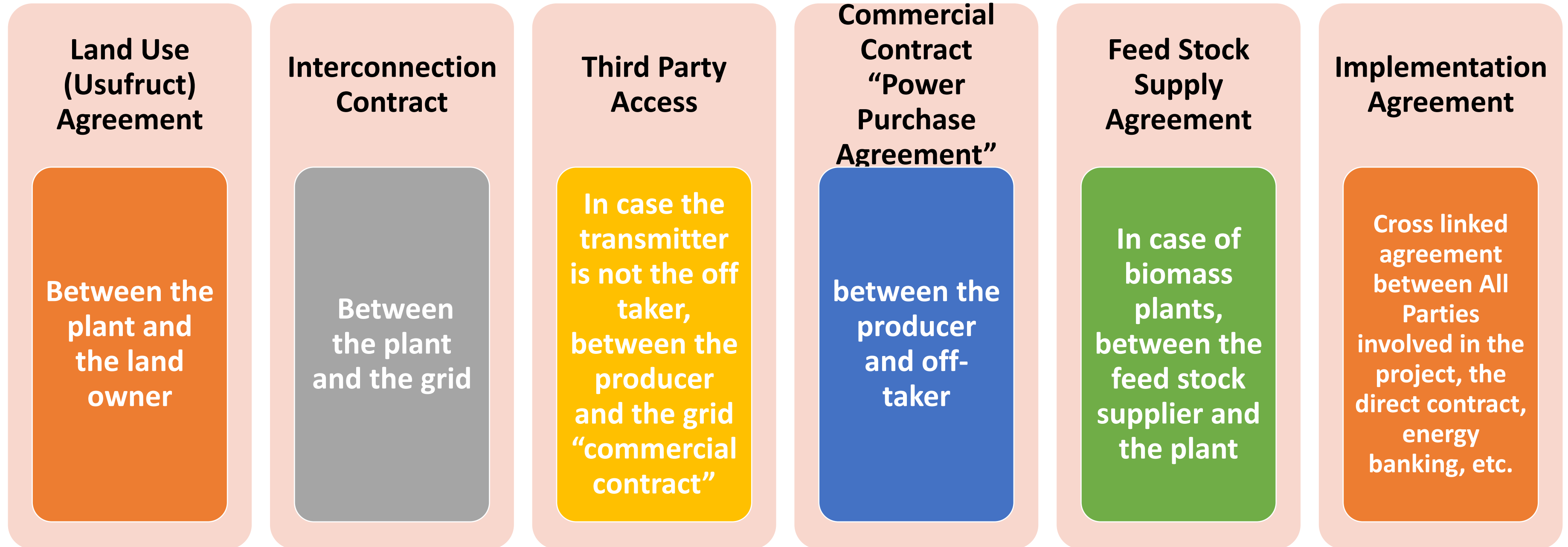
Power Purchase requirements (including take or pay contracts in case the grid is the off-taker)

Settlements and GoC regulations

Issuance of Renewable certificates

Contractual Framework

This includes the following contracts



Supplementary Framework

Settlement and
payment
mechanism

Accreditation of
system integrators
for small projects

Soft loans for
small projects.

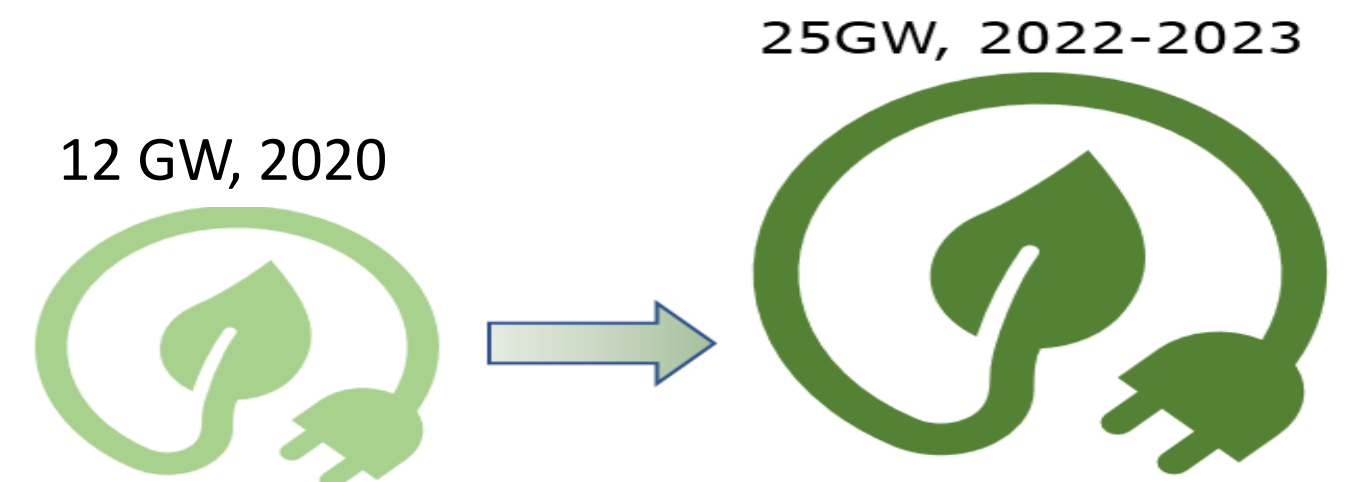
Land development
and supply with
infrastructure

One stop shop
facility

RE Projects under Construction

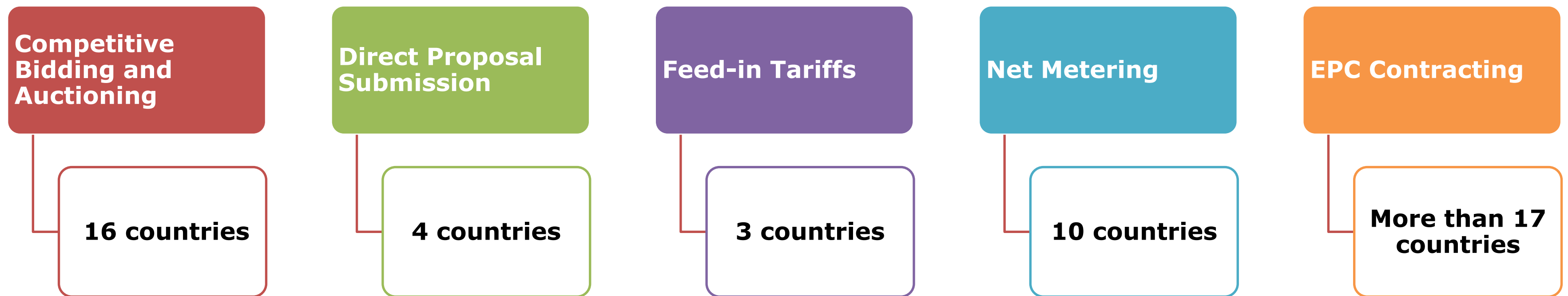


- More than **13GW** are under construction.
- A massive amount of RE capacities that shows the commitment of Arab region towards the transition to cleaner energy production.
- **PV technology** is dominating the RE projects under construction accounting for approximately **80% of the projects**.
- **Wind projects** come second with approximately **13%**.
- Several countries with low installed RE capacities are developing large scale projects. For example, Qatar, that has around 50MW of renewable power is developing 800MW solar projects. It is the same case for Iraq (has more than 2GW of RE projects under development).



Policies for Mobilizing RE Investments in Arab Countries

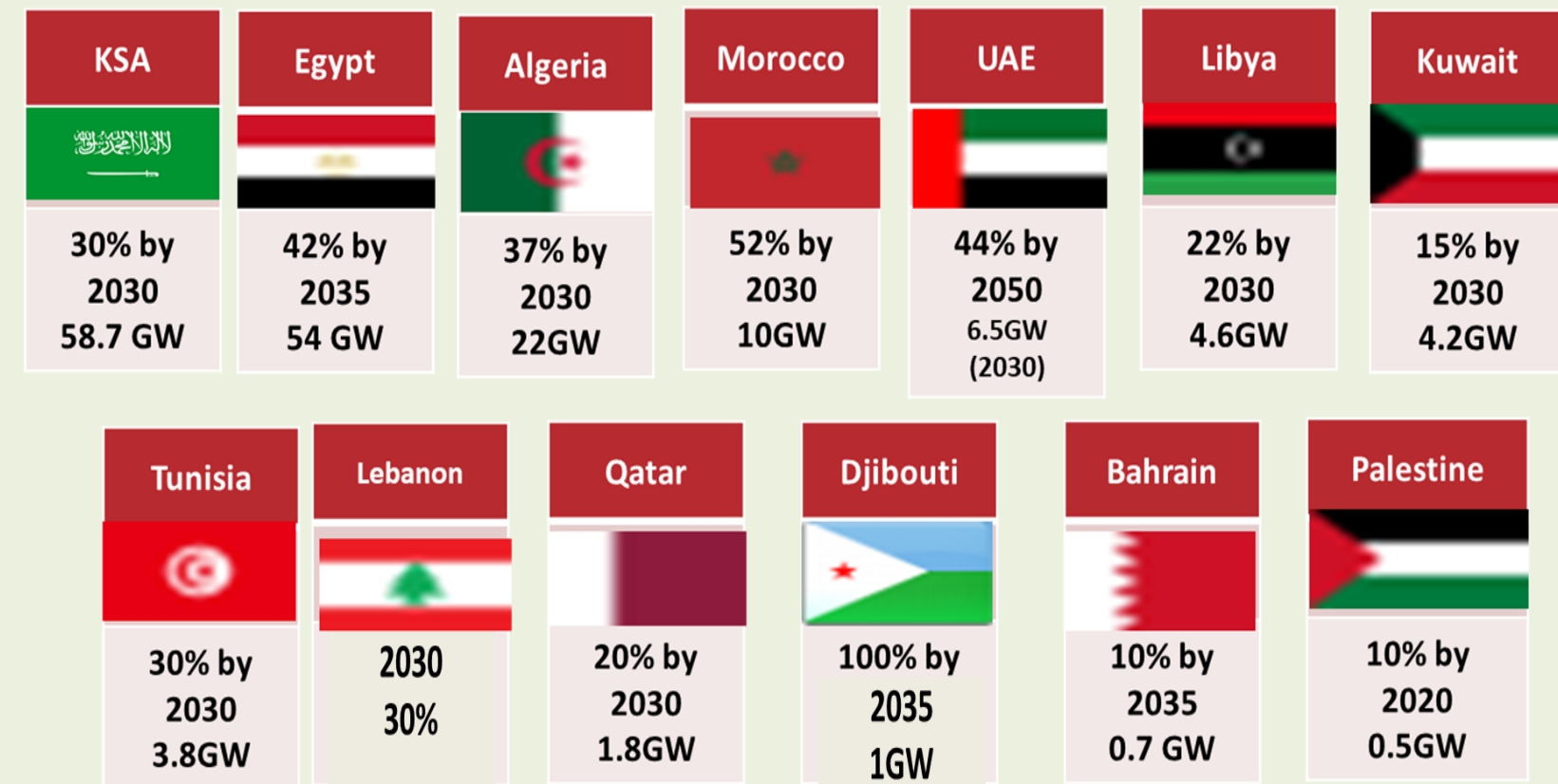
- The preferred policy option for **utility scale projects** in the region is the public **competitive bidding/auctions** in many countries.
- **Feed-in Tariffs (FiTs)** are phasing out for utility scale projects
- The adoption of **direct proposal submission** proved to be successful for the development of large-scale RE projects in some countries.
- **FiT and net metering** are emerging for **decentralized RE** systems.



RE Targets

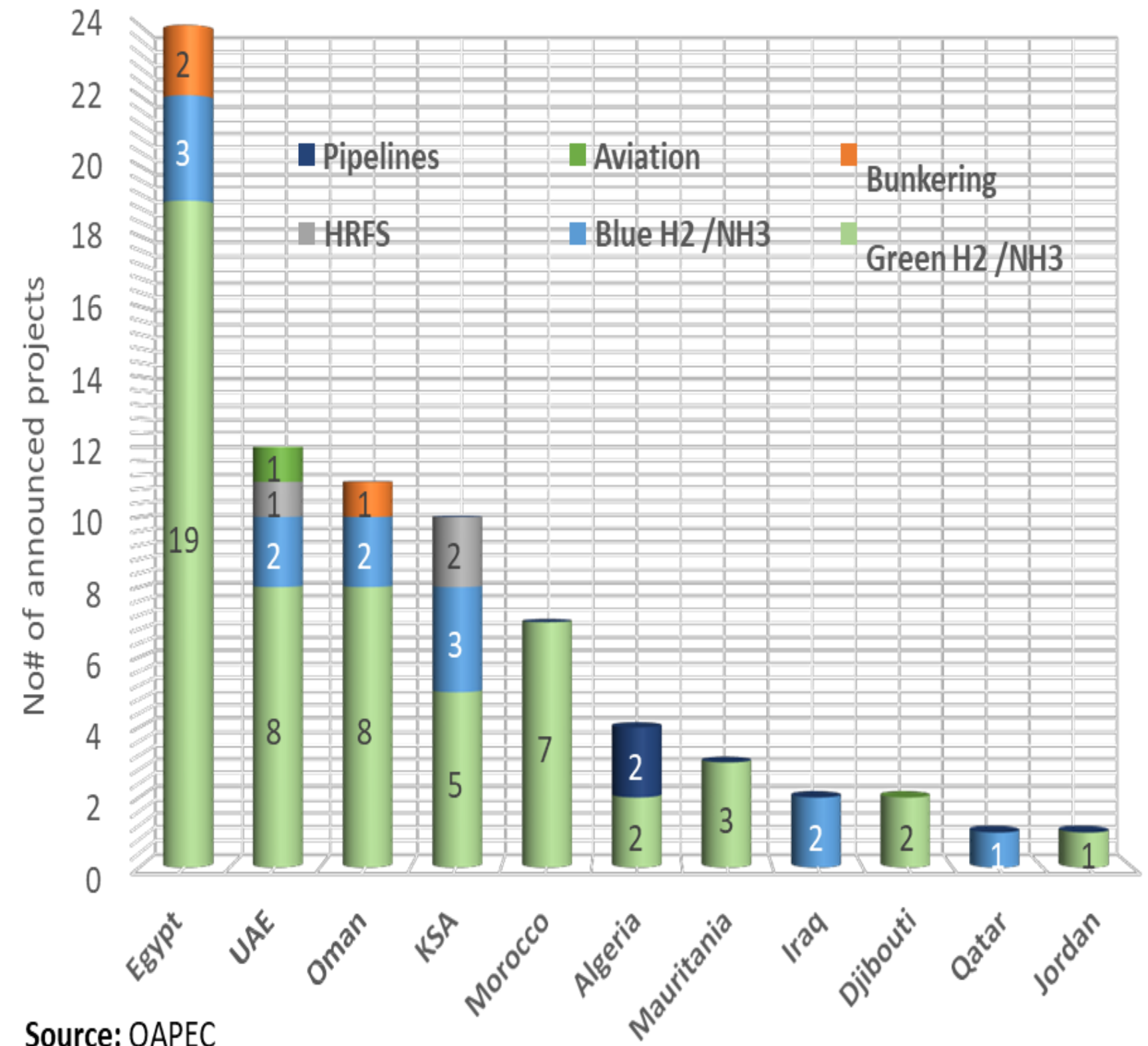
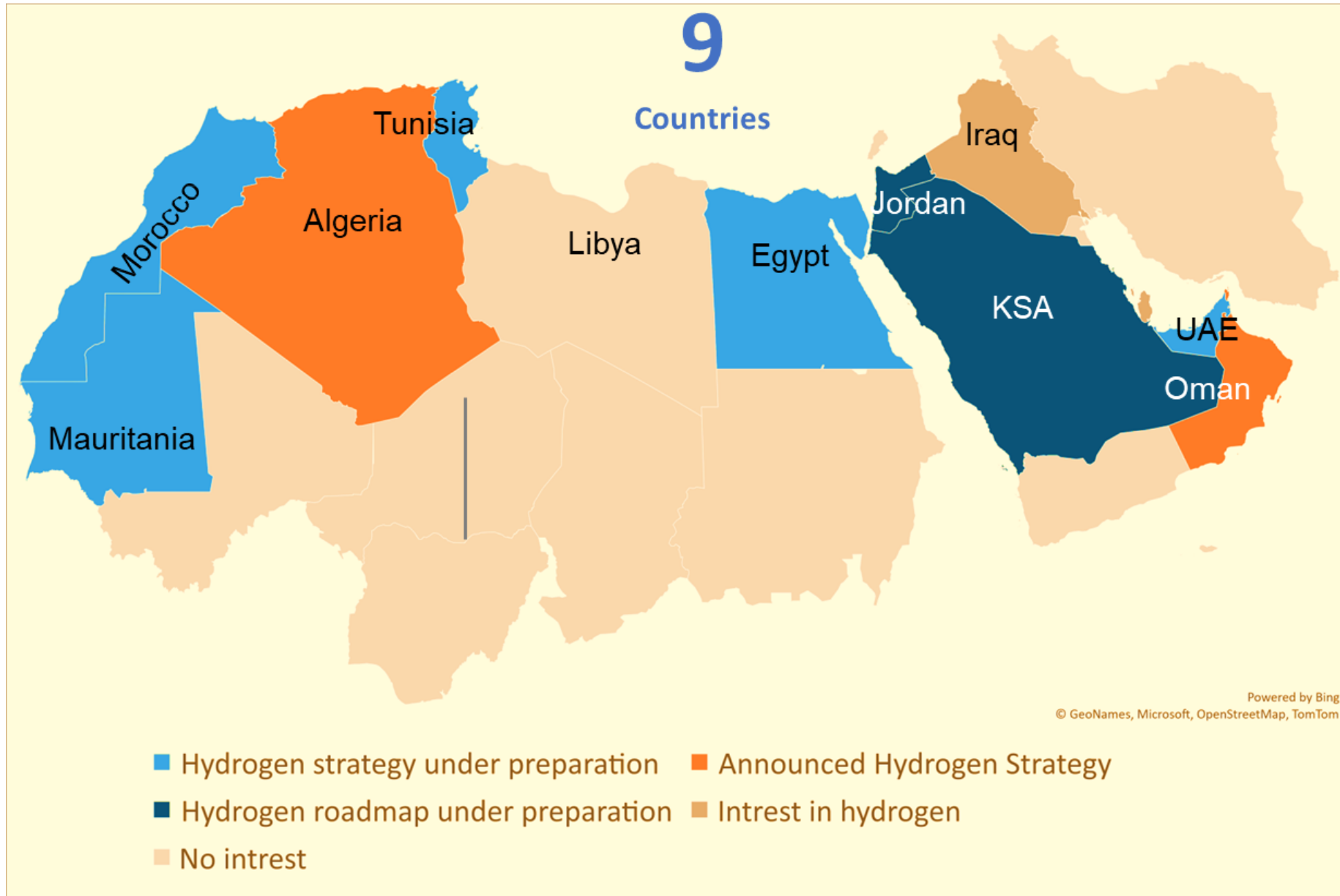
- **Two Arab countries have 100% RE targets: Djibouti by 2035, and Morocco by 2050.** Morocco also aims to achieve 52% of RE share by 2030.
- **Two Arab countries adopted Net-Zero Emissions National Strategy; UAE and Saudi Arabia by 2050 and 2060, respectively.**
- **Algeria changed its target to be 15GW of photovoltaic technology by 2035.**
- **Jordan raised in the updated Energy Strategy for the Energy Sector 2020-2030 from 21% in 2020 to 31% share for renewables in total power generation capacity and 14% of the total energy mix by 2030.**
- **In terms of installed capacity, the highest are Saudi Arabia target of 58.7 GW by 2030 and Egypt target of 59.7 GW by 2035.** These targets represent 30% and 42% share of national installed capacity respectively. The Egyptian RE strategy is under revision to be updated in order to reach more than 50% by 2035.

At least 300,000 estimated direct green jobs in Arab countries by 2030

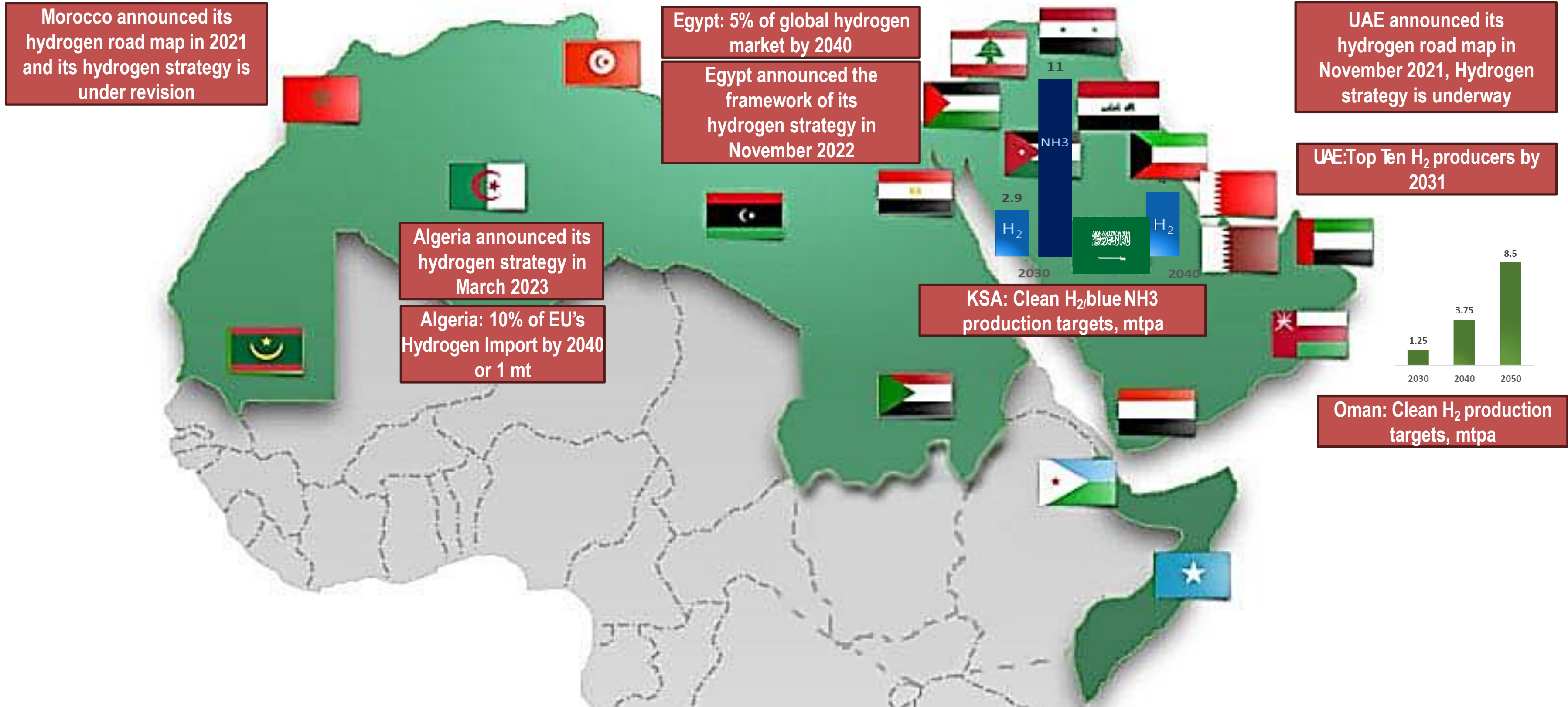


Source: RCREEE- AFEX, 2019

Hydrogen Policies in the Arab Countries



Hydrogen Objectives and Targets in the Arab countries



Facing Challenges (1/2)

- MENA countries are considered amongst the **most exposed and least resilient** to the EU Carbon Border Adjustment Mechanism.
- The EU's Carbon Border Adjustment Mechanism could **cut the profits from exports of some targeted goods** by 10-65%, impacting the producers of these goods.
- This could encourage increased production of **H₂-derived materials to reduce the carbon footprint of energy-intensive materials exported** to Europe.
- **Liquid hydrogen transport is costly, while liquid organic hydrogen carrier's gravimetric density is relatively low and the supply chain is complicated.**
- **Thus, the ammonia and alternative fuels value chain appears the most practical and cost-effective approach to trade and transport MENA hydrogen over long distances, and this is the approach being pursued by KSA, Egypt and Morocco.**
- **Water electrolyzers currently have an efficiency of 60-81% and require around 9 liters of water to produce 1 kgH₂.**
- **The cost of water is less than 2% in the overall business case.**
- **Freshwater access may become an issue in water-scarce or water-stressed areas, meaning desalinated seawater will likely be required in the Gulf.**
- **Current electrolyzers require desalinated water, though new generations are under development that could work with salt water.**

Facing Challenges (2/2)

- Given the early stage of the industry, Arab countries should consider
 - including green (blue) hydrogen in the revision of national sustainable energy strategies and action plans as well as in the Nationally Determined Contributions (NDCs) for the Paris Agreement
 - adopting supportive policy instruments and awareness-building, starting with policy-making constituency
 - building collaboration on technologies
 - coordination on harmonizing regulations and standards,
 - developing low-carbon green products pricing/carbon pricing mechanisms, with links to other “carbon” pricing schemes (e.g. European ETS), to create business opportunities to expand the hydrogen market.
- Green hydrogen investors need to start by initiating and developing projects themselves, in partnership with state actors and strategic investment vehicles.

More R&D investments need to be allocated to:

- strengthen technology expertise,
- drive cost reductions in electrolyzers,
- create an infrastructure network, and
- refine export business models.

Examples of policy instruments:

- Double auction model for green hydrogen supply contracts (cover for the difference between green H₂ production price and the highest willingness to pay for it)
- Carbon contracts for difference in industry;
- Quota for aviation;
- Auctions for CHP plants;
- Financial and fiscal incentives for decarbonized materials;

This should be accompanied by regulations that ensure:

- sustainable renewables growth,
- appropriate infrastructure investment,
- system integration,
- standards, certification ...

Final Messages



- **New power sector normal is revealed**, where RE&EE are increasingly competitive, and the **alternative opportunity** for oil and gas exports and/or utilization in petrochemical industries are financially and economically rewarding
- **Lowest wind and PV price records are now found in Arab countries**, thanks to a well-designed competitive bidding and auctions schemes with strong public utilities- private partnerships and incentives.
- **Economics – rather than policy – will drive accelerated deployment of renewable technologies**
- **Blended energy financing is becoming a mainstream** (grants, soft/concessional/commercial loans, guarantees, and technical assistance, green bonds, sukuk, sovereign and pension funds, early-stage corporate finance, roll-out of phase of new build asset finance, and non-new investments such as corporate merge and acquisition, project equity buyouts, investors exits and asset refinancing and acquisitions, etc.)

Conclusions

- The ambitions to increase the RE share are challenged by the relatively weak pipeline of bankable projects and limited international financial flows into the region in support of clean energy.
- Multi-stakeholders, multi-governance approaches are needed to achieve a radical progress for RE&EE in the post-Covid green recovery and sustainable development agenda. The collaboration among different actors on national, regional and international levels is indispensable.
- It is important to capture the immense value of the sustainable energy business and effective public-private partnerships, especially for higher local content through local manufacturing, scaling-up decentralized solutions and commercializing emerging technologies
- To help advancing with the ecosystem, a careful design of the enabling frameworks, legal, regulatory, tariff, contractual and other supplementary frameworks is needed. Fragile and conflict-affected contexts will need more innovative approaches.

Thank You



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