

Electricity Trade in the GCC and Middle East:

Potential of a Pan-Arab Electricity Market

The third in a 2020 series of webinars from the Clean Energy Ministerial Regional and Global Energy Interconnection Initiative

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Speaker: **Mr. Phillip Cornell (World Bank Group/Atlantic Council)**

Mr. Phillip Cornell is the consultant of World Bank Group and senior fellow of Atlantic Council. He is the lead author of World Bank Group study on political economy of MENA power and gas interconnection, trade, and cross-border infrastructure to support the Pan Arab Regional Energy Trade Platform (PA-RETP). He is also the director of the Global Energy Governance Reform Task Force, including project conception and leadership, the specialist on Middle East and global energy economics, oil market, and Saudi Arabian transformation. He once worked as the senior corporate planning advisor of Saudi Aramco, special advisor to the executive director in IEA, etc., has a major expertise in international grid integration study on power infrastructure and trade in MENA, South Asia, South East Asia.



About the Regional and Global Energy Interconnection (RGEI) Initiative

The RGEI Initiative was established at the 9th Clean Energy Ministerial meeting in Copenhagen/Malmö in May 2018. RGEI's objectives are to:

- * Discuss conducive policy and regulatory framework regarding regional and global power system integration
- * Build consensus on facilitating energy transition via increased proportion of renewable energy in energy consumption and enhanced grid interconnection
- * Encourage CEM member countries to engage in the process of RGEI and seize collaborative opportunities

CEM Members: China, Chile, Finland, Korea, South Africa, United Arab Emirates. RGEI works with other regional and national technical organizations in the field of power system integration including State Grid Corporation of China, the Korea Electric Power Corporation, and others.

Operating Agent: Global Energy Interconnection Development and Cooperation Organization (GEIDCO)

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RGEI Link: <https://www.cleanenergyministerial.org/initiative-clean-energy-ministerial/regional-and-global-energy-interconnection-rgei-initiative>

GEIDCO Link: <https://www.geidco.org/> 

Electricity Trade in the GCC and Middle East: Potential of a Pan-Arab Electricity Market

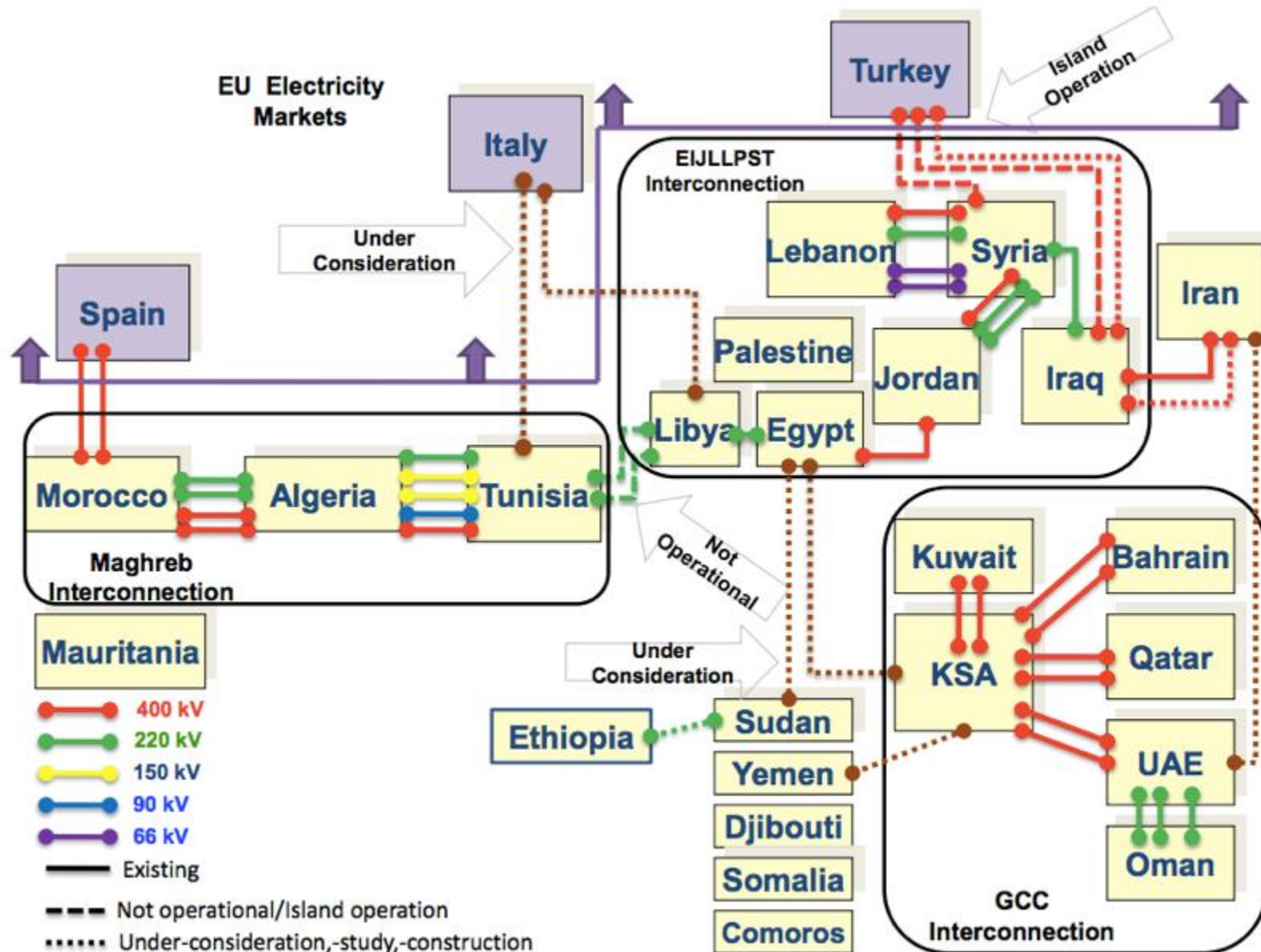
Phillip Cornell

April 2020

Senior Fellow, Atlantic Council



Three regional interconnections: Maghreb, Mashreq (EIJLLPST), and GCC



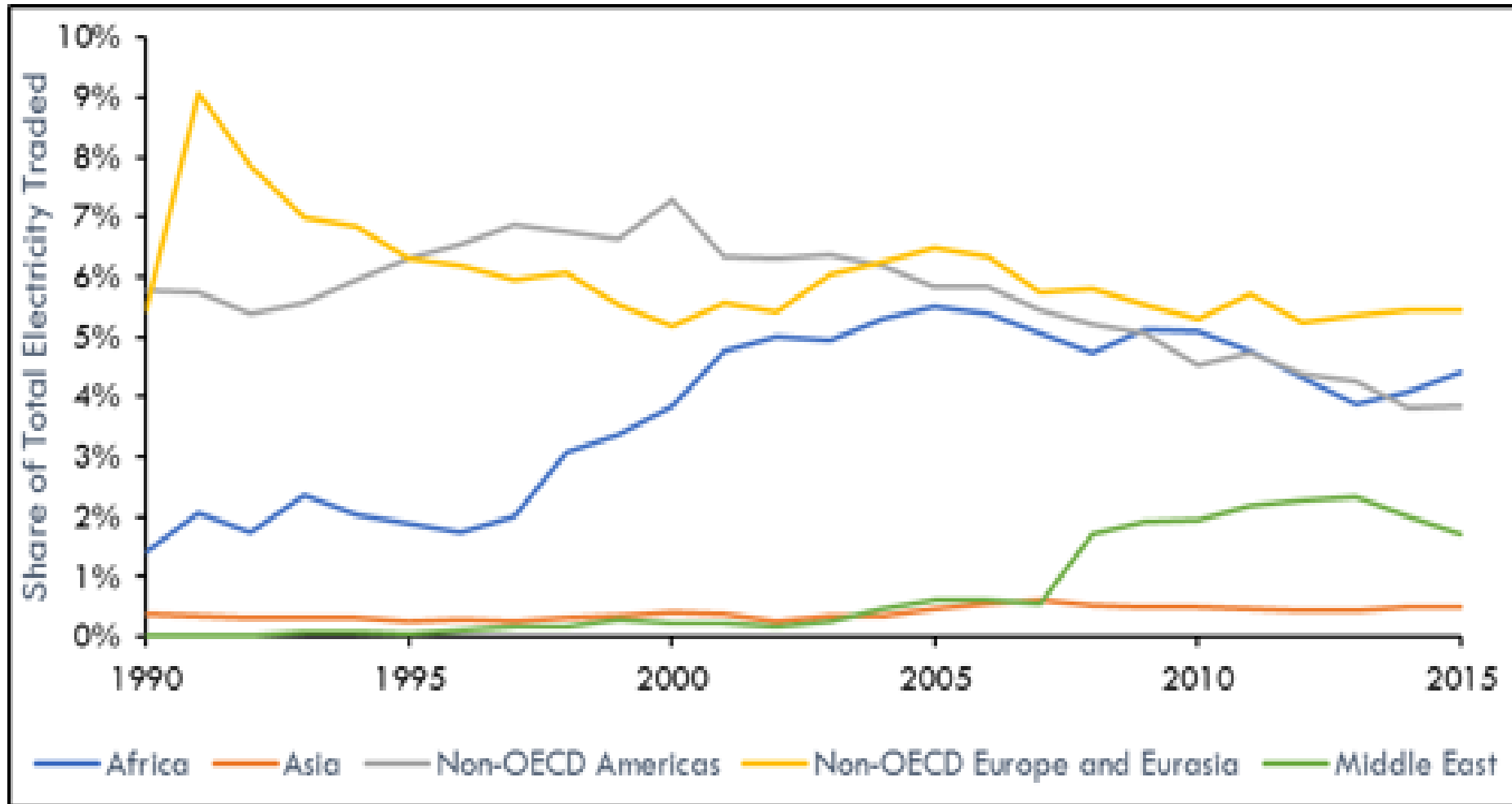
Maghreb: Algiers Declaration, connected to Europe (ENTSO-E), Moroccan renewables

Mashreq: Underutilized interconnections, lacking institutional framework

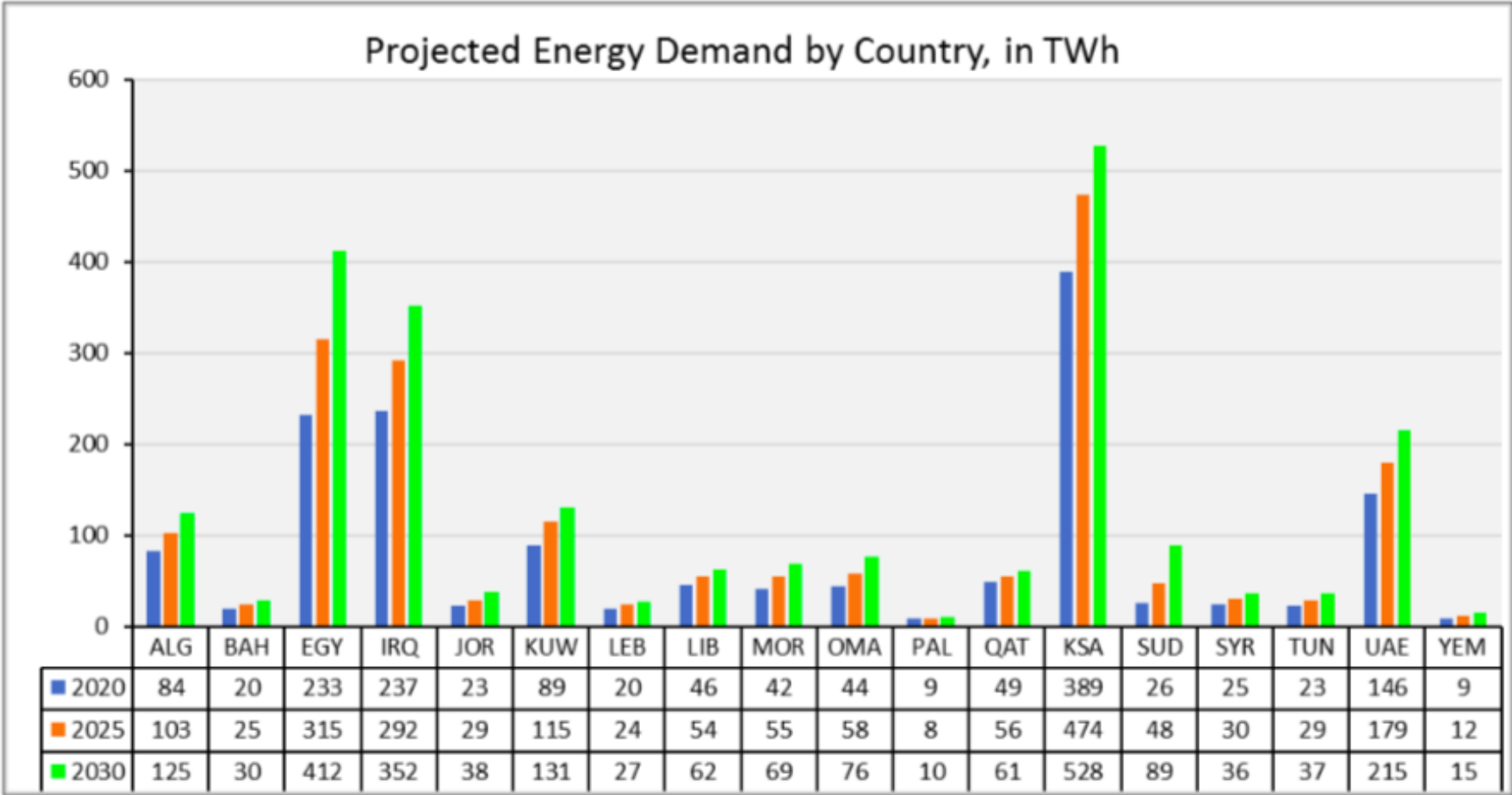
GCC Grid: Institutionally advanced (GCCIA), fully owned grid (regional TSO), interest to develop short-term market. GCC can form an advanced power pool for others to join, but subsidies must be addressed

But power trade is very low in the Middle East, even among developing countries

- 2% of electricity produced in the region is traded
- Almost all are one-off, irregular trades
- GCC interconnections function at 5-6% capacity (almost 50% in Europe)



Political-economic challenge across MENA: Rapidly increasing power demand, plus fiscal squeeze on government budgets



Note: ALG = Algeria; BAH = Bahrain; EGY = Egypt; IRQ = Iraq; JOR = Jordan; KUW = Kuwait; LEB = Lebanon; LIB = Libya; MOR = Morocco; OMA = Oman; QAT = Qatar; KSA = Saudi Arabia; SUD = Sudan; SYR = Syria; TUN = Tunisia; UAE = United Arab Emirates; YEM = Yemen; TWh = Terawatt-hour

Responding to the challenge: Market reform and liberalization to enable trade, plus integrating renewable generation capacity (energy transition)

- Development of regional markets will have to contend with varying speeds of domestic reforms
- Strengthening market liquidity is essential for bulk electricity and gas trade
- Pricing of electricity and gas should reflect the economic cost of production
- Benchmarking pricing is a near-term fix... but eventually effective subsidy reform is crucial to addressing the concern of implicit wealth transfer
- Increasing the share of renewable energy in power generation to free up hydrocarbons for export, spur a local technology ecosystem, foster employment, and improve sustainability

Regional trade lowers system costs, increases reliability, and brings benefits to MENA relative to the status quo

Access to Wider Pool of Generating Units

Reliability Enhanced | Systems Costs Optimized | More Transparent Pricing



Improved
Finances of
Governments
and Utilities

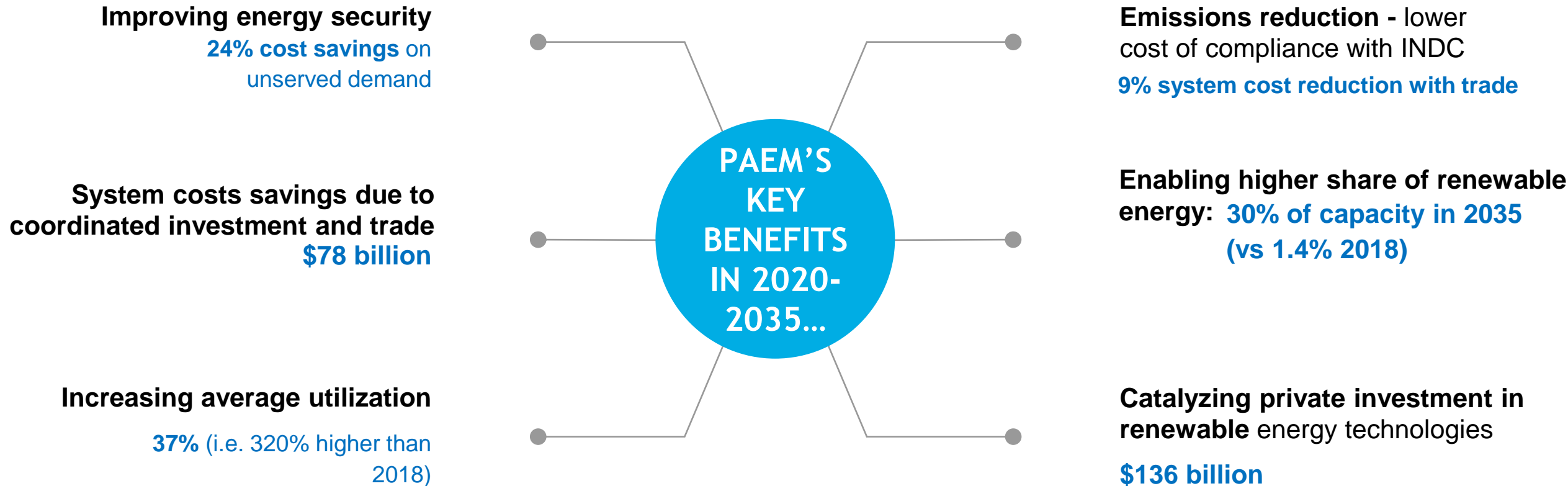
Increased
Prosperity in
the Region

Reduced
Regional
Environmental
Impact

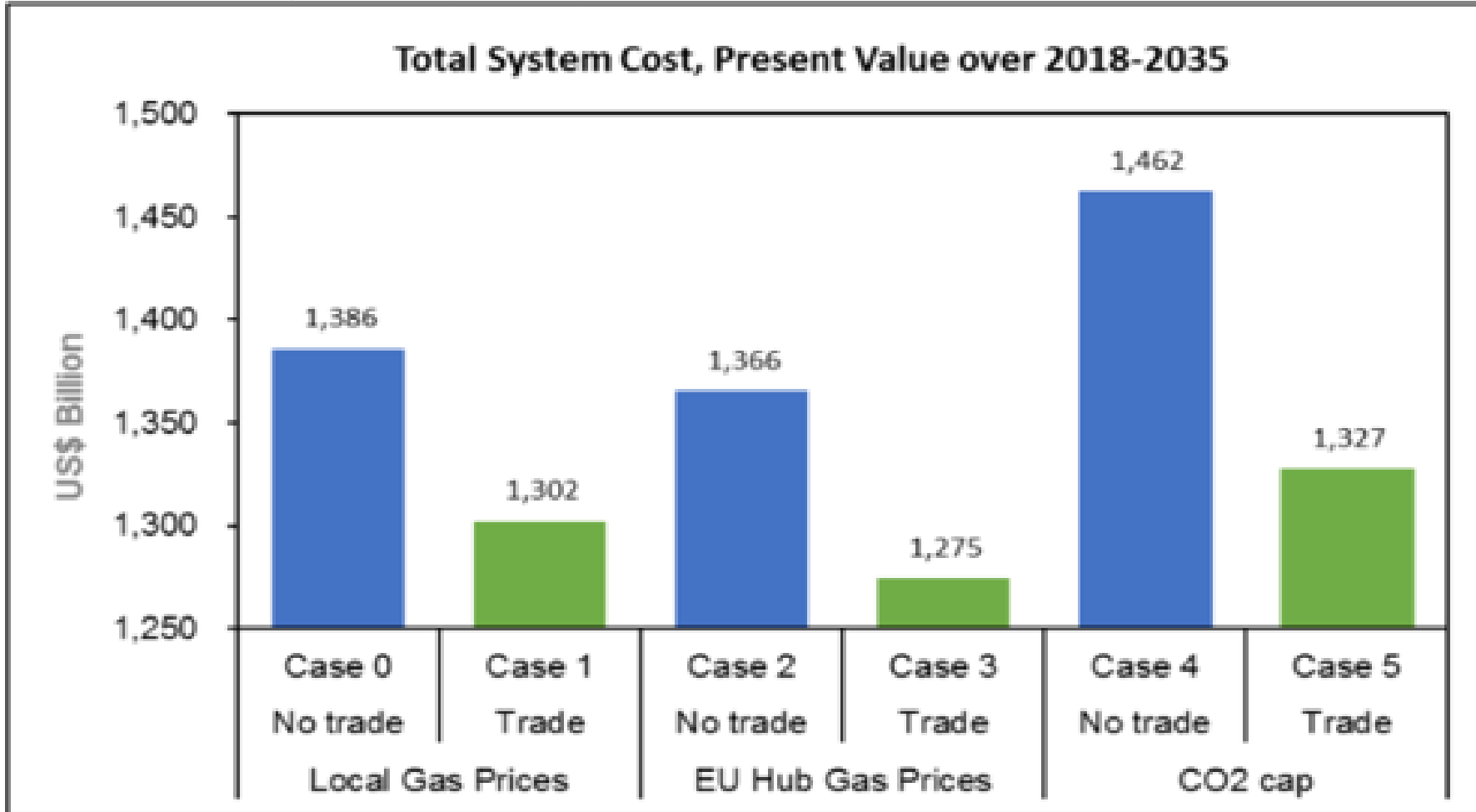
Incentive to
Reduce
Subsidies & Grid
Open Access

Contribute to
Peace &
Stability

The Pan Arab Electricity Market (PAEM) initiative to create second electricity market after EU, deliver multiple benefits



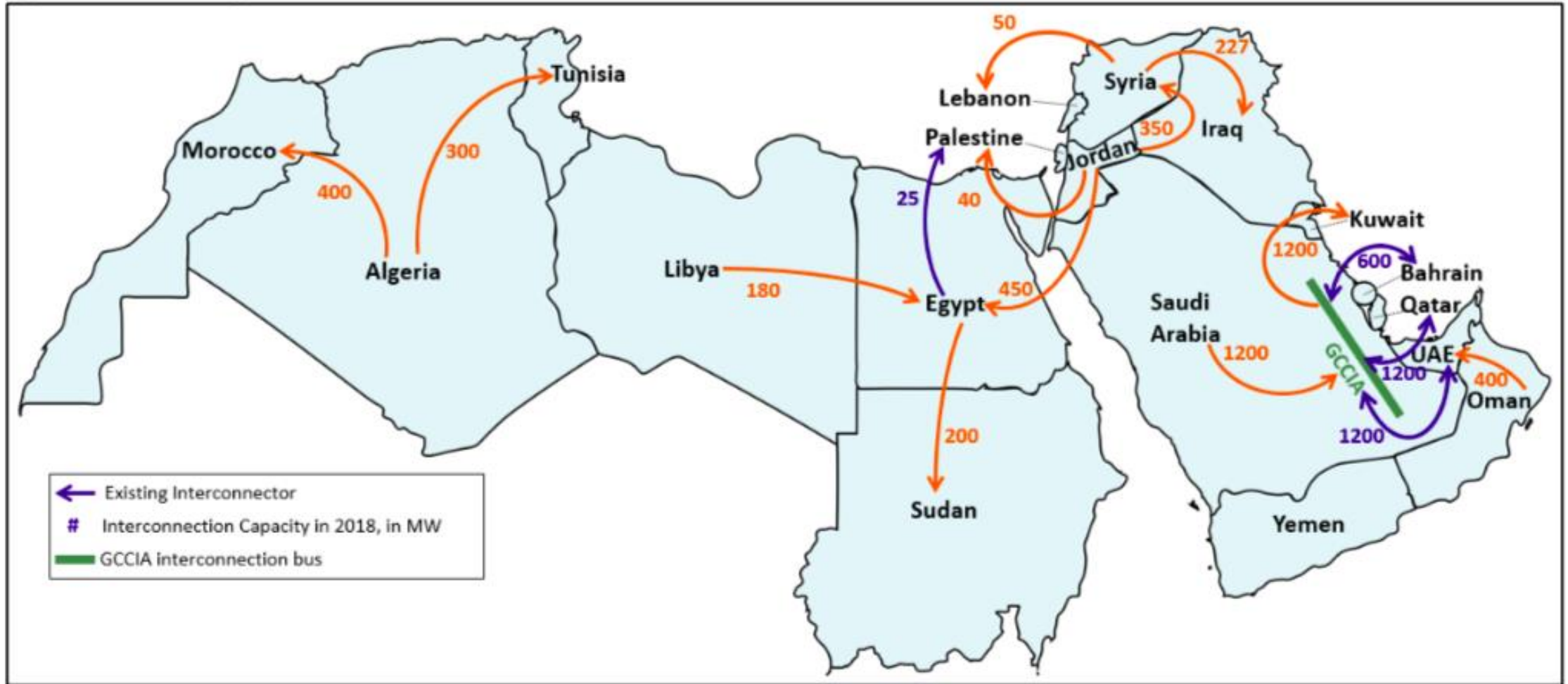
Biggest gains from trade are without gas subsidies, with CO2 cap



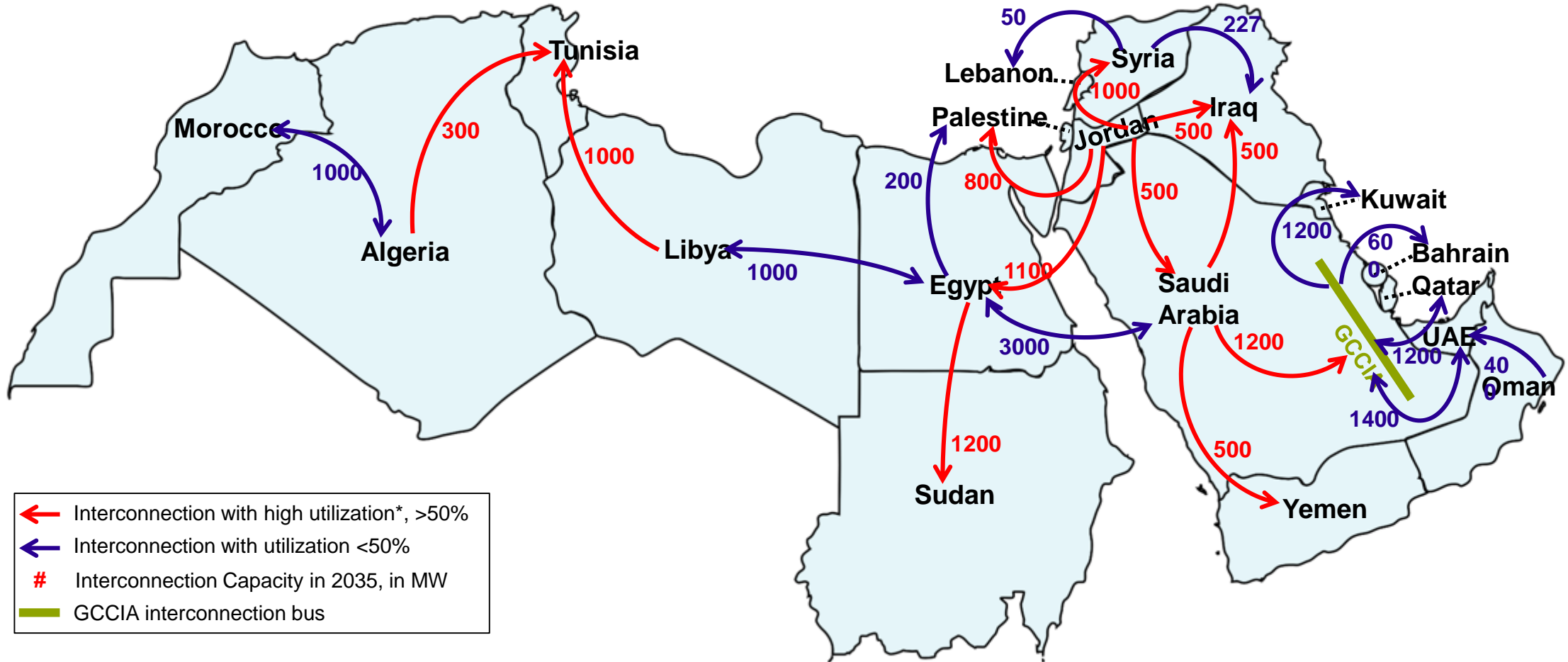
How energy subsidies constrain trade?

- Subsidies on electricity tariffs in importing countries stress the financial condition of the importing country's electric utility, increasing off-take and payment risks
- Subsidies on electricity tariffs in the exporting country results in over-consumption, reducing the amount of electricity that could be traded at international prices.
- Subsidies on generation fuels may result in the unintended export of subsidies to the importing country.

Existing regional interconnections (2018)



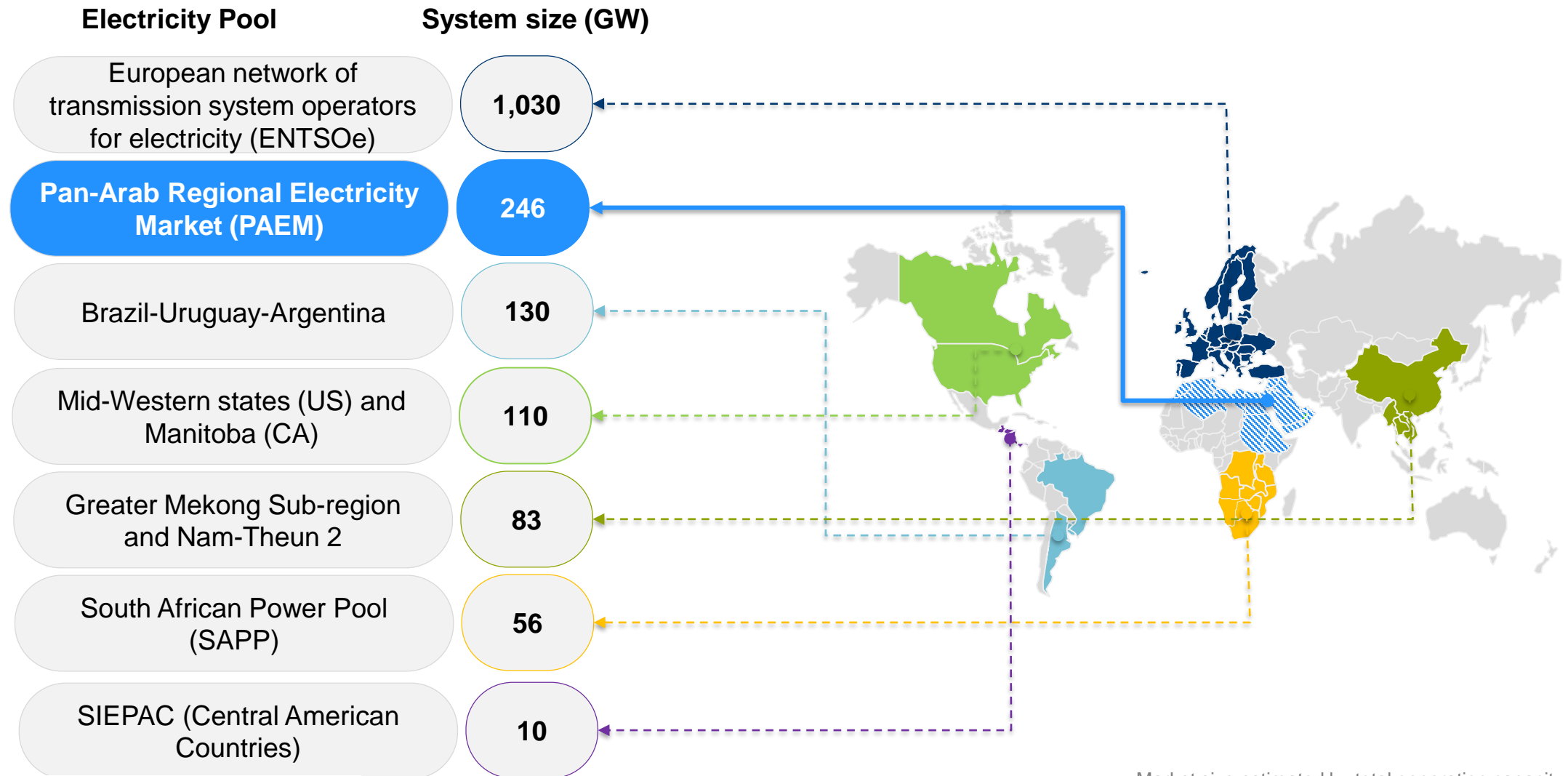
...versus targeted interconnections in 2035 (prioritize connections with > 50% utilization in all cases analyzed)



- ← Interconnection with high utilization*, >50%
- ← Interconnection with utilization <50%
- # Interconnection Capacity in 2035, in MW
- GCCIA interconnection bus

*Interconnection utilization is defined as the annual average interconnection utilization. It refers to the unitless ratio calculated by dividing the yearly electricity flowing over a transmission line by the maximum possible yearly electricity flow.

PAEM has the potential to play a key role in electricity trade within and beyond its borders (Asia-Europe-Africa trade potential)



- Market size estimated by total generation capacity installed or peak demand
 - Map is for illustration of regional power pools and does not reflect geographical borders

Challenge to identify, convince, and empower local champions for trade and market integration

- Bottom-up approaches
- 1990s OECD reform model is not one-size-fits-all
- Interim solutions to demonstrate benefits of trade and build consensus
- Some degree of regional institutionalization will be necessary...
but institutional development should follow practical need
- Respect challenges and national circumstances when it comes to domestic political, market, and institutional reform

Advancement of regional energy trade is ultimately the product of national political considerations

The PA-RETP Initiative

WHAT IS THE PA-RETP INITIATIVE?

A collaboration platform between the WBG, regional partners, and IFIs to support regional champions (e.g. LAS) to implement the building blocks of institutionalizing electricity and gas trade among the Arab countries. It has the following areas of focus:



Enabling regional electricity and gas trade.

1



Developing regional governance structures and institutions

2



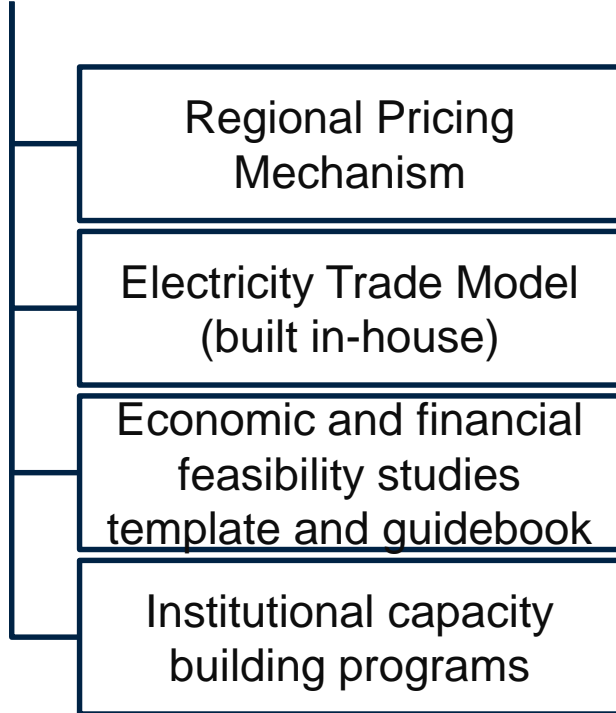
Innovative financing solutions to advance regional electricity and gas investments

3

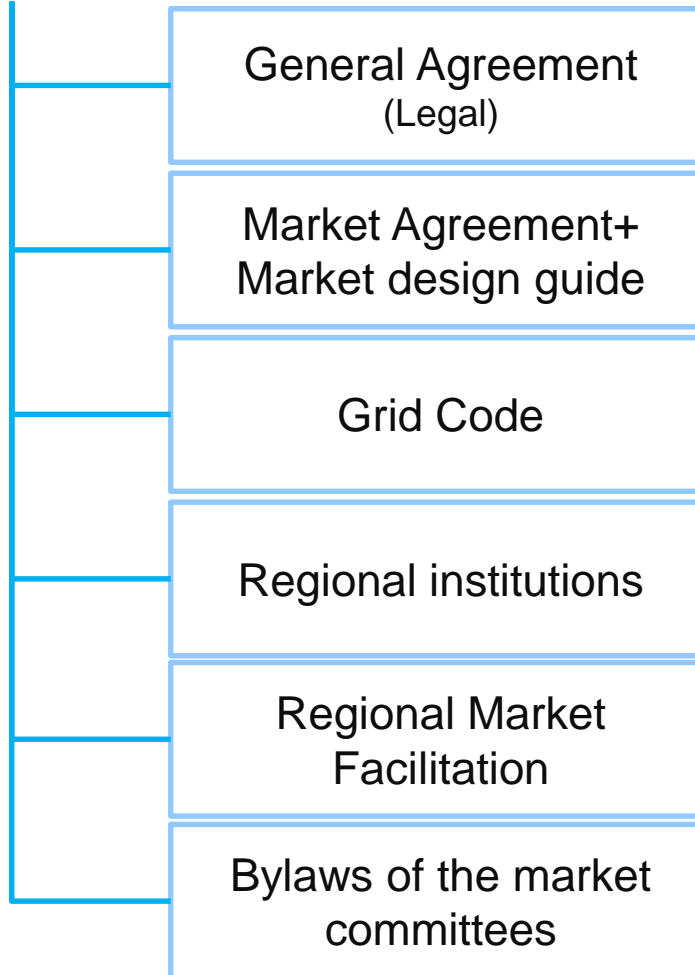
Highlights of the PA-RETP's products to establish the PAEM



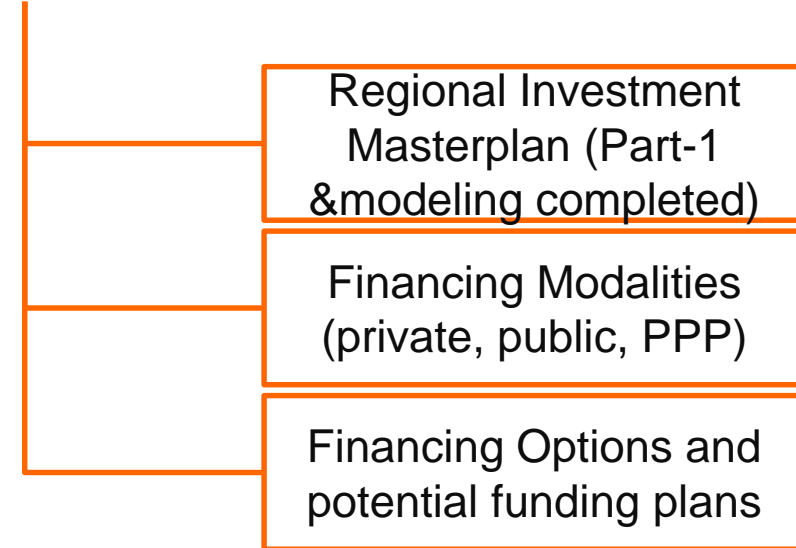
Enabling regional electricity trade



Developing regional governance structures and institutions



Innovative financing solutions to advance regional electricity



The PA-RETP aims at achieving the PAEM objectives at different levels

- **Building a must-needed and consistent momentum of political support and “trust” to not only construct physical cross-border interconnection but also cooperation for trade on commercial basis**
- **Addressing the major energy prices distortions** (mainly fuel and tariff subsidies) in a systematic and transparent way
- **Overcoming the lack of transparent trade pricing** (i.e. limited price discovery to utilize most efficient, cleaner, and cost-effective supply)
- **Solving institutional weaknesses at the national level** – there are limited entities with the authority, expertise, incentive and financial resources to undertake regional trade
- Absence of a **harmonized regulatory framework** governing electricity trade and **independent institutions** to oversee operations and market development (to be addressed by the PAEM governance framework)



Thank You