TeasiMed

TOWARDS AN EFFICIENT, ADEQUATE, SUSTAINABLE AND INTERCONNECTED MEDITERRANEAN POWER SYSTEM

Closing Conference

A project by

Med-TSO

MEDITERRANEAN TRANSMISSION SYSTEM OPERATORS

Co-funded by
the European Union

INTEGRATION OF THE MEDITERRANEAN POWER SYSTEMS:

A KEY DRIVER FOR ENERGY TRANSITION

MED-TSO AT A GLANCE

- Association of the Mediterranean Transmission System Operators (TSOs) for electricity

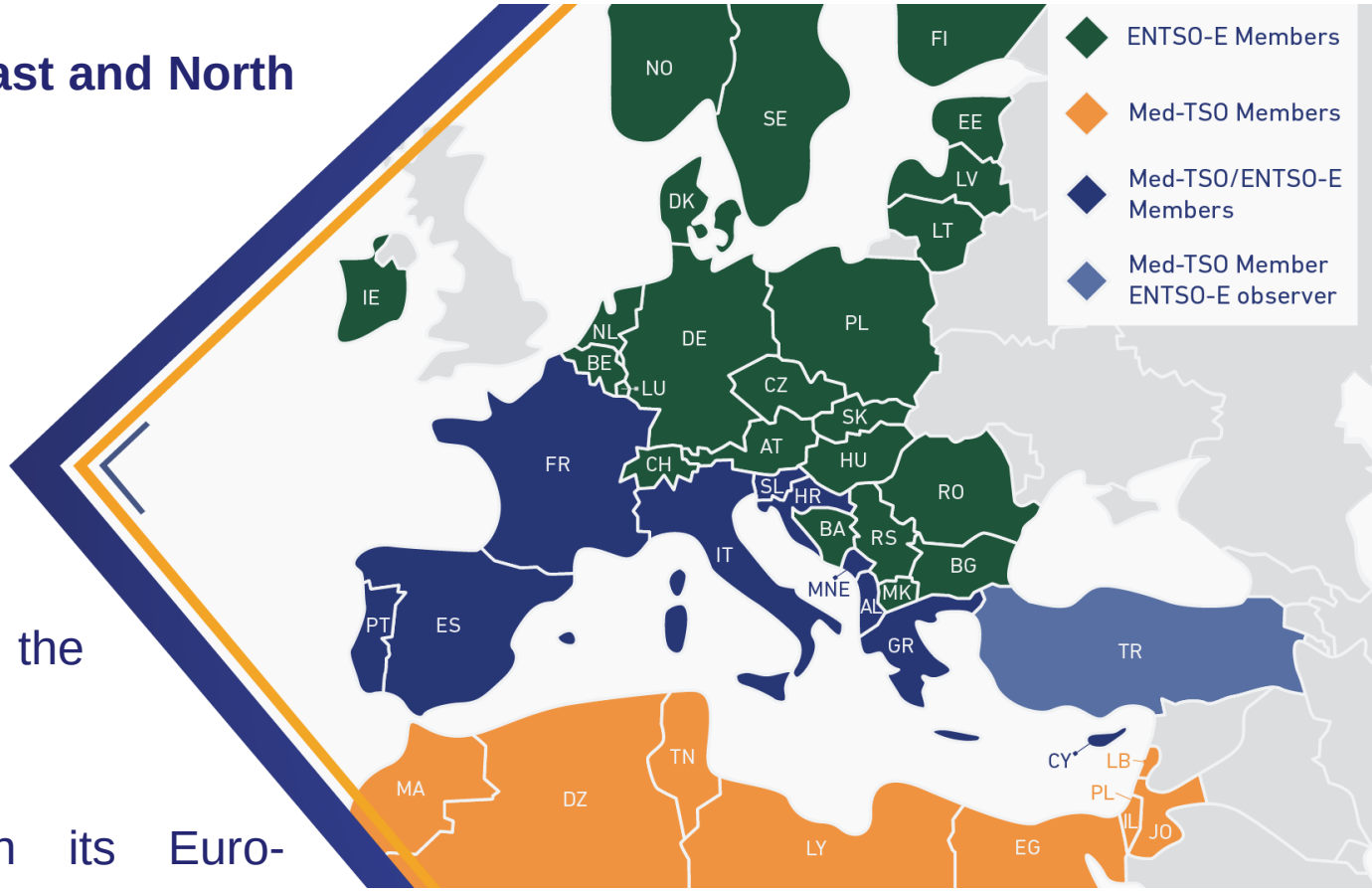
  20 Med countries members

- **A bridge between Europe and the Middle East and North Africa Region**

- Playing a regional reference role for creating a favorable climate for the **development of North-South and South-South interconnections**

- **Launching pilot projects** to strengthen the integration of the MENA Power Systems

- **Support the European Commission** in its Euro-Mediterranean initiatives in the field of integration of power systems



Main streams of Med-TSO's action plan

a — Coordinated planning

- Coordinated development of HV grid
- Med Masterplan

b — Common rules

- Power System interoperability
- Mediterranean Grid Code

c — Capacity building

- Training
- Knowledge Sharing programs

d — Interconnected Electricity Exchange Zones

- Coordinated Adequacy assessments
- Enhance coordination in operations

2015 2018 2020 2023 2025

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TOWARDS AN EFFICIENT, ADEQUATE, SUSTAINABLE AND INTERCONNECTED MEDITERRANEAN POWER SYSTEM

FIVE WORKING STREAMS

Consolidate the Common Target Regulatory Framework to let it become a real **Mediterranean Grid Code.**

Optimizing the calculation of **interconnection capacities** and applying **joint operational procedures.**

1

2

3

4

5

Update the **Mediterranean Masterplan**, the HV Transmission Network Development plan, in close connection with ENTSO-E Ten Years National Development Plan.

Identify and put into operation **pilot projects** on selected **Interconnected Electricity Exchange Zones** (IEEZ).

Knowledge Sharing programme, also through the development of a digital web platform.

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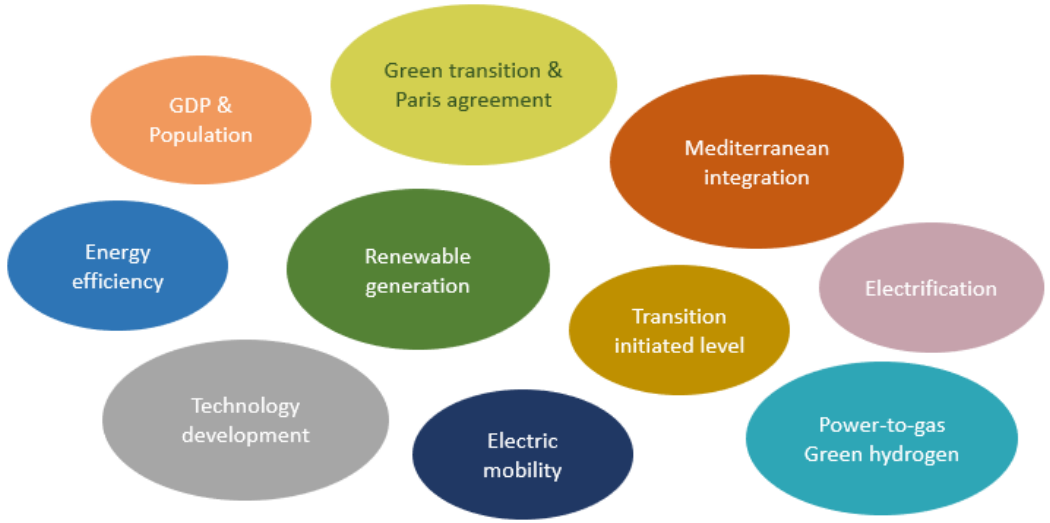
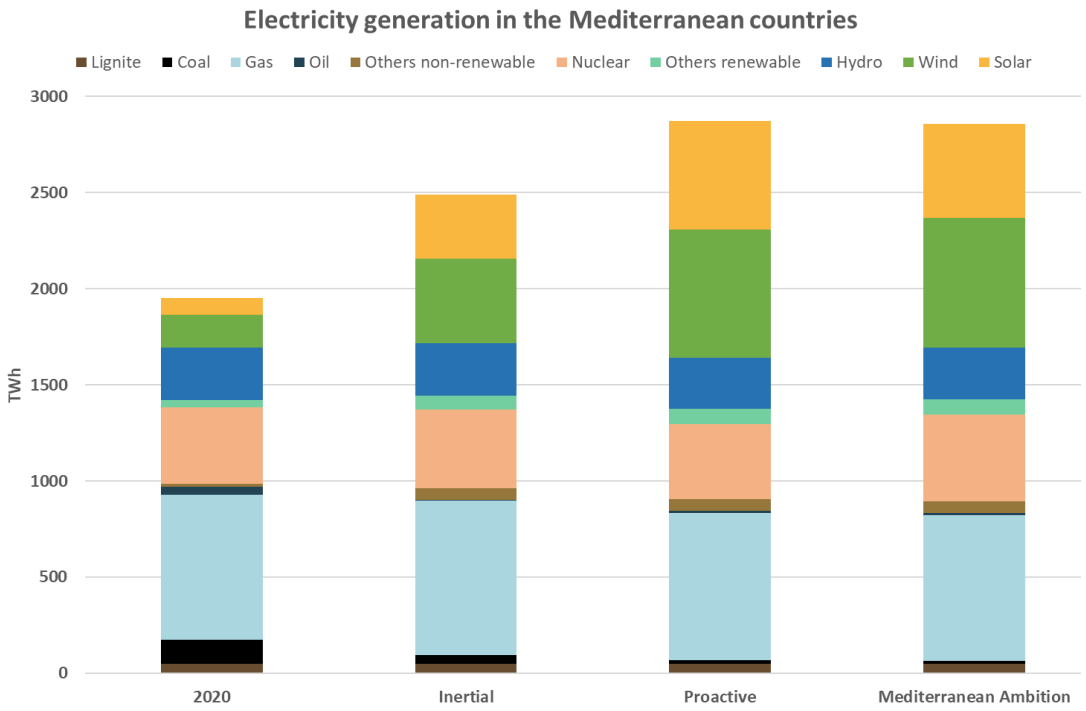
Mediterranean Master Plan 2022: energy scenarios



	2019	2030		
	Mediterranean countries	Inertial Scenario	Proactive Scenario	Mediterranean Ambition
Electricity Demand (TWh)	**2020**	**2400**	**2680**	**2690**
Demand increase	-	*+ 19%*	*+ 33%*	*+ 34%*
Compound annual growth rate (CAGR)	-	*+ 1.8%*	*+ 2.9%*	*+ 2.9%*



The Mediterranean from 2020 to 2030

- Electricity demand: +20∽+30%
- Wind x2 to 3 – Solar x3 to 5
- RES share: Up to 60% (from 28%)
- Carbon-free generation: Up to 73% (from 48%)
- CO2 emissions: decrease by 25 to 30%
- CO2 content 275->150 g CO2/kWh

Mediterranean Master Plan 2022: the projects

19 Interconnections assessed (some of them realized by 2030)

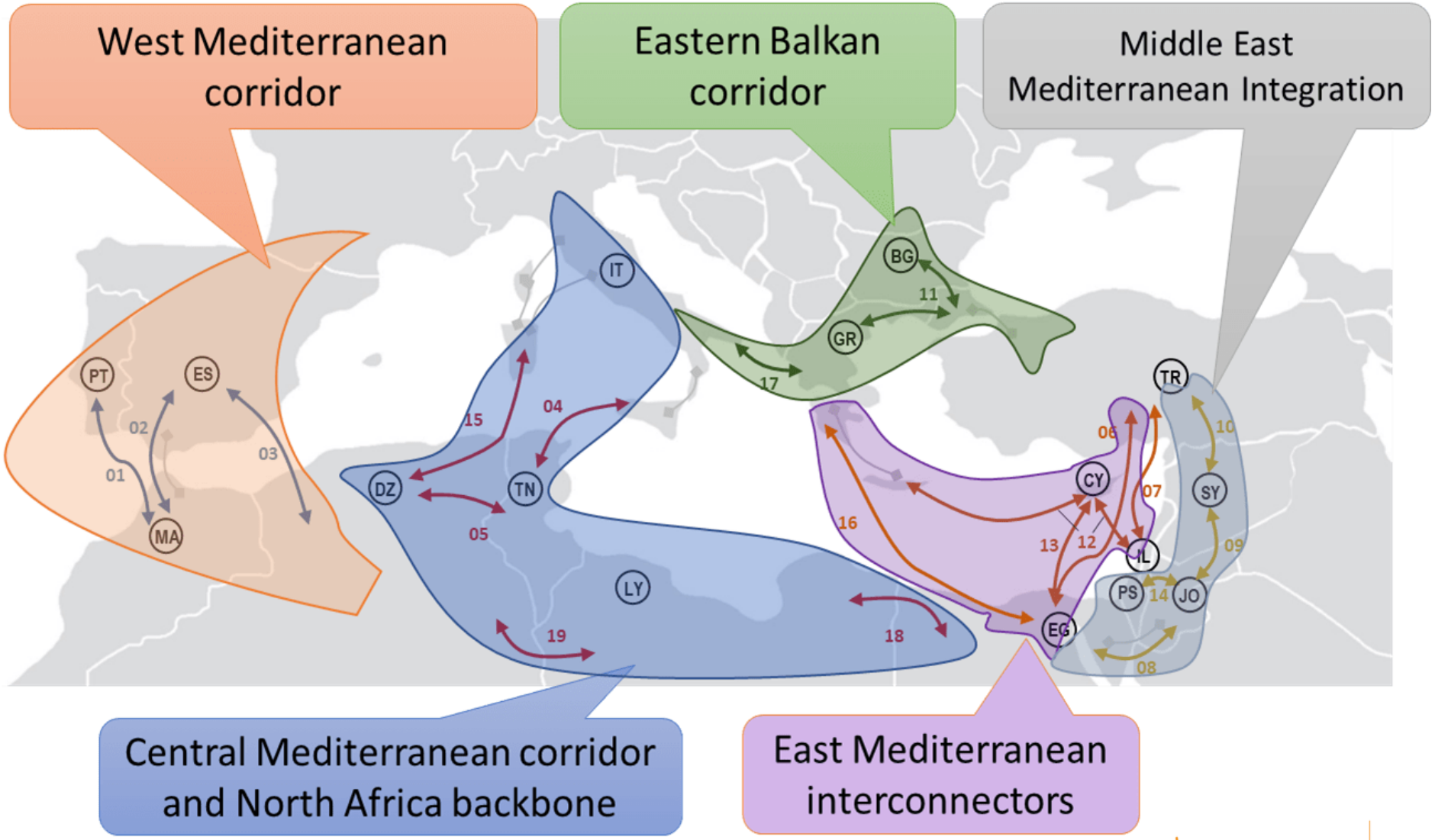
16 Countries involved

16 BEUR Investments

9.600 km new lines

19 GW new interconnection capacity

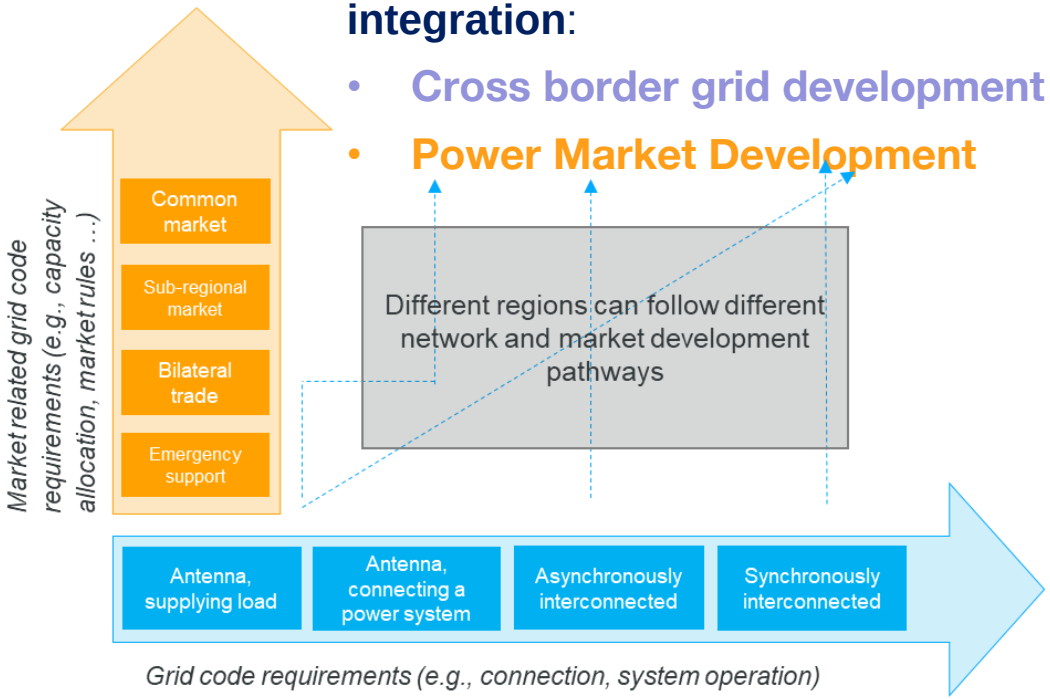
- **Improved security of supply**
- **Access to more affordable electricity price**
- **Carbon-free generation: Up to 15 TWh of integrated RES generation**
- **CO2 emissions reduction: Up to 24 Mt CO2 avoided**

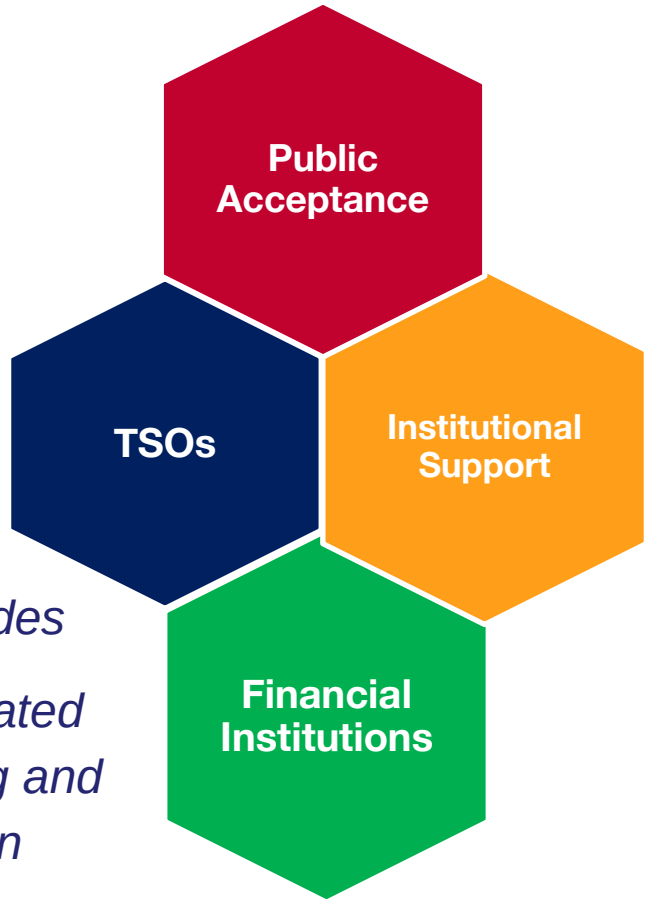


Towards a common playground for the Med integration

Indicator developed to evaluate the degree of integration:

- **Cross border grid development**
- **Power Market Development**





- *National Regulatory Authorities*
- *Regional Organizations*
- *National Institutions*
- *MOUs*

- *Grid Codes*
- *Coordinated Planning and operation*

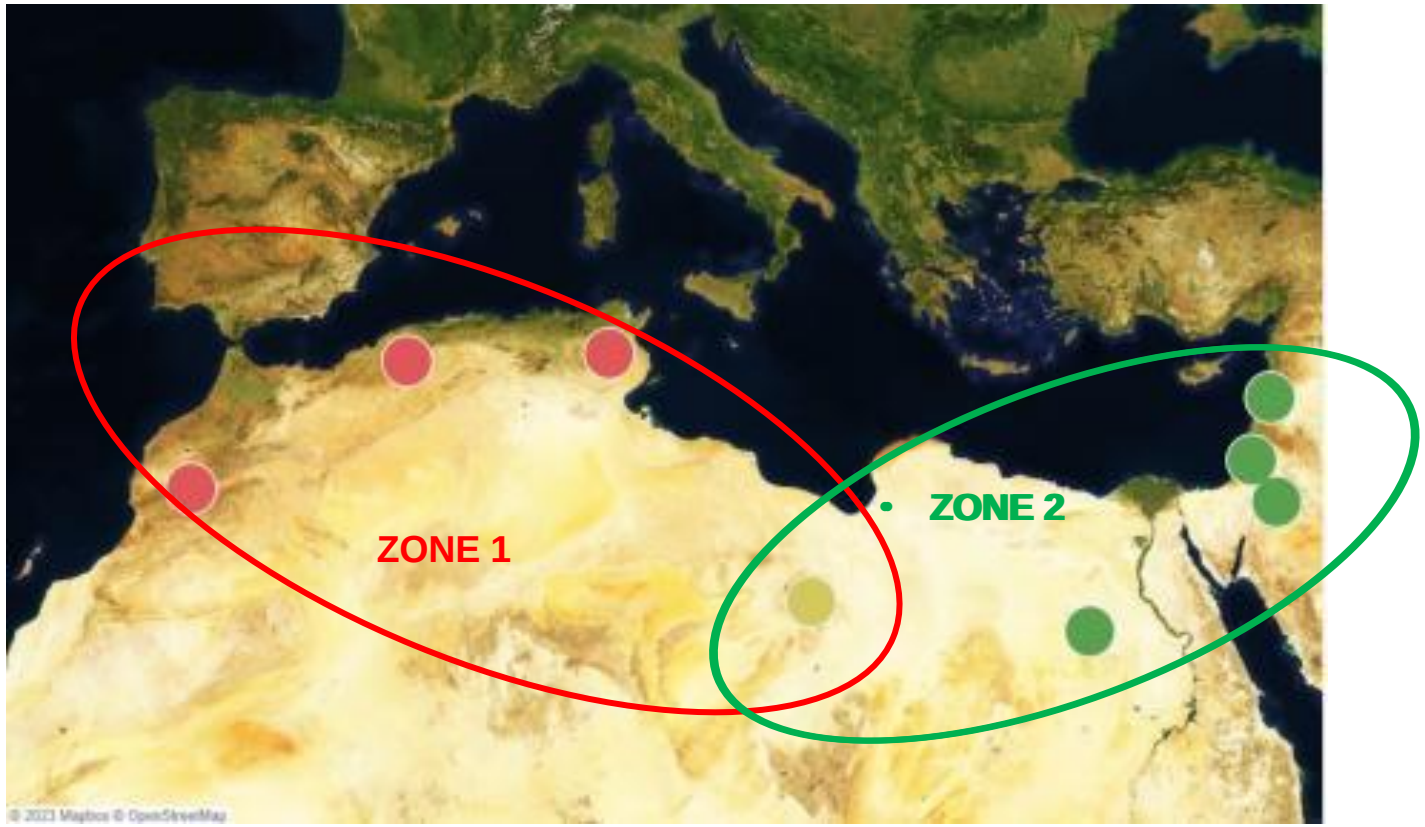
The indicator takes into account:

- Legal and regulatory issues: 11 requirements
- Connection to the grid: 44 requirements
- Operation of the interconnected systems: 41 requirements
- System Service Markets: 29 requirements

Institutional buy-in is essential for pushing the regional integration!

Launching pilot projects

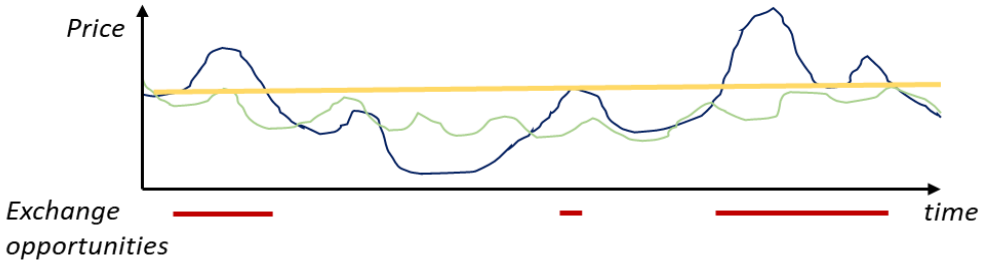
- Roadmaps set up by Med-TSO with the final goal to promote the efficient operation of interconnected electrical systems
- Implement a coherent and harmonized set of technical rules for the management of existing interconnections
- Design web platforms for exchanging electricity
- Start the preparation of coordinated national plans for the development of HV networks
- Cooperation with institutional stakeholders (EC, LAS and COMELEC) is key to success



A win-win integration with the EU energy market

Launching pilot projects: multiphase approach

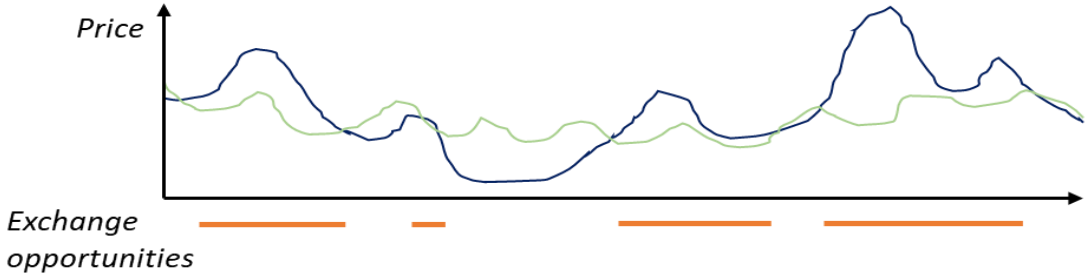
Current situation



Legend:
- Buyer price
- Seller price
- Fixed price
- Time windows when some exchanges are possible if the price is fixed

STEP 1

- **Bilateral Contracts should evolve:**
  - **Pre-defined price range instead of one fixed price for the next months, different per hour of the day**
  - **Increased Exchange Opportunities**



	Step 1	Step 2	Step 3
Participants	TSOs		TSOs and other market participants
Contract Counterparties	Bilateral	Trilateral	Multilateral
Products	Hourly and Block Daily and Intraday products		
Price Determination	Pre-determined price range with internal guidelines	Auction clearing price	
Type of cross-border capacity allocation	No allocation necessary in a bilateral environment	Implicit allocation of cross-border capacity	
Market Organization and market rules	Bilateral agreements	Trilateral market rules	Market Rules

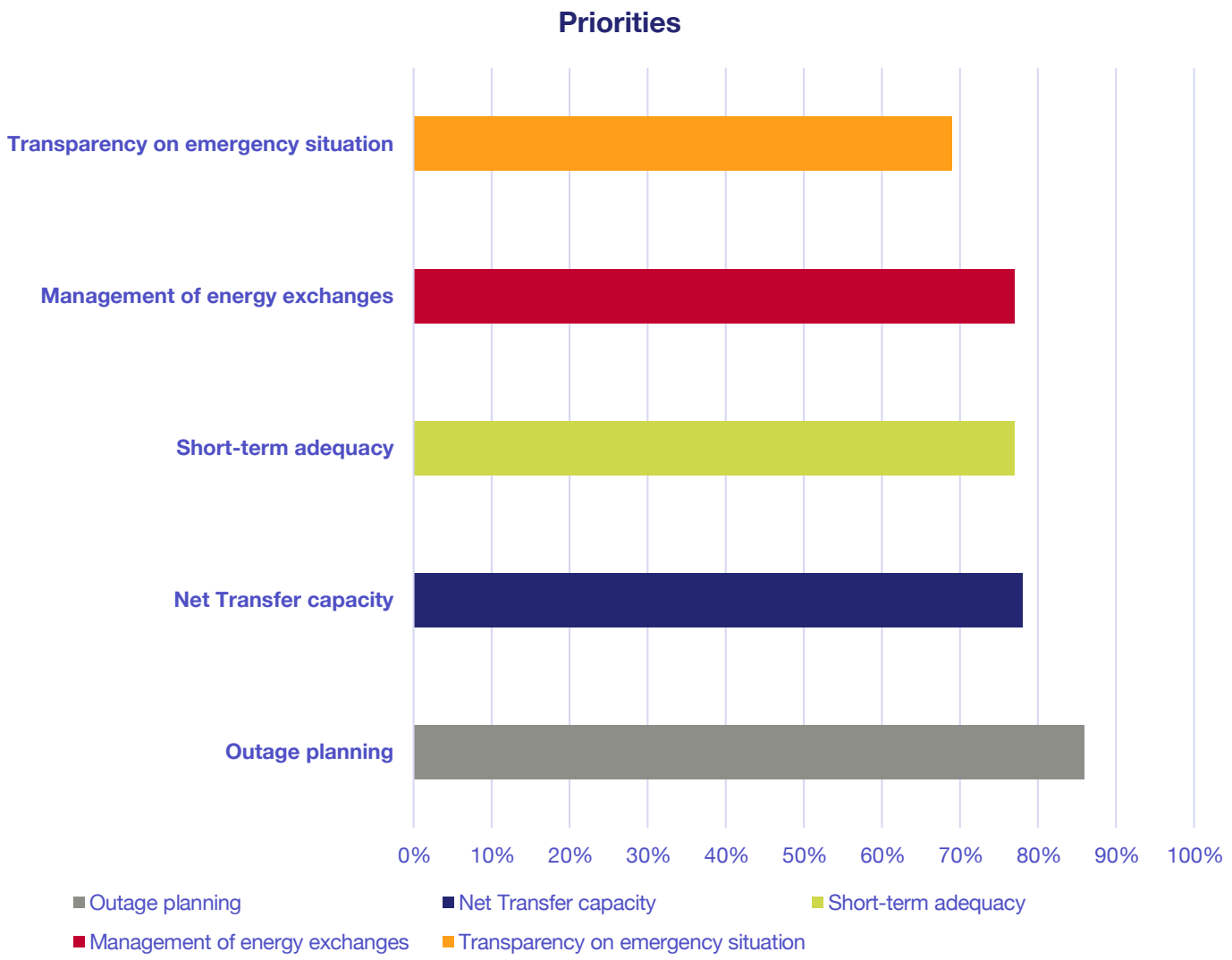
Optimized the operation in power systems

- Members define 5 priority areas for enhancing coordination of operation within neighboring countries

- Members define categories of data that can be shared at different time-frames and agree on a template to collect operational forecasts and statistical data

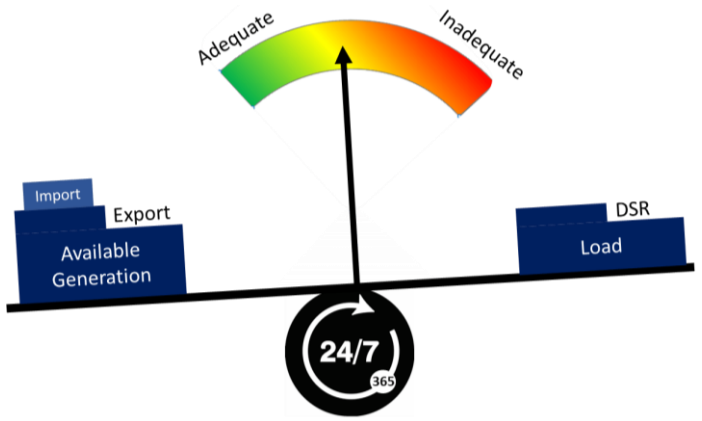
- Med-TSO built a data exchange tool (portal) in the Mediterranean Database (DBMED) for exchanging data at different time-frames (Annual & Monthly) & cover 4 sections (Network, Market, Adequacy & Operation)

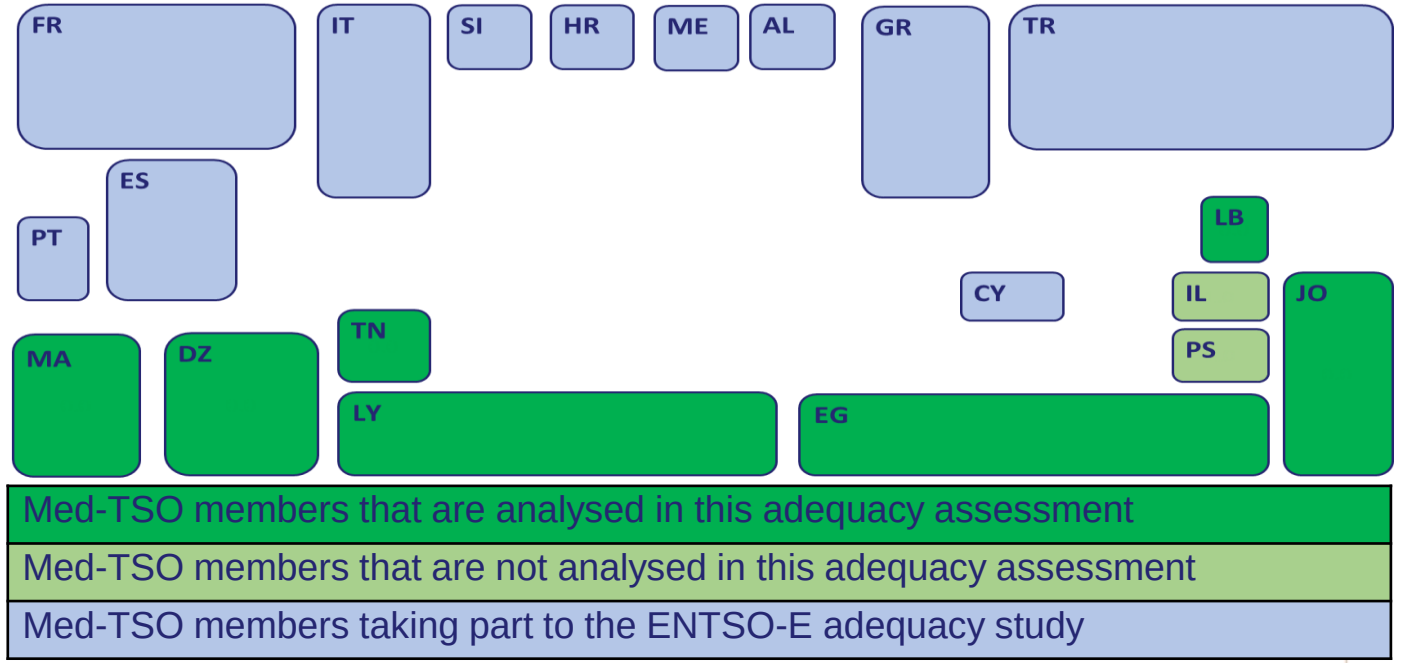
- Aggregated data publicly available at **data.med-tso.org**



Adequacy assessment methodology

- Coordinated adequacy assessment to help answering Security of Supply questions like:
  - Does the country ‘A’ have enough capacity to cover power demand even under severe/extreme conditions?
  - How the interconnection could reduce shortage situations?

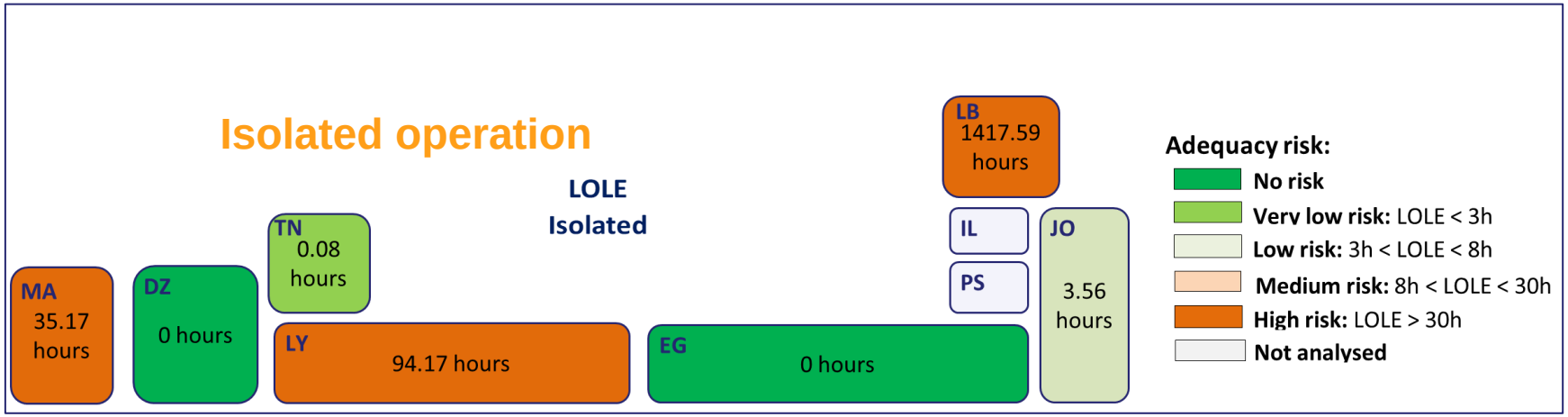




Med-TSO decided to carry out investigations related to the power system’s adequacy for the non-EU Med-TSO members, publishing:

- 2 Seasonal Adequacy (Winter and Summer)
- 1 Mid-term adequacy (2025-27 horizon)

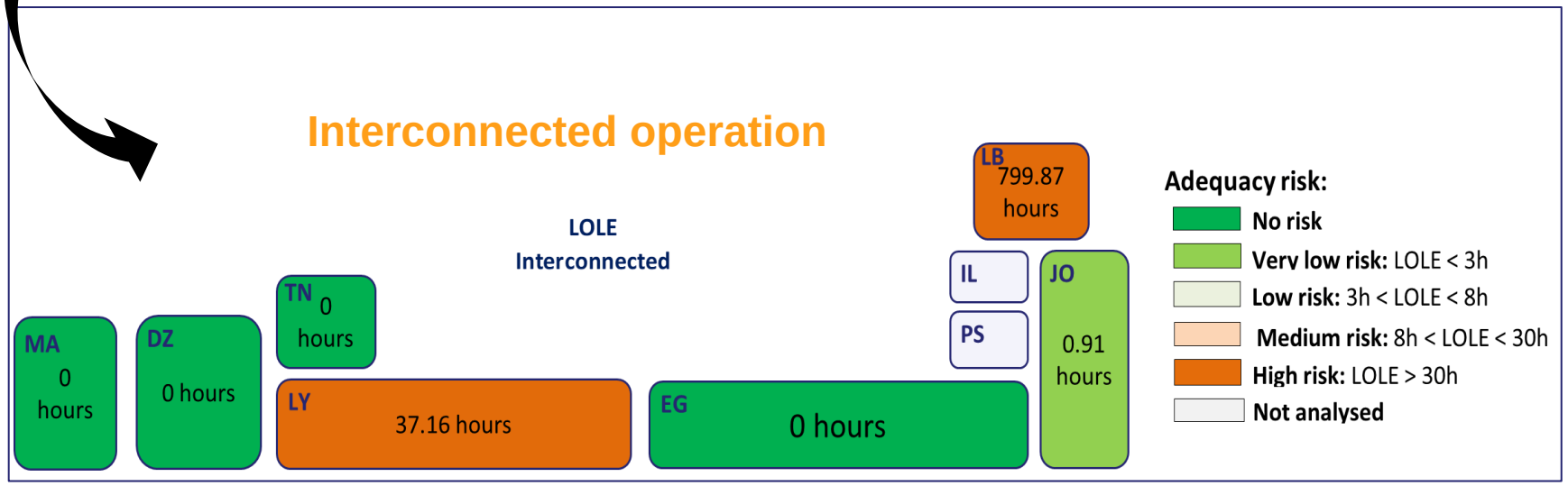
Key role of interconnections for Security of Supply



Winter Outlook 2022/23 assessment shows that the majority of the Southern Mediterranean countries see a significant improvement of Adequacy Security indicators (i.e. reduction of Loss of load expectation and Electric Energy not Supplied) thanks to interconnections

The Loss Of Load Expectation (LOLE) significantly improves in all the analyzed countries, remaining critical only in Libya and Lebanon

Cumulated average Expected Energy Not Served (EENS) decreases from **1010 GWh** of the "Isolated" configuration to **450 GWh** thanks to interconnections —> **-50%!!!**



Knowledge Sharing and Capacity Building

Cooperation for enhancing Members capacities and share experiences

- 96 TSO experts trained on energy regulation
- 2 training sessions on Adequacy Assessment
- continuous Members' training on market modelling and simulation tools
- 12 thematic webinars and workshops with Stakeholders

Cooperation with main stakeholders

- Supporting Med-TSO work programme since 2015
- Starting cooperation with League of Arab States on some common dossiers
- Med-TSO is active stakeholder in Ufm *REM Platform*
- Cooperation framework since 2014
- Long-term joint cooperation agreement since 2017
- Cooperation within UfM energy platforms and strengthened collaboration for the development of long-term energy scenarios
- Protocol of cooperation signed in 2022 (together with OME & MEDENER)

- **Gradual approach**
- **No one-size-fits-all solutions**
- **Sub-regional approach**

THANK YOU!

TEASIMED Closing Conference
Brussels, 15 march 2023

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