



# L'INTEGRAZIONE ELETTRICA DELLA REGIONE EUROMEDITERRANEA ED IL RUOLO DI MED-TSO

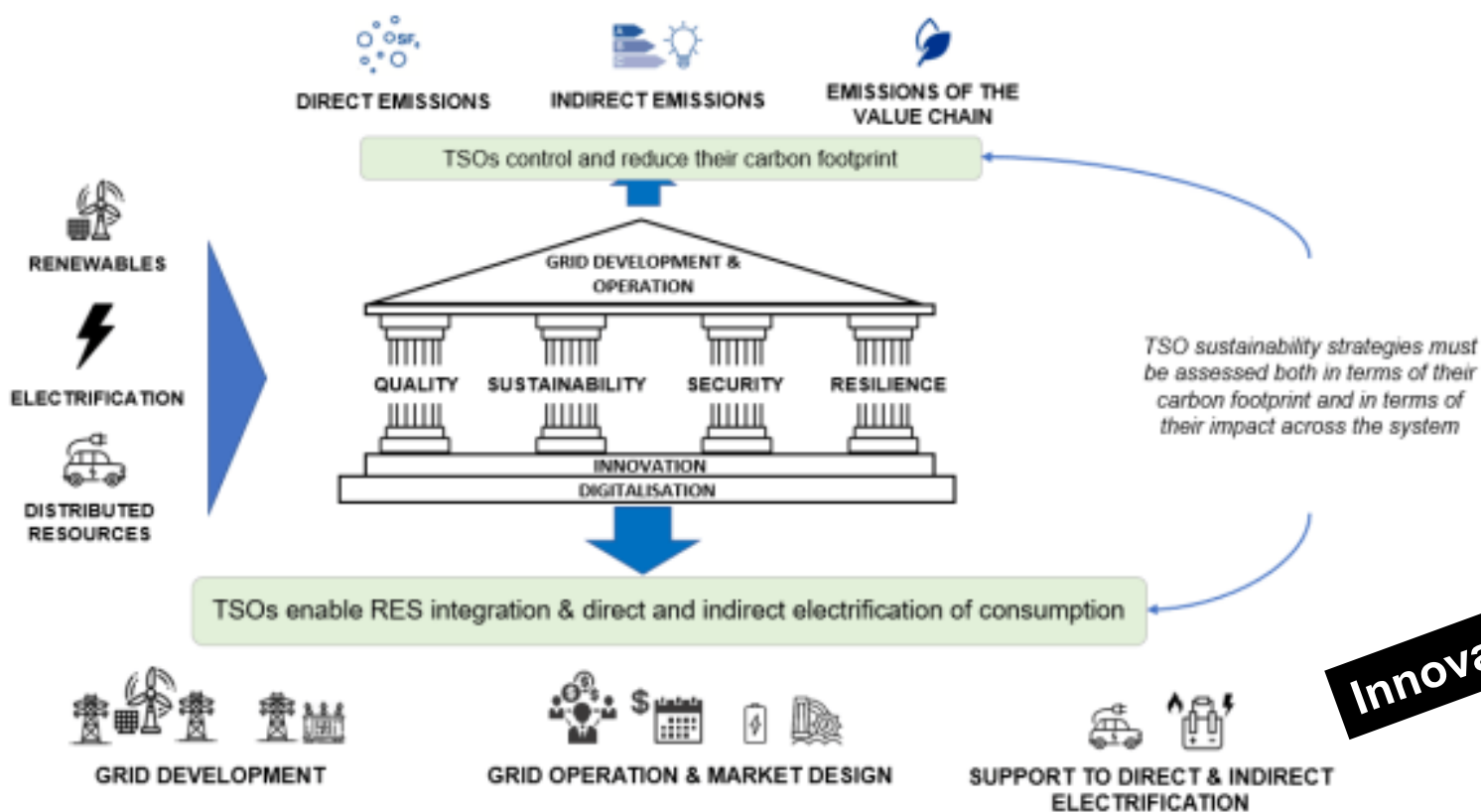
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## Part 1: Med-TSO and the TEASIMED Project

# The role of infrastructure in the energy transition

- Both for direct and indirect electrification of uses, electricity infrastructure is key (connection of RES, electrolysers, etc.)



**Innovation is key!**



# Energy transition in the Mediterranean context

1

## All countries involved in the energy transition

- COP27 marks the growing commitment of MENA countries to global climate actions
- Need of investments in gas (medium term) & RES

2

## TSOs called to adapt to this new context

- Grid expansion
- System operation more complex (fast and massive RES growth)
- Need for more system flexibility

3

## Challenges

- Limited or non-efficient use of grids & interconnections
- Unstable environment for investors: market fragmentation, lack of long-term price signals
- balance climate engagements with fossil fuels overdependence

4

## Integration is a key driver

- Reduced mkt fragmentation
- Share balancing resources
- Complementarities:
  - i. seasonal
  - ii. hourly
  - iii. generation mix



**Integration is no longer an option**

**Inadequate interconnection level is a barrier**

**Reinforced cooperation is essential**



# Challenges to regional integration

- Boosting long-term & capital-intensive investments in grids to develop the electricity infrastructure (N-S and S-S) through:
  - efficient **financing mechanism** for remunerating investors
  - Mediterranean-wide **network development plans**

## Technical / regulatory challenge

- Harmonized rules for development and operation of the interconnected electricity network (mkt approaches for using the interconnection capacity)
- Mechanisms for the efficient and secure integration of RES in the energy mix



## Financial challenges

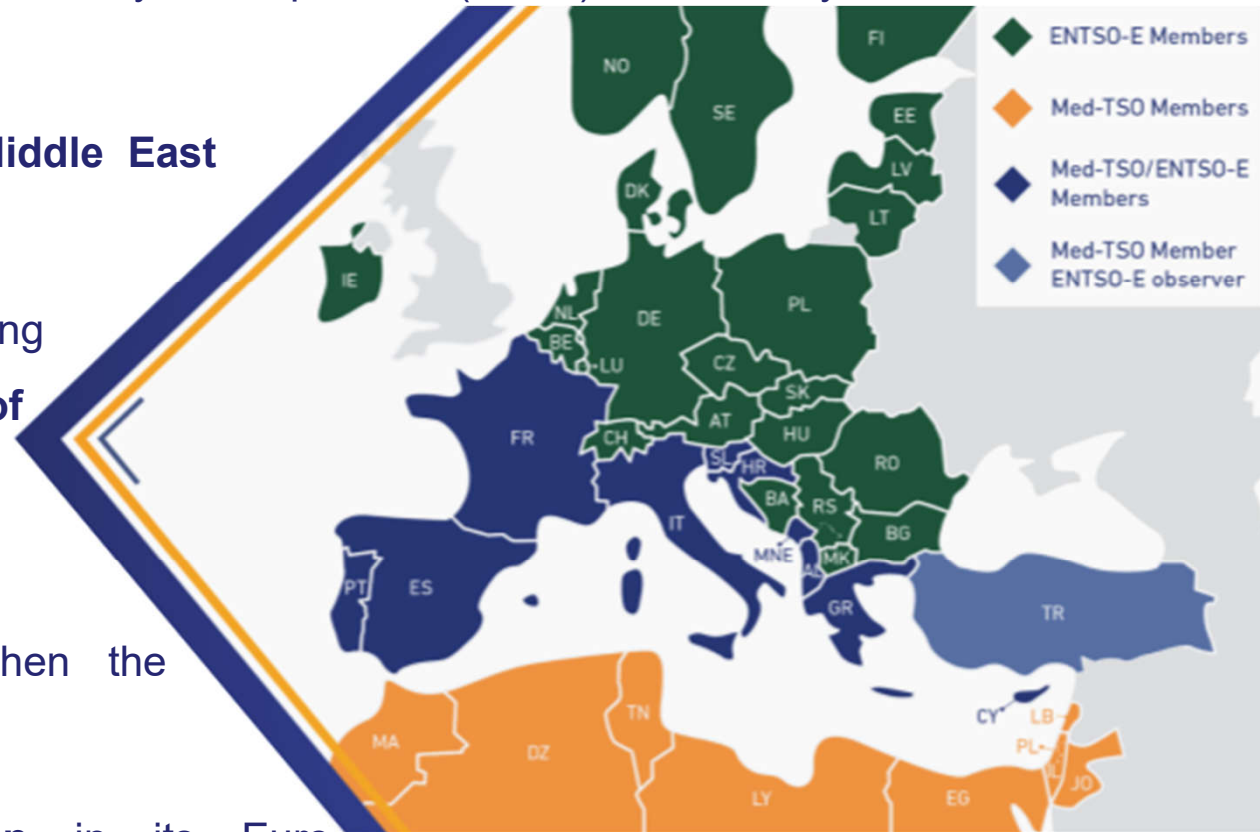
- Lack of appropriate remuneration schemes
- Regional policies to be put in place for favoring regional efficient financing mechanism
- Promote tighter positive role of IFIs

- **A chicken & egg problem?**
- **Promoting the development of the grids at first**

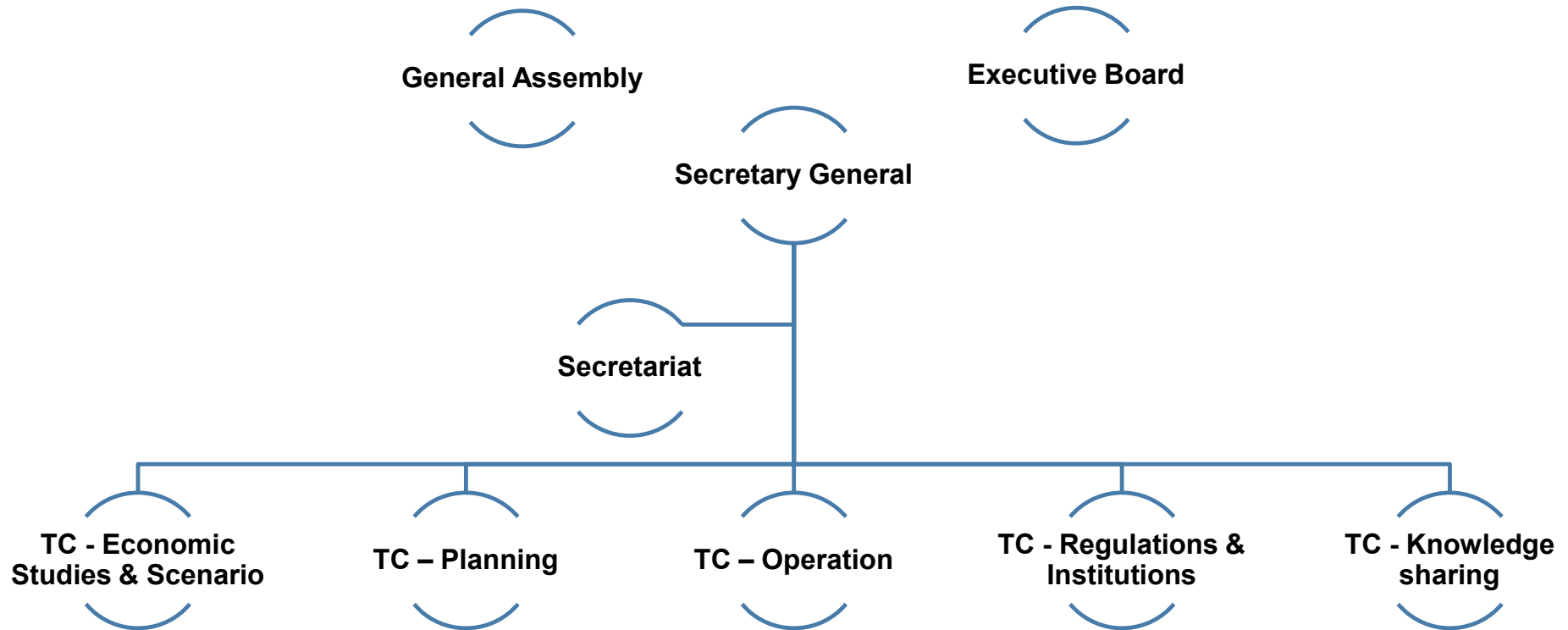
## Med-TSO at a glance



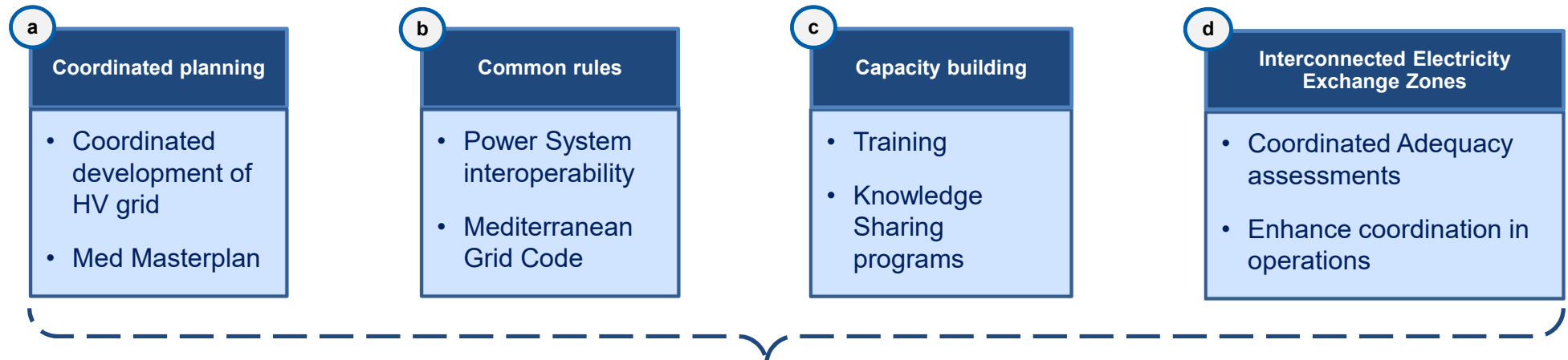
- Association of the Mediterranean Transmission System Operators (TSOs) for electricity
- **20** Med countries members
- **A bridge between Europe and the Middle East and North Africa Region**
- Playing a regional reference role for creating a favorable climate for the **development of North-South and 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



# Med-TSO Organization



# Main pillars of Med-TSO's action plan



2015

2018

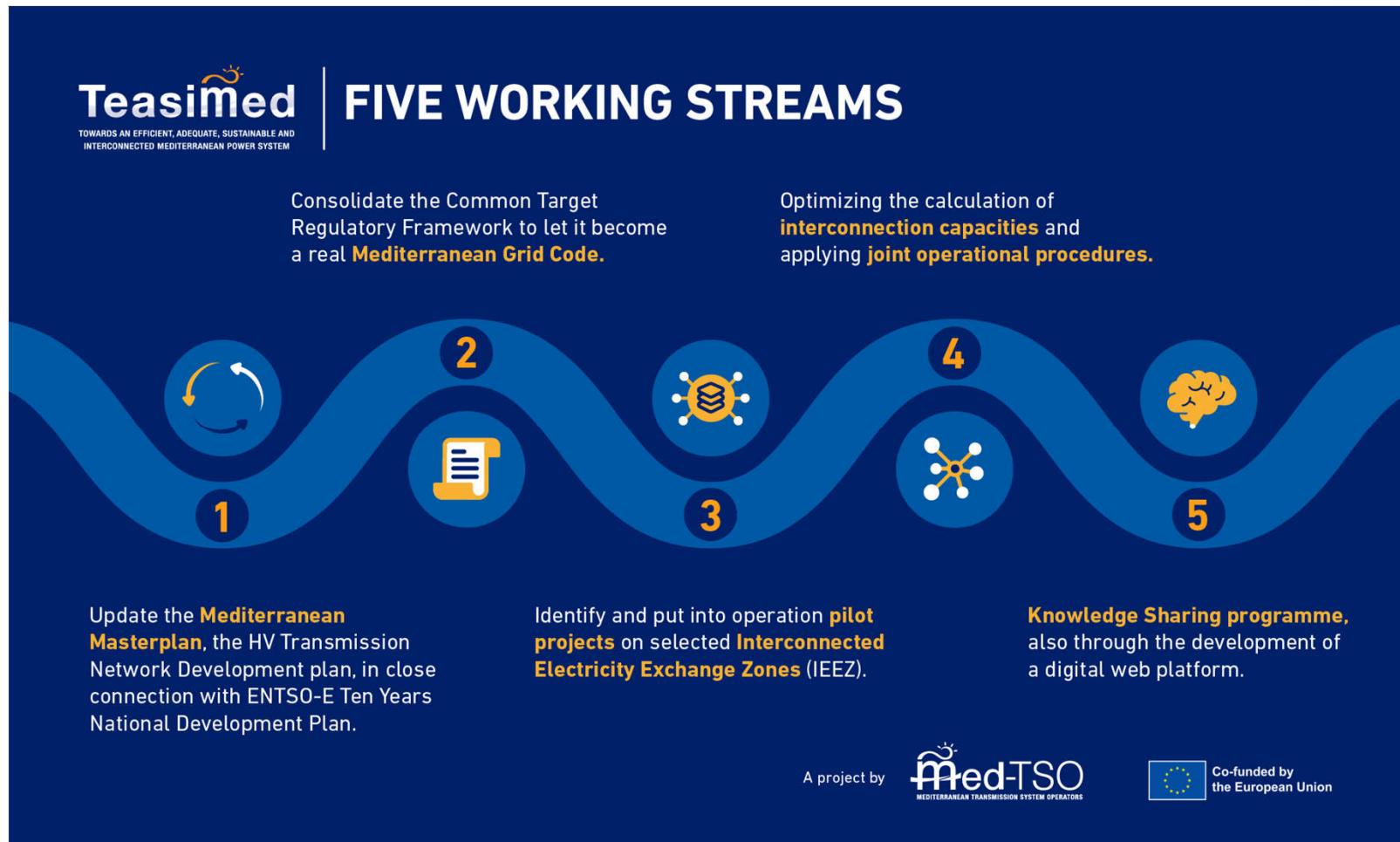
2020

2023

2025

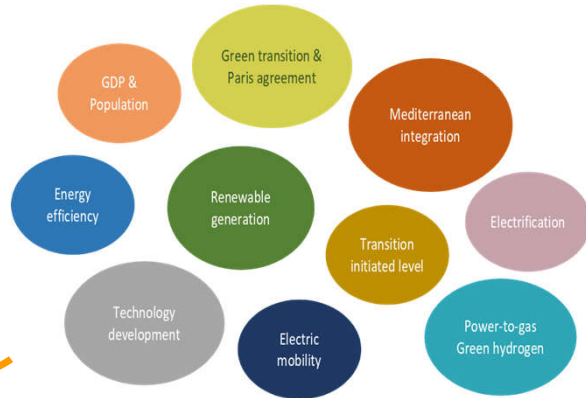




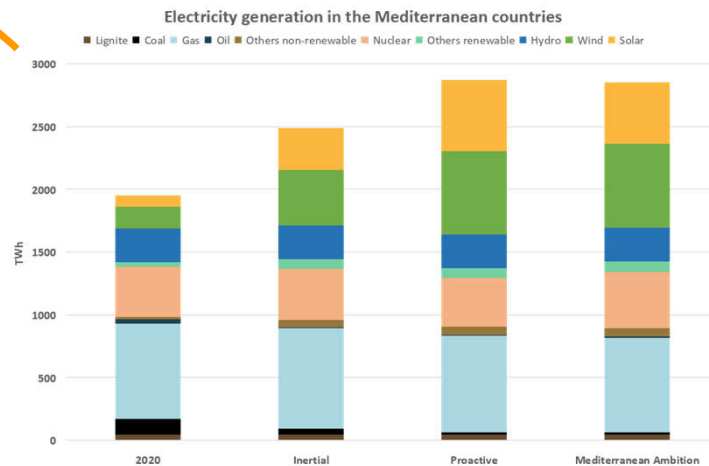


# The Mediterranean Master Plan 2022 – a set of activities

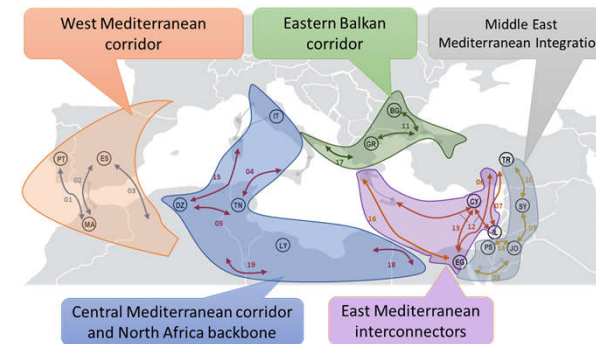
## 1 - Identify main trends, drivers & uncertainties



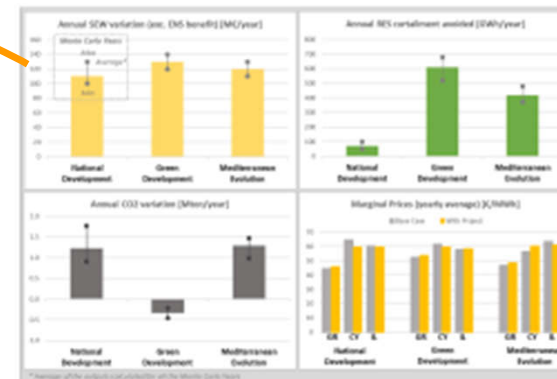
## 2 - Development of exploratory scenarios



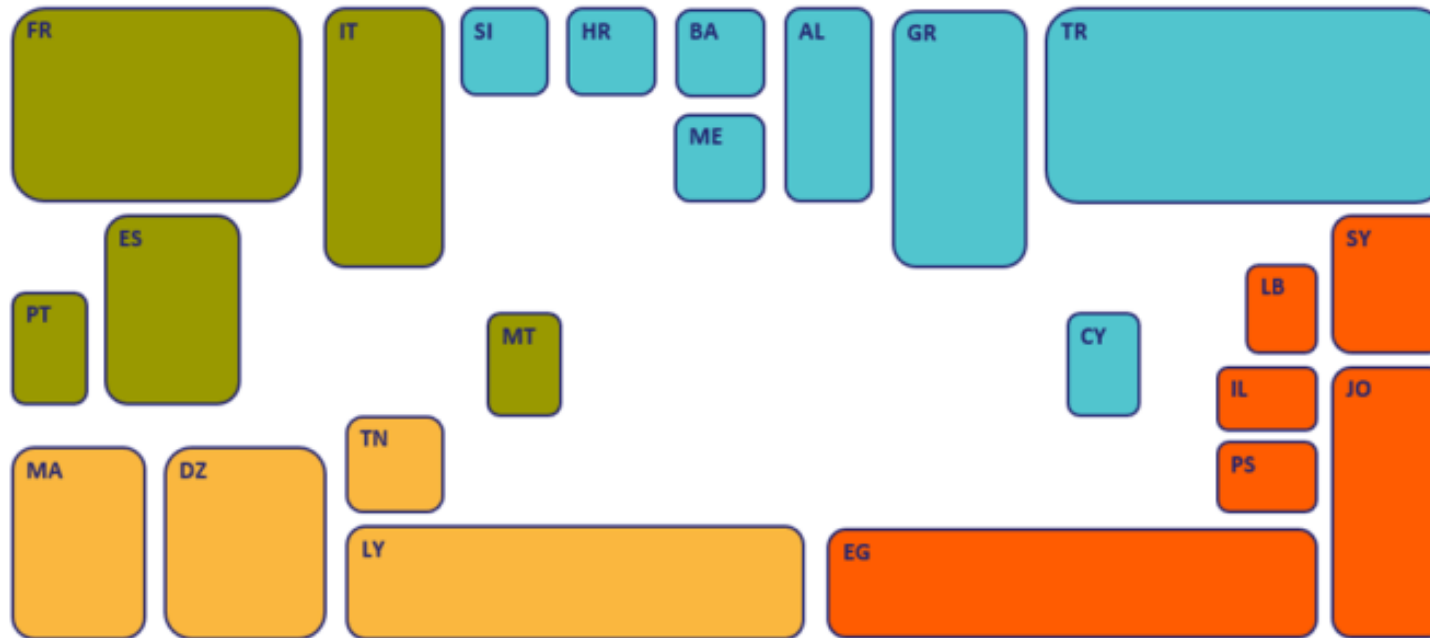
## 3 - Collect list of projects after having defined common eligibility criteria



## 4 - Cost-Benefit assessments Market & Network Analysis



# The Mediterranean Master Plan 2022 - Modelling



- North-West
- North-East
- South-West
- South-East

Countries present in our Market model (detailed data for load, aggregated generation, internal modeling, open-source software)

- All the EU countries also present with the same level of detail
- Border conditions (predetermined hourly exchange time series) : EG-KSA, EG-SD, JO-KSA, JO-IQ
- Our model can be easily extended to neighboring countries (Gulf) if data are accessible



# The Mediterranean Master Plan 2022 - List of projects

• Project 1 – Morocco (MA00) – Portugal (PT00)
• Project 2 – Morocco (MA00) – Spain (ES00)
• Project 3 – Algeria (DZ00) – Spain (ES00)
• Project 4 – Italy (ITSI) – Tunisia (TN00)
• Project 5 – Algeria (DZ00) – Tunisia (TN00)
• Project 6 – Egypt (EG00) – Turkey (TR00)
• Project 7 – Israel (IL00) – Turkey (TR00)
• Project 8 – Egypt (EG00) – Jordan (JO00)
• Project 9 – Jordan (JO00) – Syria (SY00)
• Project 10 – Syria (SY00) – Turkey (TR00)
• Project 11 – Bulgaria (BG00) – Greece (GR00) – Turkey (TR00)
• Project 12 – Greece (GR03) – Cyprus (CY00) – Israel (IL00)
• Project 13 – Cyprus (CY00) – Egypt (EG00) – with 12
• Project 14 – Jordan (JO00) – Palestine (PS00)
• Project 15 – Algeria (DZ00) – Italy Sardinia (ITSA)
• Project 16 – Egypt – Greece
• Project 17 – Italy – Greece
• Project 18 – Egypt – Libya
• Project 19 – Algeria – Libya



# The Mediterranean Master Plan 2022 - Outcomes



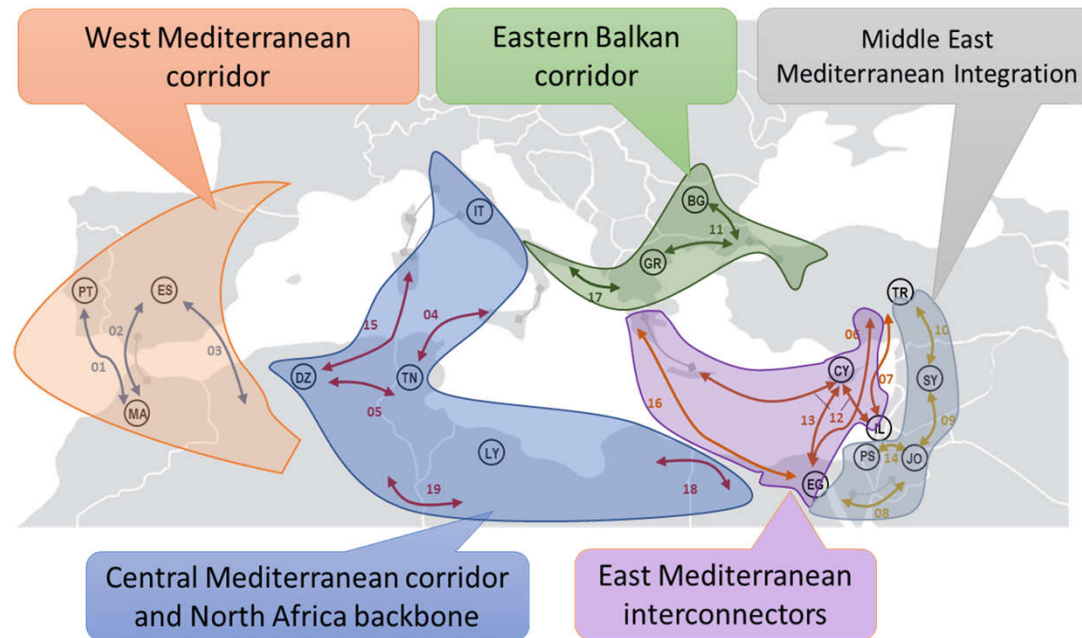
**19 Interconnections assessed (some of them realized by 2030)**  
**16 Countries involved**  
**16 BEUR Investments**  
**9.600 km new lines**  
**19 GW new interconnection capacity**

**Integration of Renewable Energy Sources**

**Increased System Resilience and Security of Supply**

**Social & economic growth**

**Allows TSOs to realize long-term energy scenarios and run assessments on the potential benefits of interconnection projects with neighboring countries**



**Many potential reinforcements exist in the Mediterranean Region that have technical and commercial viability but suffer financial and policy/regulatory gaps**

<https://masterplan.med-tso.org/>  
<https://data.med-tso.org/>



## Adequacy assessment

- European TSOs regularly assess and control system adequacy
- Similar investigations carried out for the first time ever to non-EU Med-TSO members
- Provided reports:
  - Summer Outlook 2022 Report provides information about potential adequacy issues during summer 2022 in the 5 MED-TSO members (Morocco, Algeria, Tunisia, Egypt and Jordan)
  - Winter Outlook (plus Lebanon and Libya)
  - Mid-term Adequacy Forecast



antaresimulator



# 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

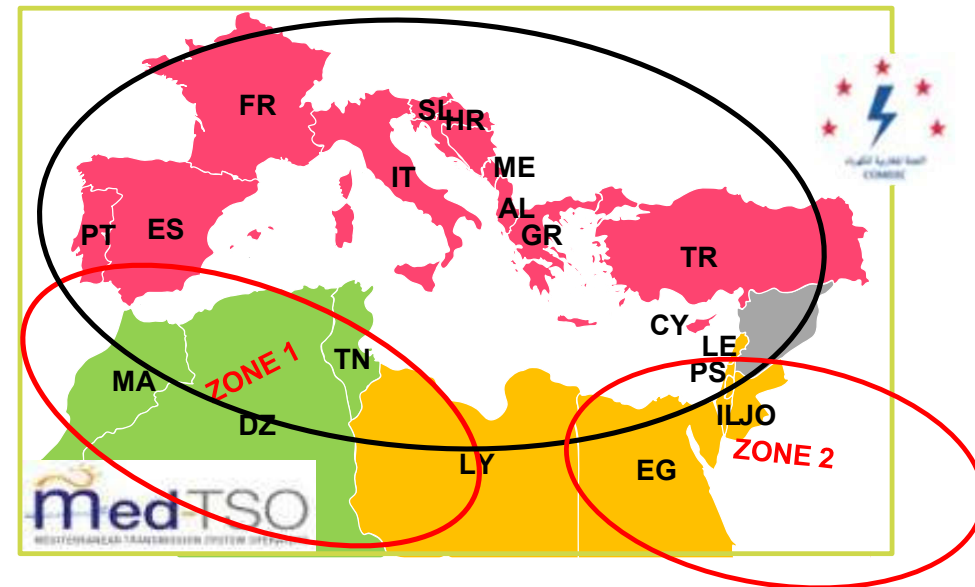


## Launching pilot projects

- Create IEEZ to exchange electricity on a commercial basis
- Roadmaps set up with the final goal to promote the efficient operation of interconnected electrical systems, through the use of trading web platforms
- Implement coherent / harmonized technical rules for managing interconnections and adopt commercial rules for allocating the interconnection capacity and settle the financial transactions

- **Strong institutional support required**

- **Trading areas connected to the EU IEM: win-win integration among EU and non-EU countries**





## New approaches in TEASIMED 2 (2023-25)

- Most in continuity with TEASIMED
- Extend the geographical perimeter of investigations to other regions bordering MENA countries, in particular the Gulf Region and Saudi Arabia at first

Only 1 scenario for 2030

3 different scenarios for 2040

Electrification

Green hydrogen in MENA region

Energy Efficiency

Storage

Electrical mobility

2040 for the Network Analysis

Projects and CBA



## 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



Protocol of cooperation signed in 2022 (together with OME & MEDENER)



Cooperation within UfM energy platforms and strengthened collaboration for the development of long-term energy scenarios

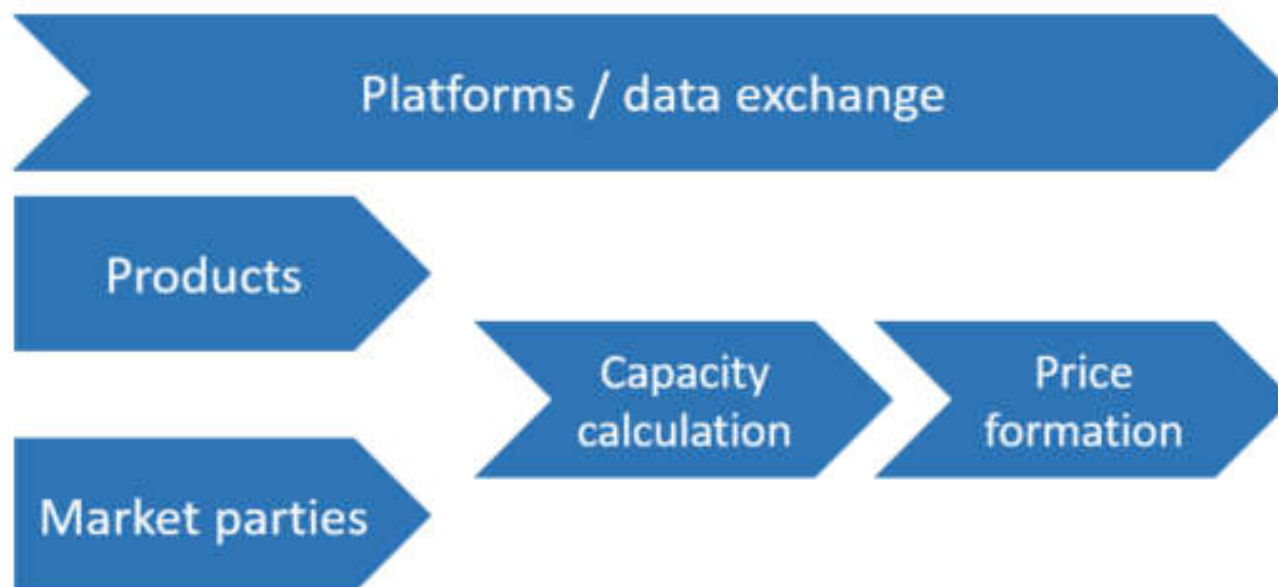
- **Gradual approach**
- **No one-size-fits-all solutions**
- **Sub-regional approach**



## Part 2: A Roadmap for the creation of a Maghreb electricity Market

## Key dimensions of cross-border energy trading

Energy trade in an integrated market requires to intervene in some key dimensions

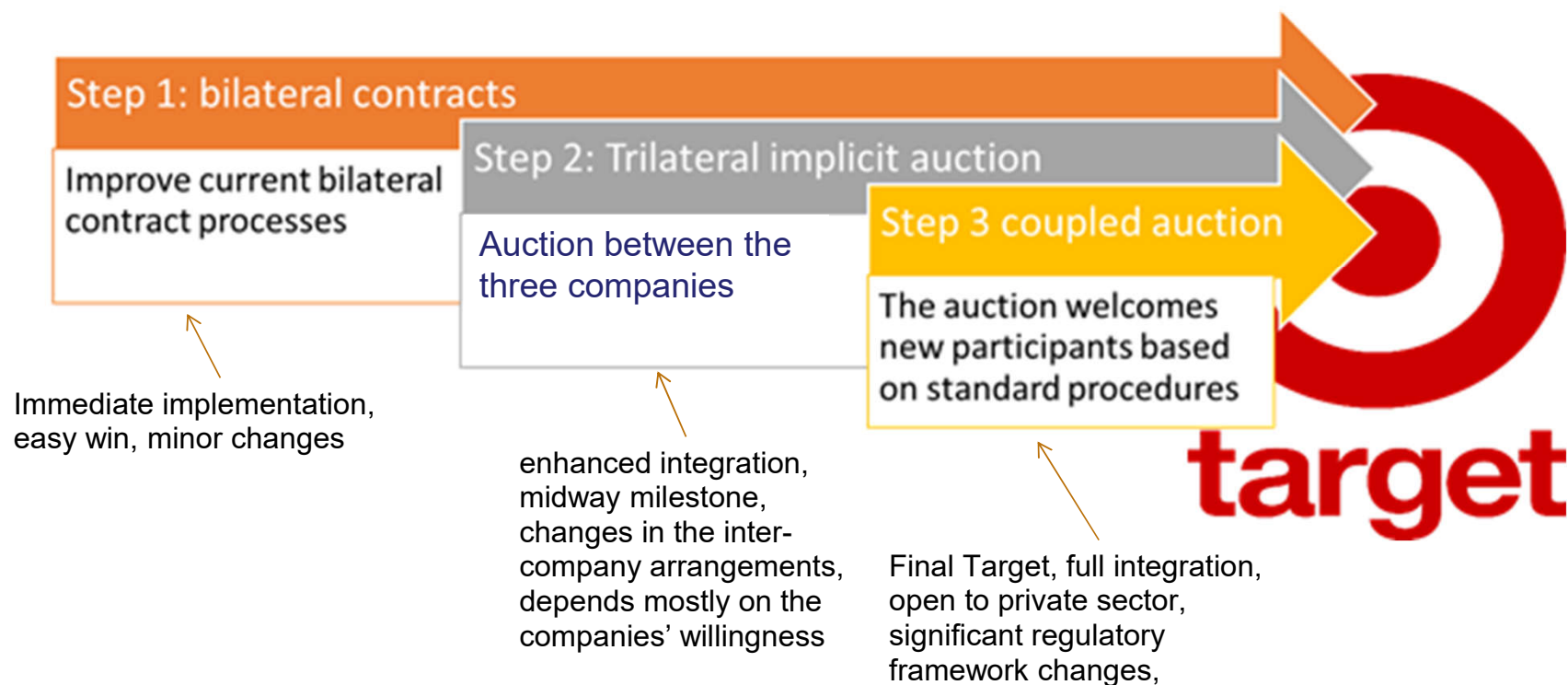


## Maghreb IEEZ: the objective

Creating a Maghreb Interconnected Electricity Exchange Zone (IEEZ) with the objectives to:

1. **use the existing interconnection** capacity better and in a more efficient way,
2. **build a cross-border market** in line with the principles of the Internal European Energy Market to make easier the exchanges with the EU Markets
3. **adopt multi-phase approach** to build progressively and pragmatically on current commercial arrangements, without creating a big bang and considering each country specificities

# The Proposal: a multi-phase approach



## The multi-phase approach in a nutshell

<b>TRADING DESIGN – PHASED APPROACH</b>			
<b>CATEGORY</b>	<b>PHASE 1</b>	<b>PHASE 2</b>	<b>PHASE 3</b>
<b>Participants</b>	TSOs		TSOs and other market participants (*in at least one country)
<b>Contract Counterparties</b>	Bilateral	Trilateral	Multilateral
<b>Products</b>	Hourly and Block – Daily and Intraday products		
<b>Price Determination</b>	Pre-determined price range with internal guidelines	Auction Clearing Price	
<b>Type of cross-border capacity allocation</b>	No allocation required in a bilateral environment	Implicit allocation of cross-border capacity	
<b>Market Organization and market rules</b>	Bilateral agreements	Trilateral market rules	Market Rules
<b>Payment and nominations</b>	Unchanged, with no central clearing party	Trilateral settlement	Central Counterparty



## Conclusions

- **Integration** of Med Power Systems is no more “an opportunity” but a **real necessity**
- Technical, financial, regulatory, institutional barriers: **break the loop by facilitating investments** in the grids, as they require very long times to implementation
- **First** implemented **projects** to act as **catalyst** for boosting all the other necessary investments
- **Efficient financing mechanism** to boost long-term & capital-intensive investments in the grids also through specific instruments, i.e. **not only market-driven CBA and CBCA**
- **Regional policies** to achieve the effective external dimension of the EU Green Deal (reach EU targets and Med Integration): specific instruments for boosting investments not only in the EU MS, filling the gap between policies and concrete actions
- Effective integration when we think **new interconnections as links between regions**
- **MENA region is not the energy reservoir for Europe**: first objective is to secure the internal demand
- **Integration is a win-win process** to exploit complementarities: electricity is not gas or H2
- Med-TSO works to **achieve the technical interoperability** of systems: **trading comes next**





# THANK YOU!

[www.med-tso.org](http://www.med-tso.org)



**Med-TSO**  
Teasimed2 project

Co-funded by  
the European Union

