MEDREG's MEMO+ results

Zitouni Lamine – Electricity Expert, MEDREG Secretariat

ERRA – EMER COM meeting - 8 March 2024

Co-funded by
the European Union

2022

Energy Potential of the Mediterranean

27
OPERATIONAL LNG TERMINALS

TOTAL RES INSTALLED CAPACITY
OVER 290 GW

ELECTRICITY CONSUMERS EXCEED
240 MILLION

POPULATION OF MORE THAN **540 MILLION**

CROSS-BORDER INTERCONNECTIONS
SURPASSING 100
OF WHICH **50% ARE IN THE EU**

HUGE TECHNICAL POTENTIAL FOR PV AND WIND

45+ BILLION $
OF PLANNED INVESTMENT IN HYDROGEN BY 2030

MORE THAN **2000 TWH** OF ELECTRICITY GENERATED (IN 2021), OF WHICH **30% RES**

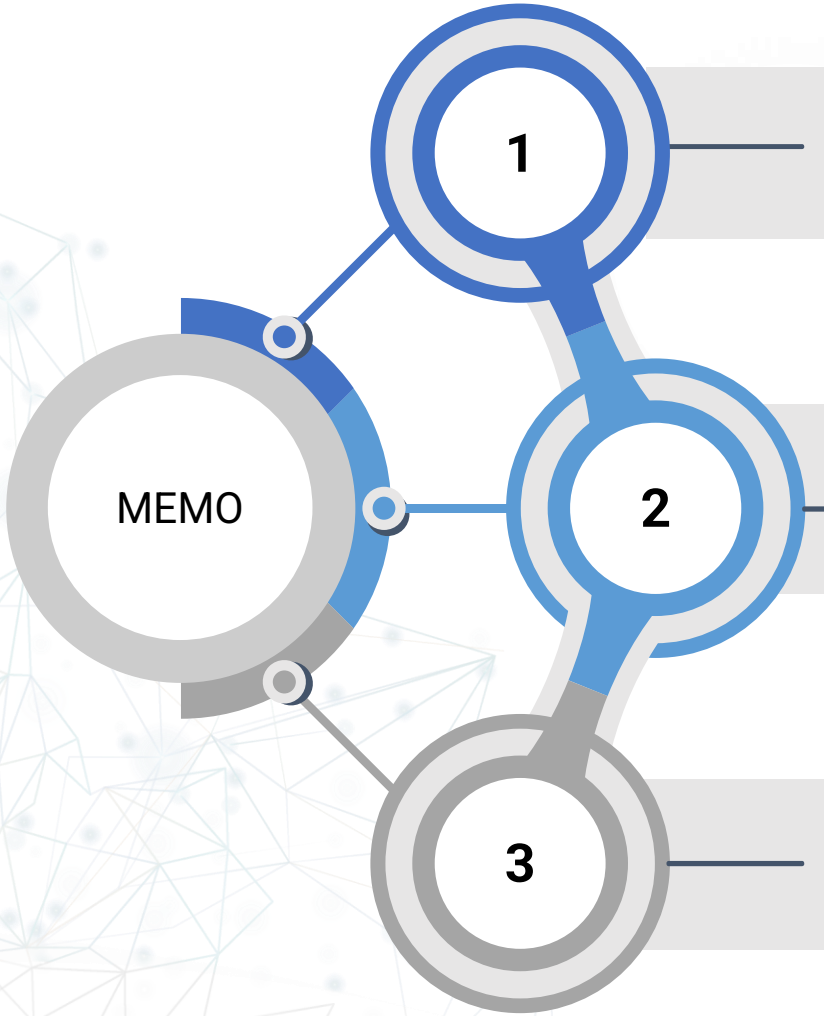
GAS CONSUMERS NUMBER GREATER THAN
70 MILLION

4 NATURAL GAS EXPORTING COUNTRIES WITH MORE TO COME

ELECTRICITY TRANSMISSION AND DISTRIBUTION LINES SPAN OF **7,5 MILLION KM**

150 000+ KM OF NATURAL GAS PIPELINES SERVING NATIONAL CONSUMERS

What's the Mediterranean Electricity Market Observatory (MEMO)

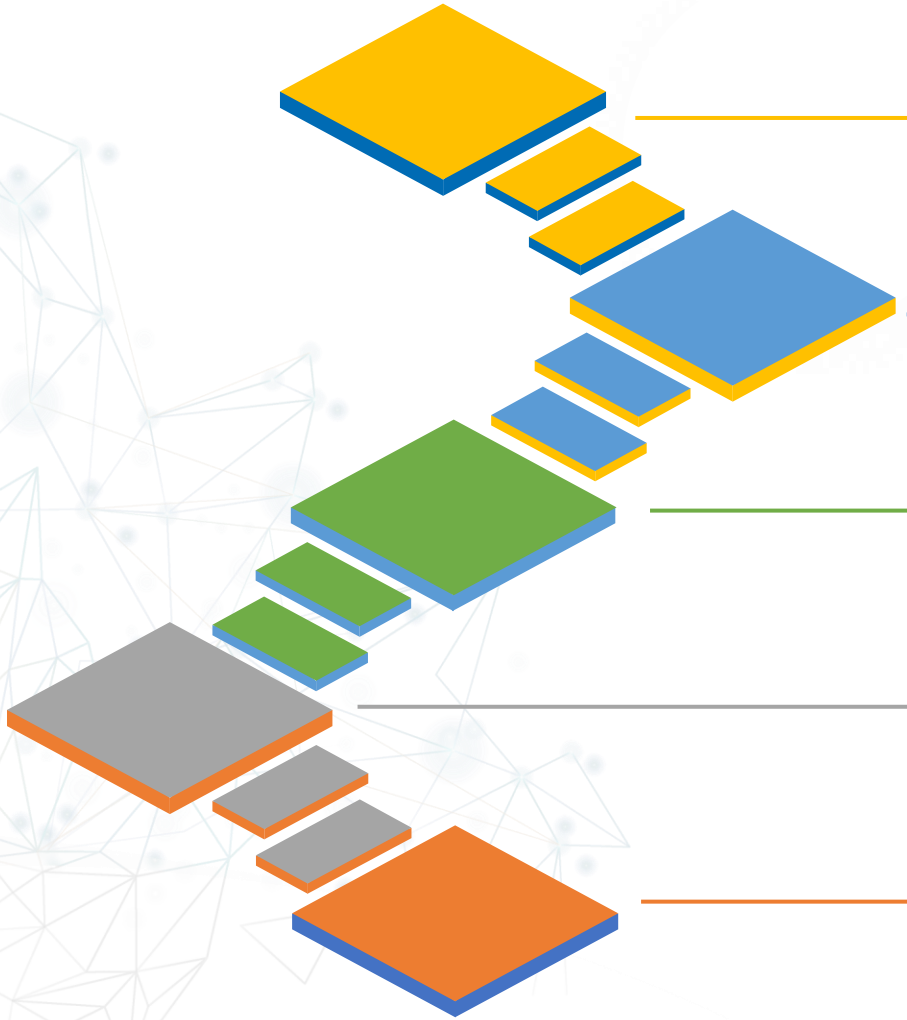


1 — Assess the progress in establishing and integrating national and (sub)regional markets. — **Aim**

2 — Key Aspects of National Electricity Markets — **Part 1**

3 — Regional Electricity Market Integration — **Part 2**

Mediterranean Electricity Market Observatory - Evolution



6th	2022	MEDREG MEMO+ update
5th	2020	MEDREG MEMO update
4th	2018	Towards a MEDREG Electricity Market Observatory
3rd	2015	MEDREG MEMO – 2010-2015 evolution and comparison
2nd	2010	MEDREG Master Plan towards Regional Market
1st	2007	MEDREG First survey on the electricity national market

MEDREG

Co-funded by the European Union

Mediterranean Electricity Market Observatory - Structure

Overview of electricity systems

- Macro-economic context
- Electricity demand trends
- Power generation

Interconnections

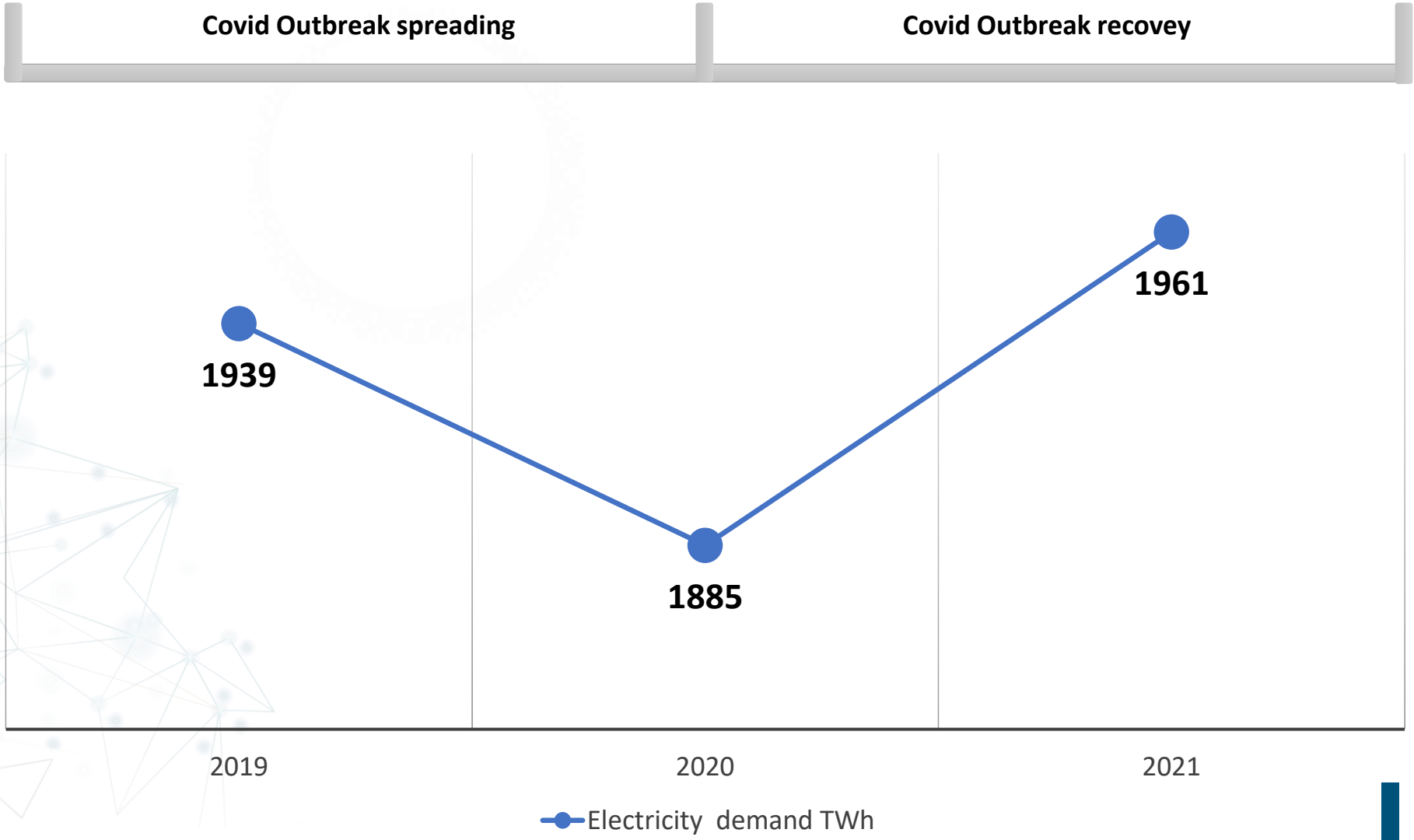
- Institutional organization

Subregional approach

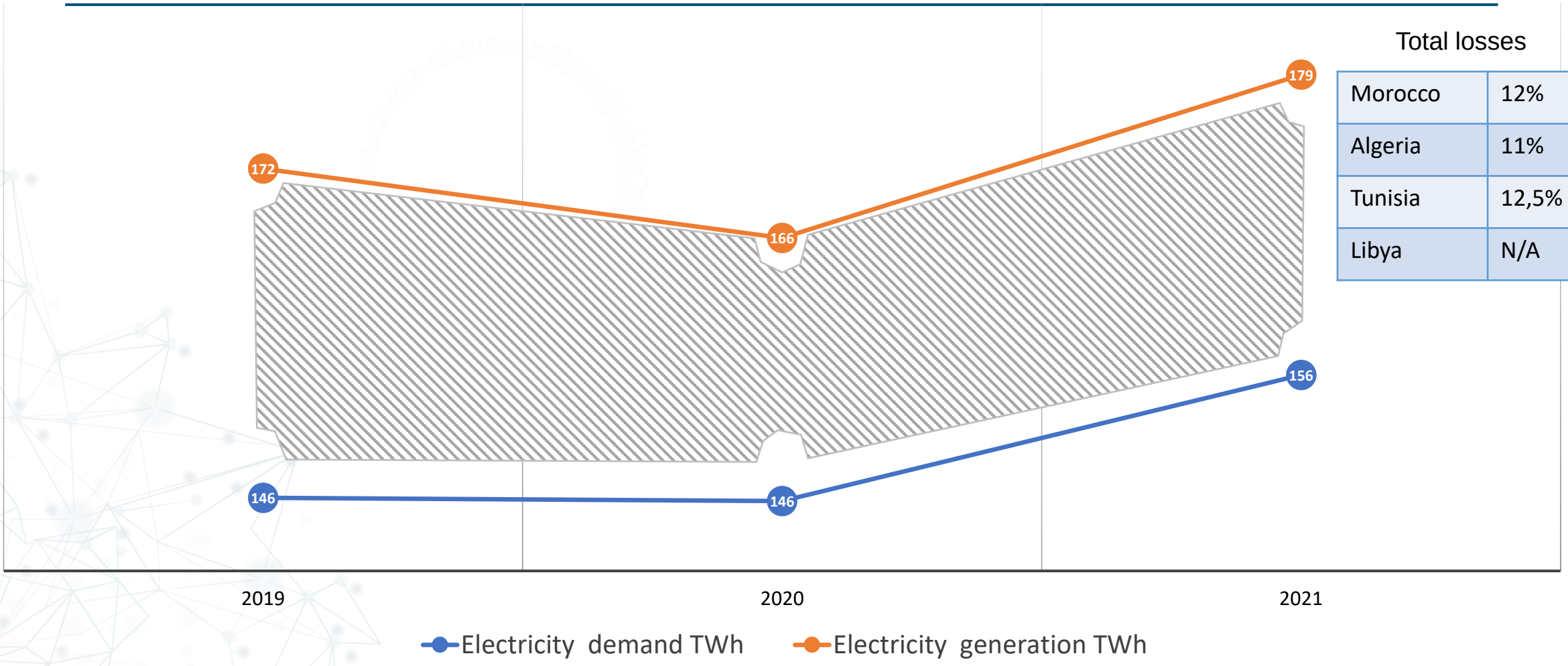
- Demand and supply
- Power generation
- Governance and unbundling regime
- Internal structure of the electricity market
- Regional electricity market system

MEMO – Sub-regions

Overview of electricity system



Electricity demand VS generation in Maghreb sub-region



Total losses

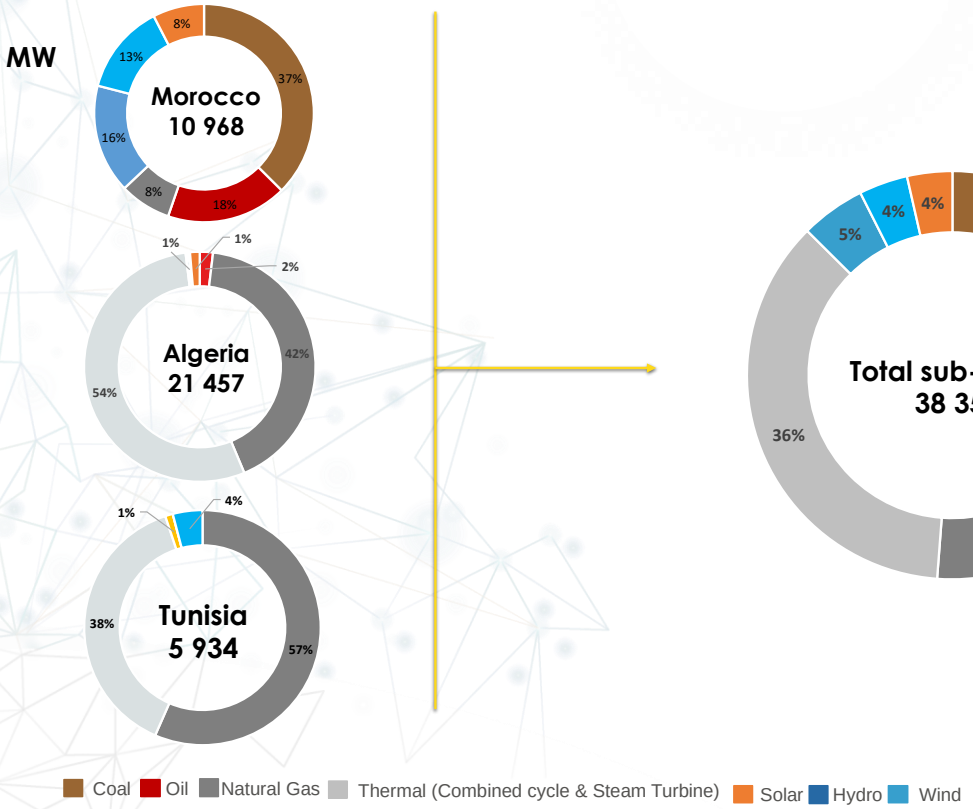
Morocco	12%
Algeria	11%
Tunisia	12,5%
Libya	N/A

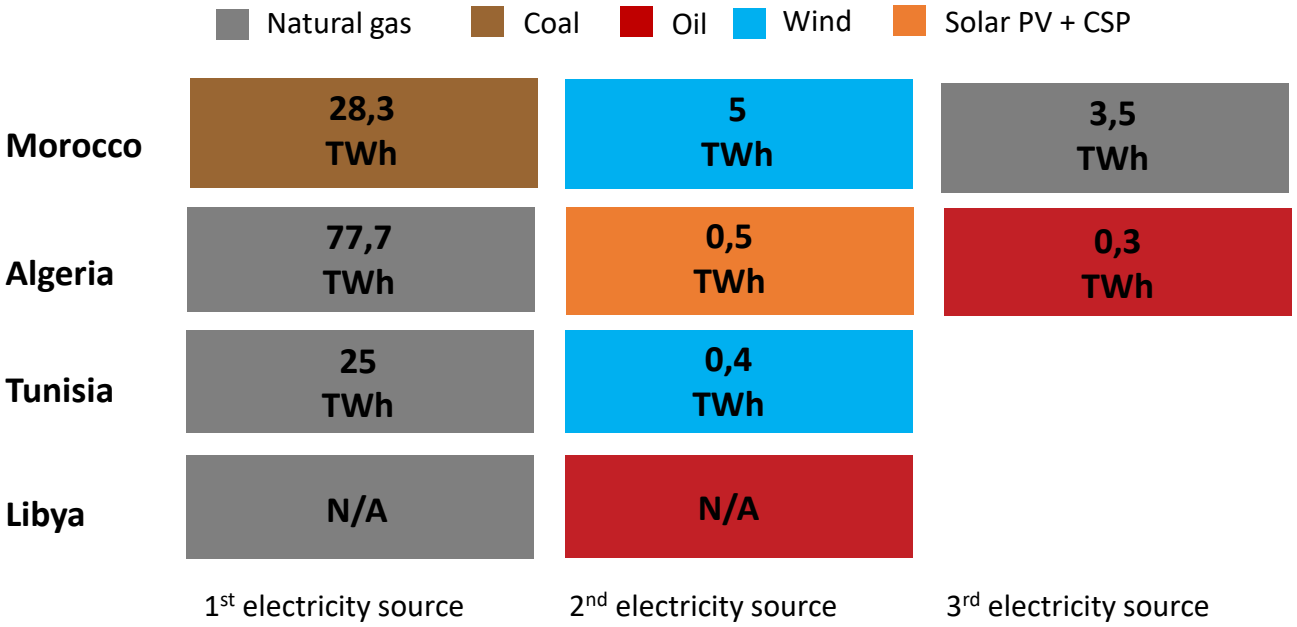
Energy mix in Maghreb region

Energy mix in Maghreb region

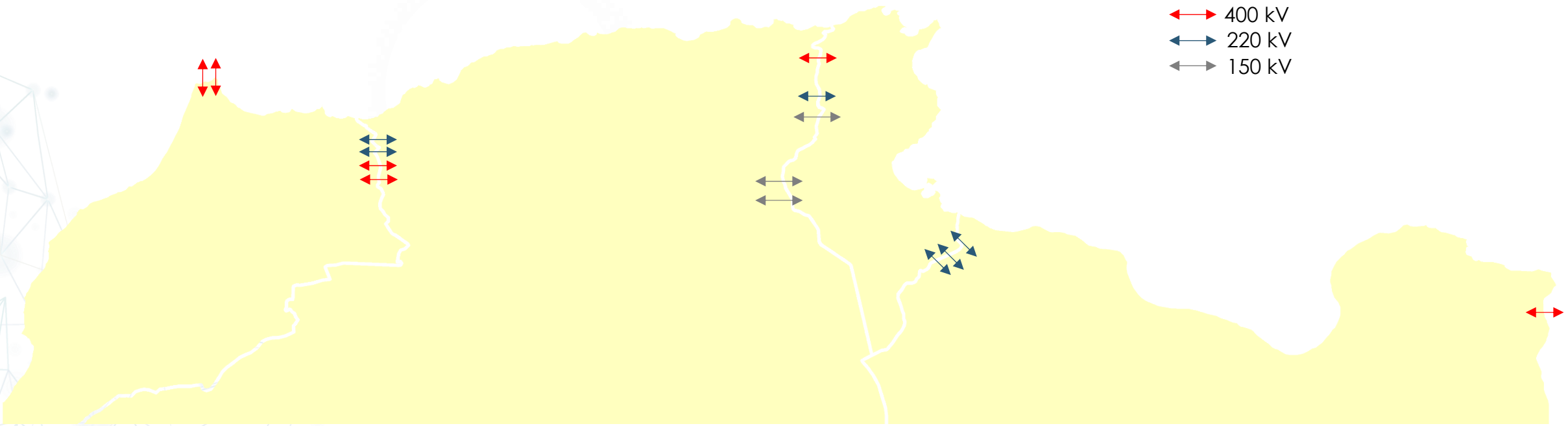
Installed capacity

Electricity generation





Cross-border interconnections in the Maghreb member countries



Total import: 0,7 TWh
Total export: 0,9 TWh

Total import: 0 TWh
Total export: 1,7 TWh

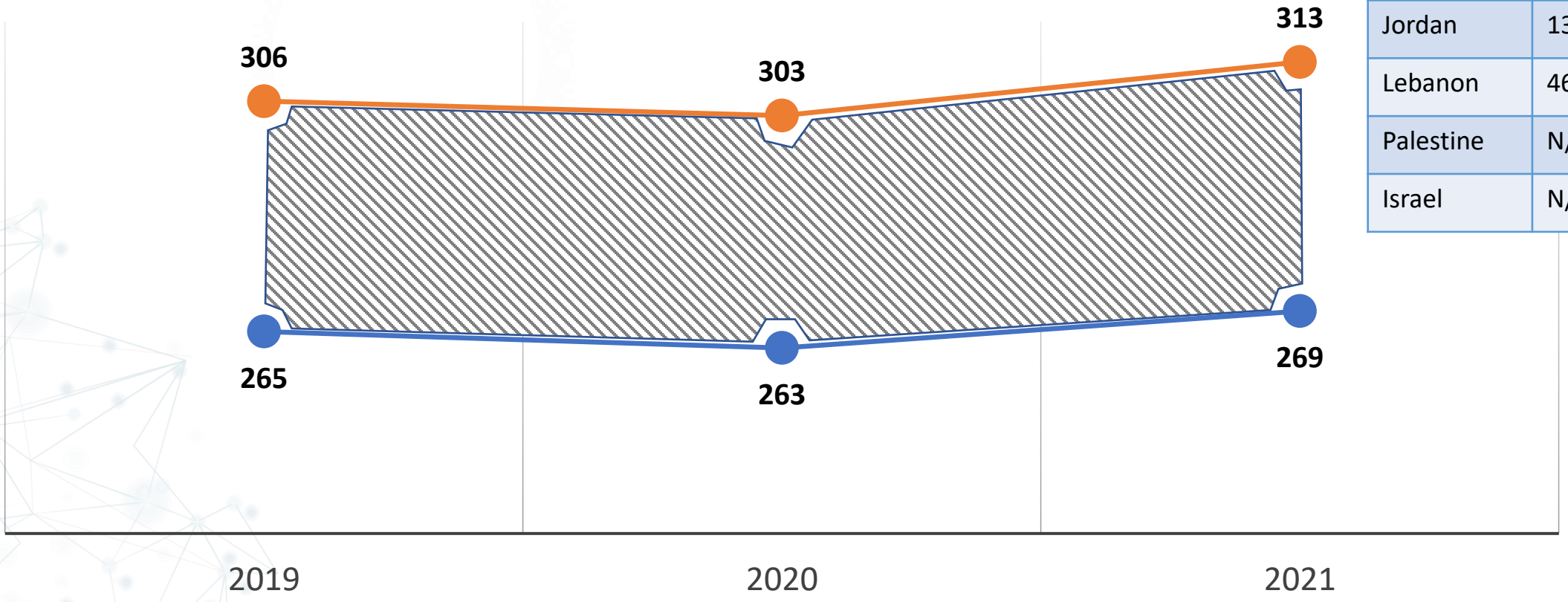
Total import: 1 TWh
Total export: 0,1 TWh

Total import: 1,6 TWh
Total export: 0 TWh

MEDREG

Co-funded by the European Union

Electricity demand VS generation in East Mediterranean



Total losses

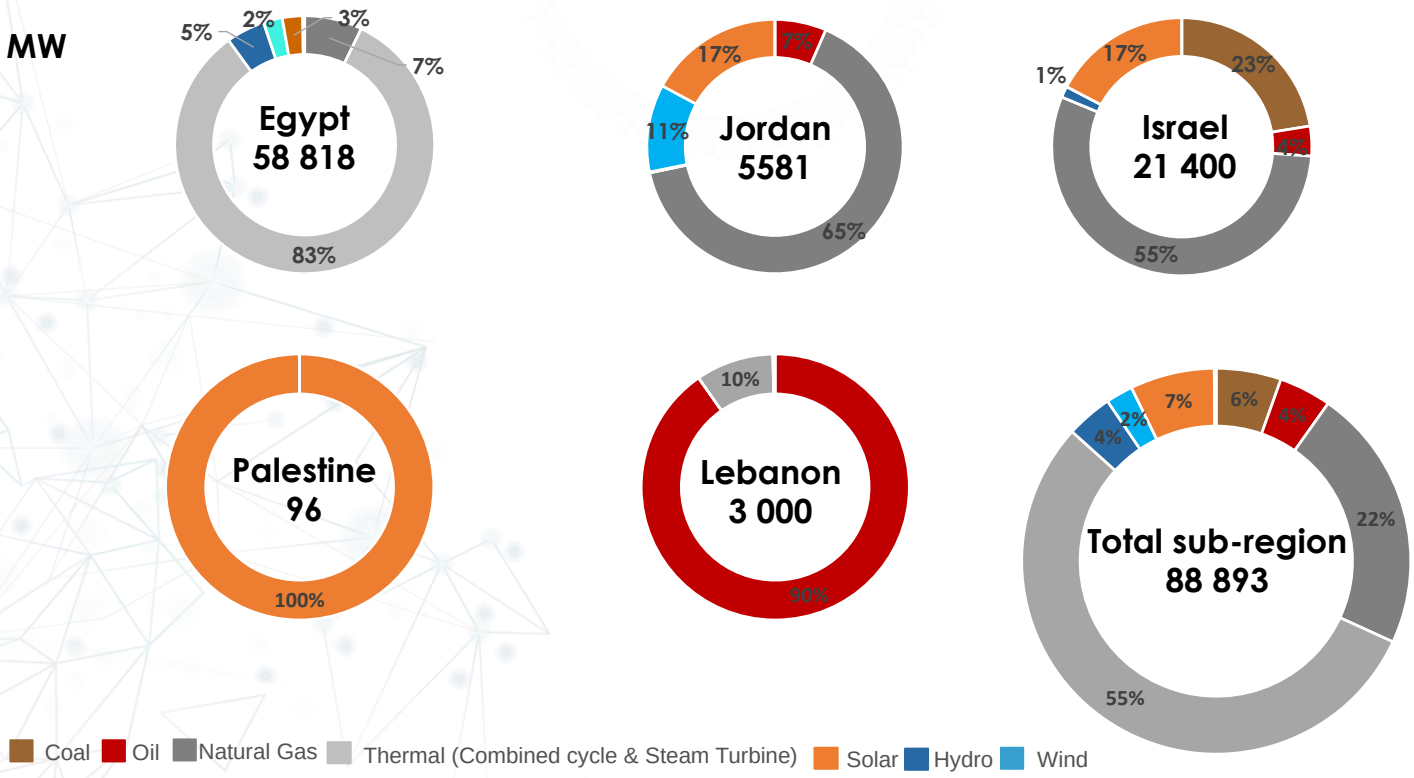
Egypt	22%
Jordan	13%
Lebanon	46%
Palestine	N/A
Israel	N/A

Energy mix in East Mediterranean region

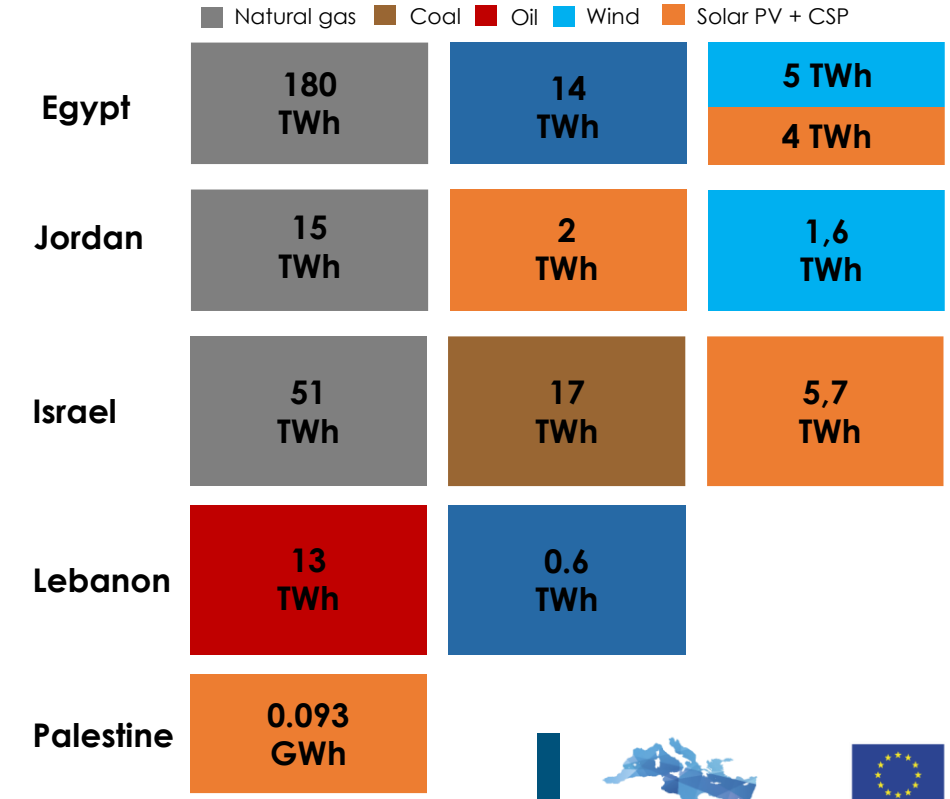
Energy mix in Middle east region

Installed capacity

MW



Electricity generation



MEDREG

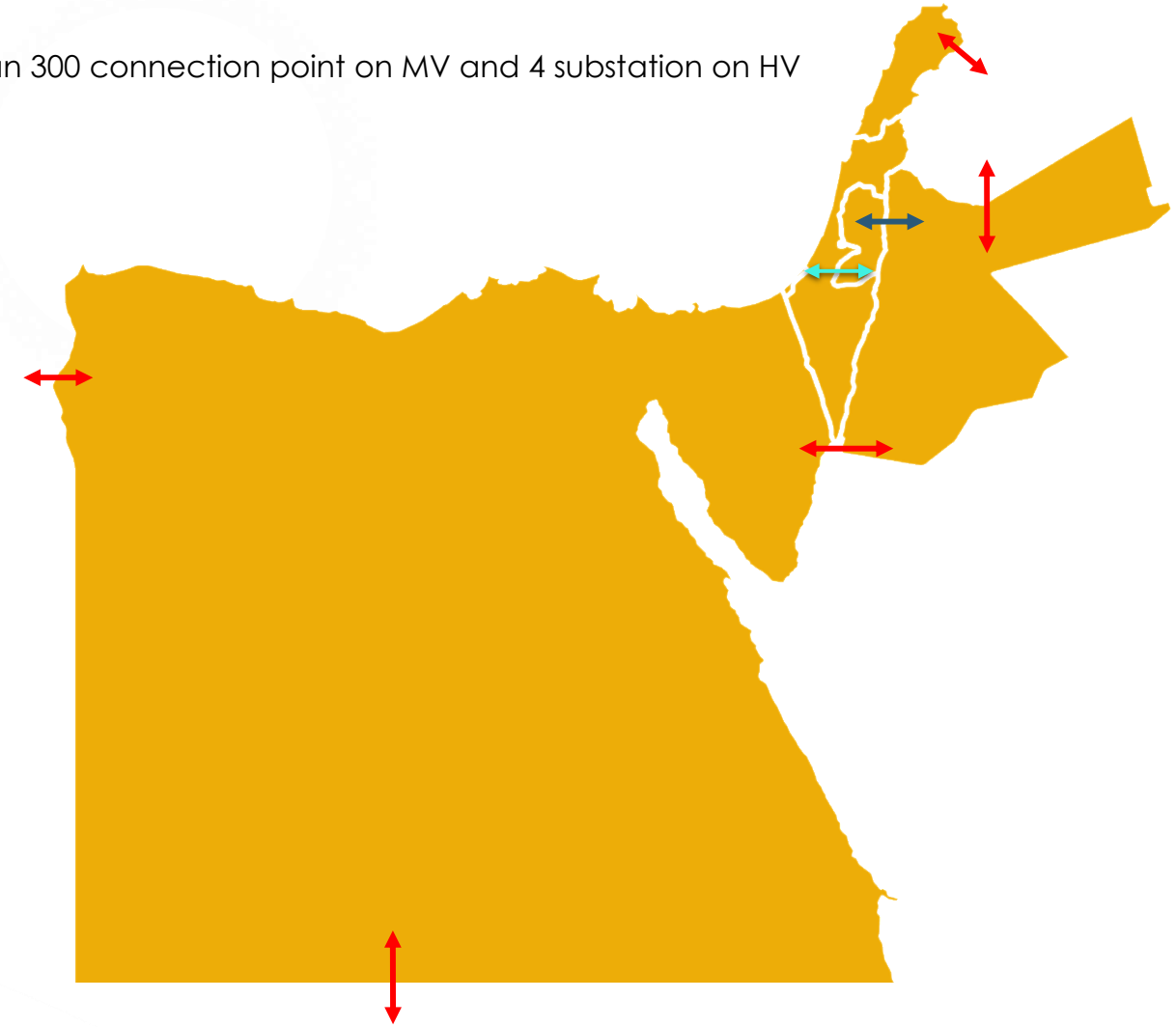
Co-funded by the European Union

Cross-border interconnections in the East Mediterranean

400 kV

220 kV

More than 300 connection point on MV and 4 substation on HV



Total import: 0,2 TWh
Total export: 1,6 TWh

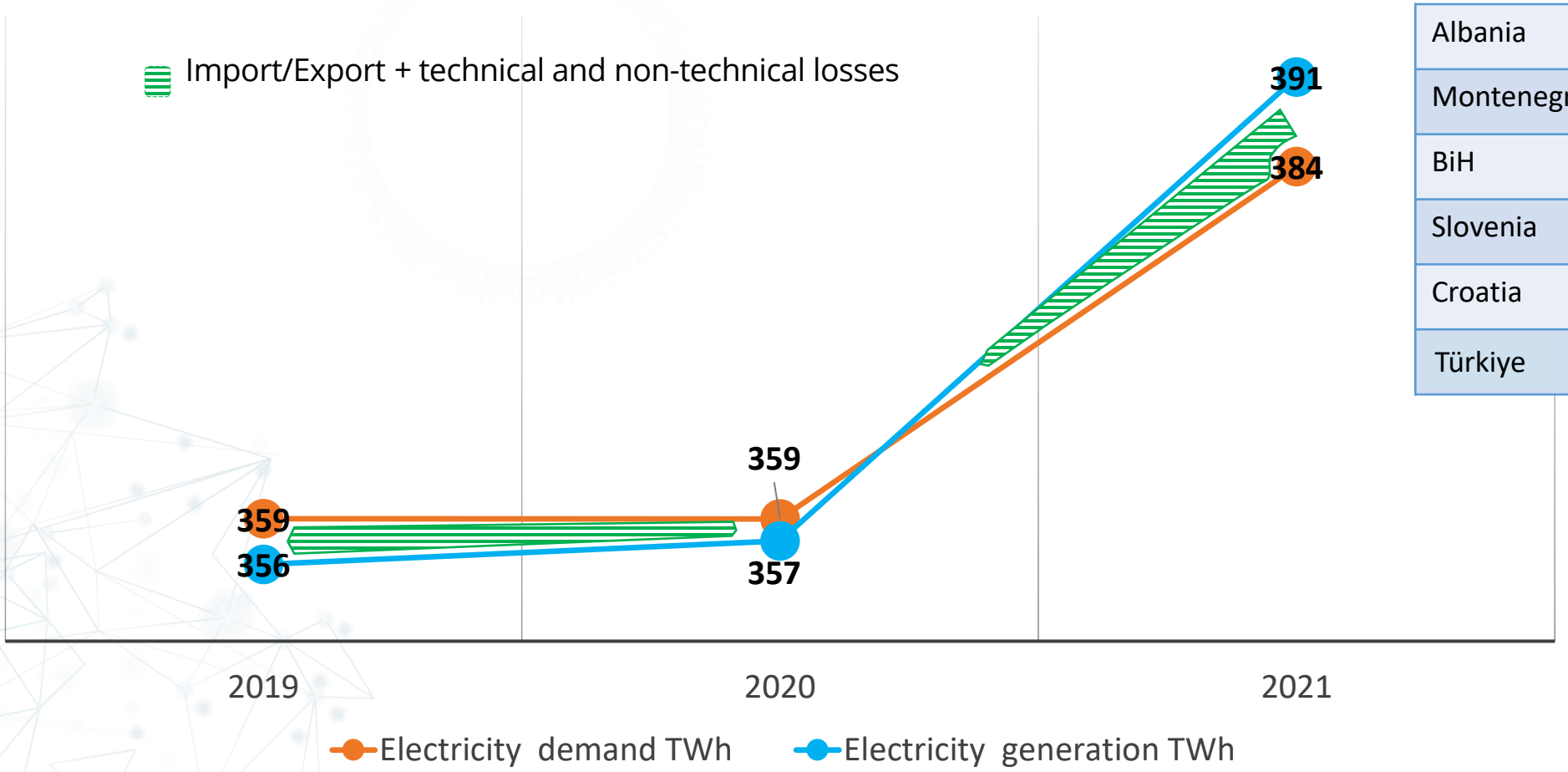
Total import: 0,7 TWh
Total export: 0,2 TWh

Total import: 3,3 TWh
Total export: 0 TWh

Not operational

No interconnections

Electricity demand VS generation in Türkiye & the Balkans sub-region

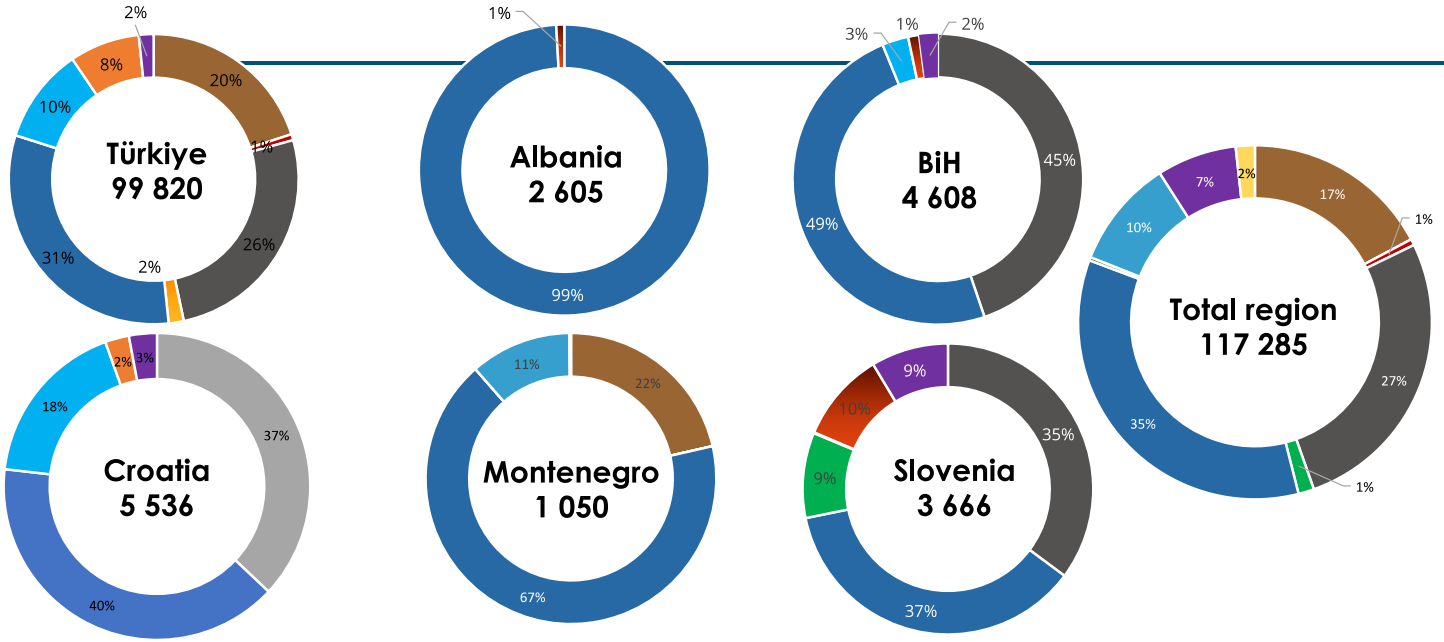


Total losses

Albania	23%
Montenegro	14%
BiH	11%
Slovenia	N/A
Croatia	N/A
Türkiye	12%

Energy mix in Türkiye & the Balkans region

MW



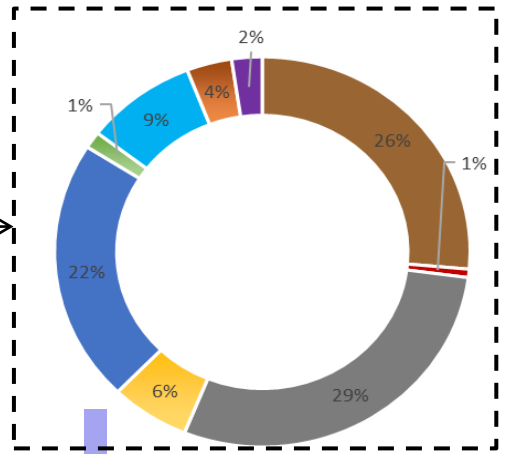
Coal | Oil | Natural Gas | Thermal (Combined cycle & Steam Turbine) | Geothermal

Solar | Hydro | Wind | Nuclear | Others (biomass, CHP etc…)

Installed capacity

Electricity generation

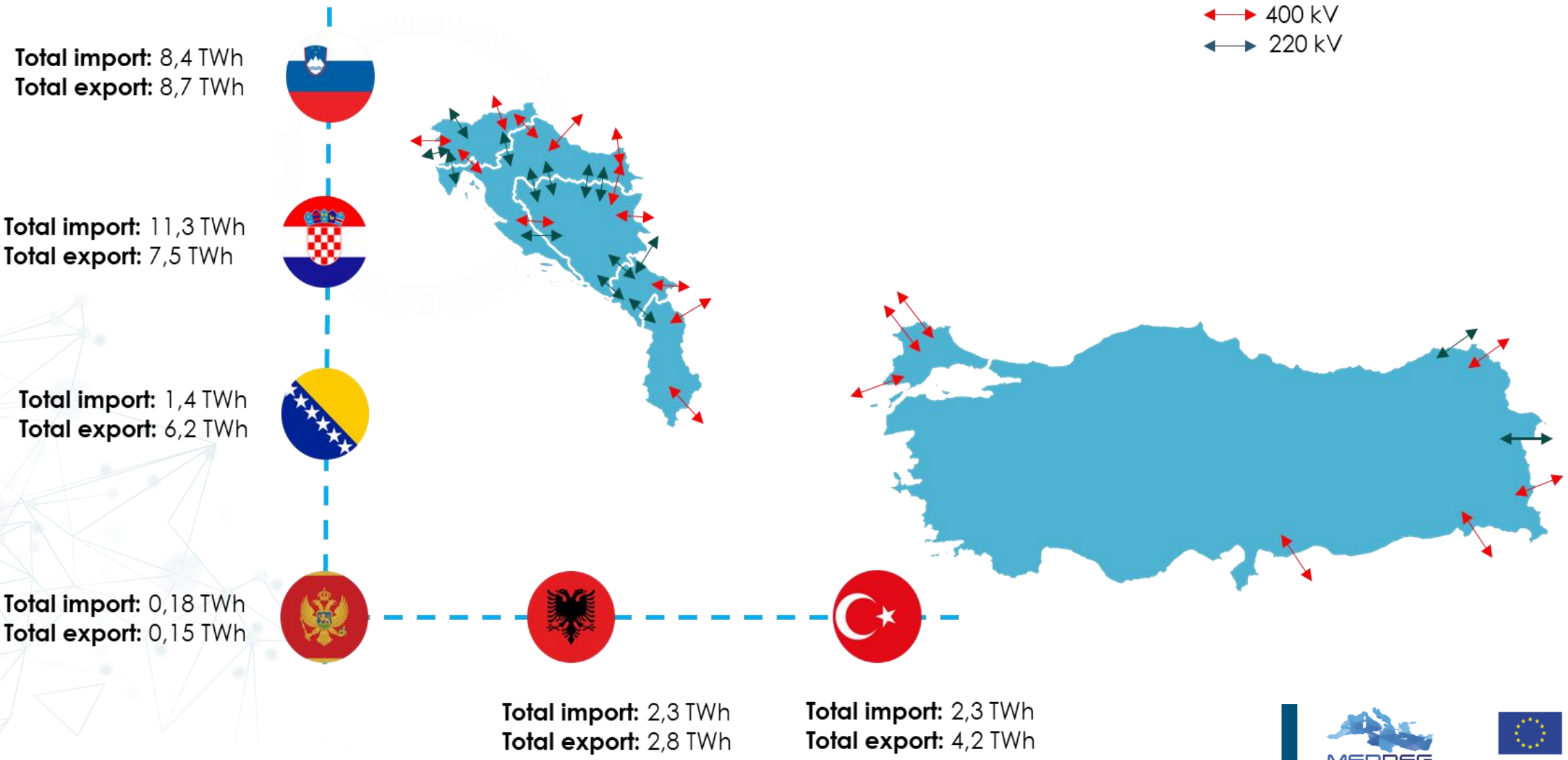
	Natural gas	Coal	Hydro	Wind	Solar PV + CSP	Nuclear	Geothermal
Albania			8,9 TWh	0,04 TWh			
Bosnia & Herzegovina	9,8 TWh	6,7 TWh	0,4 TWh				
Croatia	7 TWh	4,6 TWh	2 TWh				
Montenegro	2 TWh	1,3 TWh	0,3 TWh				
Slovenia	5,4 TWh	4,5 TWh	3,4 TWh				
Türkiye	108 TWh	102 TWh	56 TWh				
	1st electricity source	2nd electricity source	3rd electricity source				



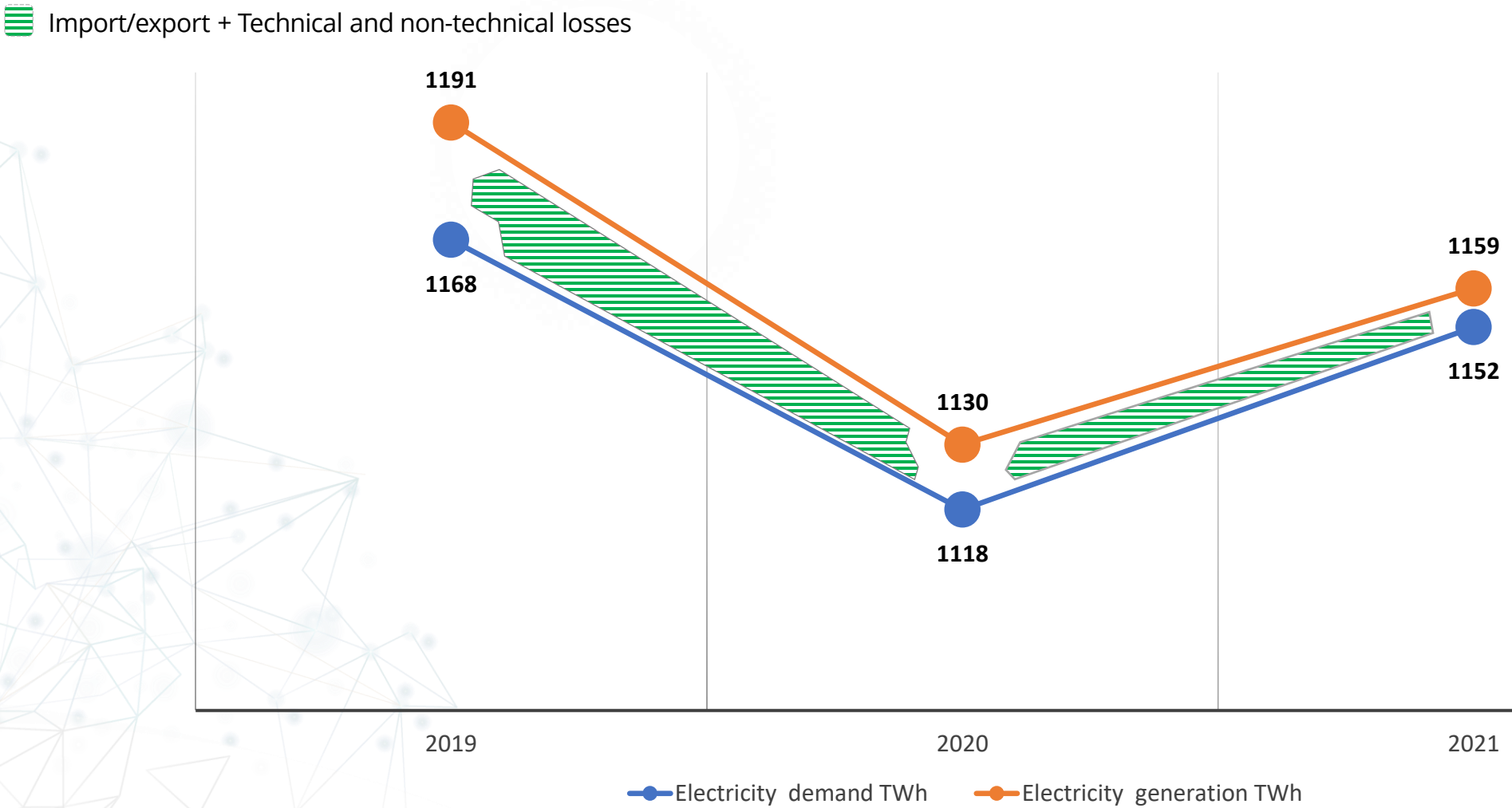
Transmission and distribution infrastructure in Türkiye and the Balkan

		High voltage (≥ 60 kV)	Medium voltage (10 kV ≤ V ≤ 30 kV)	Low voltage (< 10 kV)
Türkiye	Length (km)	72 272	1 363 320	
	Consumption (TWh)	64	189	
Croatia	Length (km)	7 785	140 969	
	Consumption (TWh)	5	10	
Slovenia	Length (km)	2 925	19 120	45 141
	Consumption (TWh)	0,094	1,4	11,3
Albania	Length (km)	3 360	16 682	56 566
	Consumption (TWh)	5,3	3,1	
Bosnia & Herzegovina	Length (km)	6 458	N/A	N/A
	Consumption (TWh)	1,17	10,4	
Montenegro	Length (km)	1 423	6 277	13 720
	Consumption (TWh)	0,604	0,463	1,909

Cross border interconnections in the Türkiye & the Balkan



Electricity demand VS generation in MEDREG's EU members



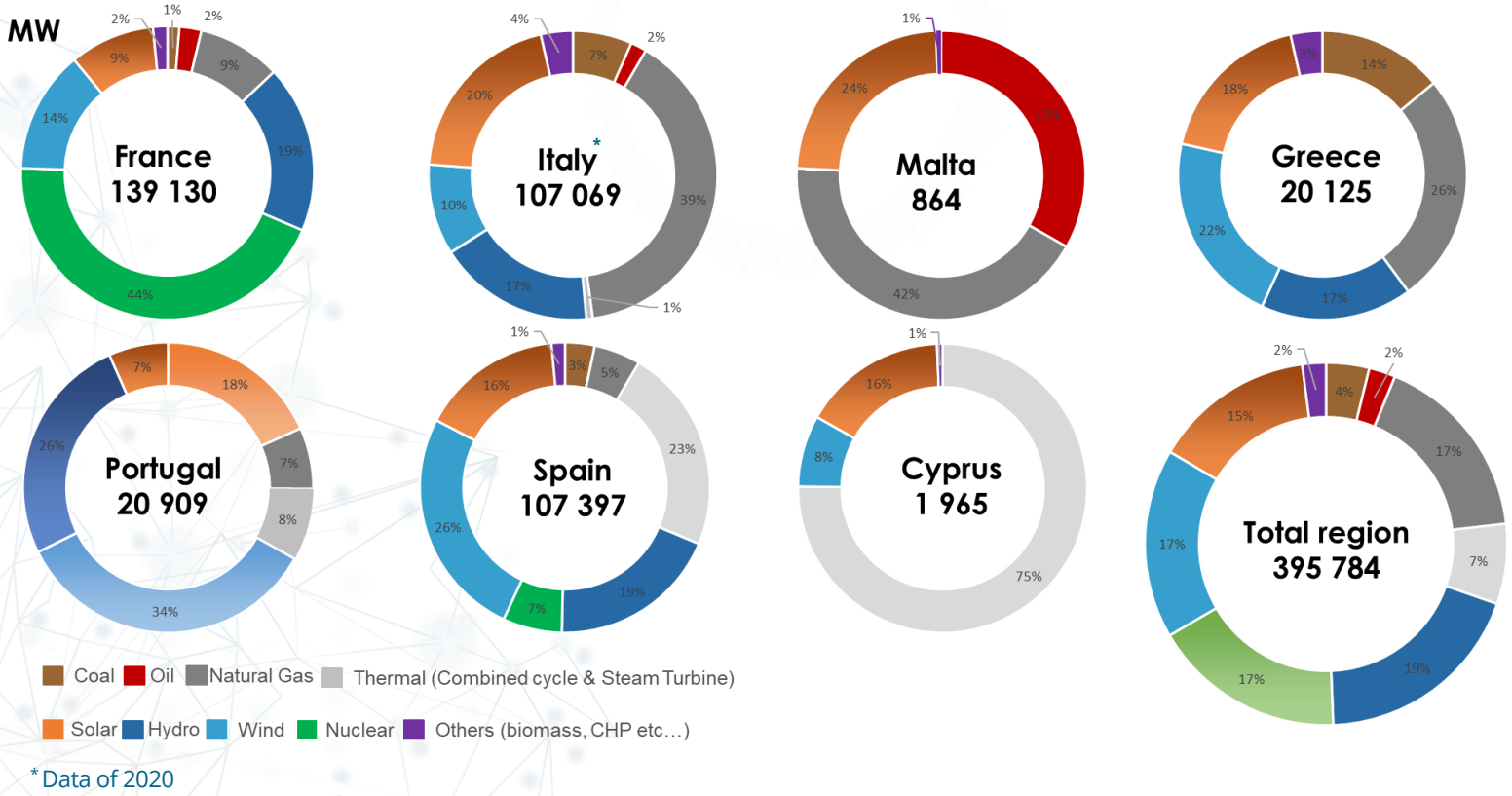
Total losses

Cyprus	5%
Greece	12%
Italy*	6,7%
Malta	7%
Portugal	9,7%
Spain	10%
France	8,6%

*No unpaid bill considered

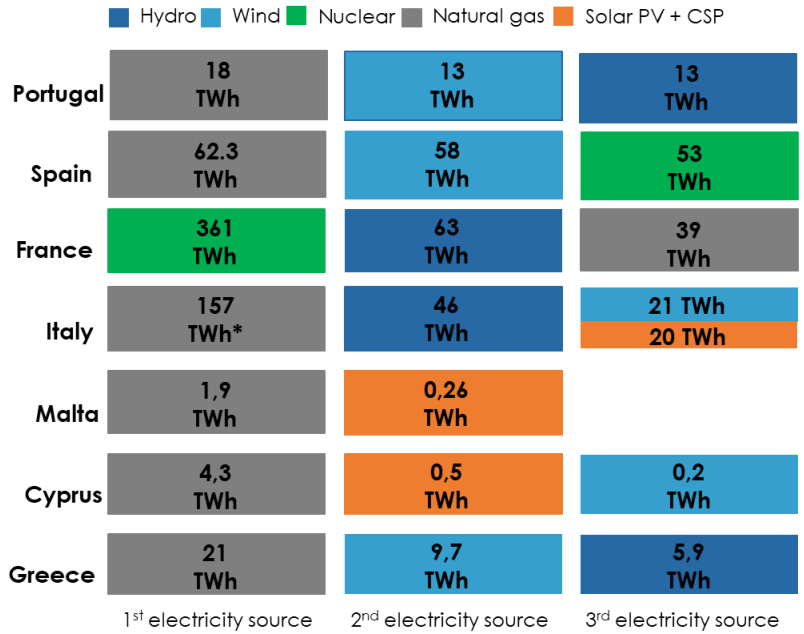
Energy mix in MEDREG's EU members

Installed capacity

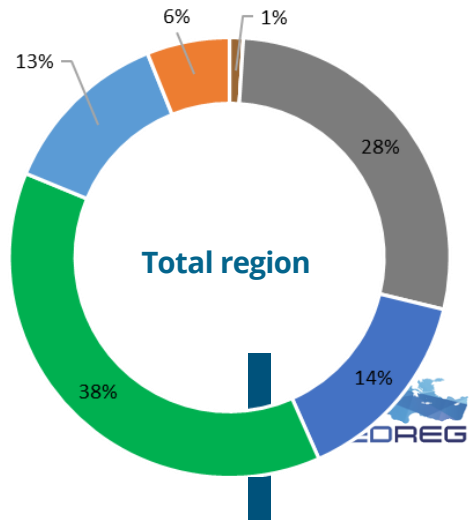


*Data of 2020

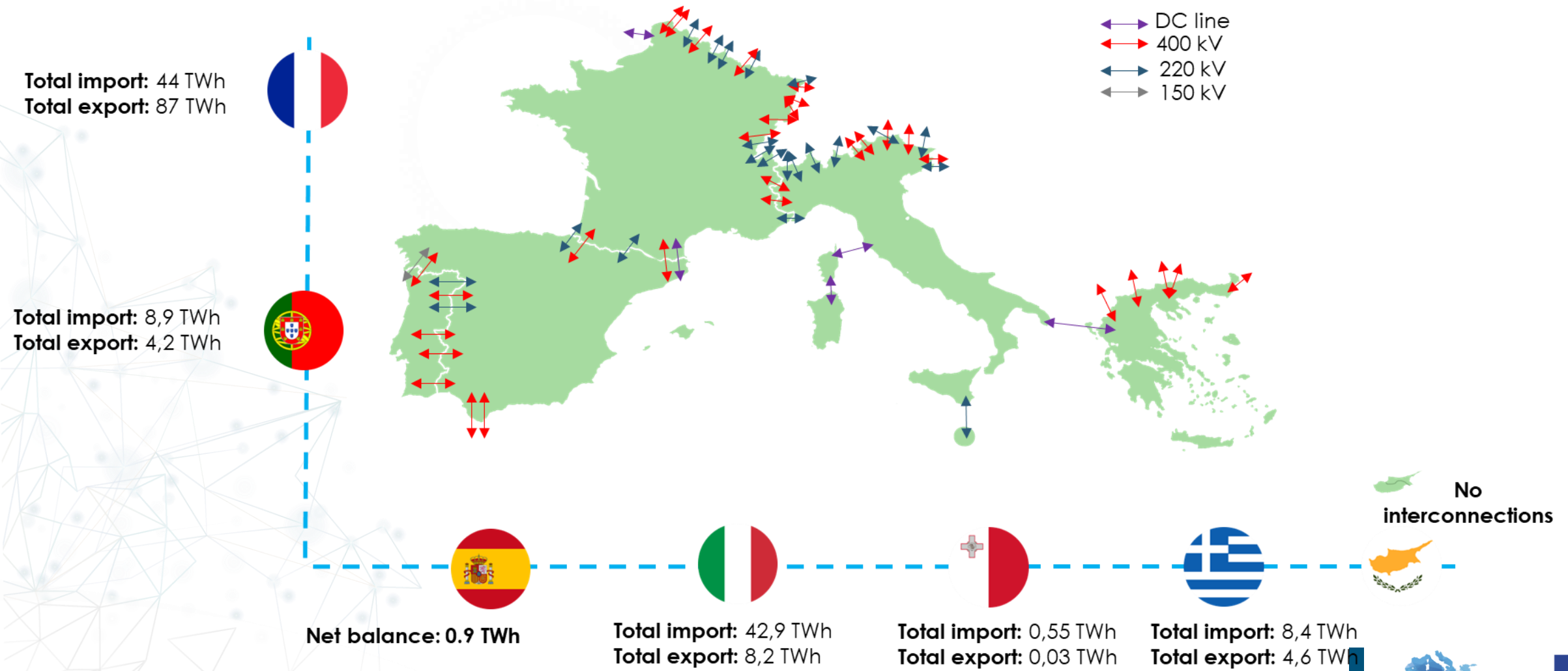
Electricity generation



* includes all the fossil fuels, but mostly from natural gas.

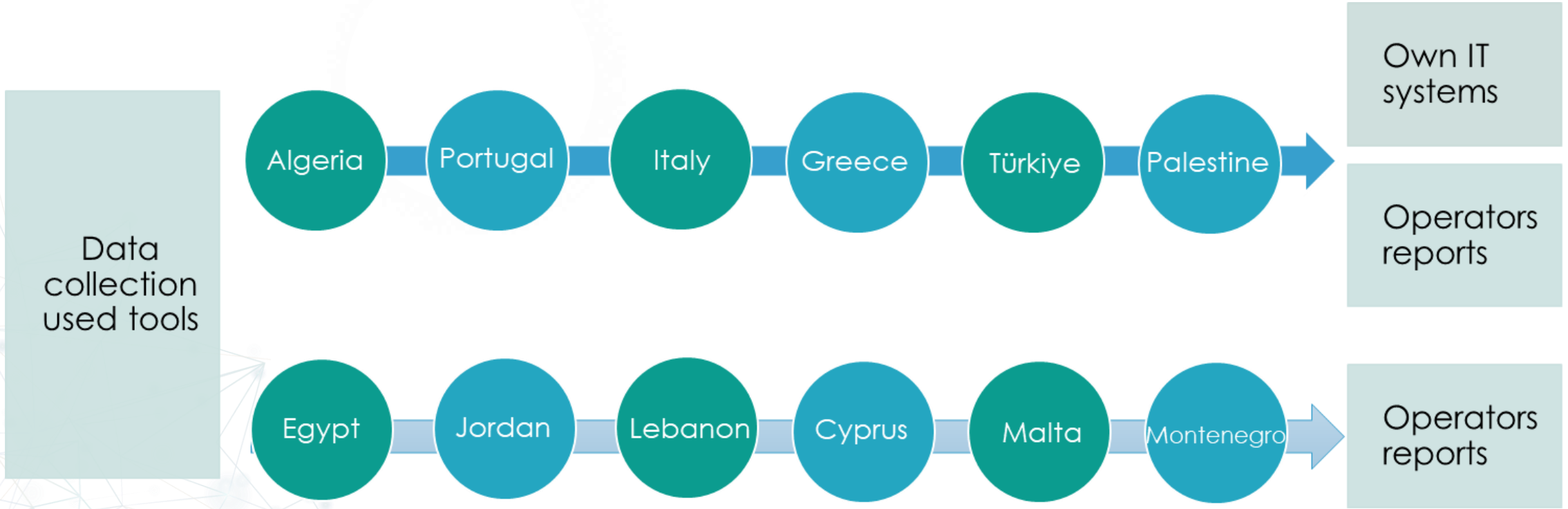


Cross border interconnections in MEDREG's EU members



Information systems and data monitoring and exchanges

Data collection used tools by country



Information systems and data monitoring and exchanges

	Hourly	Daily	Monthly	Yearly
Data on electricity flow		Algeria Jordan Türkiye	Algeria / Jordan Palestine / Lebanon Cyprus / Montenegro Croatia	Algeria/ Egypt /Jordan Palestine/ Montenegro Italy /Portugal / Croatia
Data on cross border interconnections	Greece	Algeria Jordan Türkiye	Algeria Jordan Lebanon Montenegro	Algeria / Egypt Jordan / Palestine Montenegro / Italy Portugal / Croatia
Data on quality of service at transmission level	None	Algeria	Algeria Lebanon Montenegro	Algeria / Egypt Jordan / Palestine Montenegro / Cyprus Greece / Italy Portugal / Croatia
Data on quality of service at distribution level	None	Algeria	Cyprus Lebanon Montenegro Türkiye	Algeria / Egypt Jordan / Palestine Montenegro / Greece / Italy / Portugal / Croatia
Data on quality of service at consumers level	None	Algeria Greece	Lebanon Türkiye	Algeria / Egypt Jordan / Palestine Cyprus / Italy Croatia
Data on electricity wholesale price	Türkiye Greece Portugal	None	Jordan / Palestine Cyprus / Croatia	Jordan / Palestine Cyprus / Italy
Data on infrastructure development	None	Algeria Jordan Türkiye	None	Algeria / Egypt Jordan / Palestine Montenegro / Cyprus Greece / Italy Türkiye / Portugal

THANK YOU

For any questions or information, please contact us by email:
lzitouni@medreg-regulators.org

Follow us on

Empowering Mediterranean regulators for a common energy future

Co-funded by
the European Union