

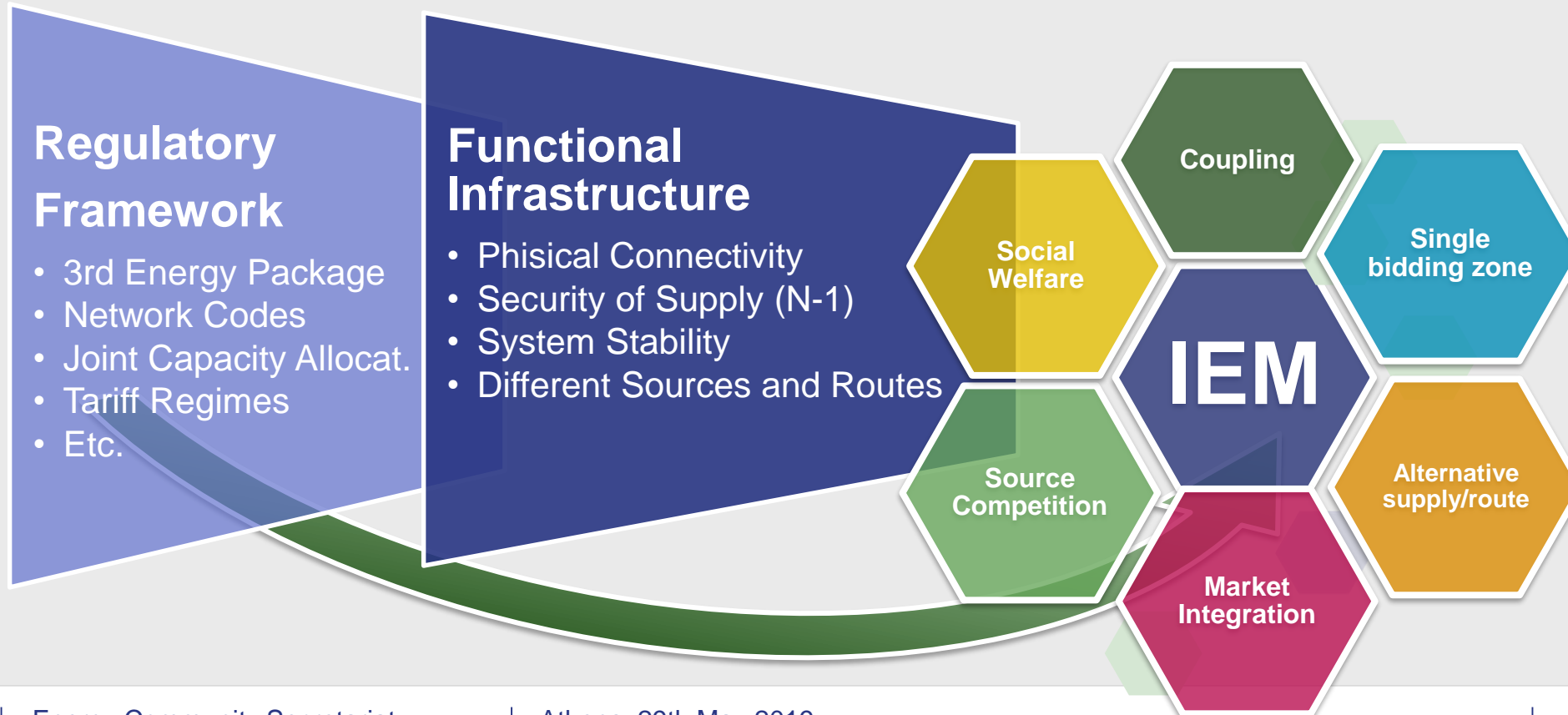


*Panel Debate VI – Working  
towards coordinated connection*

Athens, 29<sup>th</sup> May 2019

# Infrastructure and regulatory framework...

The „colourful“ world of an energy market requires...



# PECI/PMI - Electricity Projects in EnC up to 2030

## Mid term projects (TYNDP) PECIs

1. Transbalkan corridor – phase 1
  - 400 kV OHL Resita (RO) – Pancevo (RS)
  - 400 kV OHL Kragujevac (RS) – Kraljevo (RS)
  - 400 kV OHL Obrenovac (RS) – B.Basta (RS)
  - 400 kV OHL B.Basta (RS) – Pljevlja (ME) – Visegrad (BA)
  - 400 kV OHL Pljevlja (ME) – Lastva (ME)
2. 400 kV OHL Bitola (MK) – Elbasan (AL)

## Mid to long term projects:

3. 400 kV OHL Mukacheve (UA) – V.Kapusany (SK)
4. 400 kV OHL with B2B Substation, Isacea (RO) – Vulcanesti (MD) – Chisinau (MD)
5. 400 kV OHL Pivdennoukrainska NPP (Ukraine) – Isaccea (Romania)
6. Transbalkan corridor – phase 2
  - 400 kV OHL B. Basta (RS) - Kraljevo (RS)
  - 400 kV OHL Kraljevo (RS) – Nis (RS)
7. New interconnection between Serbia – Croatia
8. New interconnection between Serbia – Romania (+ internal reinf.)
9. 400 kV OHL B. Luka (BA) – Lika (HR)



# EnC region and Interconnection Targets

In October 2014, the European Council called for all EU countries to achieve interconnection of at least 10% of their installed electricity production capacity by 2020, and 15% by 2030 (Council Conclusions of 23 and 24 October 2014

[http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ec/145397.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145397.pdf))

This means that each country should have in place electricity lines that allow at least 10% (15% by 2030) of the electricity produced by its power plants to be transported across its borders to neighbouring countries. 17 EU MSs are already on track to reach that target by 2020, or have already reached the target, but more interconnections are needed in some regions.

Contracting Party	% of interconnection to installed capacity
Montenegro	168%
Kosovo*	108%
Ukraine	91%
Moldova	76%
North Macedonia	60%
Serbia	57%
Albania	48%
Bosnia and Herzegovina	40%

# ECS Infrastructure Transparency Platform



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## PLIMA: Infrastructure Transparency Platform

Filters: Category



### EL01 / Transbalkan Corridor: OHL B.Basta - Visegrad - Pljevlja

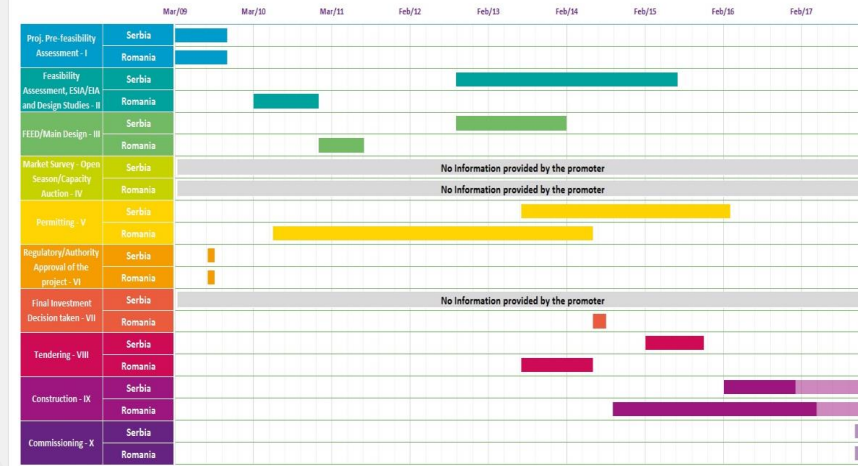
REG

Serbia / Bosnia Herzegovina / Montenegro [Show on map](#)

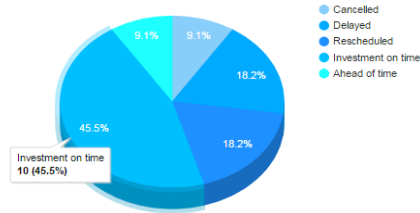
Electricity Transmission | 2023 | FID

New 400 kV interconnection between Serbia, Bosnia and Herzegovina and Montenegro, which implies construction of a new double 400 kV OHL between SS Bajina Basta (Serbia), SS Visegrad (BiH), SS Bistrica and SS Pljevlja (Montenegro) accounts for one of the four first phase Transbalkan corridor infrastructure investment items, due to be completed by 2025.

[Read more](#)



Monitoring Summary - status of the investments



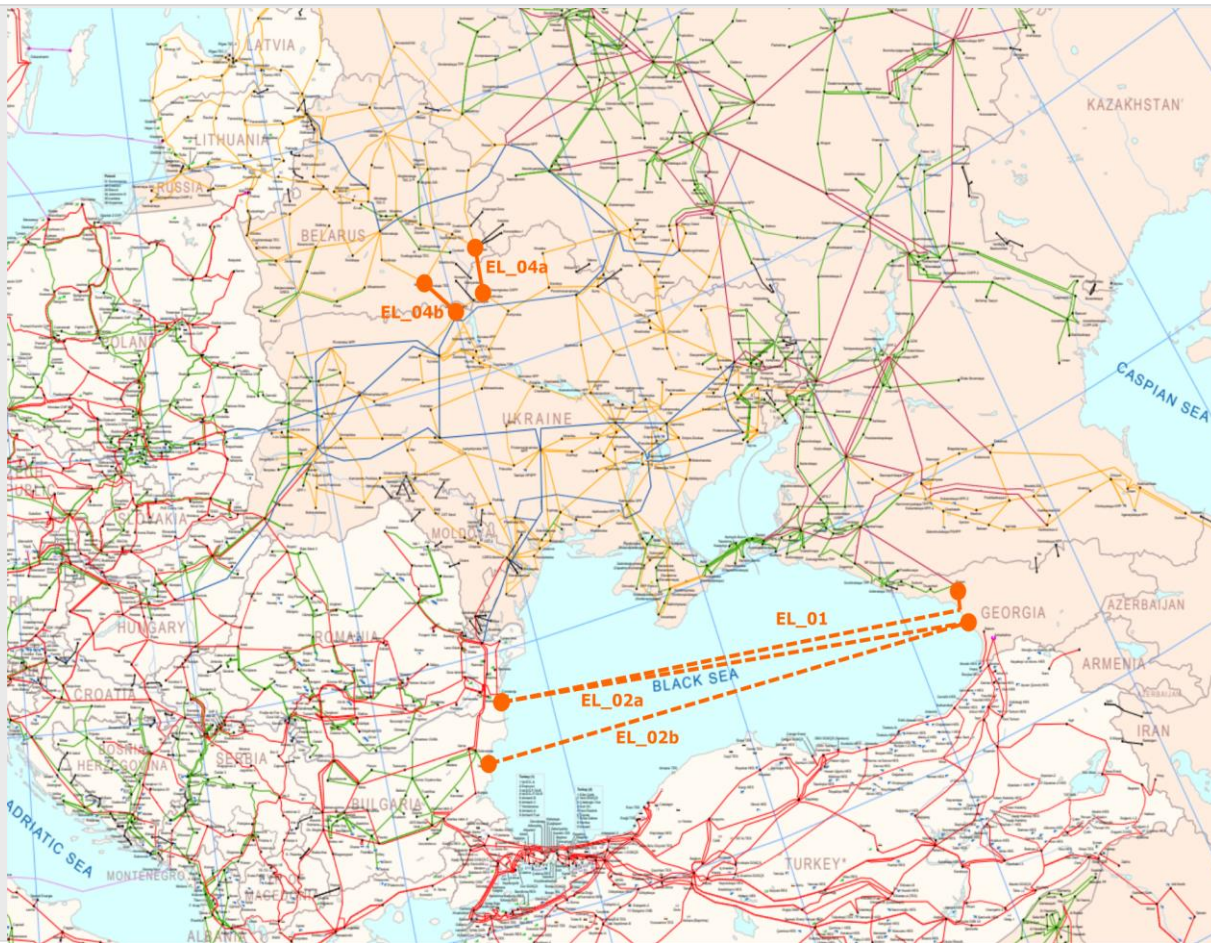
Rescheduled investments



# PEPI 2019 projects

## New potential DC links in EaP region:

- 1. HVDC interconnection - asynchronous interconnection between Georgia and Romania or Bulgaria, and
- 2. HVDC interconnection - asynchronous interconnection between Ukraine and Belarus (two DC links foreseen)

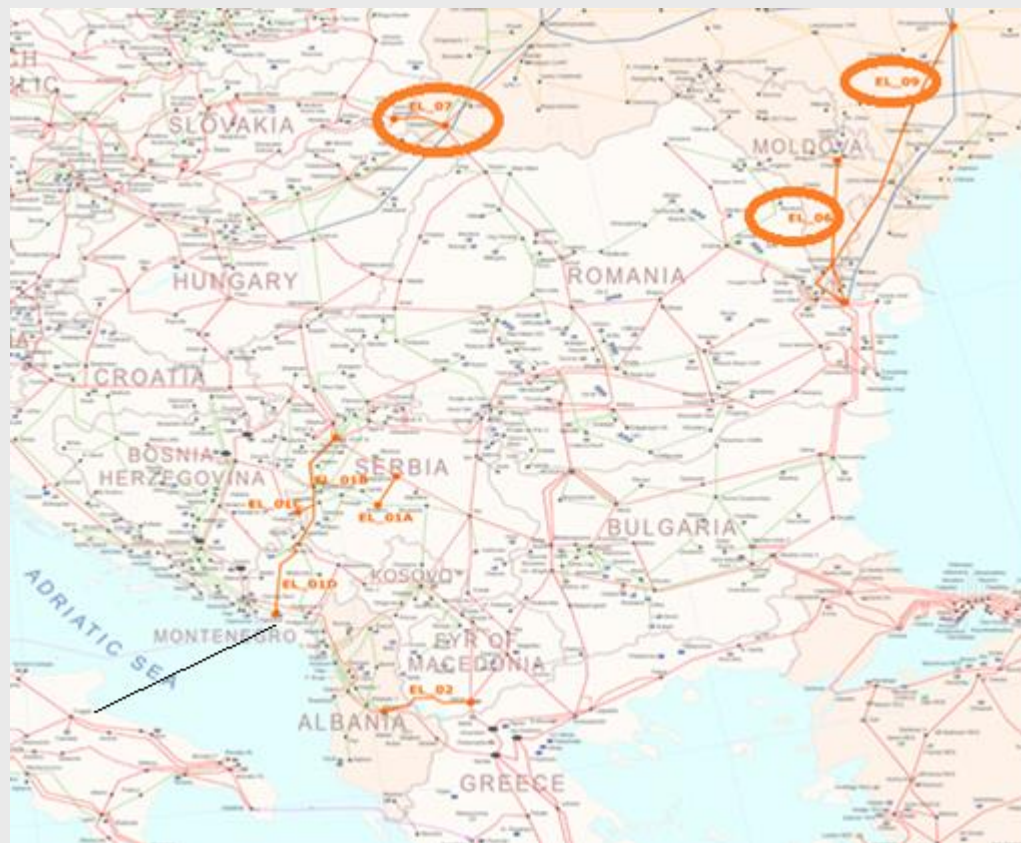


A night-time satellite view of the Earth, showing the continents of Europe and Africa. The globe is overlaid with a complex network of glowing blue lines that represent energy transmission routes or data connections. The lines are bright and have a soft glow, creating a sense of dynamic energy and connectivity across the globe.

**Thank You!**

# PECI/PMI 2018 projects

1. Back-to-Back (B2B) High Voltage DC (HVDC) interconnection - asynchronous interconnection between Moldova and Romania,
2. 400 kV OHL Ukraine – Slovakia,
3. 400 kV OHL Ukraine – Romania,
4. Transbalkan corridor – (RO), RS, ME, BA and (IT)
5. 400 kV OHL Albania – North Macedonia

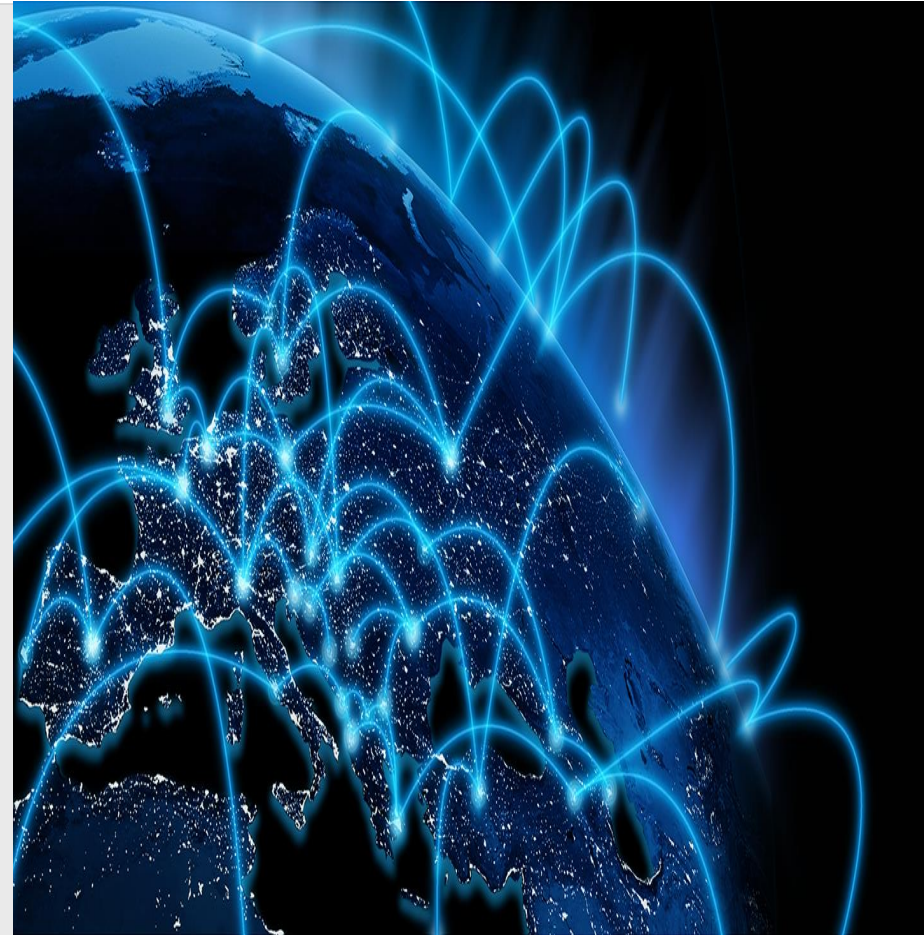




# Connection of UA/MD to Continental European power system

Two different technology based projects are considered for the physical connection of the power systems of Ukraine and Moldova to the Continental European power system:

1. Alternative Current (AC) connection - Joint Moldova-Ukraine synchronous interconnection with ENTSO-E – UA/MD synchronization project.
2. Back-to-Back (B2B) High Voltage DC (HVDC) interconnection - asynchronous interconnection between Moldova and Romania, through B2B station and usage of DC-Direct Current technology, so called ROMOL project, and



# Synchronous connection of UA/MD to Continental European power system (AC)

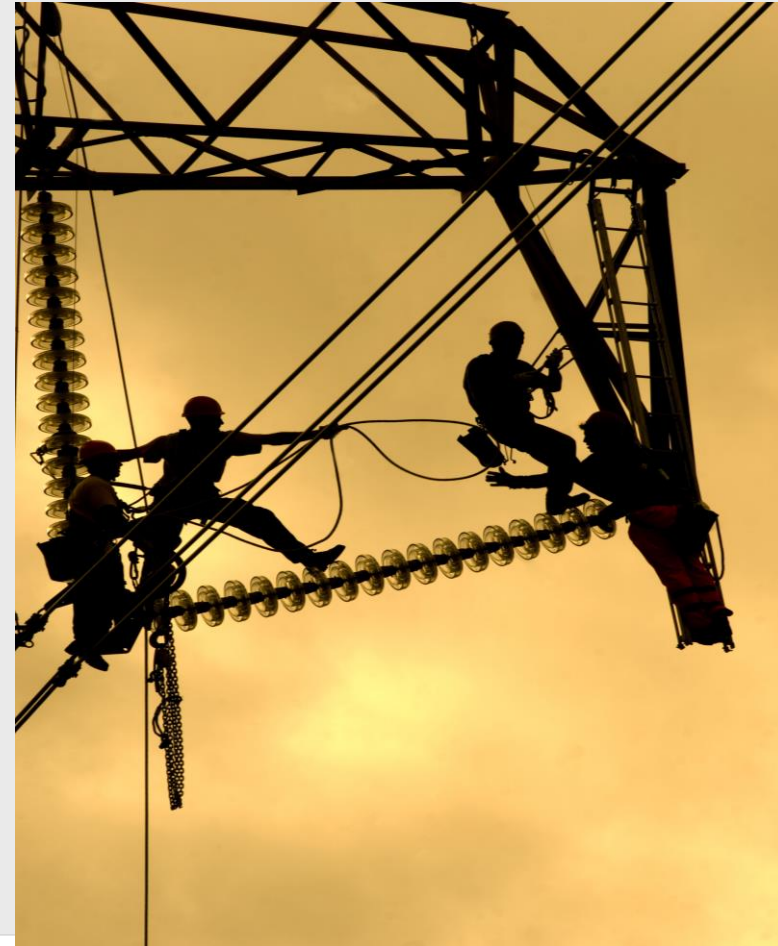


- Agreements on conditions for integration of power systems of Ukraine and Moldova with ENTSO-E were signed on 28th June 2017 by ENTSO-E, Ukrenergo and Moldelectrica. The agreements require Ukrenergo and Moldelectrica to meet **legal**, **regulatory**, **market** and **technical** requirements before connecting to the European synchronous grid.
- The following Studies, defined by the ENTSO-E Project Group UA/MD, are necessary to be done as part of the preparation for the full synchronization of the Ukrainian and Moldovan power systems to the Continental European power system:
  - UA/MD synchronization Study, part II, continuation of UMPSI2015 Feasibility Study performed by the international consortium of TSOs/ENTSO-E, 2014-2016.
    - “Steady state calculations for a synchronous interconnection of the grids of Continental Europe and Ukraine/Moldova using the present network”
    - “Dynamic calculations for a synchronous interconnection of the grids of Continental Europe and Ukraine/Moldova using the present network and detailed, planned dynamic model of the Ukrainian and Moldovan grid”

# Synchronous connection of UA/MD to Continental European power system (AC)

Additional studies/analysis needed:

- Analyzing a pure DC or hybrid AC/DC interconnection of the grids of CE and Ukraine and Moldova (if after finalizing the requested dynamic studies the synchronous interconnection is not considered the best option; shall start, if necessary, mid of 2019)
- Burstyn island extension study, so called “Power Bridge”. Study will show techno-economic viability of the Burstyn island extension, especially focusing on the technical feasibility and connected security/stability issues.
- ENTSO-E Continental South East Regional Group – CSE RG, under System Development Committee, is about to launch study on Ukraine-Moldova Network Connection sensitivity analysis (Market and Network simulations included), which will be used later on for inclusion of UA/MD projects into ENTSO-E TYNDP2020, as agreed with Energy Community Secretariat in January 2017.



# Asynchronous interconnection – ROMOL (DC)



Full Feasibility Study and ESIA Study, on ROMOL DC-B2B connection (asynchronous connection) are completed and agreed with EIB, EBRD and WB. EBRD, EIB, [European Union \(EU\)](#) and the WB are providing a €270 million package to finance a permanent interconnection between the electrical networks of Moldova and [Romania](#). The package includes EIB and EBRD loans of EUR 80m each, a EUR 70m loan from the World Bank and a EUR 40m investment grant from EU funds (NIP).

# Line up activities and needs of PECE/PMI and ENTSO/E TYNDP

The lack of modelling data for Ukrenergo and Moldelectrica.

