Cross-border trade

The European market & the potential for Cyprus

7th Cyprus Energy Symposium || Thursday, December 5th 2019

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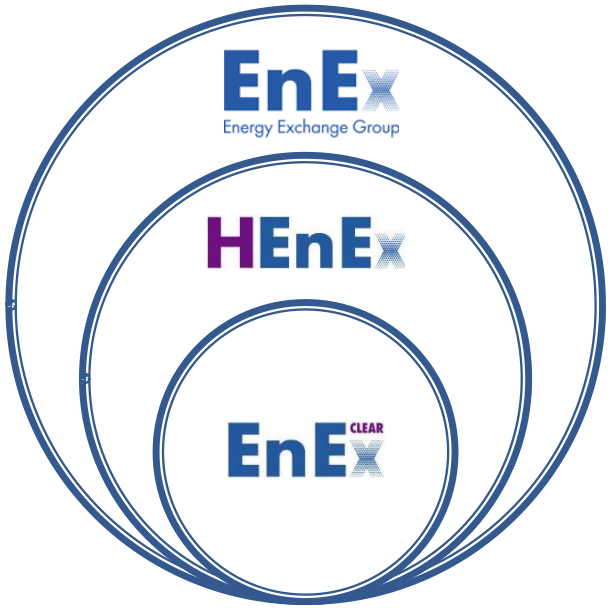
Agenda

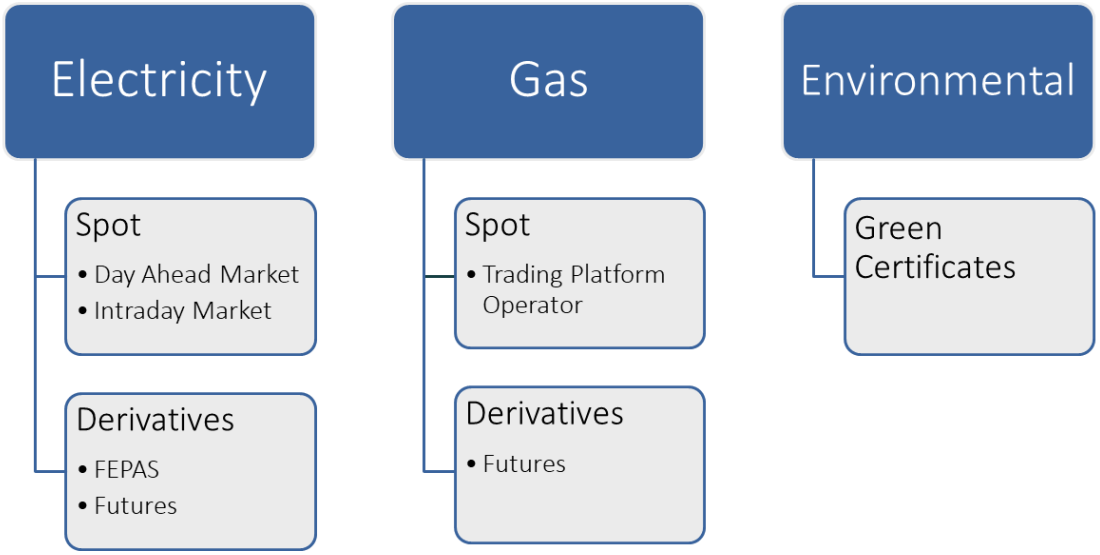
- Who are we
- Observations on the European energy market
- Zooming in SEE || Greece
- The potential for Cyprus

Energy Exchange Group

- **EnEx Group** (Energy Exchange Group)
  - **HEnEx** (Hellenic Energy Exchange S.A.)
    - Established in June 2018
    - Private company operating **Spot & Derivatives** energy markets
  - **EnExClear** (EnEx Clearing House S.A.)
    - Established in November 2018
    - 100% owned by HEnEx
    - Private company clearing **Spot** energy markets
      - **Derivatives** energy markets cleared by ATHEX Clear (company of ATHEX Group)



EnExGroup Business Description & Target Model



- **One-shop stop** to a range of Energy Markets
- Nominated Electricity Market Operator (**NEMO**) for the Greek Spot market
- Full **PCR member**
- Currently working on DA and ID **market coupling** with Italy & Bulgaria
- Vision is to provide **tailor-made solutions and easy market access**
- Working with two clearing houses which bring **transparency, structure and security to the market**

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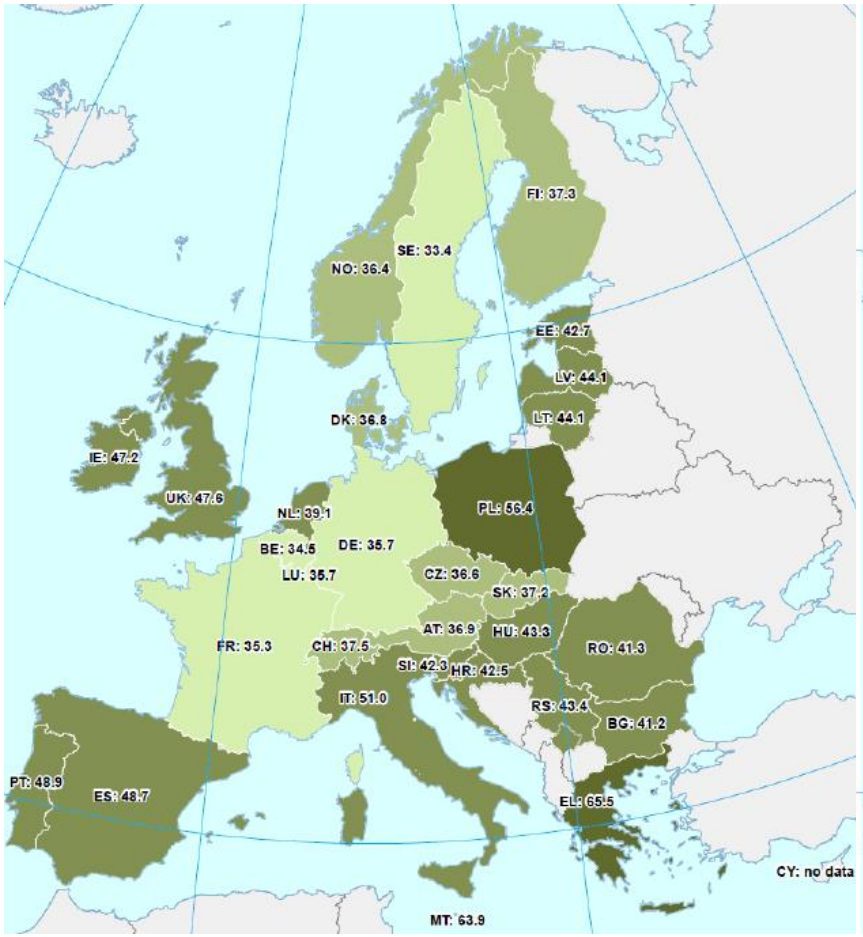
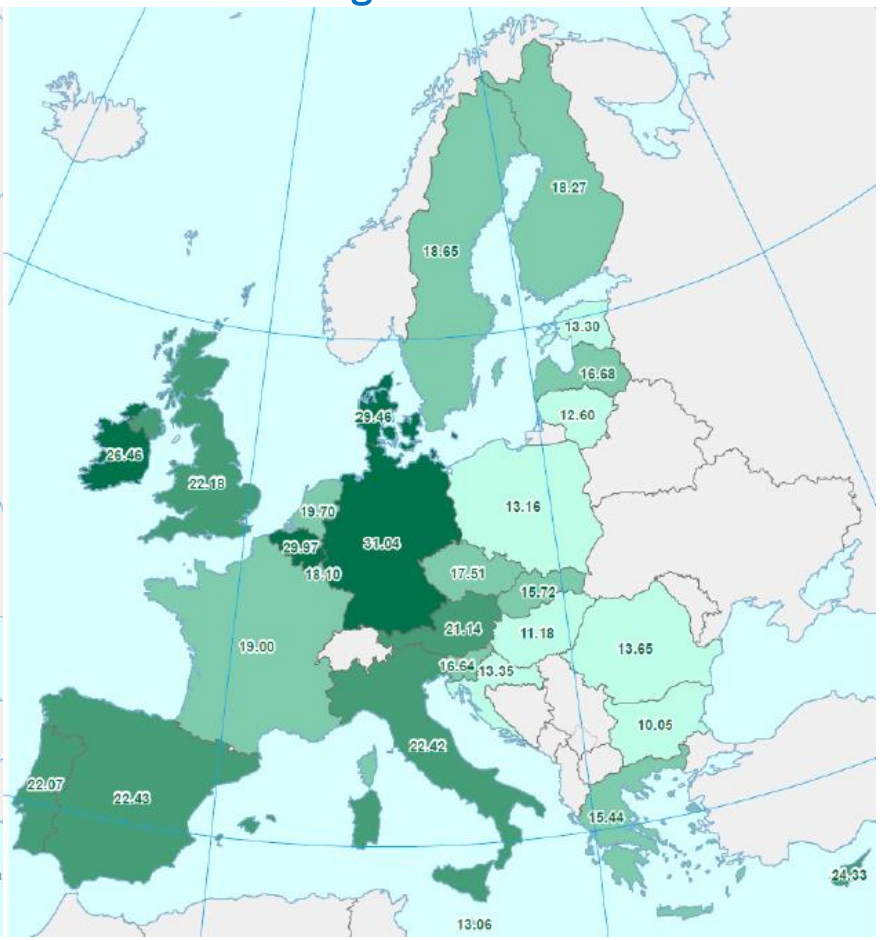
Electricity prices across Europe

WHOLESALE PRICES in €/MWh
Baseload

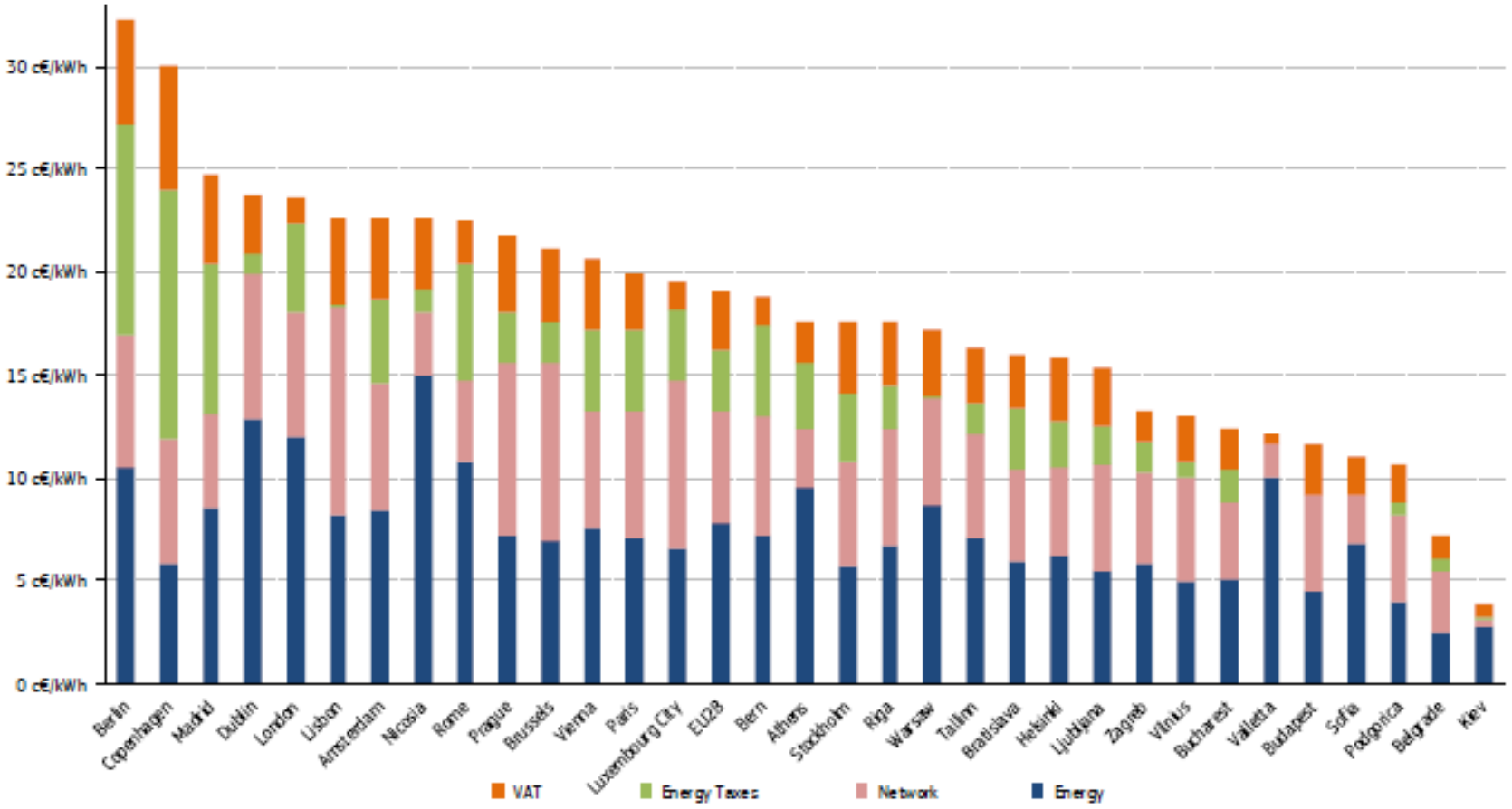


HOUSEHOLD PRICES in €ct/kWh
Including all levies & Taxes



Source: *Quarterly Report on European Electricity Markets, DG Energy, Volume 12 (issue 2; 2nd quarter of 2019)*

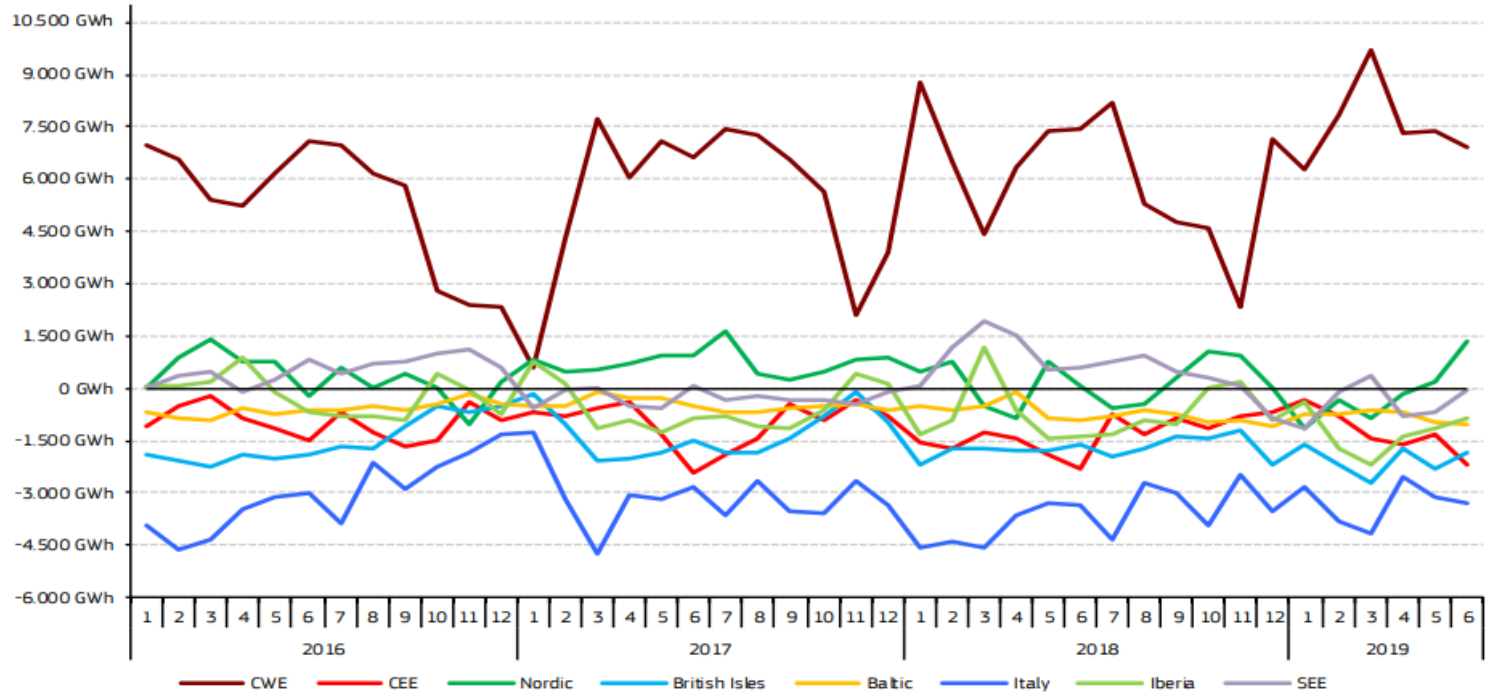
Household Energy Price Index (HEPI)



Source: *Vaasaett // Quarterly Report on European Electricity Markets, DG Energy*

Trading energy across Europe

- Significant spreads lead to strong cross border flows
- EU cross border monthly physical flows by region



Key to country distribution in regions: CWE (AT, DE, BE, NL, FR, CH), CEE (CZ, HU, PL, SK, SI, HR), Nordic (DK, SE, FI, NO), Baltic (LT, LV, EE), Iberia (ES, PT), SEE (BG, GR, RO, RS, BA, ME, MK, AL), British Isles (UK, IE), Apennine Peninsula (IT, MT). Source: ENTSO-E, TSOs

Source: *Quarterly Report on European Electricity Markets, DG Energy, Volume 12 (issue 2; 2nd quarter of 2019)*

Benefits of the European Target Model

- The Third Package was a legally binding regulatory framework which required EU markets to couple and finally develop an internal EU market for electricity.

What are the benefits of European Price Coupling in short?

- An integrated European electricity market promotes increased liquidity, transparency, efficiency and social welfare since:
  - A market with a lot of power traded "in and out" leads to **depth** in the market
  - Liquidity helps the market **price discovery** process, leading to reliable price signals
  - An efficient price formation mechanism provides **sufficient incentives for investments**
- Price coupling guarantees the overall welfare and **optimal use of electricity network resources.**
- **Implicit trading removes unnecessary risks** of trading cross-border capacity and electricity separately.

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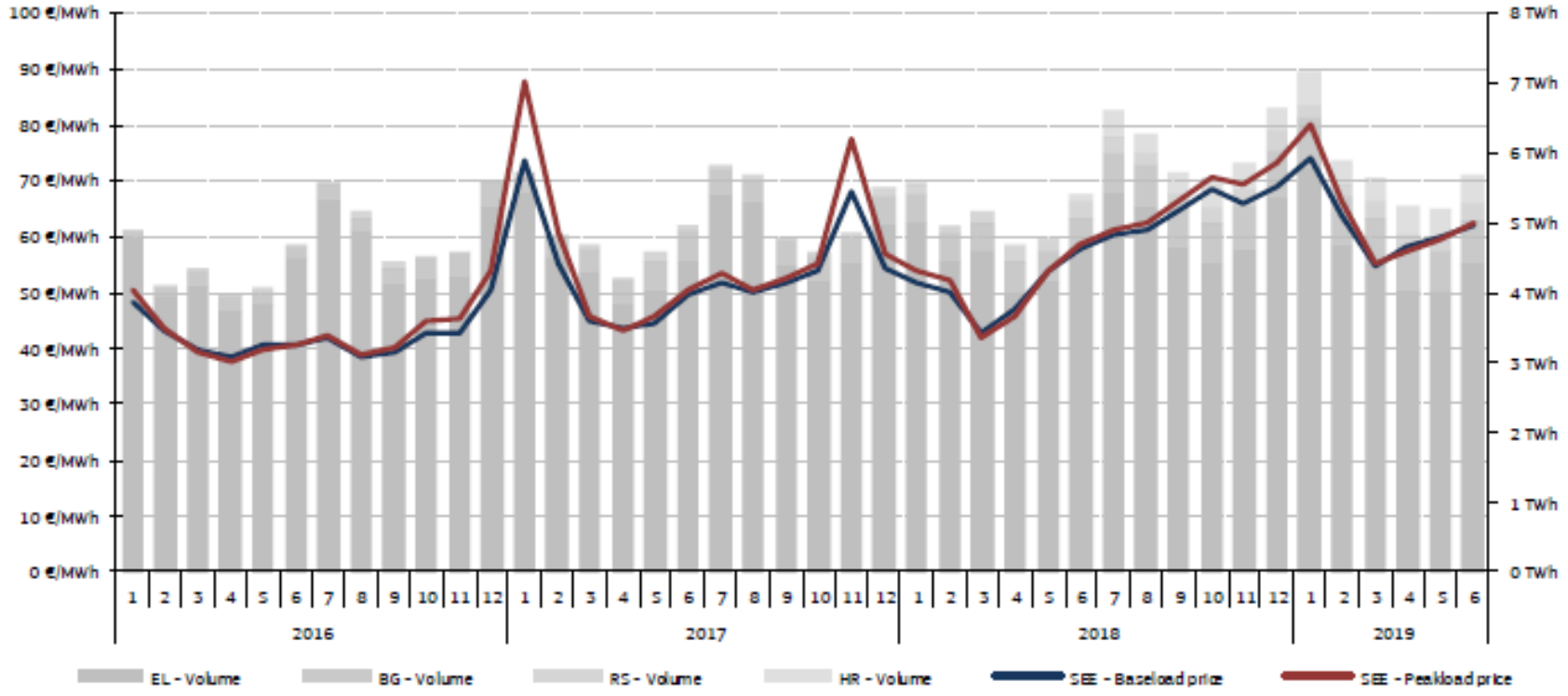
Monthly traded volumes and prices in SEE

- Significant spreads lead to strong north to south flows
- Volume weighted SEE prices heavily influenced by Greek prices



Source: *IBEX, HEnEx, OPCOM, SEEPEX // Quarterly Report on European Electricity Markets, DG Energy*

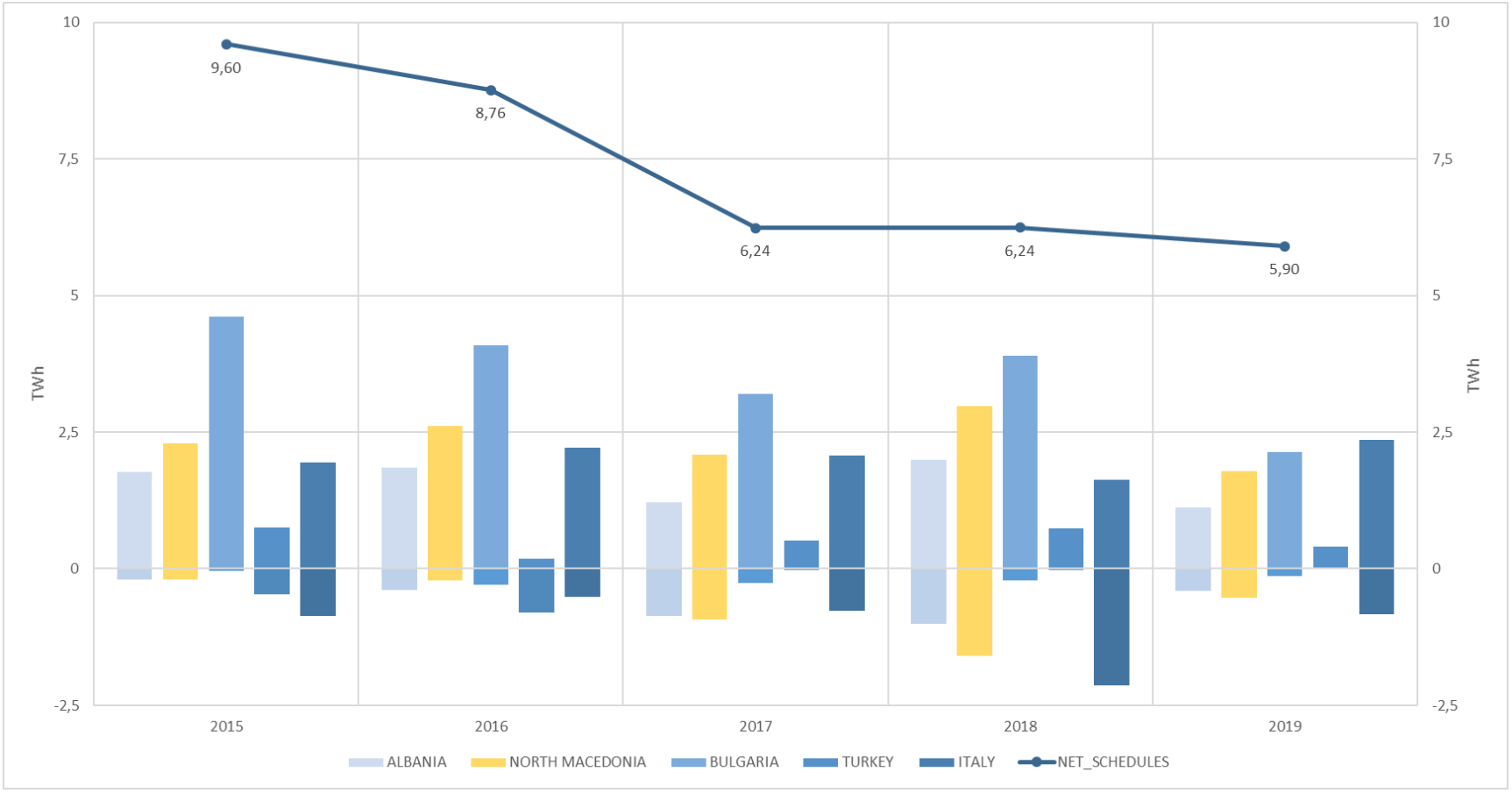
Greek Interconnections

- Albania
- Bulgaria
- North Macedonia
- Turkey
- Italy
  - DC link

- Total NTC*
  - Imports 1,700 MW
  - Exports 1,700 MW

**indicative values*

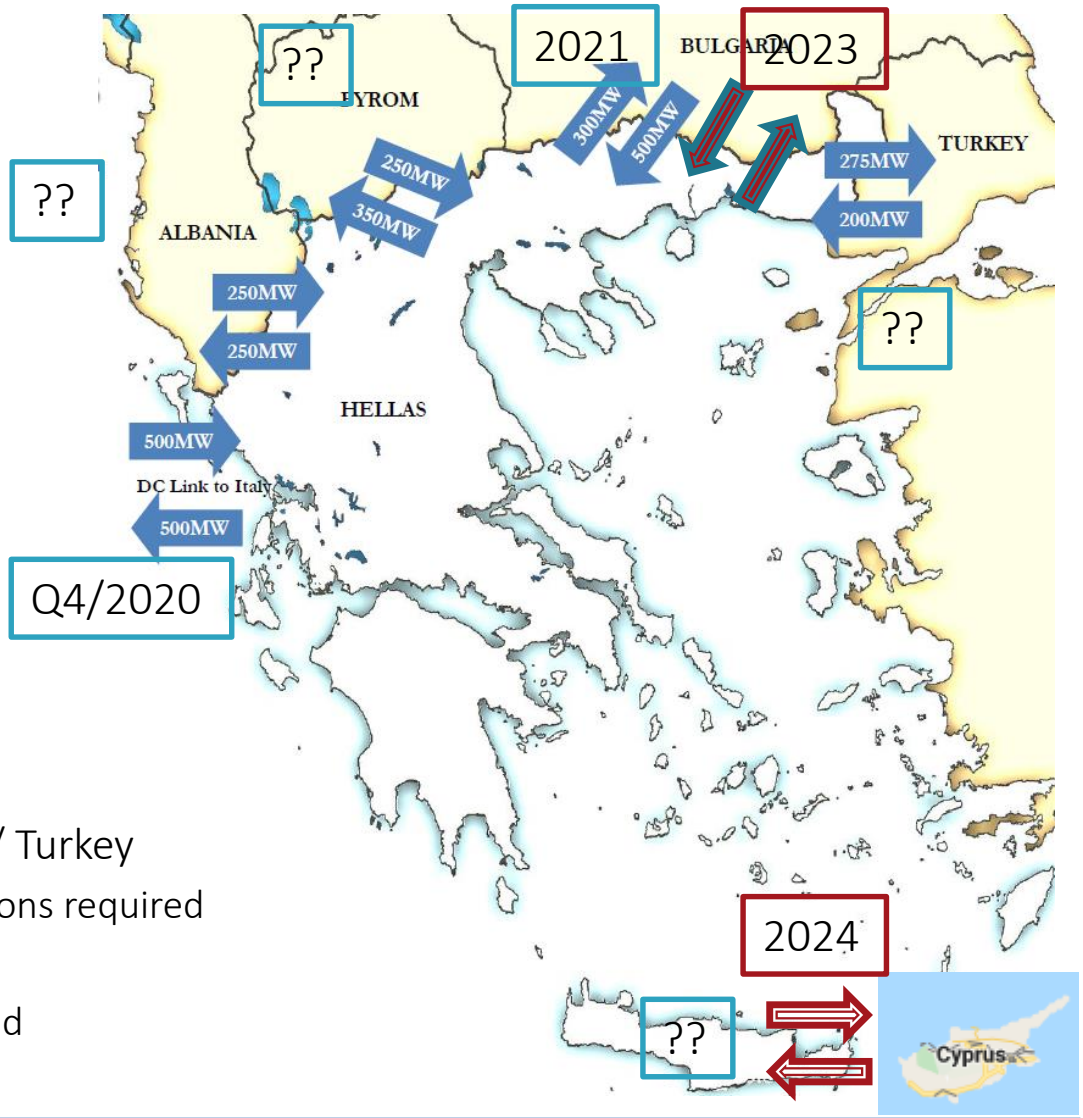
Greece - Cross Border Trade (DAS)



*2019 data until 31/07/2019

Interconnections

- Capacity
  - Bulgaria
    - New line decided
      - (~2023: +600MW Capacity)
  - Cyprus
    - EuroAsia
      - (~2024: 1000+1000MW)
  - Albania / North Macedonia
    - Upgrade
- Coupling has started
  - Italy (Q4/2020)
  - Bulgaria (2021)
- Coupling TBD
  - Albania / North Macedonia / Turkey
    - High level agreements & actions required
  - Cyprus
    - EuroAsia / EuroAfrica required



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Cyprus proposed interconnections

- EuroAsia interconnector
  - Capacity: 2000 MW
  - Length: 1208 km
  - Depth: 3000 m

EuroAsia

- EuroAfrica Interconnector
  - Capacity: 2000 MW
  - Length: 1396 km
  - Depth: 3000 m

EuroAfrica

In a nutshell

- Drawbacks
  - Highly challenging construction project
  - The price tag is high

- Result
  - Ending Cyprus electricity isolation
  - Connection to the single European electricity market
  - Connection to the energy markets of Israel / Egypt

Would the impact be substantial? 1/2

- Power System
  - Increased security of supply
    - The interconnection capacity is higher than peak local demand
    - Reduction of capacity availability risks (scarcity of resources)
  - Increased stability & reliability
    - TSO has access to two major interconnections
    - Reduced probability of blackouts (stiffer system)
  - Increased hosting capacity of variable output RES
    - Allows for higher RES penetration and exploitation of Cyprus RES potential

Would the impact be substantial? 2/2

- Energy market
  - Liquidity
    - Very high interconnection capacity vs local demand
    - Access to multiple international energy market participants
  - Locational spreads
    - Substantial baseline spreads
    - Low correlation of Cyprus electricity prices with connected markets
    - Effect will be even more dominant when RES integration increases
  - Energy mix
    - Radical move away from oil
    - Allows easier capacity expansion
      - Prospects for natural gas units & RES
  - End Consumer
    - Access to cheaper energy resources
    - Lower Household Energy Price Index

EnEx
Energy Exchange Group

Thank you for your attention