

Energy Transition & the Hellenic Electricity Market

Thursday, June 6th 2019 | Vienna Energy Transition Forum

“The establishment of the Hellenic Energy Exchange”

Eva Papadionysiou, *Markets' Operation*

HEEx S.A.

Energy Transition: Key challenges and drivers

Decarbonization – social pressure to take measure increases

Decreasing costs for clean – energy technologies

Digitalization – more efficient coordination between supply and demand

Electrification – power to heat/cold- power to mobility – power to gas

NEW BUSINESS MODEL

Decentralization – from vertically integrated monopolies to small scale active players

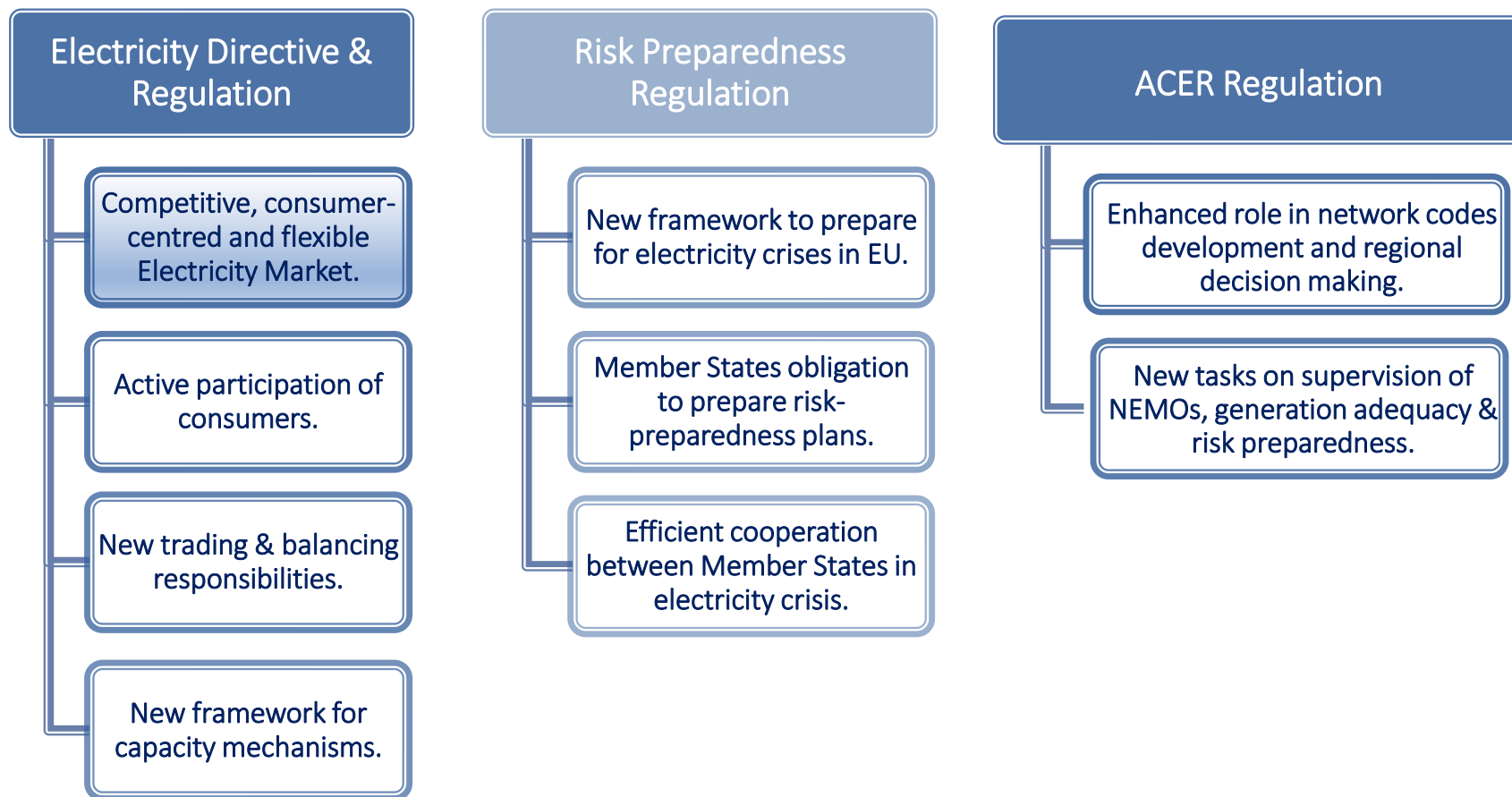
Increasing demand for **Market Integration** and cross-border cooperation.

Demographic impact – need for social acceptance

Fixed-costs technologies prevail in the future

Recent Regulatory Developments

The adoption of the four remaining files of the **Clean Energy for All Europeans Package** by the EU Council of Ministers, completes EU's energy policy framework:



The role of wholesale energy markets

Efficient and transparent wholesale energy markets will play a key role in order to achieve cost-efficient decarbonization.

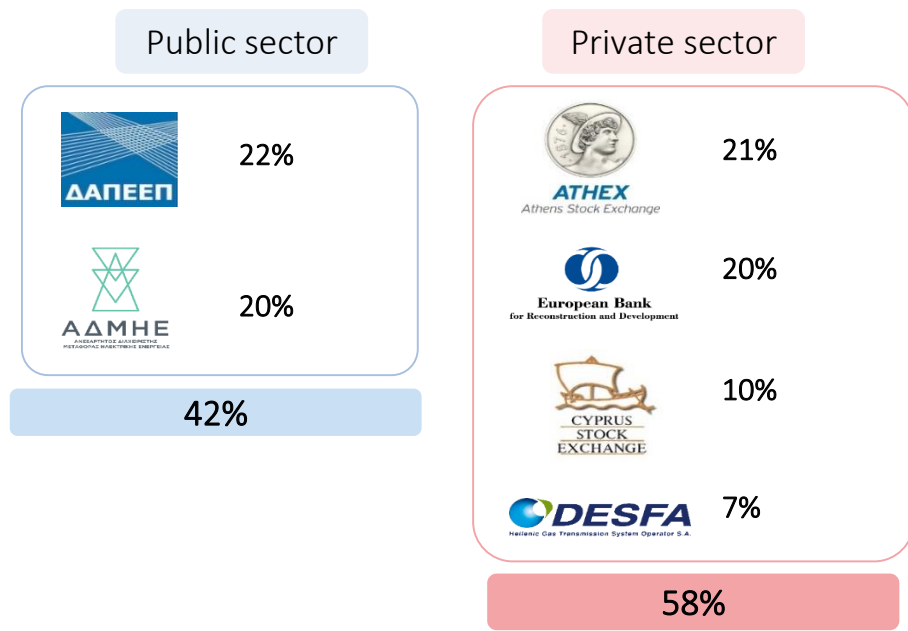


Greece: The establishment of EnEx Group

Towards that end the Hellenic Energy Exchange S.A. was established in June 2018 as a spin-off from the electricity market branch of LAGIE S.A. which was a public company.

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

Hellenic Energy Exchange S.A. Shareholders



Greece: Steps forward

- ▶ ***Regulatory and legislative reforms***

- ▶ transformation of the Greek Day-Ahead Scheduling (DAS) electricity market (mandatory pool model)
- ▶ coupling with neighboring countries.

- ▶ ***HEnEx full PCR member***

- ▶ as of Jun-18
- ▶ PXs of day-ahead electricity markets in 24 countries
- ▶ > 90% of European power consumption.

- ▶ ***Italian Borders Working Table (IBWT) project***

- ▶ HEnEx and the Hellenic TSO (ADMIE)
- ▶ Impact assessment & Project Roadmap have been approved by the IBWT SC in May 2019.

The new Electricity Markets in Greece

HEnEx (Market Operator)

ADMIE (System Operator)

Long-term planning

Short-term scheduling

Real-time operation

Derivatives Market & Bilateral OTC Contracts

- Long-term planning
- Hedging
- Speculation
- Yearly-quarterly-monthly-weekly contracts

Day-Ahead Market

- Main arena for trading power
- Auction on D-1

Intraday Market

- Auction and/or continuous trading
- Usually accounts for 5-10% of spot transactions

Balancing Market

- Balancing Capacity/Reserve Market + Balancing Energy Market + Imbalances Settlement
- Close to real-time system operation

Real-time power supply

Year until Week

D-1

D-1 until D

Real-time during D

Derivatives Market (1)

Initial
Phase

Products

Trading Methods

Tradable
Delivery Periods

Underlying Asset

Power Futures on the average **Day-Ahead Market (DAM)**
Clearing Price of the respective Delivery Period

Option of physical delivery, through the submission of **Priority-Price-Taking-Orders** in DAM.

- a. **Continuous Automated Matching Method** , Monday to Friday (excl. holidays).
- b. **Pre-Agreed Method**: Bilateral Trading in HEnEx's Trading Platform with a price/quantity pre-agreed between the counterparties, Monday to Friday (excl. holidays).

Month, Quarter & Year (up to the next year).

- a. **Baseload Index**: The average Clearing Price of DAM for the hours between **00:00 and 24:00 for all days** of the respective Delivery Period.
- b. **Peakload Index**: The average Clearing Price of DAM for the hours **between 08:00 and 20:00 from Monday to Friday** of the respective Delivery Period.

Derivatives Market (2)

Later
Phase

Products

Options on HEnEx's Power Baseload Futures – European Style
(exercised only at the Expiry Day).

Trading Methods

- a. **Continuous Automated Matching Method**, Monday to Friday (excl. holidays).
- b. **Pre-Agreed Method**, Monday to Friday (excl. holidays).

Tradable
Delivery Periods

Options on the corresponding Month, Quarter & Year (up to the next year).

Underlying Asset

Option on HEnEx's Future on the **Baseload Index**.

- ▶ MiFID II Organized Derivatives Market
- ▶ Option of physical delivery - increased liquidity
- ▶ Clearing by an EMIR Compliant CCP (ATHEX Clear)

Day-Ahead Market features

Current Day-Ahead Market Model

- ▶ **Mandatory pool model**
- ▶ **Asset-based participation** in the market
- ▶ **Co-optimization** of energy & ancillary services
- ▶ **Unit commitment - 24h social welfare maximization problem with constraints**
- ▶ **Order Types** (Buy/Sell)
- ▶ Producers submit **Techno-economic/Non-Availability** declarations
- ▶ Suppliers submit non-priced Load Declarations for demand
- ▶ Settlement of imbalances from ADMIE
- ▶ **No bilateral** agreements
- ▶ **Explicit allocation** of interconnection capacities (ST-PTRs)

New Day-Ahead Market Model

- ▶ **Semi-compulsory Market**
- ▶ **Bidding on a physical asset basis -Portfolio bidding for RES Units & RES Aggregators**
- ▶ **Pan-European market clearing algorithm – EUPHEMIA**
- ▶ **Only energy products** (Day-ahead hourly energy contracts are traded) - no ancillary services
- ▶ **Orders** compatible with PCR standards
- ▶ **Exchange-based Futures and OTC Contracts** with the option of physical delivery
- ▶ **Implicit allocation** of interconnection capacities with coupled Bidding Zones (no Daily PTRs)

Day-Ahead Market benefits

- ▶ **Stable EU market model,**
 - compatible with existing developed regional market models, allowing for seamless integration with developing neighboring markets;
 - well understood by local & foreign Participants.
- ▶ **Robustness of DAM results** for reference price that will:
 - provide strong and reliable signals for further viable and competitive investments.
 - provide for healthy competition among Participants in favor of end-consumers;
- ▶ **Position correction** after the Derivatives Market.

Intra-Day Market

- ▶ Optional Participation
- ▶ Unit-based Market
- ▶ 2 Implementation phases:
 - ▶ **1st Phase:** Local Intra-Day Auctions (LIDAs)
 - ▶ **2nd Phase:** Complementary Regional Auctions (CRIDAs) & Continuous Trading (XBID)
- ▶ Fine tuning positions prior Balancing and mitigating financial exposure to the Balancing Market
- ▶ Position correction after the Day-Ahead Market.
- ▶ Submit more accurate short-term forecasts
 - ▶ for Renewable Energy Resources (RES);
 - ▶ for consumers demand.

High-level Implementation Roadmap

- ▶ Spot markets Trading Rulebook – Approved by the Regulator
- ▶ Spot markets Clearing Rulebook – Pending approval by the Regulator
- ▶ IT spot trading & clearing infrastructure for DAM & IDM – ongoing
 - ✓ Application Programming Interface (API) with the Energy Trading Spot System (ETSS) available early June
- ▶ Spot Markets Participant Training: starting Q3 2019
- ▶ Spot Markets System Testing: starting Q3 2019 for own systems
- ▶ Spot Markets System Testing for interface with the TSO upon completion of the Balancing Platform
- ▶ Derivatives Market Regulatory & Licensing: Q4 2019
- ▶ Derivatives Market Trading System (ETSD): Q4 2019

Hellenic Gas Market - Developments & Prospects

Working towards the new Gas Market

▶ Our vision

- Establishment of a Gas Trading Platform
 - HEnEx as a Trading Platform Operator (TPO)
 - EnExClear as a Gas Clearing House
- Investigation of synergies for a Regional Gas Market
 - Creation of regional indices and price signals

▶ First Step: Feasibility study

Thank you for your attention!

Eva Papadionysiou, MA
Markets Operation Division HEnEx S.A.

Tel.: +30 210 336 6854

Mob.: +30 697 800 6854

email: evangelia.papadionysiou@enexgroup.gr