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2019

Hellenic Energy Exchange

Towards the integration of Greek and EU Energy Markets

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The liberalization of energy markets began in the 1990s as an attempt to unify the European internal markets, achieve price convergence across all European markets and maximize overall social welfare.

The movement towards the use of a single energy market in Europe is explicitly directed by the European Union (EU) through various directives.

In particular, this process is clearly specified by the EU through the Third Energy Package.

The majority of EU countries have successfully established power exchanges (PXs) through which cross-border transactions are conducted in a transparent and reliable manner, ensuring greater liquidity in energy markets and at the same time providing a competitive environment for the benefit of the consumers. Additionally, the development of PXs presents supplementary advantages, such as easier access, lower transaction costs, elimination of counterparty risk, neutrality, price reference, clearing and settlement services.

PXs are considered an important part of the European energy sector, both in terms of physical and financial trading.

Based on the most recent available data, the total volume of electricity traded across the European Union amounted to 12,647 TWh for 2017, out of which 42.3% was traded among PXs.

Given the ongoing coupling among various regions in Europe, in the coming years we are likely to witness a significant integration among energy markets. Currently, electronic auctions are conducted daily, where energy products such as electricity, natural gas, CO2 emissions and green certificates are traded between PXs all over Europe.

The first PX that was established in the EU was OMIE (1997) in Spain, followed by APX (1999) in the Netherlands and the United Kingdom, Nordpool (2001) in the Scandinavian countries, EEX (2002) in Germany and more recently IBEX (2014) in Bulgaria and CROPEX (2016) in Croatia. The main difference among those PXs is liquidity, since the less developed PXs struggle to survive or try to integrate with their neighbours in the region. In the case of Greece, the framework of the energy market was reshaped radically in February of 2017.

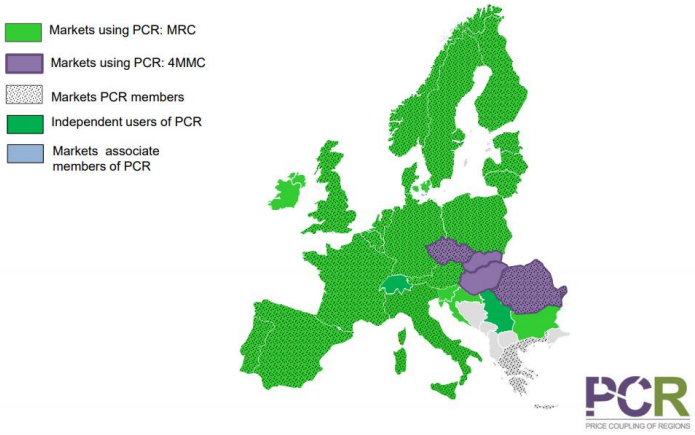
Former Market Operator (LAGIE) and Athens Stock Exchange (ATHEX) signed a memorandum of cooperation and established the Hellenic Energy Exchange.

Targeting to enhance competition compared to the previous period, Greece has introduced numerous steps towards the liberalization and deregulation of its wholesale electricity market.

One of these steps was to establish the Hellenic Energy Exchange (HEnEx) in June 2018 in order

to operate the Energy Derivatives Market, the Day-Ahead Market and the Intra-Day Market. Following the establishment of the HEnEx, market coupling with Italy is expected to take place within 2020, with other neighbouring bidding zones to follow. Furthermore, in 2018, HEnEx joined the Price Coupling of Regions (PCR) project, which is an initiative of eight PXs covering the majority of European electricity markets.

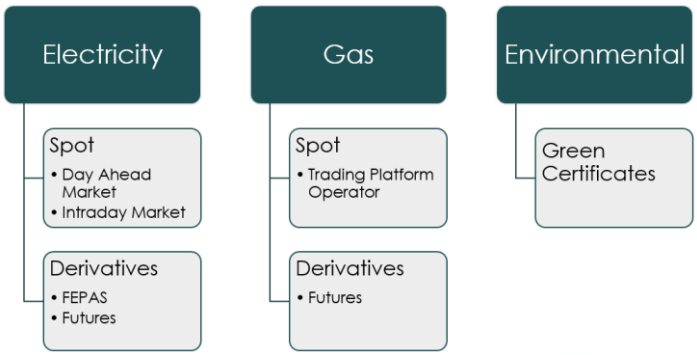
Figure 1: PXs participating in PCR project



One of the key achievements of PCR is the development of a single price coupling algorithm, known as EUPHEMIA. In addition, as part of the establishing a full liberalized energy market, specific energy policies are implemented in order to decrease the market share of PPC below 50% by 2020.

Furthermore, the operation of the Energy Exchange is complemented by new provisions of operating the gas market and the Green Certificates

Figure 2: Target Markets of HEnEx



Since 2011, the Day-Ahead Scheduling Market. in Greece was operated by LAGIE. Further LAGIE's responsibilities comprised clearing, settlement and reporting of transactions to both the Regulatory Authority for Energy (RAE) and the Agency for the Cooperation of Energy Regulators (ACER).

In June 2018, HEnEx was established and undertook the market operation responsibilities that previously belonged to LAGIE.

Aiming to modify the aforementioned structure, the Greek authorities, in co-operation with the European Commission, have formed a framework for the implementation of the target model guidelines. All electricity market responsibilities are now undertaken by HEnEx, while the remaining part of LAGIE is renamed to DAPEEP, being the Renewable Energy Resources and Guarantees of Origin Operator.

According to the current ownership structure of HEnEx, DAPEEP owns 22% of the new entity, thus ensuring the participation of the Greek state. The Athens Stock Exchange owns a share of 21% and its role is of central importance, since it is expected to contribute the necessary expertise to

the IT function of the HEnEx. Beyond those two major shareholders, the remaining required capital is covered by other entities, such as the electricity and gas TSOs (ADMIE 20% and DESFA 7%, respectively), the European Bank for Reconstruction and Development (20%) and Cyprus Stock Exchange (10%).

Following the formation of the HEnEx, a 100% subsidiary company of HEnEx was established as the market Clearing House, named EnEx Clear.

Consistent with the approved Day-Ahead and Intra-Day Rulebook, the spot markets are in charge of allocating the energy among the Participants.

Furthermore, the Hellenic Capital Market Commission together with RAE are the responsible authorities for the supervision of the Energy Derivatives Market. Therefore, based on the introduced legal framework, the traded products will have the option of being either financially or physically settled.

Apart from the Energy Derivatives Market, the Market Participants will have the option to conclude bilateral energy contracts (Over-the Counter contracts), which should be declared to the Registration and Nomination Platform of HEnEx in order to be submitted as Orders in the Day-Ahead Market.

The basic characteristics of the introduced PX are standardization, transparency, low transaction cost and elimination of counterparty risk.

In line with the Third Energy Package, the transition to the new target model of the European wholesale energy market includes the voluntary formation of PXs in parallel with the existence of over-

Registered participants are obliged to pay fees for the trading services provided by HEnEx. The overall fees comprise the following components.
a) Annual fee which is separate for each market (Energy Derivatives Market, Day-Ahead Market, Intraday Market). This component represents the cost of trading services for participation in each market and corresponds to a fixed amount per year.

b) A membership fee, which is again separate for each market.

c) Transaction fees for each MWh traded, both bought and sold, by each registered Participant.

Even though the PX's operation and OTC contracts function in a complementary way, numerous differences exist between them. Given that their supervision and regulation are difficult, as the transactions are opaque, both participants encounter high levels of counterparty risk in case that they do not select the Clearing House for the clearing and settlement transactions.

Yet the prices across the two markets are highly related, since the prices formed in any PX function as benchmark or reference price for those shaped in the corresponding OTC market.

Furthermore, EnEx Clear will undertake the responsibilities of clearing, settlement and transaction coverage.

This framework is closely supervised by both national (RAE and the Hellenic Capital Market Commission) and European regulators (ACER and ESMA).

Given that participants will be required to maintain margin accounts, EnEx Clear will be interposed between counterparties to guarantee financial reliability.

According to the European Market Infrastructure Regulation (EMIR), the clearing house manages the settlement fund, which covers the possibility of default by any market participant.

The new entities will need to comply with various European Regulations and Directions, such as the Regulation on Wholesale Energy Market Integrity and Transparency (REMIT), the EMIR, the Markets in Financial Instruments Directive (MIFID II), the Market Abuse Regulation (MAR) and the Capacity Allocation and Congestion Management (CACM).

The participation in the Day-Ahead Market is optional for all Participants, except from the Participants with Generation Units. The latter should submit Sell Orders to the Trading System of HEnEx with energy equal to the Availability of the Generation Units.

In the Intra-Day Market, the Participants will be able to correct their position from the Day-Ahead Market by selling or buying energy in Intra-Day Auctions and Intra-Day Continuous Trading. The target of each Participant is to minimize the imbalances between the position of the spot market and the real-time dispatch.

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