

The Greek Energy Market: On-going Reforms and Challenges

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Wholesale Electricity Markets: Challenges in EU

RES suppress wholesale prices and displace conventional plants, while requiring flexibility.

Coal and Nuclear phase-out plans. More than 20 GW of gas plants have mothballed.

Capacity Mechanisms: More harmonized, auctions, emissions limit.

Ambitious Environmental Targets -> Market integration of RES.

Transition to Feed-in-premium, RES auctions, No subsidies, PPAs.

Huge costs in connectivity and smart networks. 177 bil €/year to 2030.

Storage and Demand Response: Declining cost + barriers' removal.

Market Concentration, Weak wholesale - retail links -> Competition issues.

Do prices reflect scarcity?

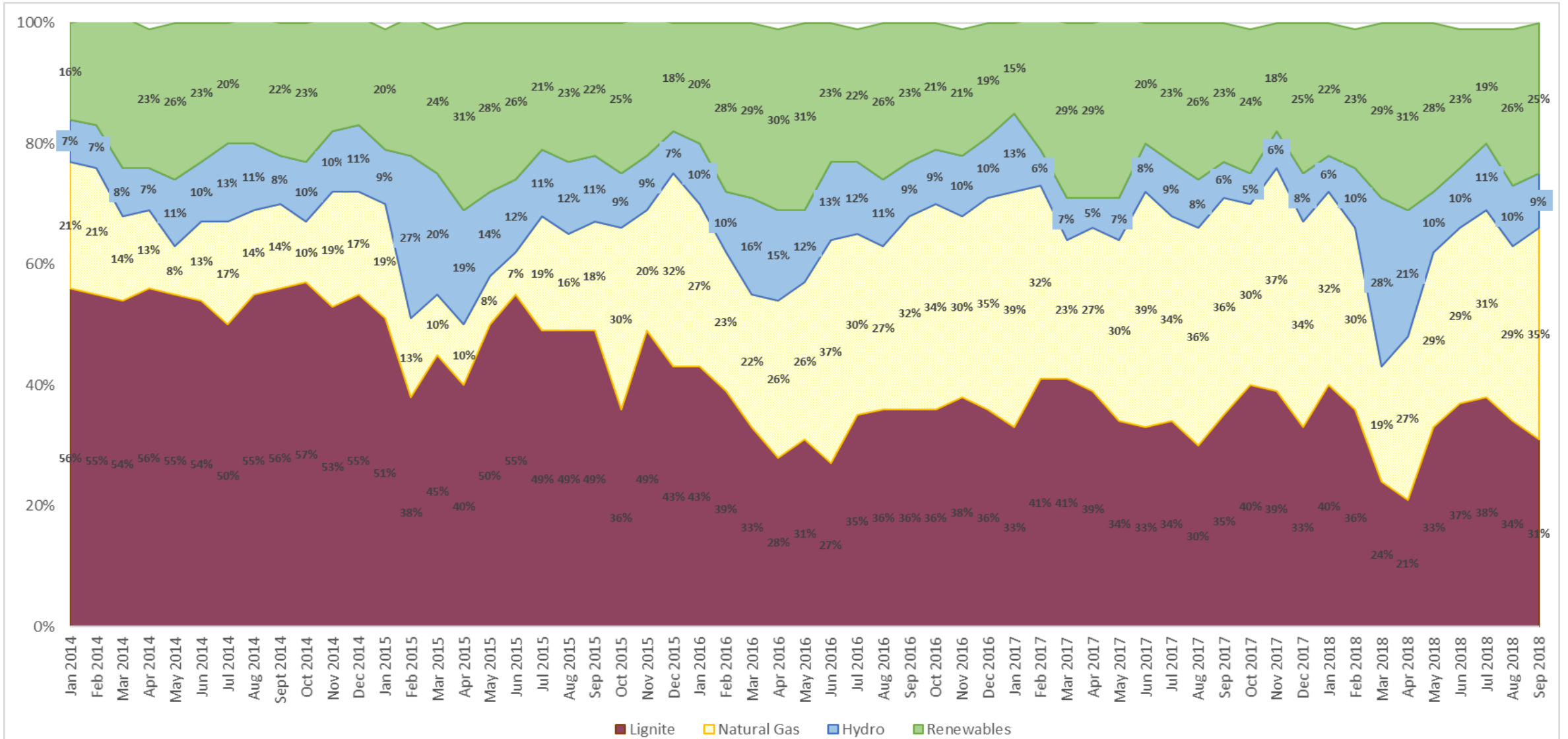
Do markets provide the right signals for investments?

Are markets sufficiently integrated?

Are cross-border flows efficient?

Evolution of Energy Mix in Greece

Fuel Market Shares in Electricity Generation, 2014 - 2018



Transformation of the Greek Energy Sector

☐ **More competitive markets.**

- ✓ Antitrust measures on incumbents. **Electricity and gas auctions.**
- ✓ Market share of alternative suppliers: 24% vs. 2% in 2015.
- ✓ **New investors** in: System Operators, gas supply and distribution companies.
- ✓ **Divestment** of lignite assets: In process.
- ✓ **New market actors:** aggregators in electricity / paper traders in gas balancing.

☐ **Better connected, more resilient and harmonized.**

- ✓ Cross-border **infrastructure** (TAP, IGB, Euroasian, Maritsa East, East Med).
- ✓ LNG Terminal extension, Underground Storage, FSRU Alexandroupolis.
- ✓ **Market Coupling:** Q2 2020. GR-BG IP: **Full compliance.** Balancing platform: July 2018.

☐ **Clean energy transition.**

- ✓ **RES market share** >20%. **2600 MW** auctioned over 2018-2020.
- ✓ Transition from Feed-in-Tariffs to **Feed-in-Premium.**

Transition to Target Model

Fine-tuning positions
Risk management
Visibility

New Markets: Forward, Day-ahead, Intra-day, Balancing.

Market Coupling: Italy, then Bulgaria.

Market Expansion: Market power potential is reduced.

Efficiency gains from cross-border flows.

Generators: Lock-in production -> Facilitates financing.

Value of Flexibility better reflected for plants and DR.

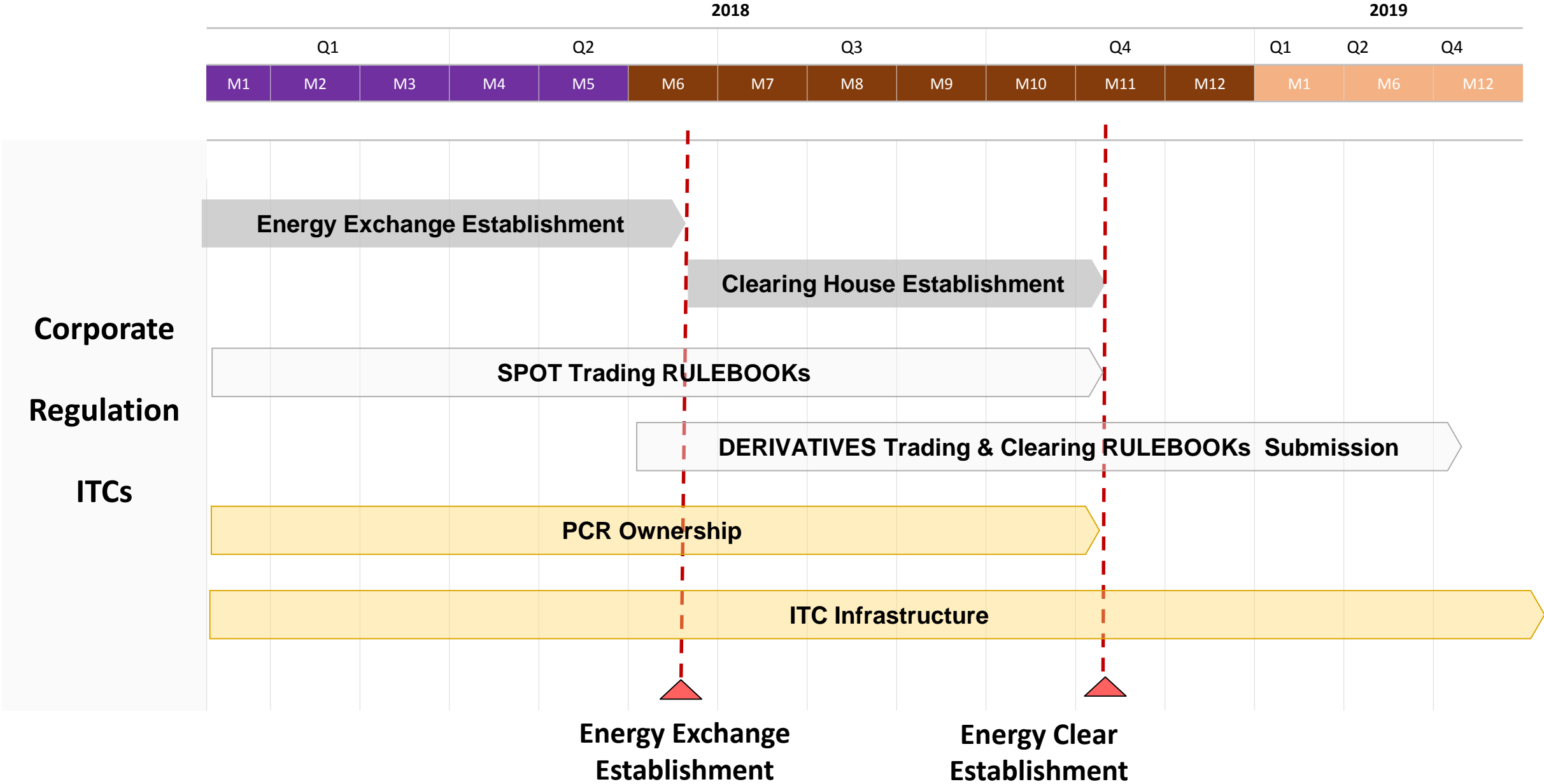
Suppliers: Hedging allows for more competitive retail products.

RES: Balancing responsibilities.

When sufficient liquidity in intra-day markets.

Derivatives: Expected to multiply the market value.

Roadmap on Corporate - Regulation - ITC



Key Principles and Changes

- ❑ **Transparency in Price Formation and Market Power Mitigation:**
 - Unit-based bidding in all markets apart from the forward market, where portfolios are allowed.
- ❑ **Robust and Smooth Transition:** Central dispatch instead of self-dispatch.
- ❑ **Security of Supply:** Mandatory participation of generators in day-ahead and balancing markets.
- ❑ **Bids format:** Flexibility vs. complexity trade-off (hybrid, blocks, linked).
- ❑ **Market Liquidity:** Cap on hedging ratio.
- ❑ Various changes arise, including:
 - Plant profiles and all costs (ramping, desynchronization) to be incorporated into orders.
 - Expensive plants may perceive bilateral contracts as a way to “hide” costs and get dispatched.
 - Credit limits and processes avert arrears.
- ❑ **Ex-post market monitoring** is enhanced.
 - Several indicators will be published. Variable costs: submitted and assessed.

Strong incentives for operational efficiency.

Power Derivatives Market: Proposal by HEnEx

- **Product:** Financial derivatives contract based on average spot price over delivery period.
- **Option of arranging physical delivery** on the Day-ahead Market, via submission of Priority_Price-Taking Orders.

Advantages of a financial contract with the option of physical delivery

- Appealing both to financial and non-financial entities.
- **Liquidity** is gathered into a single pool.
- Identical financial result.
- Counterparty risk is **minimised**, as clearing is performed by EMIR authorised CCP.
- Not required for both buyer and seller to request physical delivery
- **Common practice** (e.g EEX, HUDEX).

Core Principles

Best practices
adapted to local
specificities

Commitment

Consistency

Clarity

Continuity

Capability

Co-
ordination

Collaboration

Consensus

Common
Vision

Common
Sense

Regional Issues - ACER's Recommendations

- ❑ Availability of interconnectors.
- ❑ **Commercial** reasons vs. technical outages? Italy-Greece cable.
- ❑ Regulatory initiatives, but an investigation by EC still pending.
- ❑ **Momentum** in SEE, despite significant delays.
- ❑ Some **distortions are removed** (e.g. export fees in Bulgaria).

- ❑ **ACER Views:**
- ❑ In forward markets, solutions that decouple liquidity from size of bidding zones, i.e. **multi-bidding-zones hedging** instruments.
- ❑ NRAs and TSOs should ensure **full balancing responsibility** for all technologies and cost-reflective balancing charges.
- ❑ TSOs should **release intra-day cross-zonal capacity** as early as possible, so as to limit isolation.

Clean Energy Transition: Challenges for Energy Regulation

- ❑ **Adaptive**, open to innovation.
- ❑ **Reliable** and **predictable**, avoiding abrupt changes.
- ❑ **Independent**, reflecting technical capability and accountability.
- ❑ **Licensing**: Simplified and harmonized.

- ❑ **“3D” Transition: At least cost for consumers.**
 - ✓ Huge costs involved in connectivity and smart networks.
 - ✓ For a smooth impact on consumers (**prosumers**):
 - ✓ **Competition, Demand-response, Storage.**
 - ✓ **Revised grid tariffs, synergies across sectors.**

- ❑ **Relevant quotes**
 - “ **People who say it cannot be done should not interrupt those who are doing it** ”