The European Power Industry

"Transitioning to Decarbonisation"

IENE – 8th South East Europe Energy Dialogue

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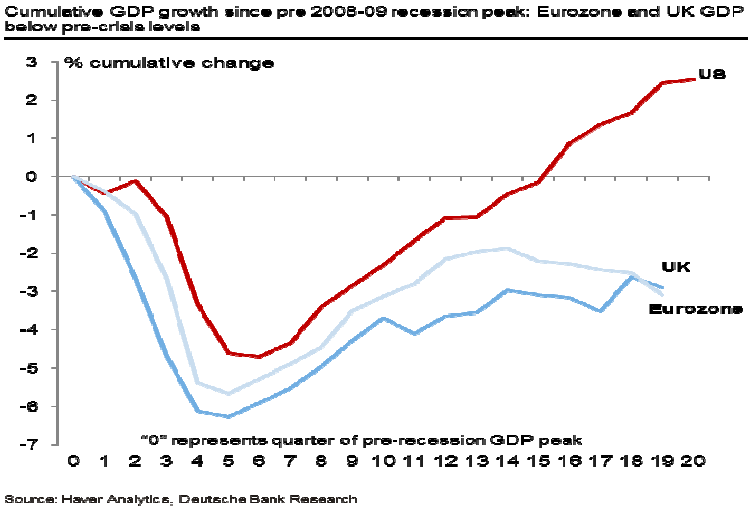
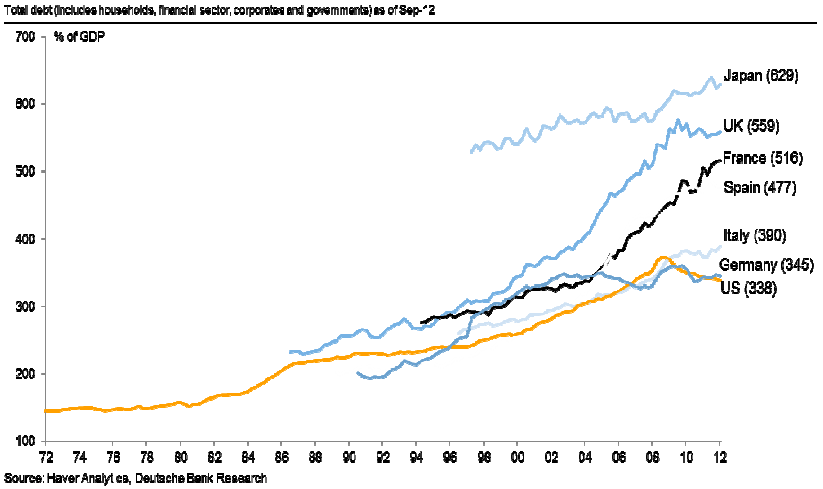
Chairman & CEO LAGIE

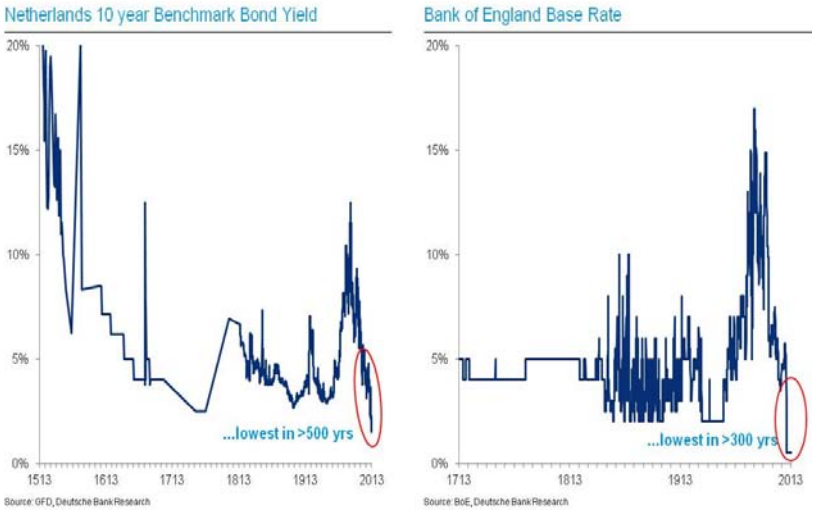
11th June 2014

Electricity Market Operator S.A. – LAGIE SA

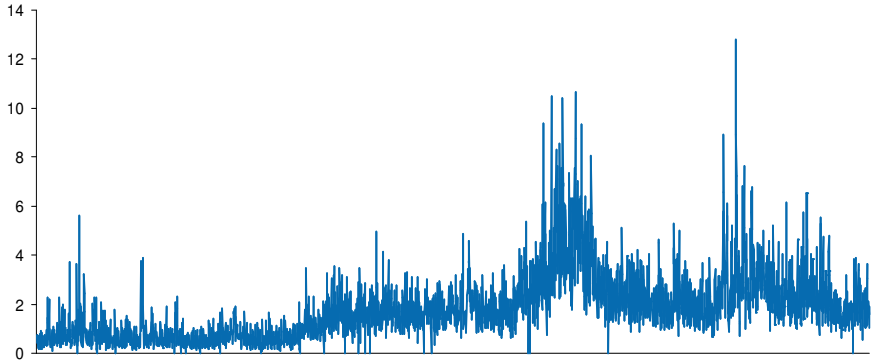
We are leaving through unprecedented Economic and Market conditions



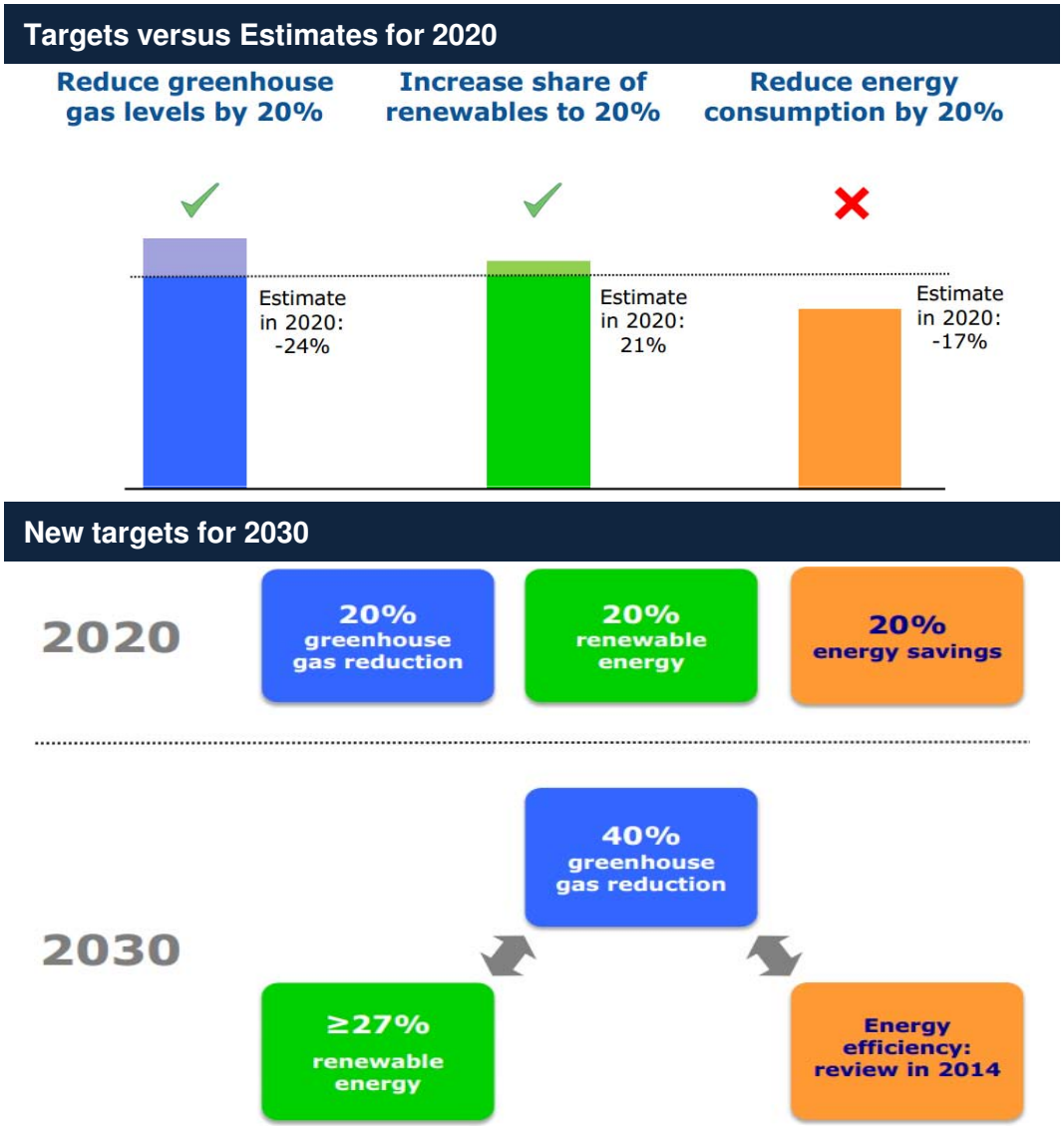




Daily Difference Between Highest and Lowest Price for Brent Spot
January 2000 – July 2013



Decarbonisation has been primarily driven by the 2020 targets, and now we have in place a renewed ambition for 2030

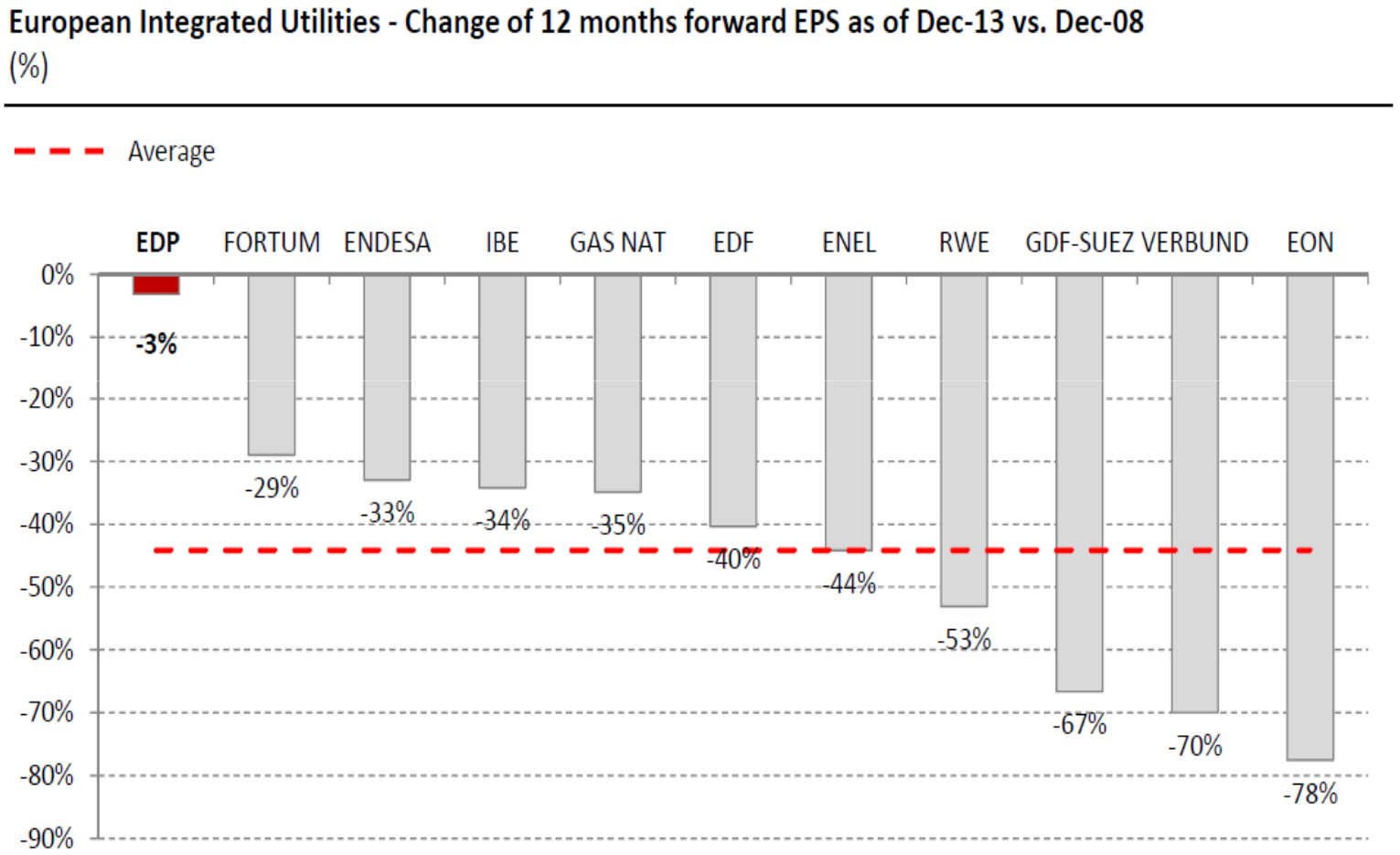


2020: Expected to exceed targets (apart from energy consumption)

2030: Emphasis on greenhouse gas reduction and RES penetration

Source: Presentation of J.M. Barroso to the European Council of 20-21 March 2014

The transition from Liberilisation to Decarbonisation and an integrated internal EU Market has destroyed significant economic value for most key European energy companies



The European Power Markets are facing unprecedented challenges

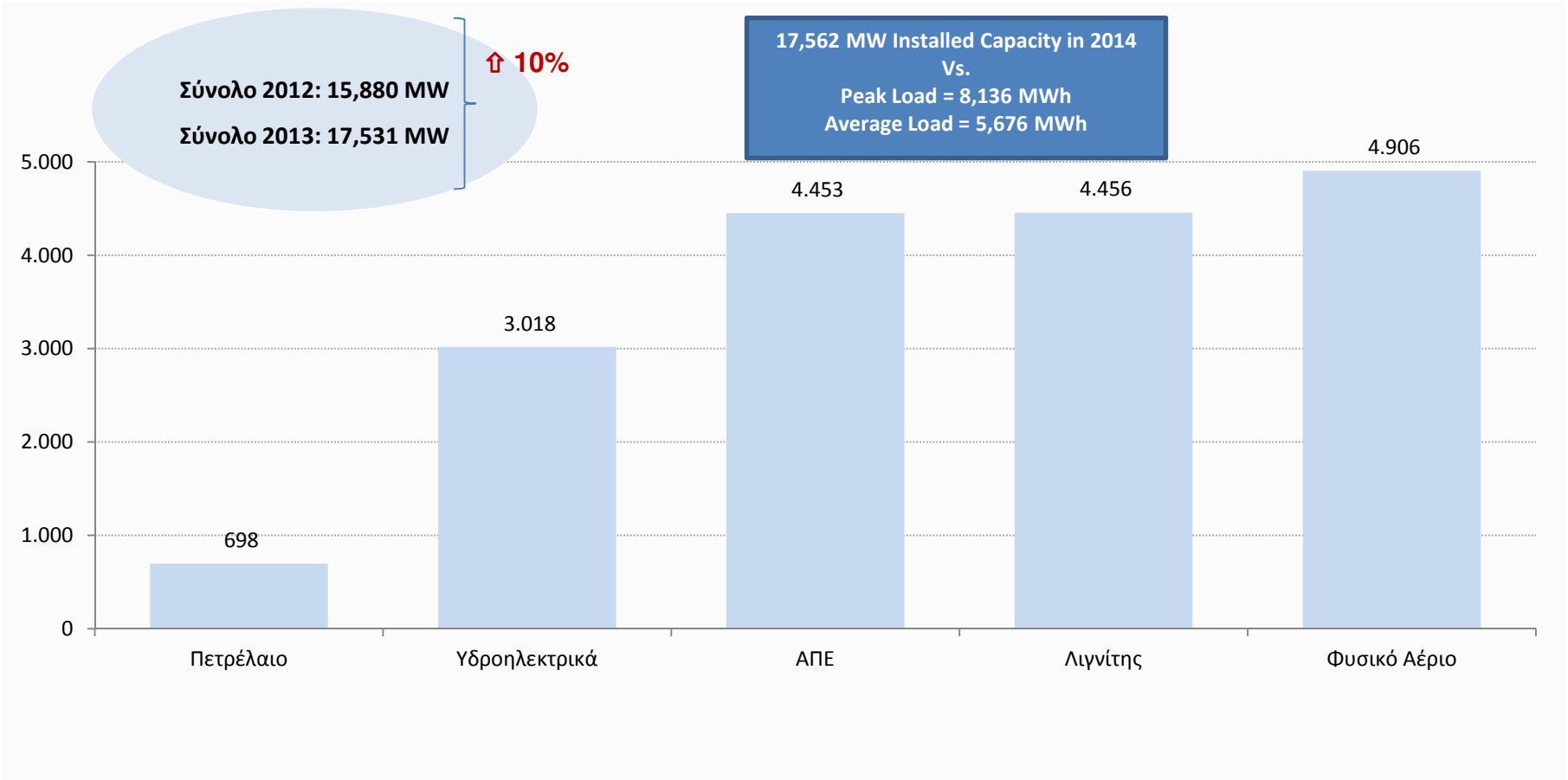
- Economic austerity and political/regulatory/financial **uncertainty**
- Internal market integration and decarbonisation progress has been hindered by most countries following their own **policies and regulations**, which change regularly
- The **investment needed does not fit the balance sheets** of the existing companies
- Existing **support for low carbon generation is crumbling**. Support schemes are costly, inefficient and prone to political risk
- We continue to build the **wrong technologies in the wrong places** and time periods, while we incentivise them to behave uneconomically, passing the costs to consumers
- RES significant penetration driving out conventional capacity and **reducing wholesale prices**. Most CCGTs are “stranded”, can not even sell forward energy for next week
- **Substantial market intervention by Regulators** in most European countries raising costs to consumers
- **Customers are “neglected”** and **Companies have become “social workers” and “tax collectors”**
- **New Market models are emerging;** Customers (usually at the end of the value chain) become Procumers (climb up the value chain)

There are no “silver bullets” for saving the industry, rather suggestions of a basket of principles to adhere

- A **successful Power Market** needs an integrated Europe with a stable regulatory framework with political risk kept to a minimum. But how much Regulation and who is going to pay for the integration? The Private or the Public sector?
- We need to find a **balance of risks** between financiers, industry, consumers, customers and regulators and manage complexity that would attract the investment needed. The new risks need new market instruments, e.g. hedging the volume risk
- Money should be spend on **developing technologies of tomorrow** rather than deploying today’s technologies
- Mature **RES technologies should join the Market** balancing risk/reward
- **Demand Management** would engage the customer and “flatten” the daily Power curves. Customers should pay for charges only related to electricity they use.
- **Successful companies** would need to have access (not necessarily ownership) to asset portfolio, risk management, control of BIG data, collateral and intimate knowledge of customer needs. There would be conflicts over customer ownership, ultimate control, value capture and holding the new risks. **New Market models appear already (e.g. Google)**
- **Increasing effectiveness** across the value chain; Optimising the RES energy systems, integrate the Market, Energise the Network, and adopt Demand Response

In Greece, the Power industry experiencing similar challenges to the rest of Europe, starting with significant oversupply (primarily due to growth in RES)

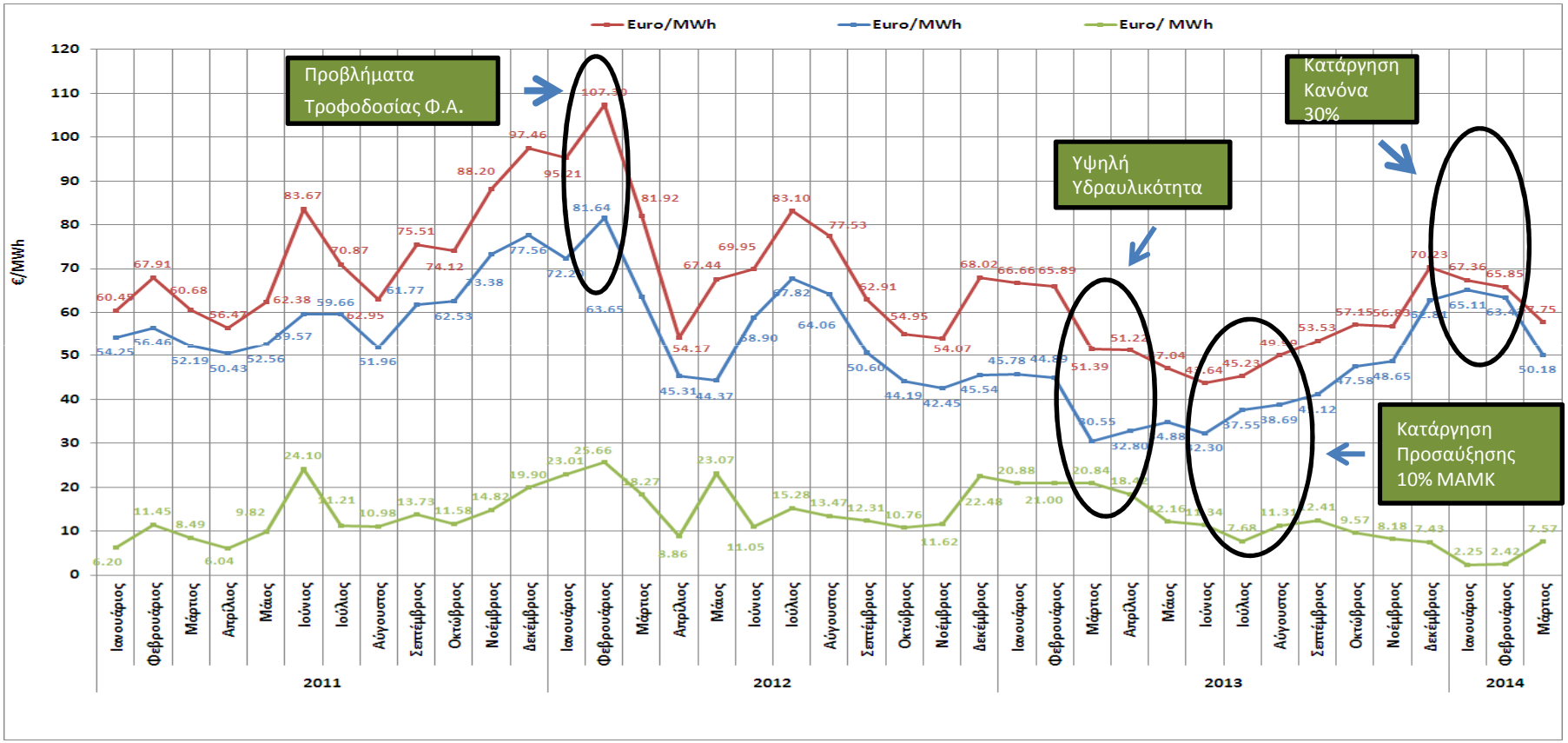
Installed Capacity (MW) - 2013



Πηγή : Μηνιαίο Δελτίο Συστήματος Συναλλαγών ΗΕΠ, Δεκ.2013, Μηνιαίο Δελτίο Ειδικού Λογαριασμού ΑΠΕ & ΣΗΘΥΑ, Ιαν.2014, Συνοπτικό Πληροφοριακό Δελτίο ΑΠΕ, Δεκ. 2013

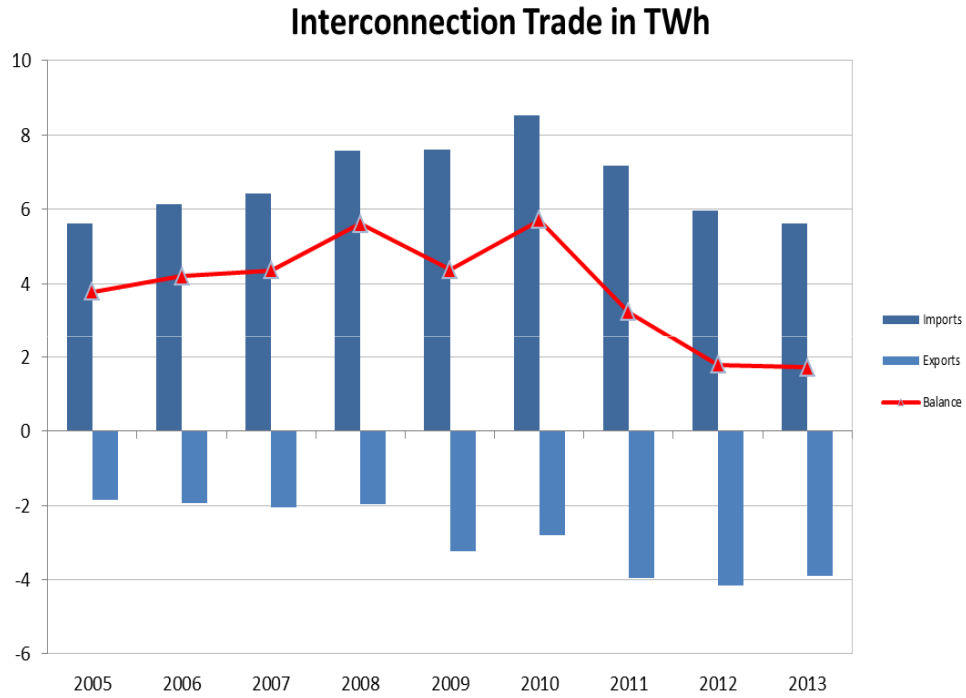
There is trend of declining SMPs since 2011 primarily due to the RES growth and other market inefficiencies

Μέση Ημερήσια ΟΤΣ και ΟΤΑ (2011,2012,2013)



Πηγή : Μηνιαίο Δελτίο Συστήματος Συναλλαγών ΗΕΠ, Δεκ.2013

Power trade across the Greek borders is limited by interconnection capacity (Italy) and Markets structure



We are experiencing significant structural changes in the Greek Power Market as reduced consumption and RES growth changing the dynamics of the Market

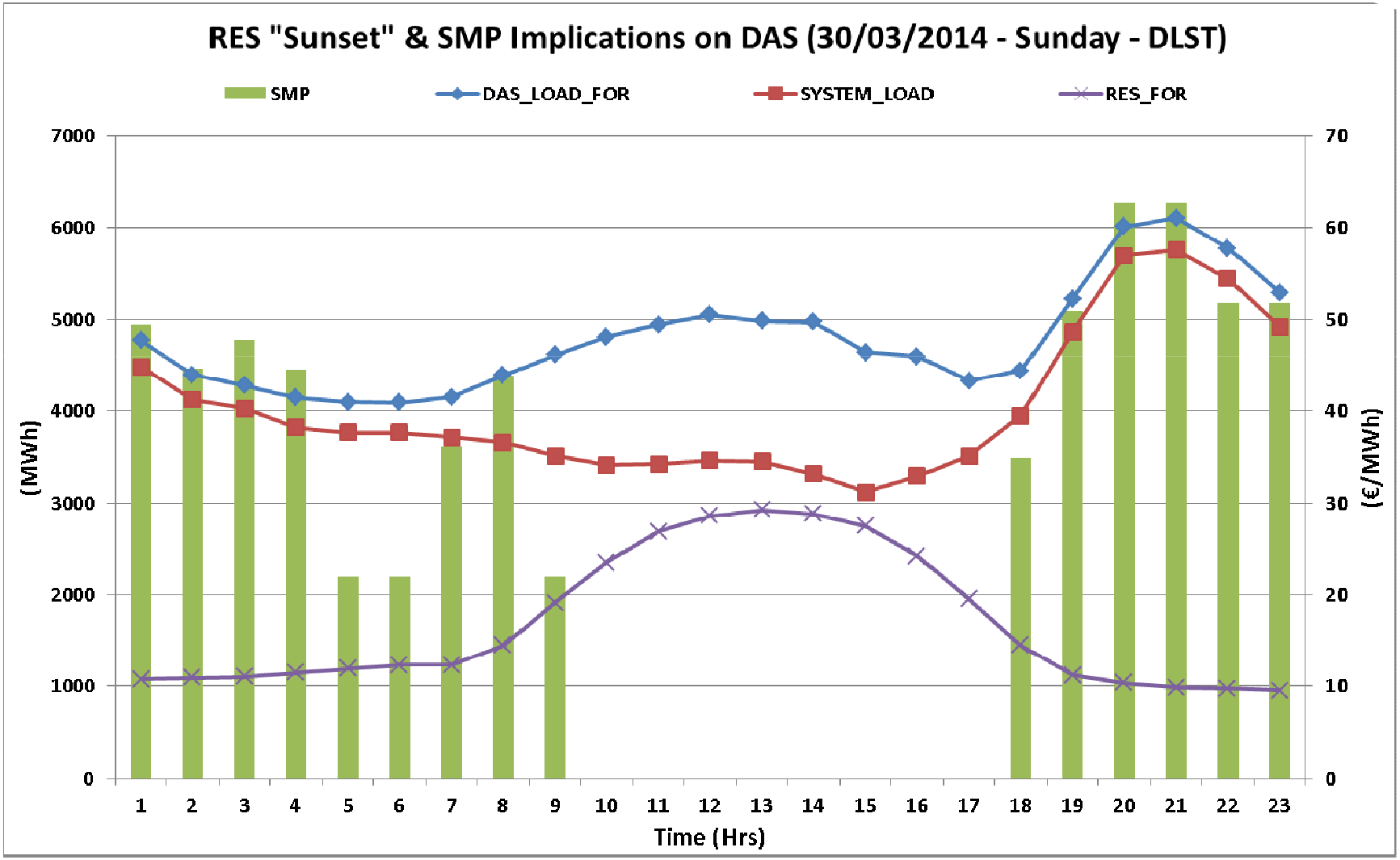
Ετήσια παραγωγή ενέργειας (TWh) ανά καύσιμο – 2011, 2012, 2013

	2011		*2012*		*2013*	
	ΕΤΗΣΙΑ ΠΑΡΑΓΩΓΗ (TWh)	**%**	**ΕΤΗΣΙΑ ΠΑΡΑΓΩΓΗ (TWh)**	**%**	**ΕΤΗΣΙΑ ΠΑΡΑΓΩΓΗ (TWh)**	**%**
ΛΙΓΝΙΤΗΣ	27,6	**52%**	27,6	**52%**	23,2	**45,6%**
ΦΥΣΙΚΟ ΑΕΡΙΟ	14,9	**28%**	14,4	**27%**	11,1	**21,6%**
ΥΔΡΟΗΛΕΚΤΡΙΚΑ	3,7	7%	3,9	7%	5,6	11,1%
ΠΕΤΡΕΛΑΙΟ	0,0	0%	0,1	0%	0	0%
ΣΥΝΟΛΟ ΣΥΜΒΑΤΙΚΗΣ	46,1	86%	45,9	86%	39,9	78,3%
ΑΠΕ & ΣΗΘΥΑ	4,0	**8%**	5,8	**11%**	8,9	**17,5%**
ΕΙΣΑΓΩΓΕΣ-ΕΞΑΓΩΓΕΣ	3,2	6%	1,8	3%	2,1	4,2%
ΣΥΝΟΛΟ	**53,4**	100%	**53,5**	100%	**50,9**	100%
ΟΤΣ	**59,36 €/MWh**		**56,73 €/MWh**		**41,47 €/MWh**	

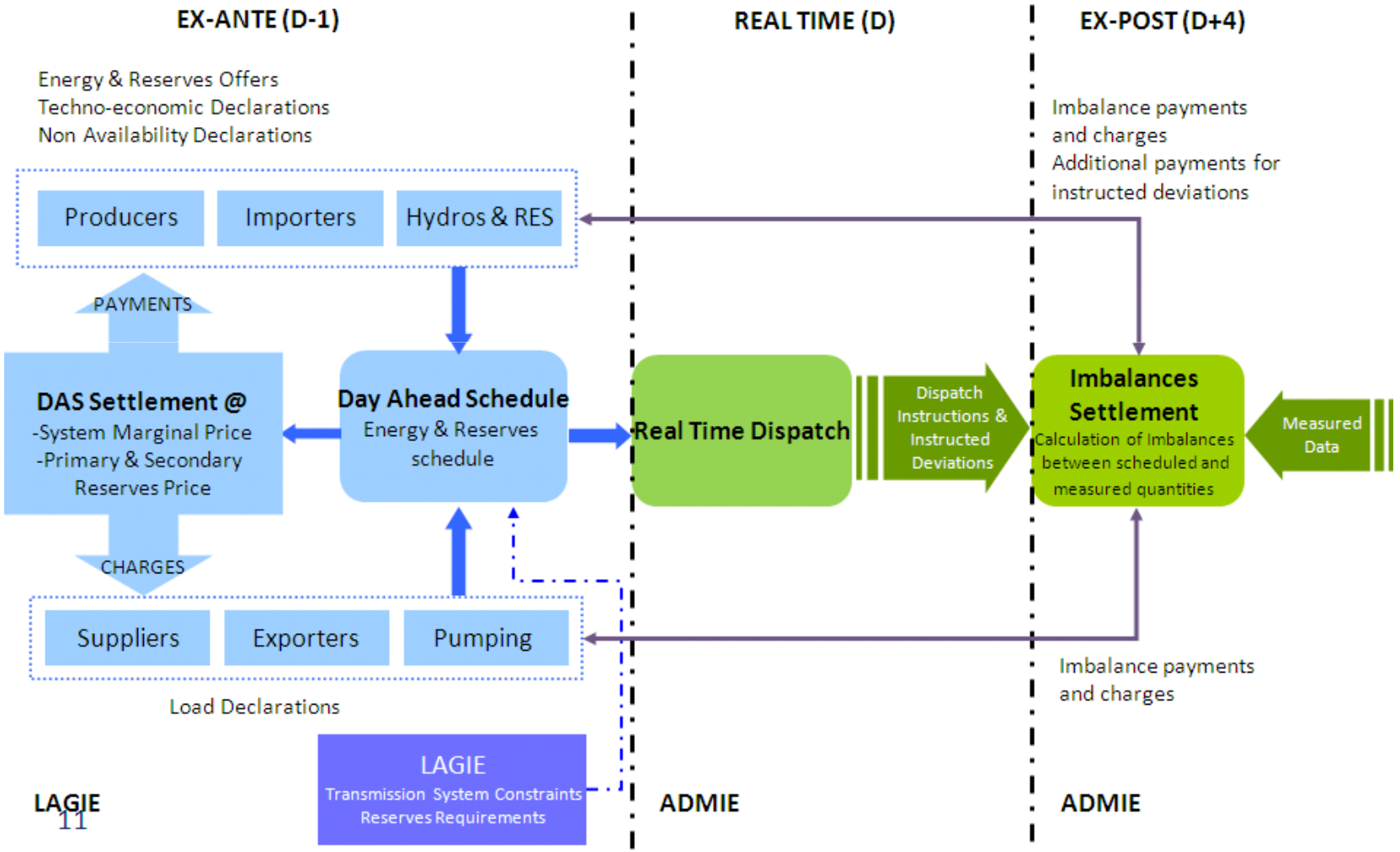
Πηγή : ΛΑΓΗΕ / ΑΔΜΗΕ, ΜΗΝΙΑΙΑ ΔΕΛΤΙΑ ΕΝΕΡΓΕΙΑΣ, Ιανουάριος 2014

The increase in RES penetration is challenging the current operation of the system and influences the SMP level during the day

Example: 30/3/2014

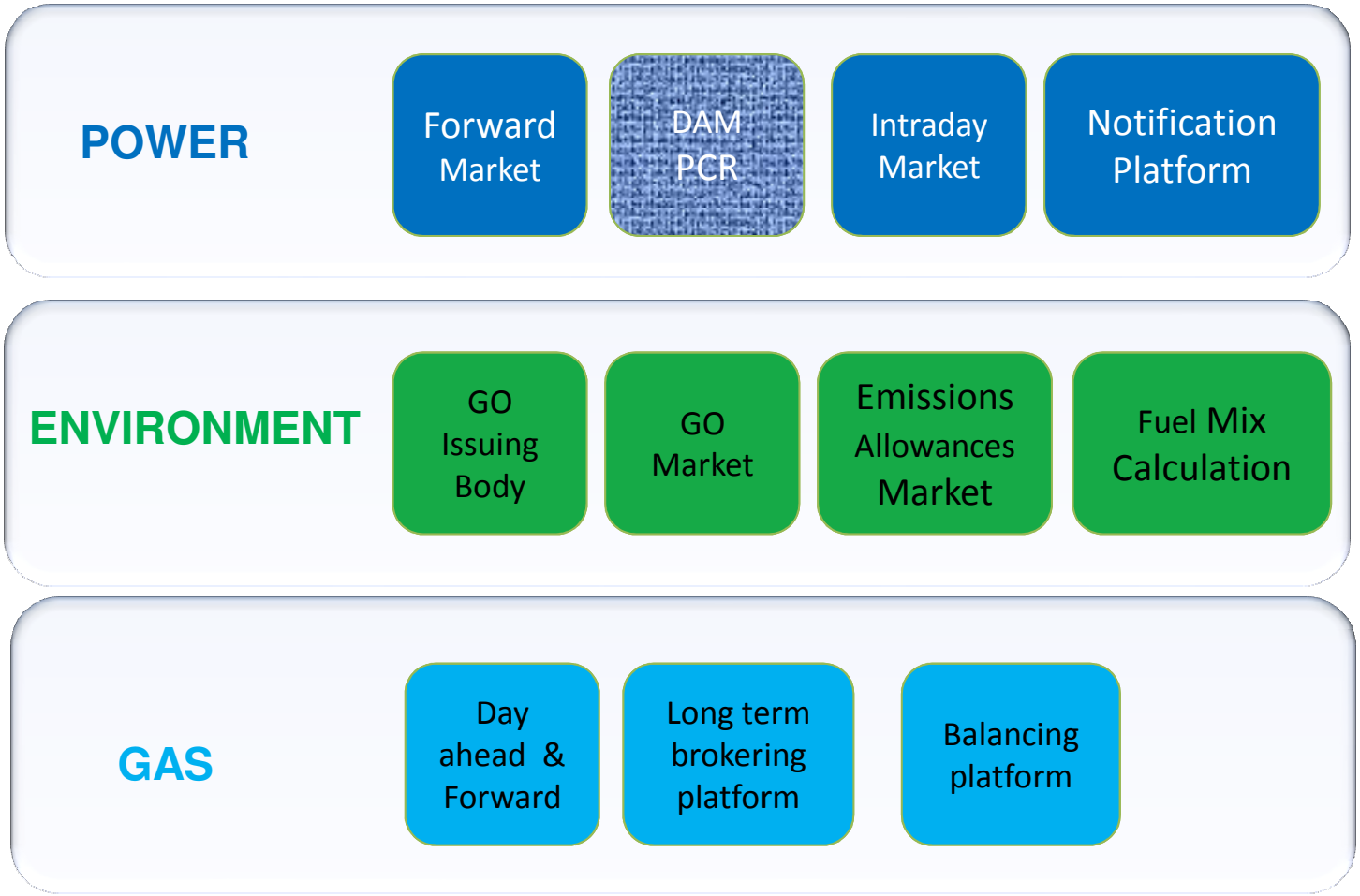


The Day-Ahead electricity market in Greece is operated solely through a Mandatory Pool



With the implementation of the “Target Model” and the “Market Reforms” in place, the Greek Power Market would be greatly enhanced

Steps ahead for the Greek Power Market reform with direct LAGIE participation



Greece is expected to enter Market Coupling within the CSE region and from there to the whole EU power markets

EU Commission has been decided to start a cooperation for elaborating a design for a day ahead market coupling on Italian borders using PCR. A Cooperation agreement for a Design Phase was signed end of 2012 between the following parties :

On TSO side:

ADMIE,

APG

ELES

RTE

Swissgrid

TERNA

On Power exchange side:

BSP Southpool

EPEX Spot

EXAA

GME

LAGIE

Market Coupling advantages to Greece

- Access to a Coupled EU Market, especially after the coupling of NWE with SWE which will cover 17 EU countries accounting for some 75% of the EU power market
- Increase of market liquidity and trading opportunities
- Decrease of price volatility in the wholesale market
- Optimal use of the interconnections
- Leverage existing technical and processes architecture as already in use by the other PCR PXs

Thank you
for
your attention