



Τάσεις στον Ευρωπαϊκό Ηλεκτρικό Τομέα

“Transitioning to Decarbonisation”

19^ο Εθνικό Συνέδριο Ενέργειας **IENE**

Ενέργεια & Ανάπτυξη 2014

Δρ Αναστάσιος Γκαρης

Chairman & CEO LAGIE

11 Νοεμβρίου 2014

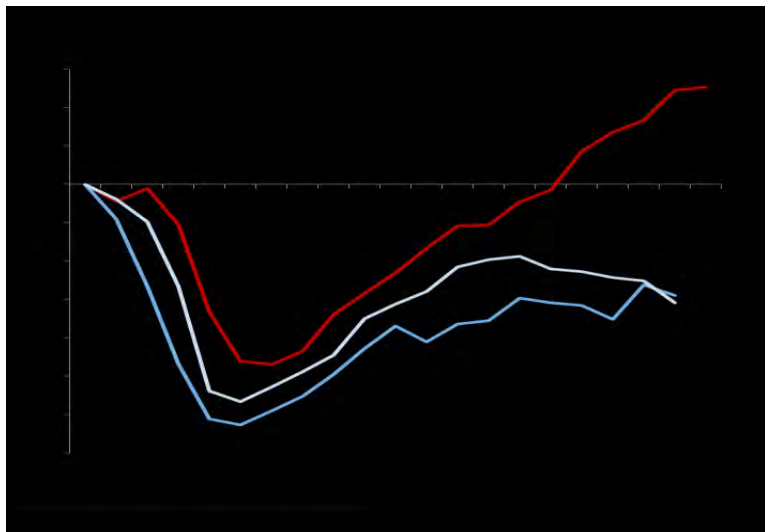


The European Energy sector faces significant structural challenges

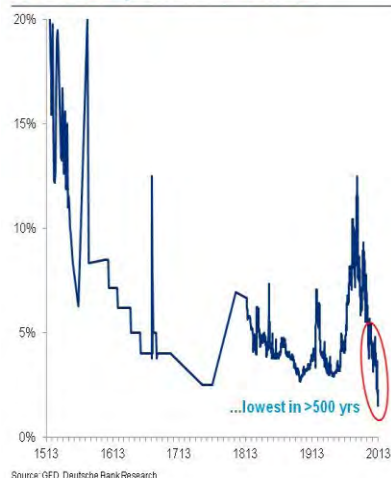
- The EU imports 53% of the energy it consumes
- Energy import dependency relates to crude oil (90%), to natural gas (66%), solid fuels (42%) as well as nuclear fuel (40%)
- **NATURAL GAS:** 6 Member States depend from Russia as single external supplier for their entire gas imports
- **ELECTRICITY:** 3 Member States (Estonia, Latvia and Lithuania) are dependent on one external operator for the operation and balancing of their electricity network
- The EU external energy bill represents more than €1 billion per day (around €400 billion in 2013)
- The EU imports more than €300 billion of crude oil and oil products, of which one third from Russia
- EU energy security has also to be seen in the context of growing energy demand worldwide, which is expected to increase by 27% by 2030, with important changes to energy supply and trade flows



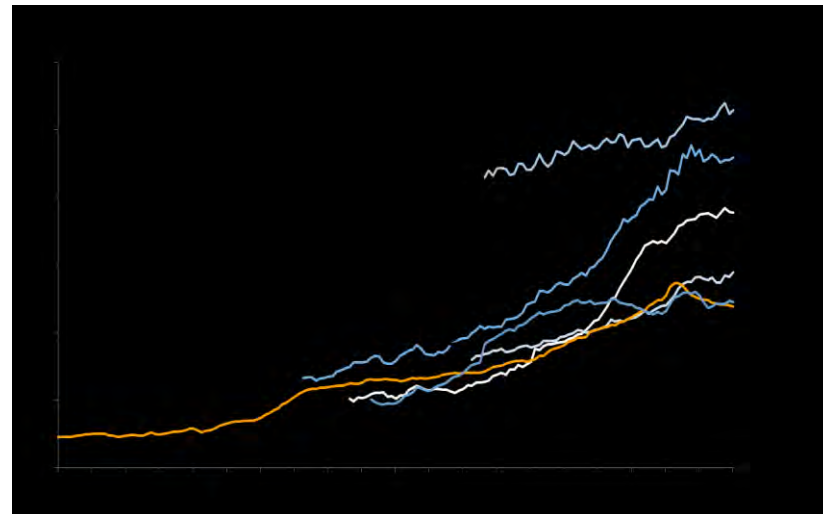
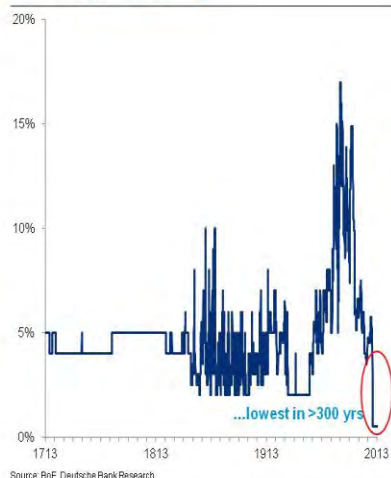
We are leaving through unprecedented Economic and Market conditions...



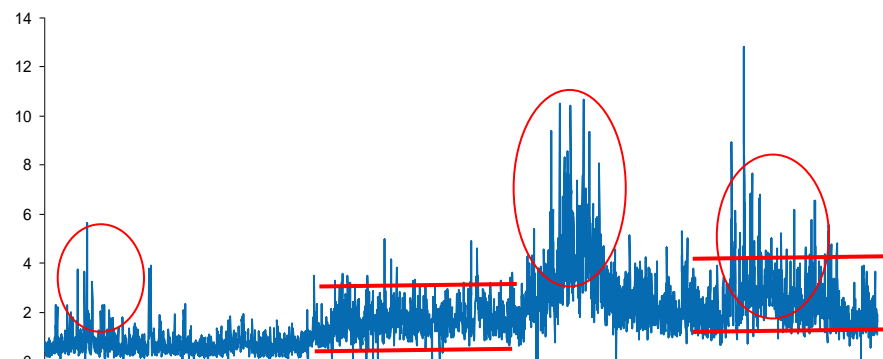
Netherlands 10 year Benchmark Bond Yield



Bank of England Base Rate

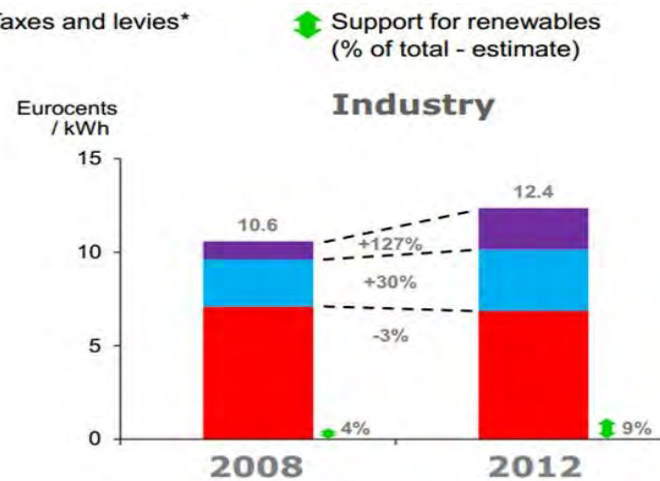
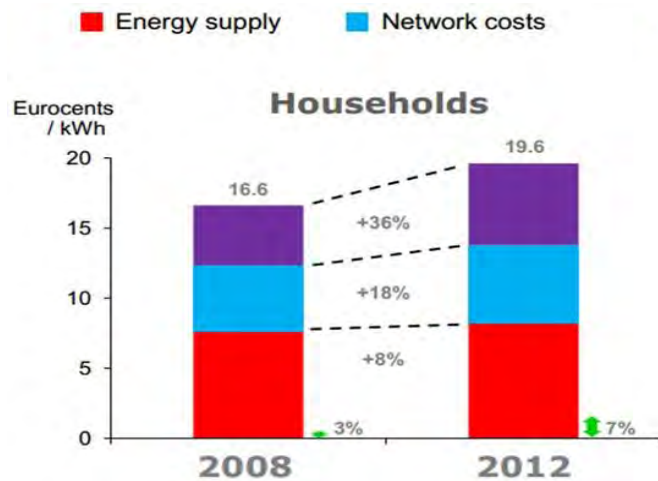
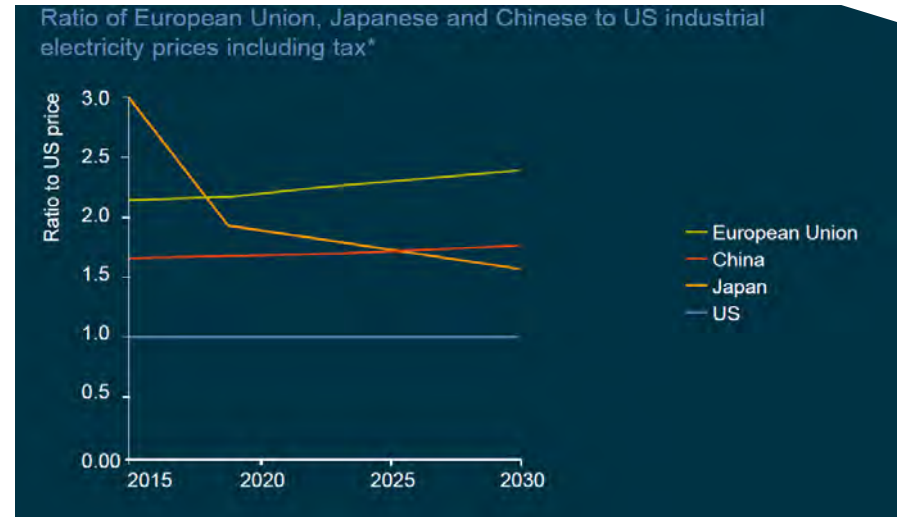
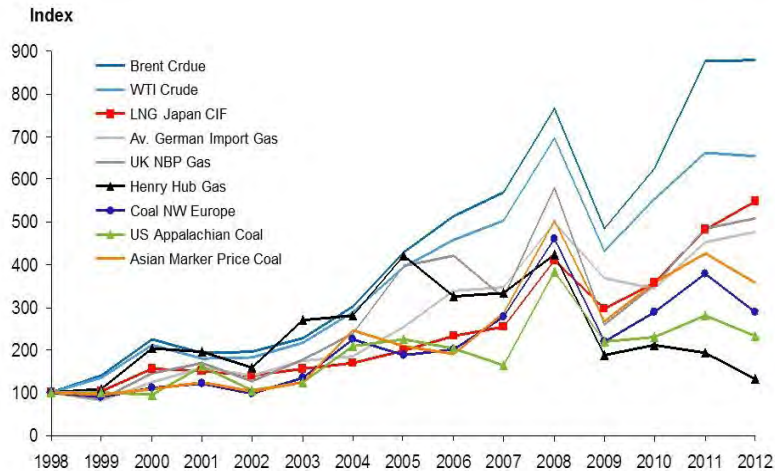


Daily Difference Between Highest and Lowest Price for Brent Spot
January 2000 – July 2013

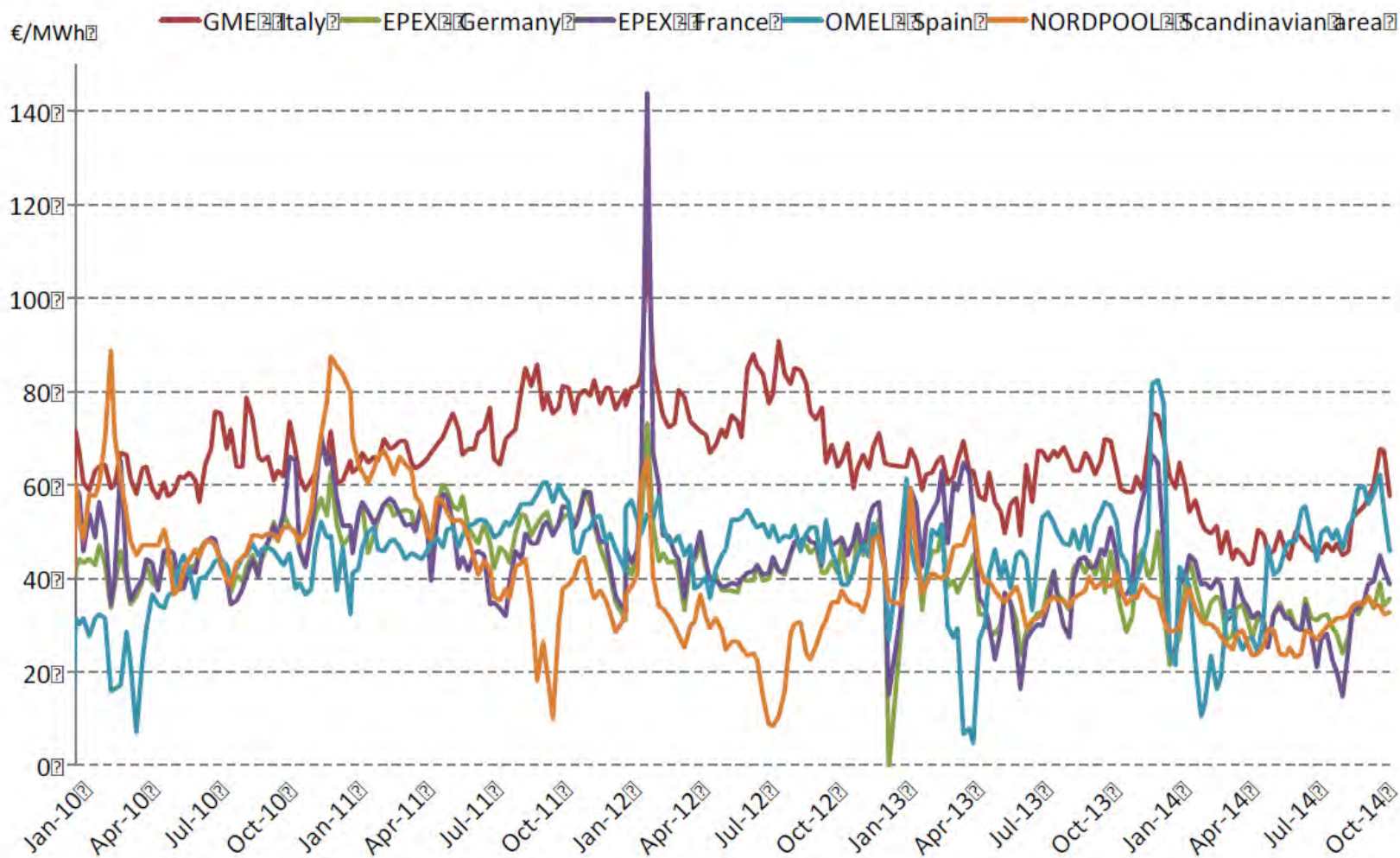


...observing incredible phenomena in the Electricity Industry

Some Examples

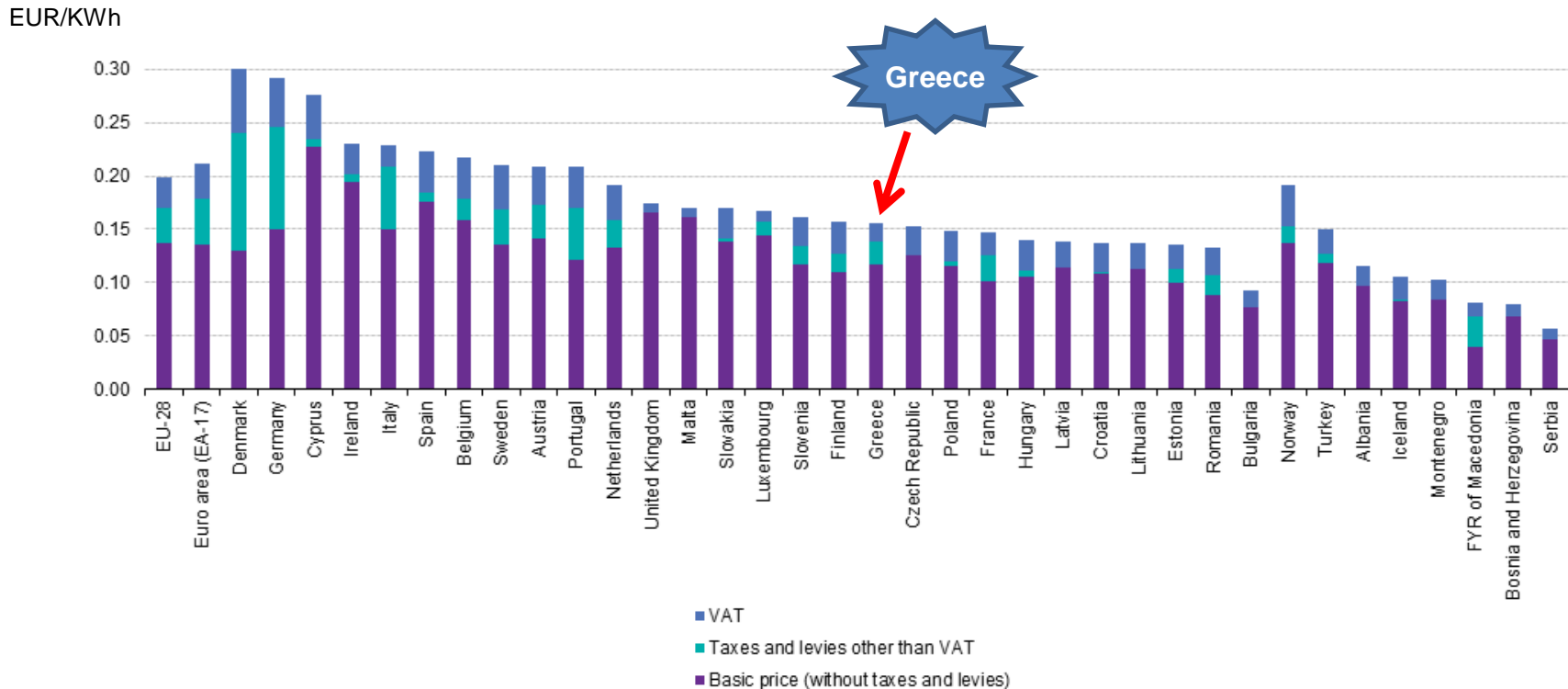


Wholesale electricity prices in many European markets do not appear to support industry costs



Retail prices differ significantly between EU countries as defined by country specific cost structures and economy priorities

Household Electricity Prices – first half 2013 (Eurostat)



(1) Annual consumption: 2 500 kWh < consumption < 5 000 kWh.

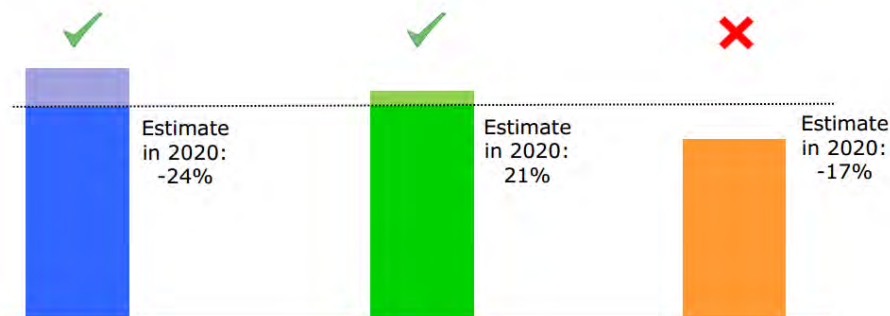
(2) Provisional.

Source: Eurostat (online data code: nrg_pc_204)

During this period, Decarbonisation has followed Liberalisation setting ever increasing targets for the “Green Economy”

Targets versus Estimates for 2020

Reduce greenhouse gas levels by 20% Increase share of renewables to 20% Reduce energy consumption by 20%



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

New targets for 2030

2020

20% greenhouse gas reduction

20% renewable energy

20% energy savings

2030

40% greenhouse gas reduction

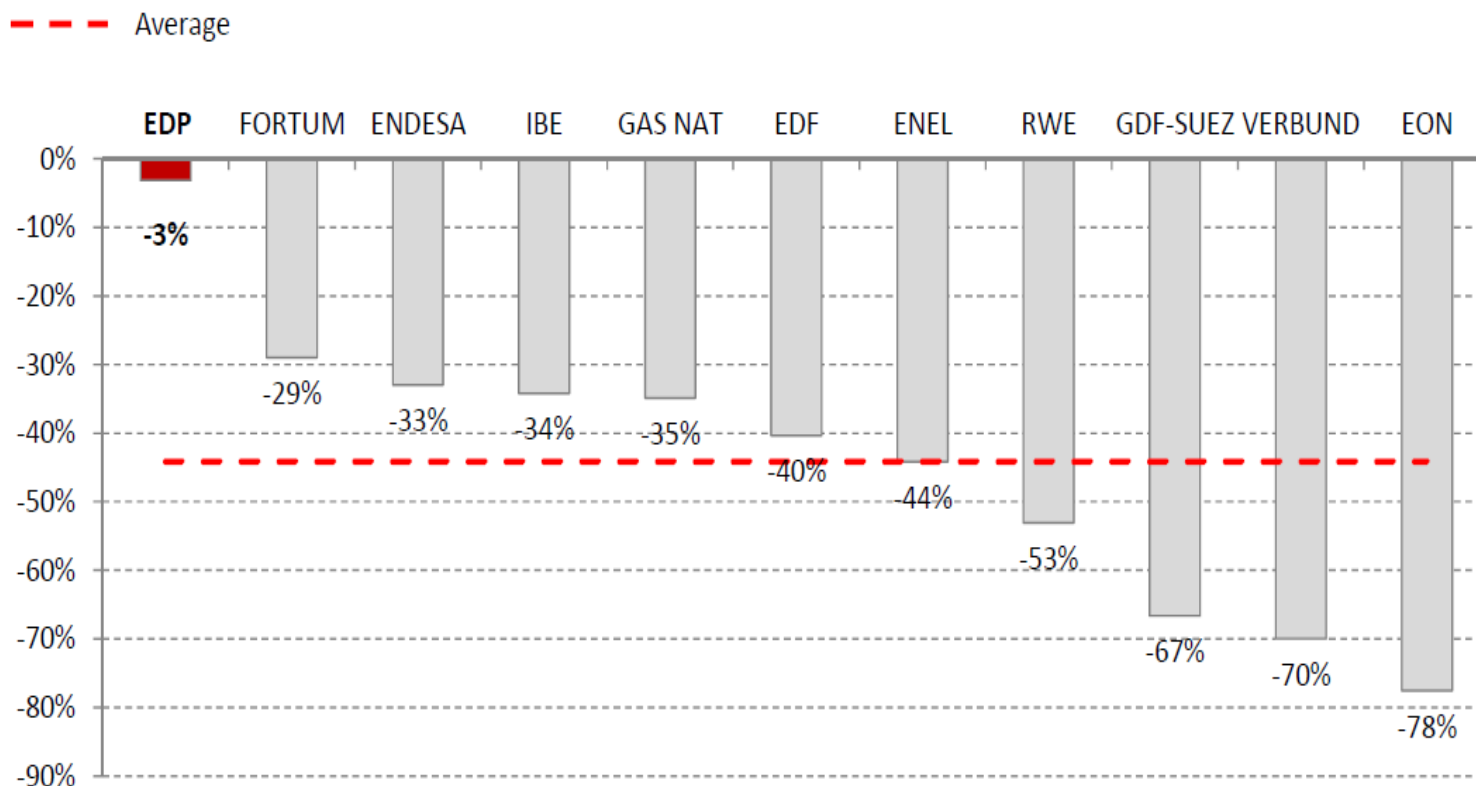
≥27% renewable energy

Energy efficiency: review in 2014

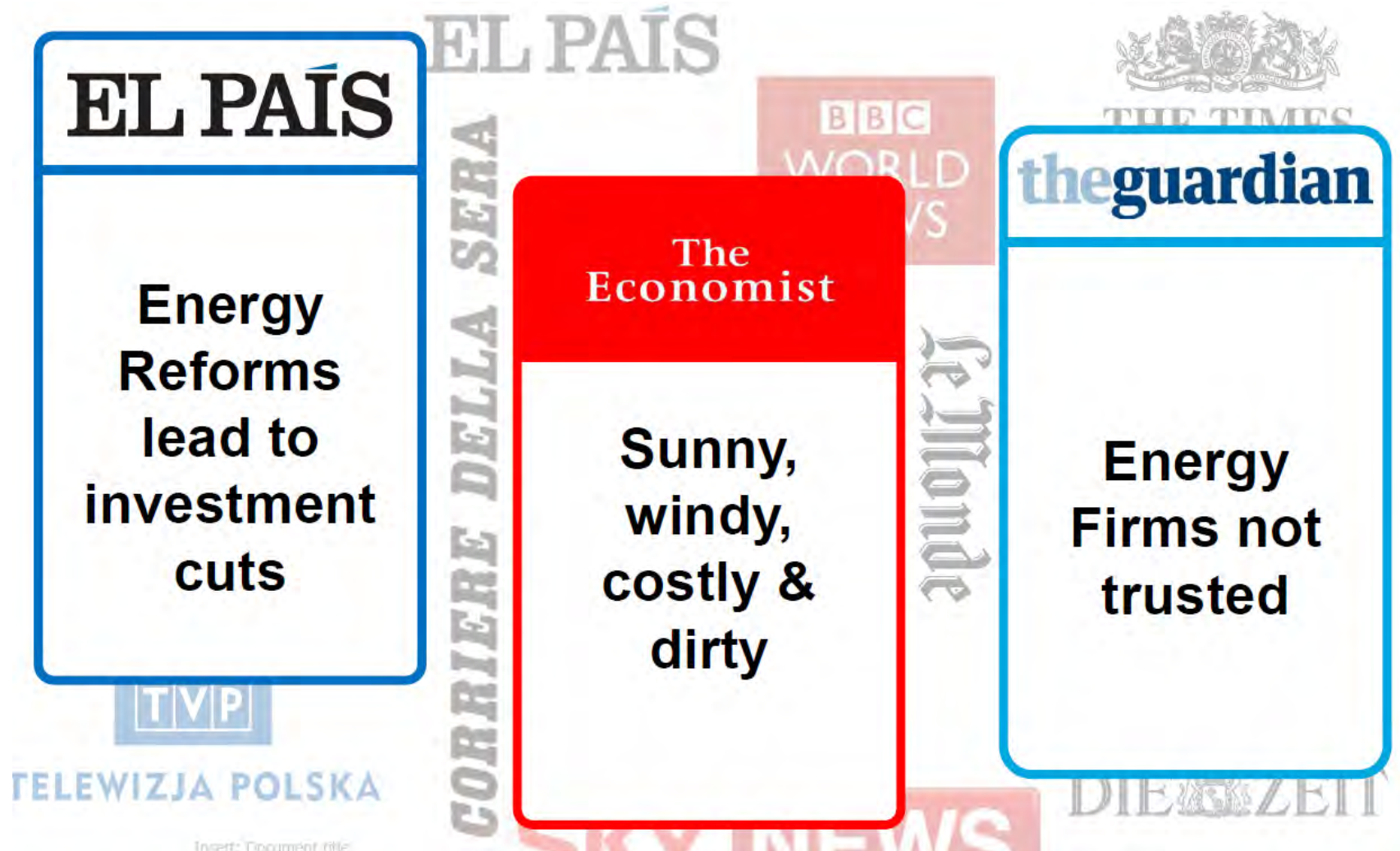
2030: Emphasis on greenhouse gas reduction and RES penetration

Unfortunately, during this period of transition to Decarbonisation and to an integrated internal EU Market, most of the European Power companies have apparently destroyed significant economic value

European Integrated Utilities - Change of 12 months forward EPS as of Dec-13 vs. Dec-08 (%)



The Energy sector is not very popular, not trusted

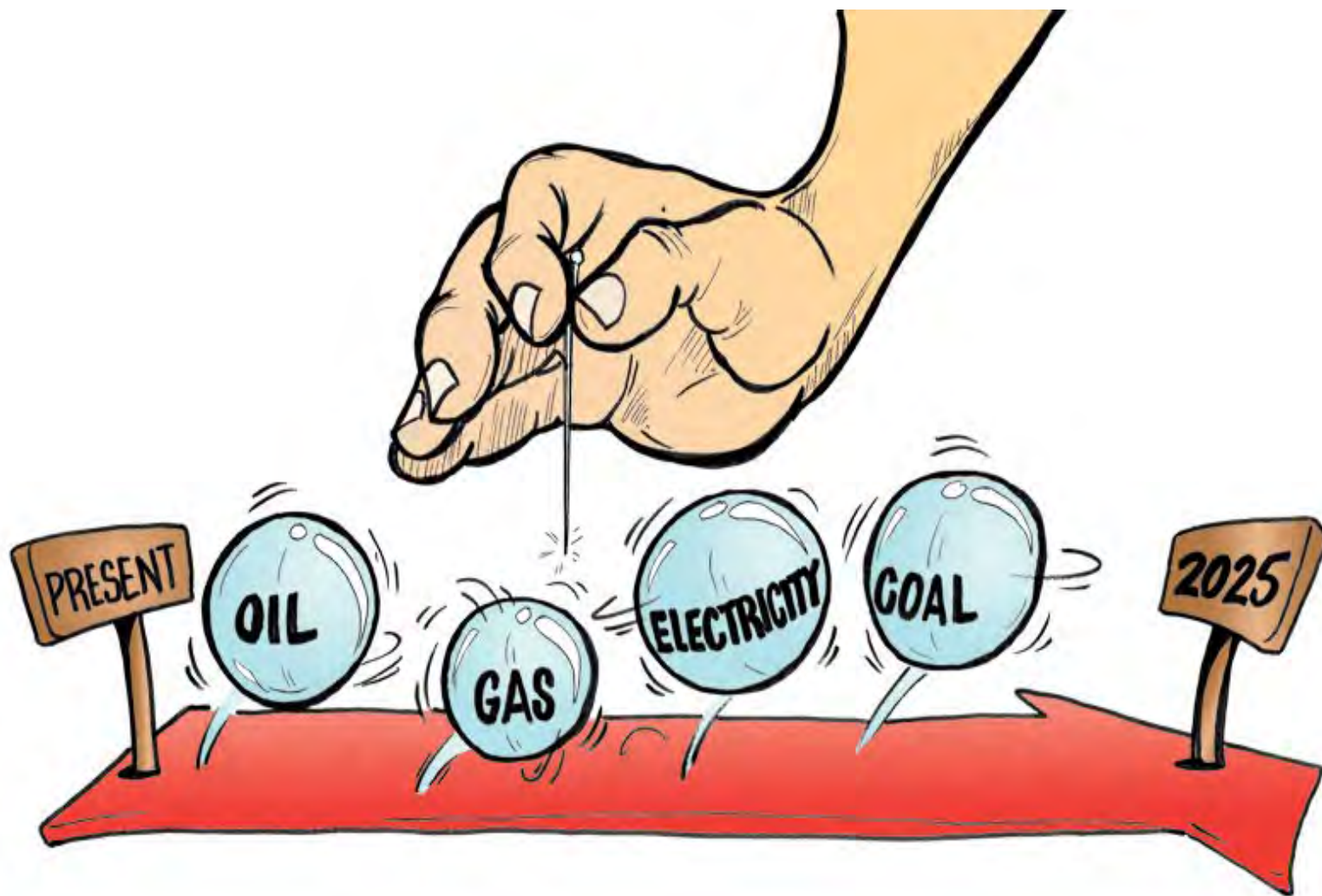


It is thus evident that the European Electricity Markets are facing unprecedented challenges....

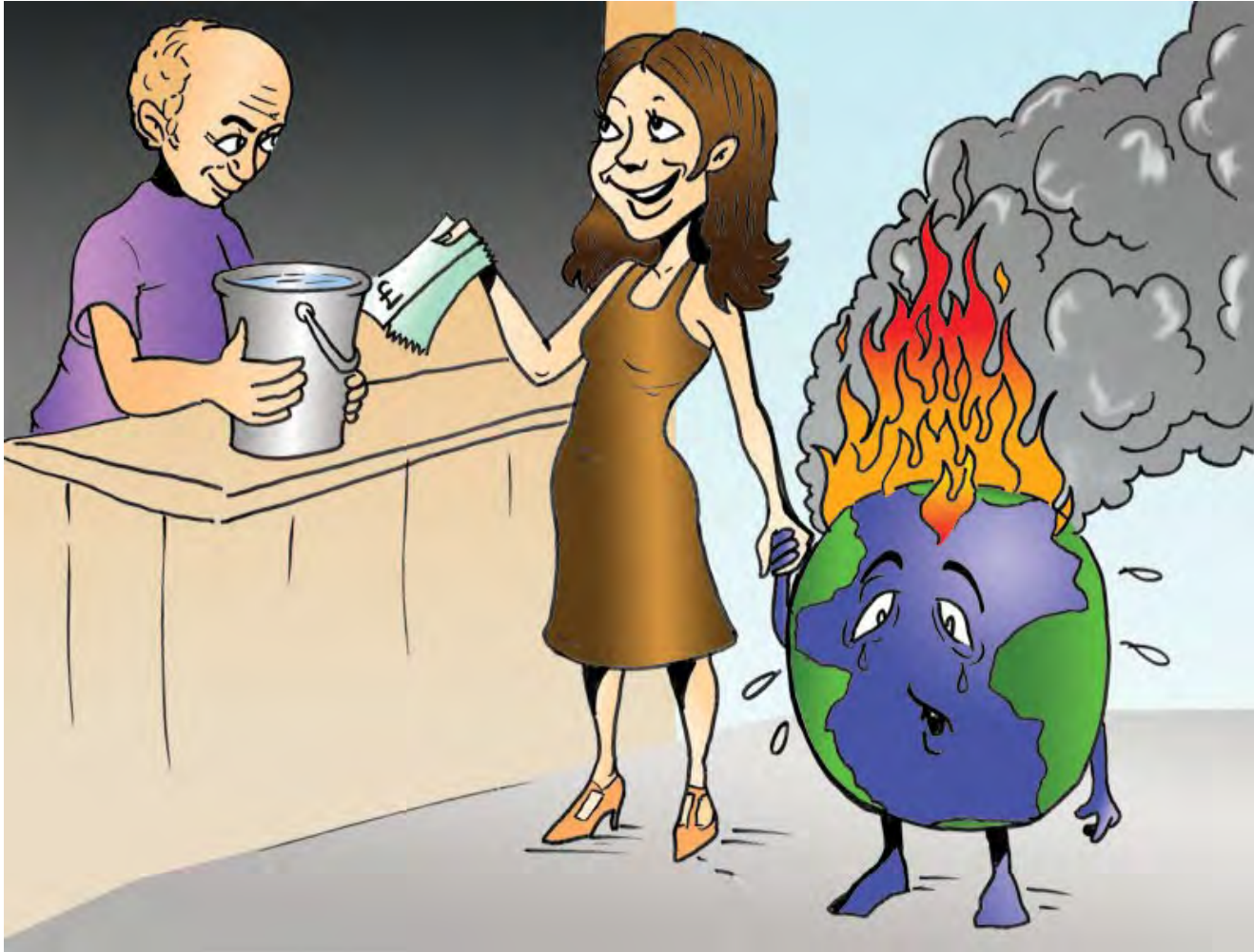
- ❑ Economic austerity and political/regulatory/financial **uncertainty**
- ❑ Internal market integration and decarbonisation progress has been hindered by most **countries following their own policies and regulations**, which also change regularly
- ❑ The **investment needed does not fit the balance 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 assets”, 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 Power Companies have become “social workers” and “tax collectors”**
- ❑ **New Market models are emerging**; Customers (usually at the end of the value chain) become Prosumers (climb up the value chain)

...and major strategic dilemmas for the choice of key strategic options

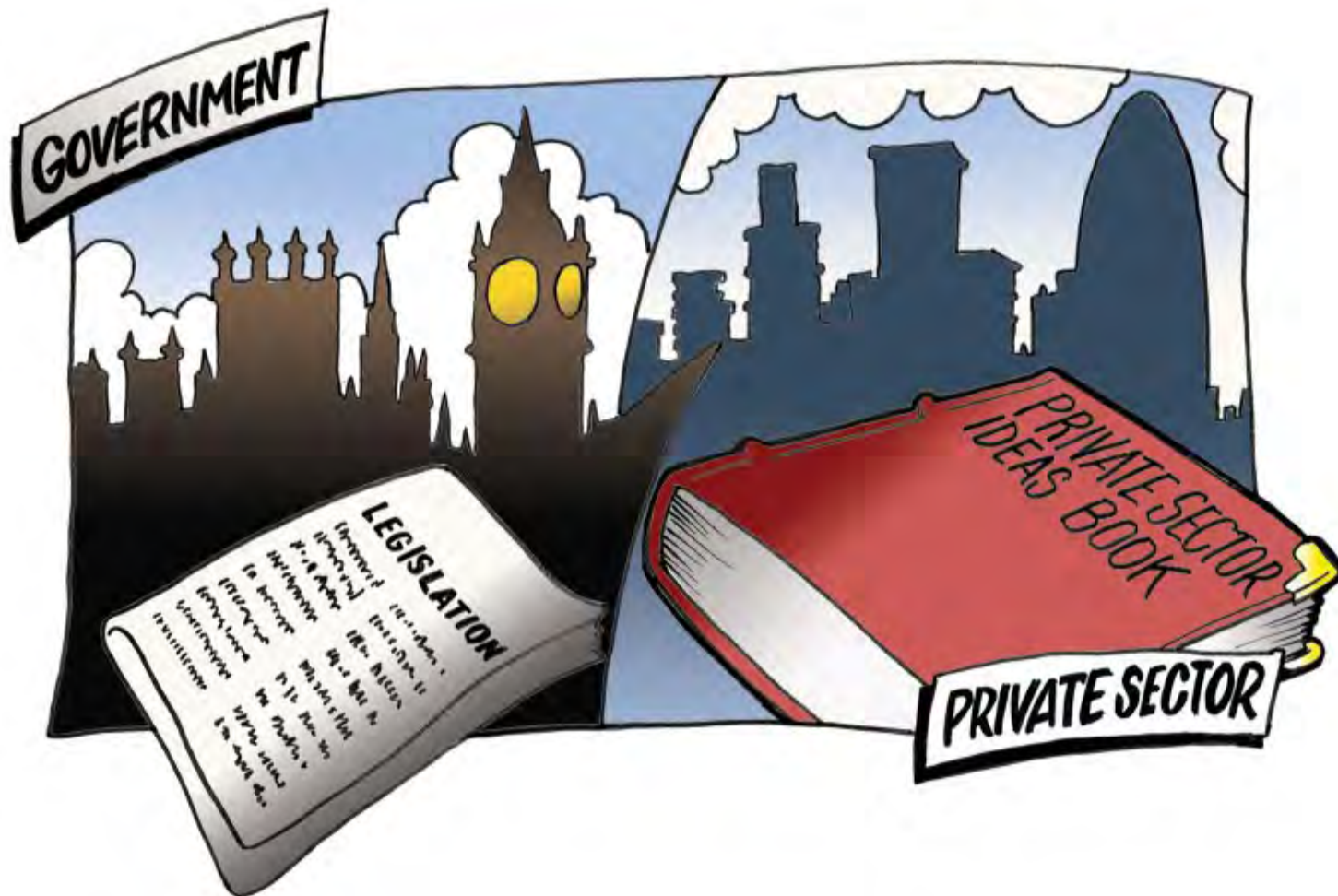
Which energy bubble will burst next ?



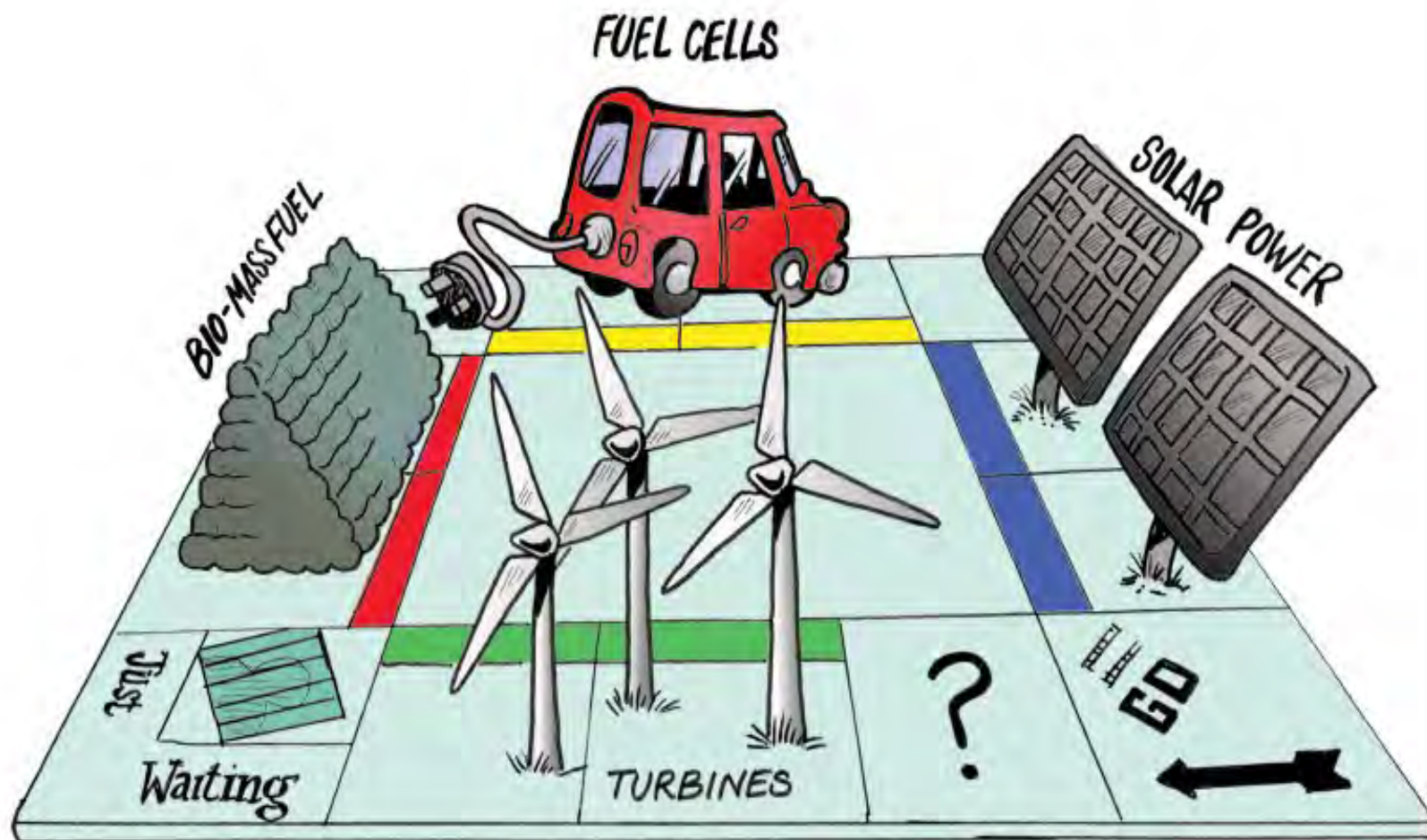
Are consumers going to pay to save the planet ?



...or can only governments force the scale of changes needed ?



What clean energy options to bet on ?



... or can nuclear solve emission issues ?



... or does influencing demand hold the answer ?



...but who will pay for the cost ?



There are no “silver bullets” in strategic choices, particularly in this world where the rate of change of key events has accelerated, but rather adhering to some key principles

- ❑ 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 all the stakeholders and manage complexity that would attract the investment needed.
- ❑ **Money should be spend on developing technologies of tomorrow** rather than on today's technologies
- ❑ Mature **RES technologies should gradually join the Market** balancing risk/reward
- ❑ **Demand Management** would engage the customer and “flatten” the daily Power curves. Ultimately, **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; Optimise the RES energy systems, integrate the Market, Energise the Network, and adopt Demand Response (*Accenture*)
- ❑

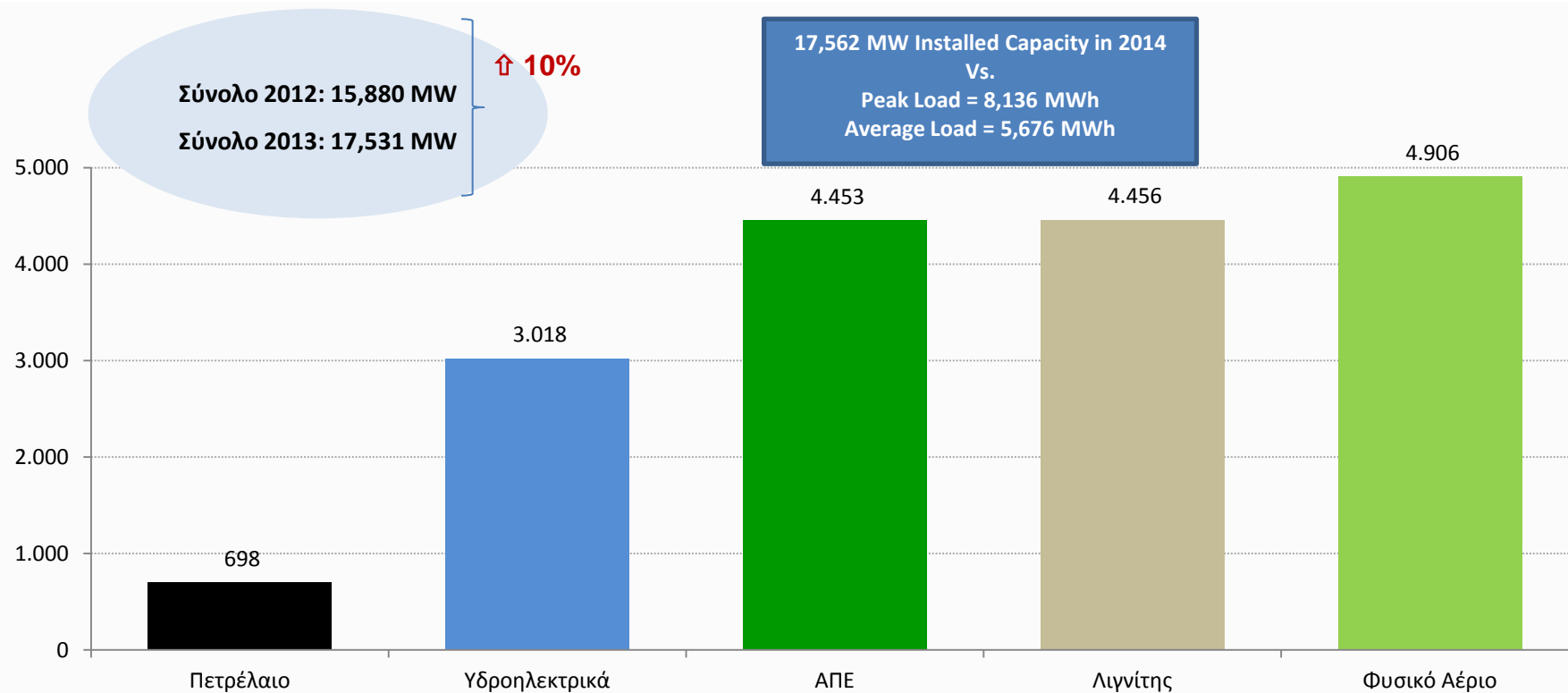
In Greece we are experiencing significant structural changes in the Electricity Market with lignite and natural gas giving way to imports and RES

Ετήσια παραγωγή ενέργειας (TWh) ανά καύσιμο – 2011, 2012, 2013, 09/2014

	2011		2012		2013		->09/2014	
	ΕΤΗΣΙΑ ΠΑΡΑΓΩΓΗ (TWh)	%	ΕΤΗΣΙΑ ΠΑΡΑΓΩΓΗ (TWh)	%	ΕΤΗΣΙΑ ΠΑΡΑΓΩΓΗ (TWh)	%	ΕΤΗΣΙΑ ΠΑΡΑΓΩΓΗ (TWh)	%
ΛΙΓΝΙΤΗΣ	27,6	52%	27,6	52%	23,2	45,6%	17,29	46%
ΦΥΣΙΚΟ ΑΕΡΙΟ	14,9	28%	14,4	27%	11,1	21,6%	4,82	13%
ΥΔΡΟΗΛΕΚΤΡΙΚΑ	3,7	7%	3,9	7%	5,6	11,1%	2,875	7%
ΠΕΤΡΕΛΑΙΟ	0,0	0%	0,1	0%	0	0%	0	0%
ΣΥΝΟΛΟ ΣΥΜΒΑΤΙΚΗΣ	46,1	86%	45,9	86%	39,9	78,3%	24,99	66%
ΑΠΕ & ΣΗΘΥΑ	4,0	8%	5,8	11%	8,9	17,5%	6,66	18%
ΕΙΣΑΓΩΓΕΣ-ΕΞΑΓΩΓΕΣ	3,2	6%	1,8	3%	2,1	4,2%	6,08	16%
ΣΥΝΟΛΟ	53,4	100%	53,5	100%	50,9	100%	37,73	100%
ΟΤΣ	59,36 €/MWh		56,73 €/MWh		41,47 €/MWh		56,9 €/MWh	

There is significant indigenous oversupply

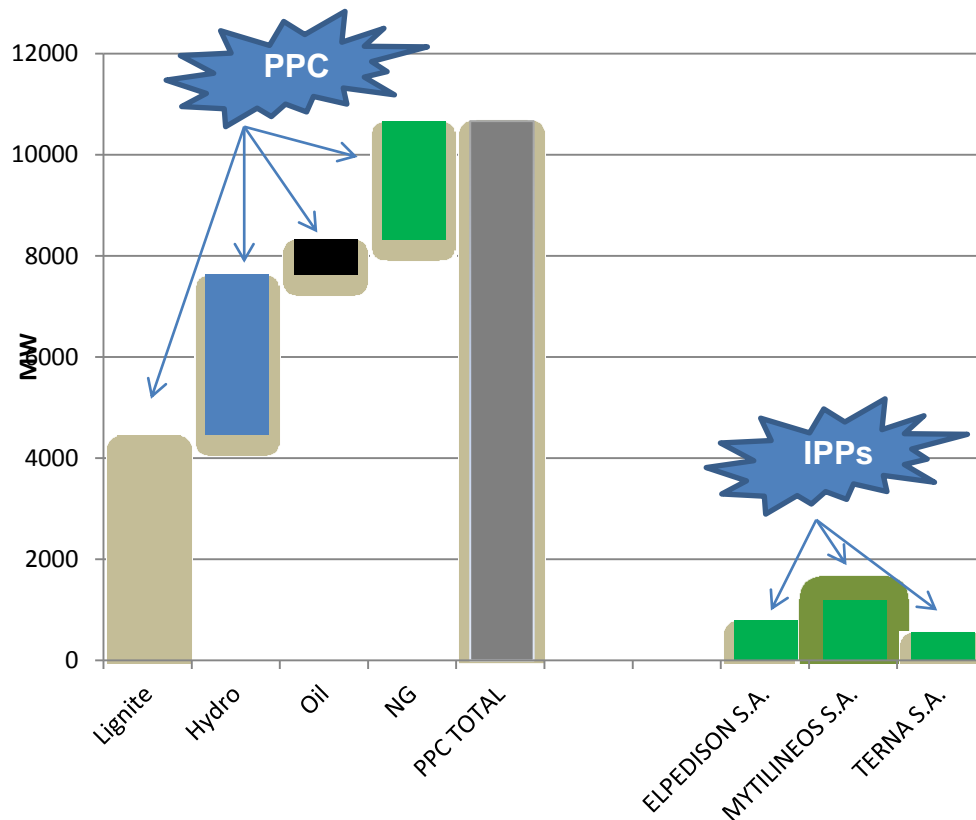
Installed Capacity (MW) - 2013



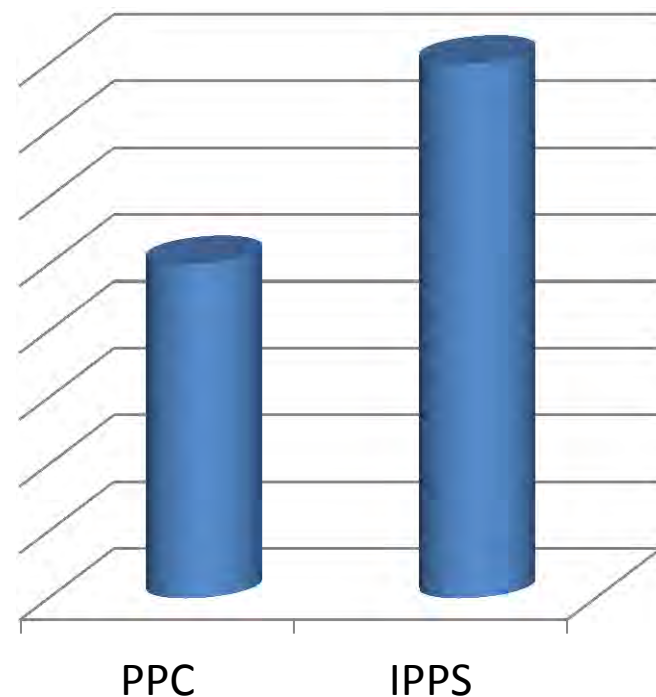
Πηγή : Μηνιαίο Δελτίο Συστήματος Συναλλαγών ΗΕΠ, Δεκ.2013, Μηνιαίο Δελτίο Ειδικού Λογαριασμού ΑΠΕ & ΣΗΘΥΑ, Ιαν.2014, Συνοπτικό Πληροφοριακό Δελτίο ΑΠΕ, Δεκ. 2013

However, the key structural issue is the disparity in conventional generation portfolio between PPC and IPPs which leads to challenged competition in the wholesale (and effectively the retail) markets...

Installed Capacity (MW) - 2014



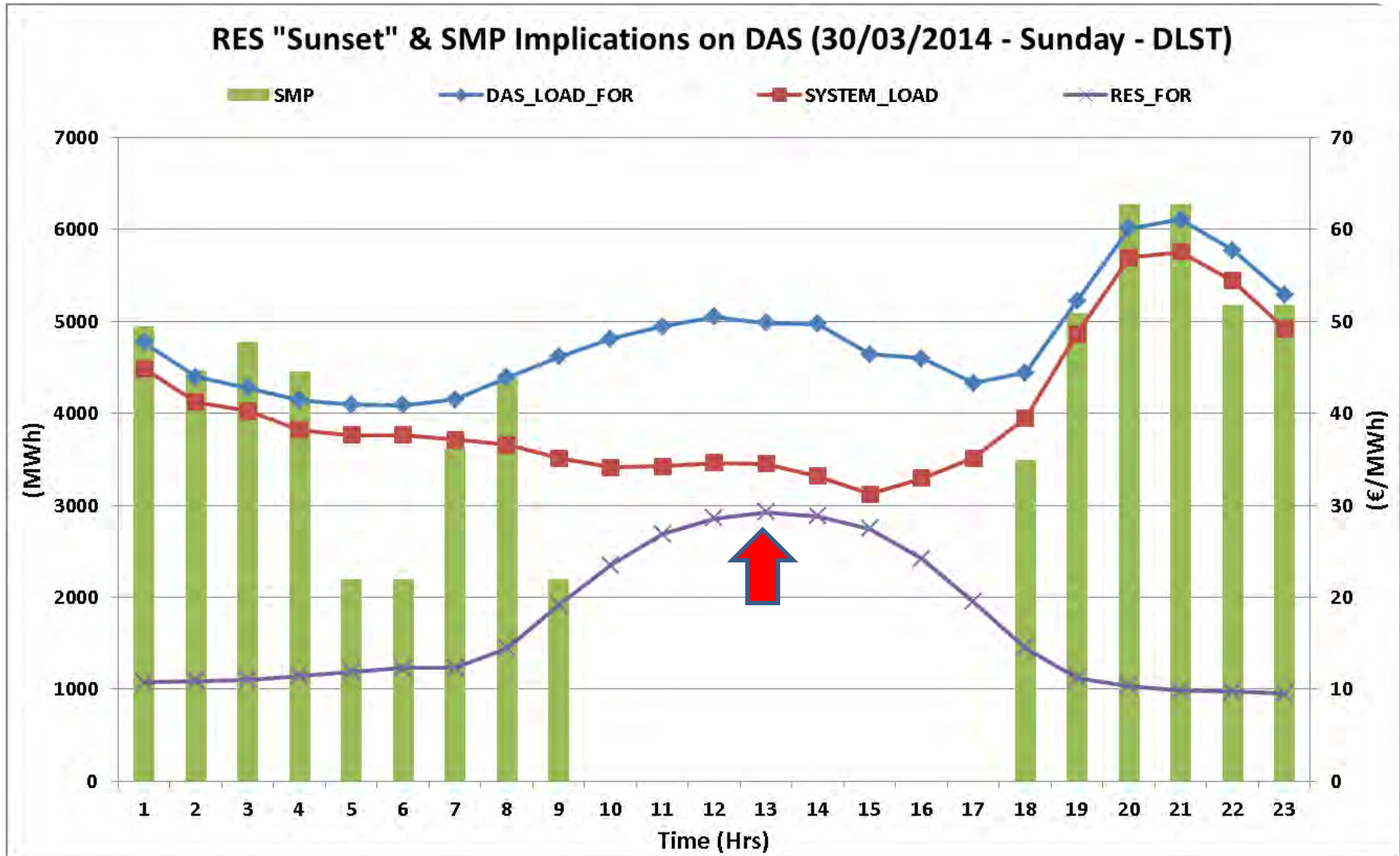
Variable cost structure (illustrative)



Πηγή : Μηνιαίο Δελτίο Συστήματος Συνεργασιών ΗΕΠ, Σεπ.2014, Μηνιαίο Δελτίο Ειδικού Λογαριασμού ΑΠΕ & ΣΗΘΥΑ, Σεπ.2014

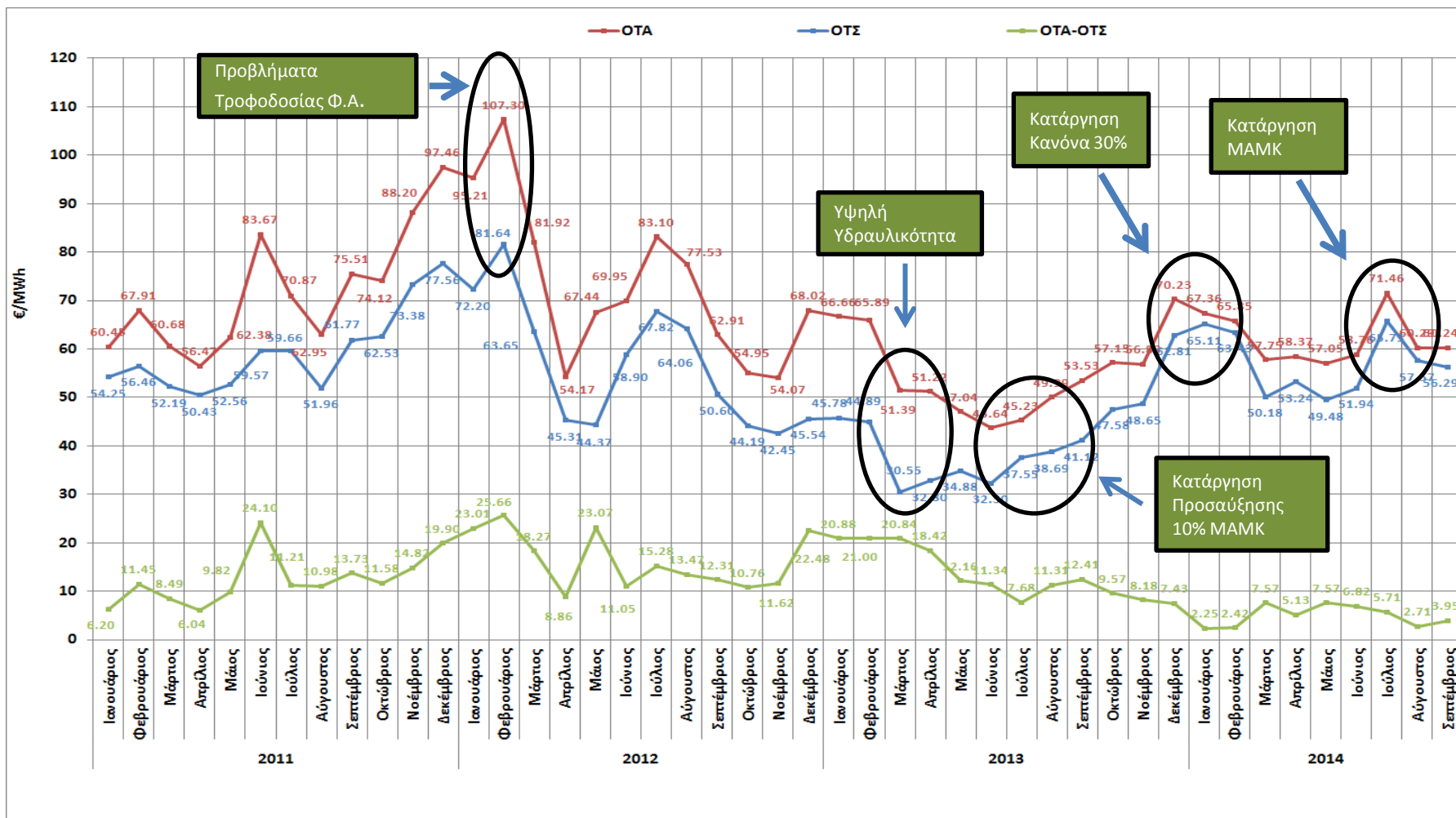
Another structural issue is the high penetration of RES

Example:
30/3/2014

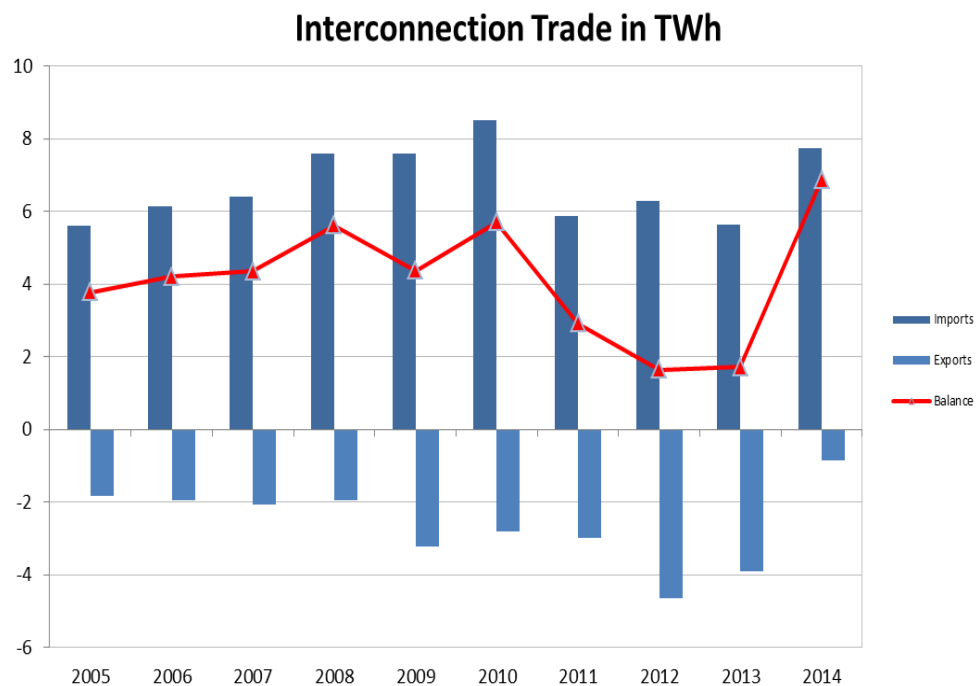


Despite the reduction in natural gas feed to generation and RES penetration, wholesale prices have recently increased

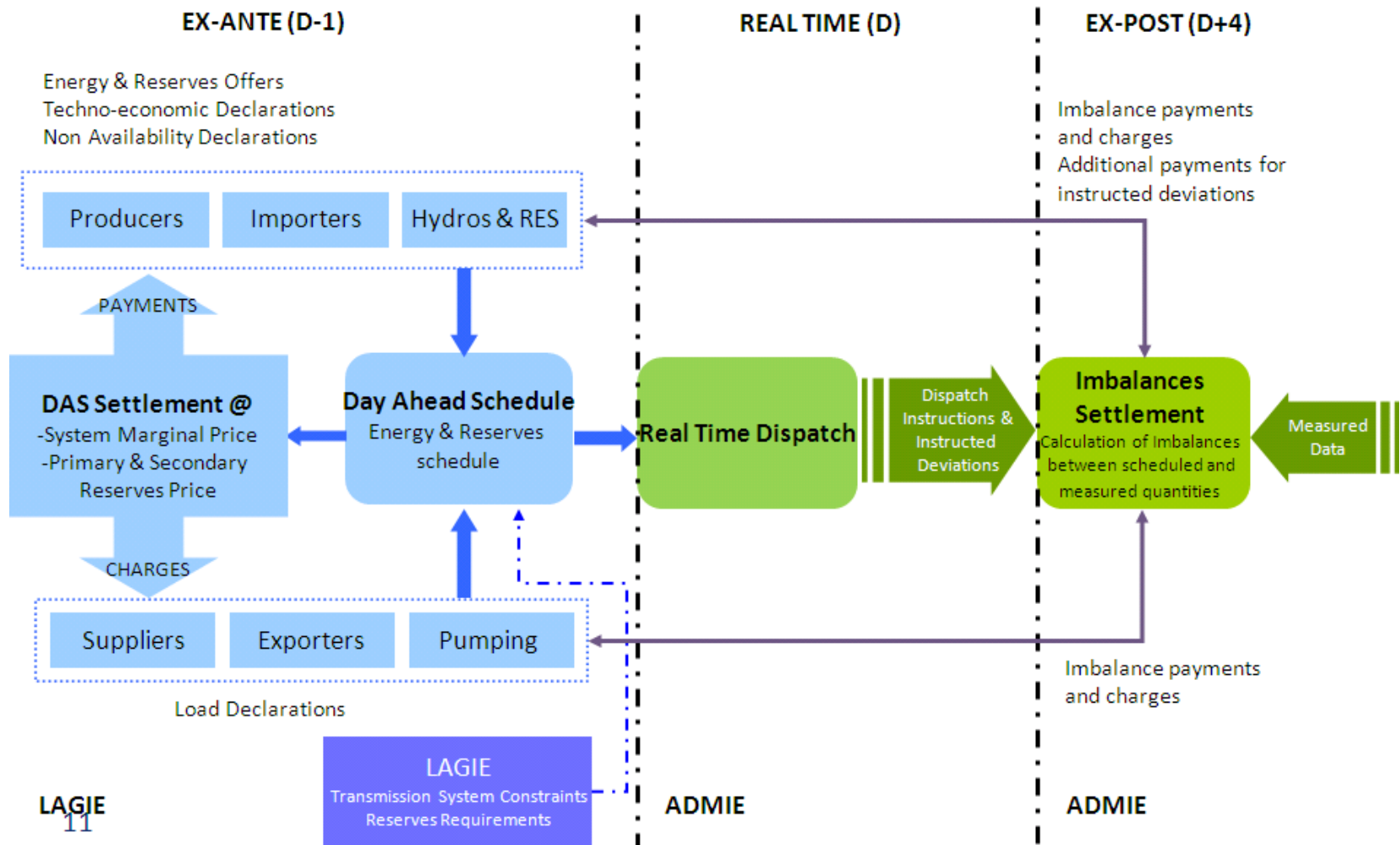
Μέση Ημερήσια ΟΤΣ και ΟΤΑ (2011,2012,2013, 2014)



...resulting in increased imports

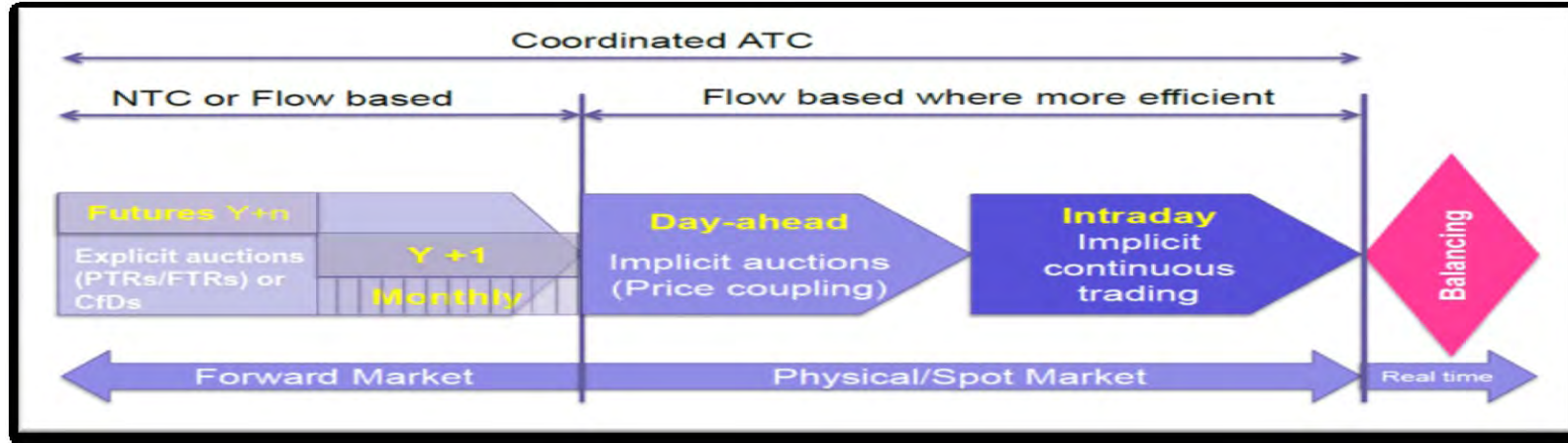


The Day-Ahead electricity market in Greece is operated solely through a Mandatory Pool allowing limited opportunity for Market flexibility



We are preparing to design and implement the Target Model that would increase the flexibility in the market...

Wholesale market model

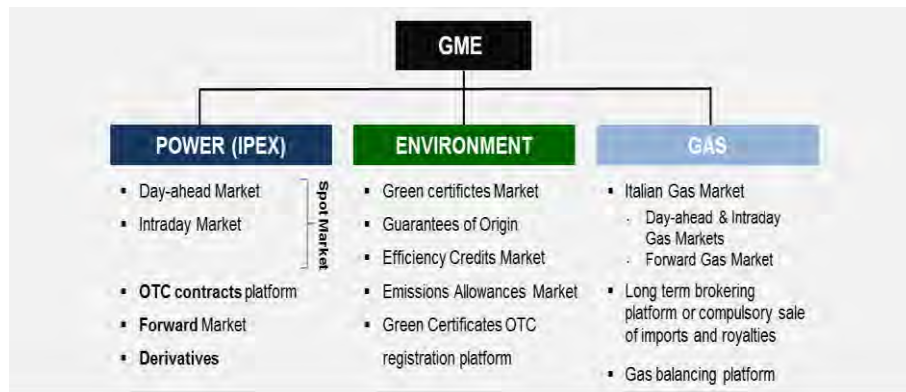
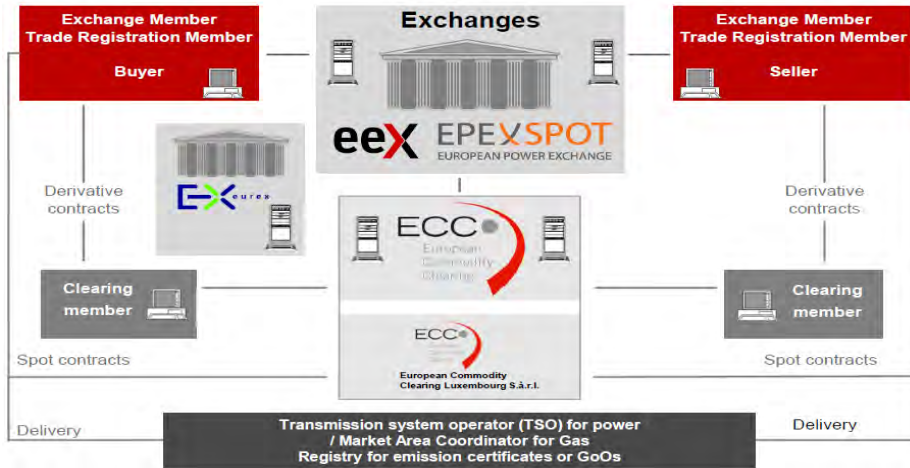


- ☐ Hybrid approach [voluntary pool and bilateral markets] (LAGIE)
- ☐ Forward national market (LAGIE)
 - gradual increase of maximum allowed bilateral contracts (OTC)
- ☐ Forward cross-border market (ADMIE)
- ☐ Day-ahead market compatible with the PCR (LAGIE)
- ☐ Intra-day continuous trading (LAGIE)
- ☐ Centralized balancing market (ADMIE)
- ☐ Responsibility for RES imbalances to ADMIE

The implementation time of the Target Model in Greece is estimated to be around 29 months

...provided that the market inconsistencies will be eliminated

We are also currently building the foundations for the development of a Power Exchange, similar to those in Europe, offering products and services required by the companies in the sector



Παράδειγμα: EEX/
EPEXSPOT - GME

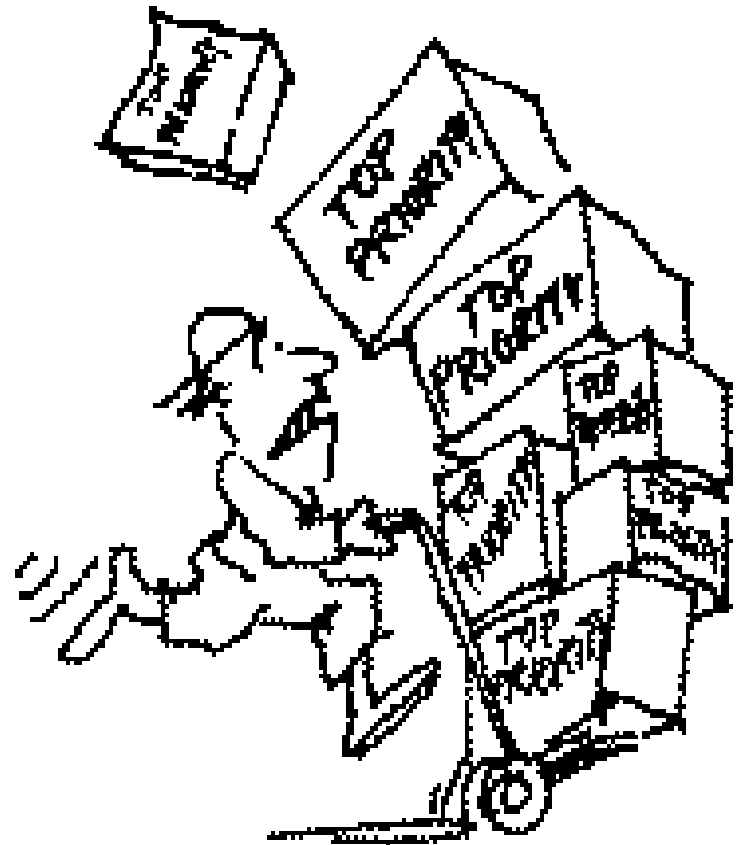


However, we must understand , that the only way this initiative would work effectively is to bring with it an environment of true competition in the country

While the EU countries are battling with Carbonisation, the Greek Power industry has not as yet passed the age of Liberalisation and need to catch up fast

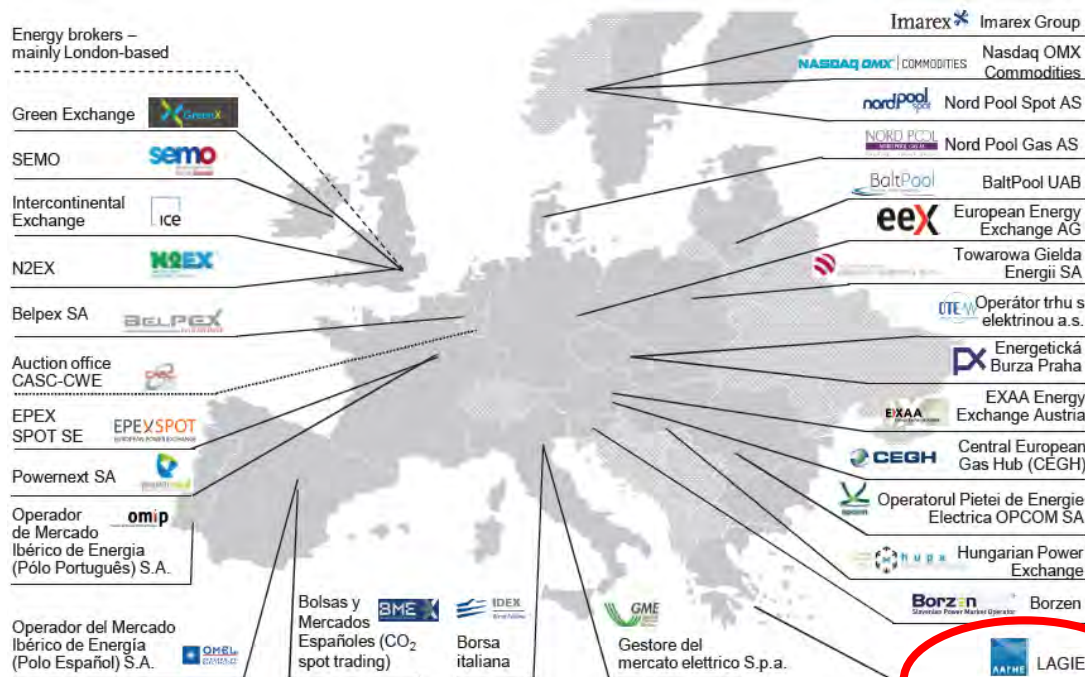
Some thoughts on building momentum on the Greek Market Reforms... **...in addition to adhering to the principles for Decarbonisation**

- ☐ **Drive straight for the ultimate goal, Intermediate steps “take our eye off the ball”**
- ☐ **Unbundle Regulation from Legislation**
- ☐ **Invest on Resource Capability where most of the Value must be generated**
- ☐ **Do not Re-invent the Wheel**
- ☐ **Offer grants where there is potential for the Most not for the Few**
- ☐ **Make things happen**



Thank you
for
your attention

LAGIE is a full member of the European Power Exchanges, EUROPEX, an industry operating in an increasingly dynamic, sophisticating and consolidating environment



- ❑ **Power Exchanges (PXs) dominate the Trading of Energy offering both paper and spot Trading products. They also perform the Clearing/Settlement tasks primarily under their own umbrella.**
- ❑ **The entry of mega US energy traders and risk managers in Europe such as ICE, CMX and Nasdaq, would speed up the Energy Trading industry consolidation.**
- ❑ **Clearing and Settlement activities, whilst today offer higher margins, will probably go the same way.**
- ❑ **Spot Energy Trading would require local presence, although (through Coupling PCR) in some cases would be subsidiaries of regional PXs. It is unlikely that Local derivatives players will survive.**