

Parallel Session 1-2 : Energy use and Behaviour

Benefits for whom? Energy Efficiency within the Efficient Market

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Agenda

- i. Energy Efficiency: a long history
- ii. The Energy Efficiency Gap
- iii. Actions
- iv. A well-functioning energy market
- v. Decision-making of end-users
- vi. Conclusions

Energy Efficiency: a long history

- ❑ The forty-year history of energy efficiency policies and measures began with the “oil shocks” of the 1970s.
- ❑ In Italy, the first National Energy Plan (1975) put the focus on the saving and rational use of energy, recommending different actions to achieve quantitative objectives of energy saving, namely in the building sector.
- ❑ Most recently, the National Energy Strategy, approved in March 2013, has set energy efficiency as the first of seven priorities which have been identified with concrete objectives and specific support measures.

The Energy Efficiency Gap

Despite appropriate efforts deployed both in terms of innovative technologies and legislative and regulatory frameworks enabling it, some analysts recognise that the untapped potential for energy efficiency remains huge (World Energy Outlook 2013).

Explanations for this “energy efficiency gap” or “energy paradox” (Robert N. Stavins) tend to fall into three broad categories: (1) market failures, such as lack of information or misplaced incentives; (2) behavioural effects, such as disregard for future energy savings when purchasing energy-consuming products; (3) modelling flaws, such as assumptions that understate the costs or overstate the benefits of energy efficiency.

Actions

What can the household end user do to help improve energy efficiency?

1. Making a choice of the best supply in terms of price, saving money and indirectly rewarding the most virtuous producer (retailer) in terms of efficiency.
2. Investing money in fundamental renovation to make the home more efficient, whatever the price of its energy supply.
3. Changing daily habits, avoiding wastage of electricity and heat, without compromising comfort.

Kahneman and Tversky's (1979) concept of reference points:

“goods are evaluated by comparison with other goods the decision maker is thinking about”

“the salience of each good's attributes relative to the reference good, such as its quality and price, determines the attention the decision maker pays to these attributes as well as their weight in his decision”

“consumer's attention is drawn to salient attributes of goods, such as quality or price. An attribute is salient for a good when it stands out among the good's attributes, relative to that attribute's average level in the choice set”

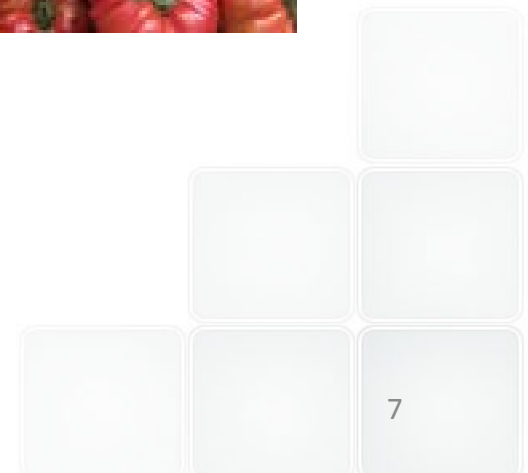
(Salience and Consumer Choice, by Pedro Bordalo, Nicola Gennaioli, Andrei Shleifer, May 2012)



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Make your choice, please





Make your choice, please

A well-functioning energy market

In the Green Paper "A framework for energy and climate policies to 2030" (COM (2013) 169) the word **market** recurs 33 times in the text. Likewise, in the Directive 2012/27 / EU on energy efficiency, the word **market** recurs 34 times in the text. However, an assessment of how the efficiency of the market is likely to affect the design of energy efficiency policies and measures as well as the achievement of the objectives set out, is omitted.

The European Commission clearly recognises that the internal energy market is not an end in itself, but its implementation is absolutely essential to achieve the objectives of EU energy policy, in particular the objectives of energy efficiency.

The Post-Tax Total Price (POTP) is defined as the sum of the commodity price, regulated transmission and distribution charges, and retail components (billing, metering, customer services and a fair margin on such services) plus VAT, levies (as applicable: local, national, environmental) and any surcharges (as applicable).

$$\text{POTP} = P_c + P_{tr} + P_{dis} + R_c + \text{VAT} + \text{Levies} + \text{Surcharges}$$

Negotiability of end-user prices

non-negotiable charges

Source: Agency for the Cooperation of Energy Regulators (ACER)



Day-ahead electricity market – system marginal price. The balance price is formed on the market, in every hour, at the intersection of the curves of supply and demand.

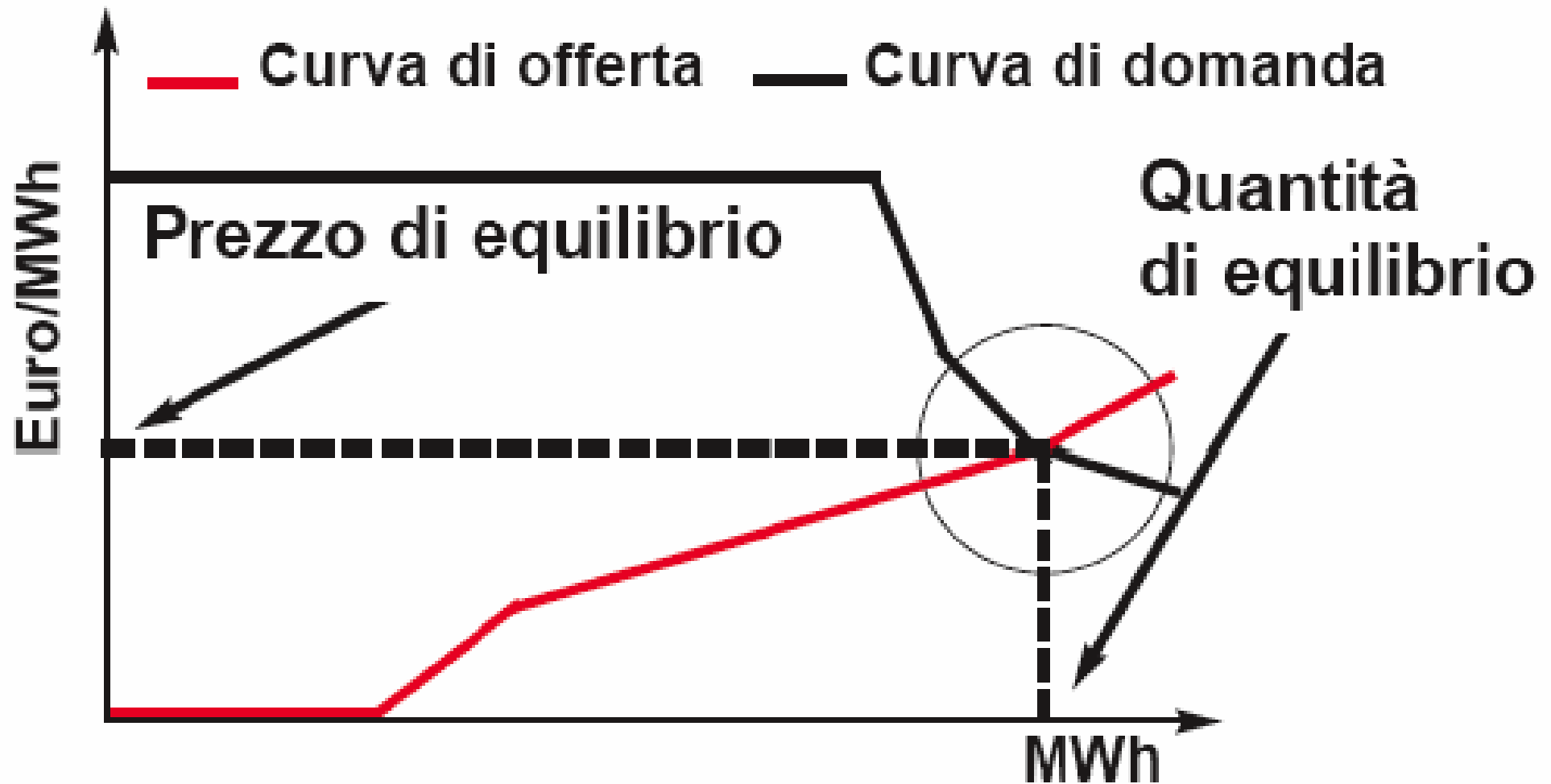


Figure 3: Electricity POTP and PTP for households – Europe – 2012 (euro cents/kWh)

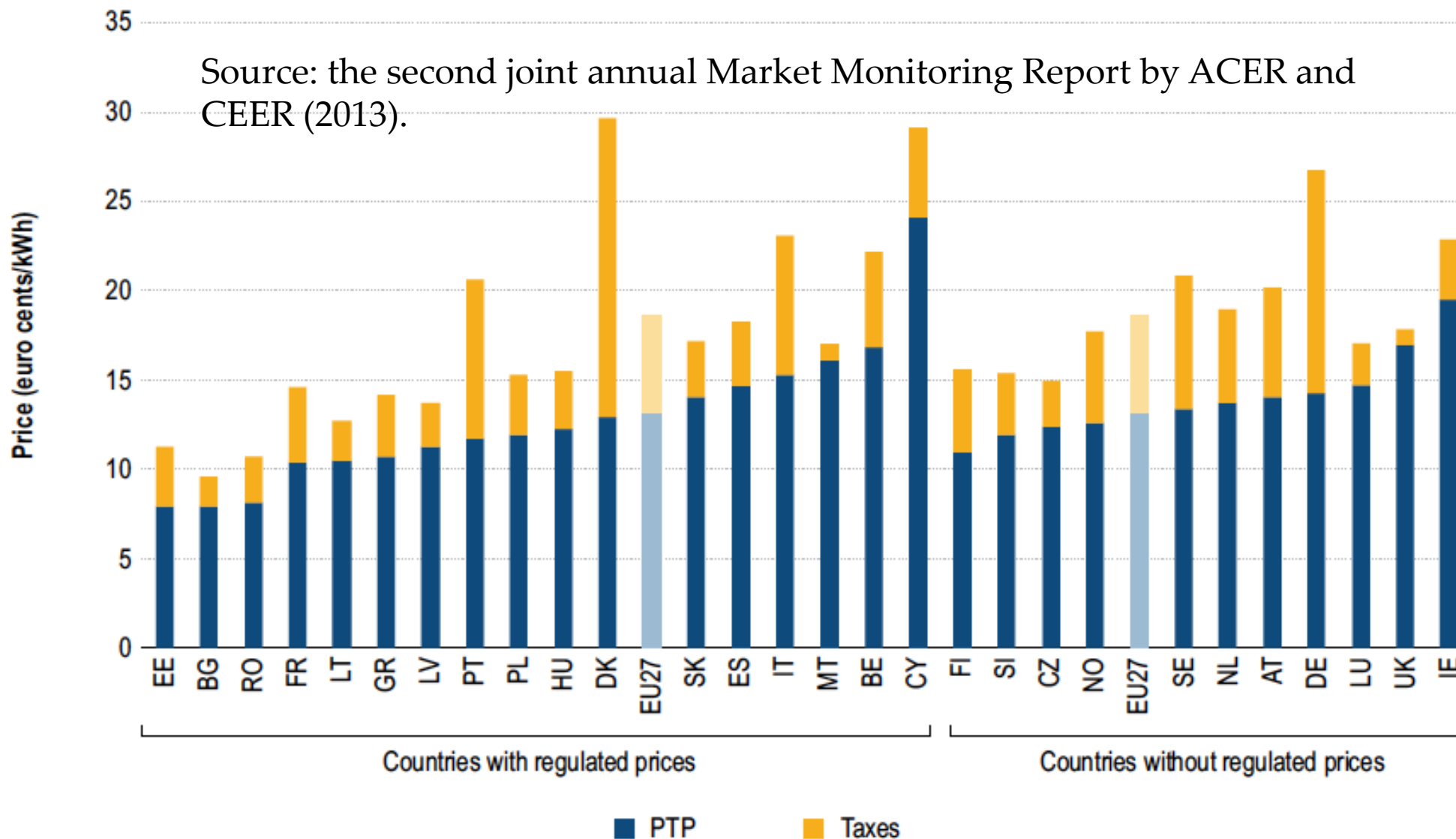
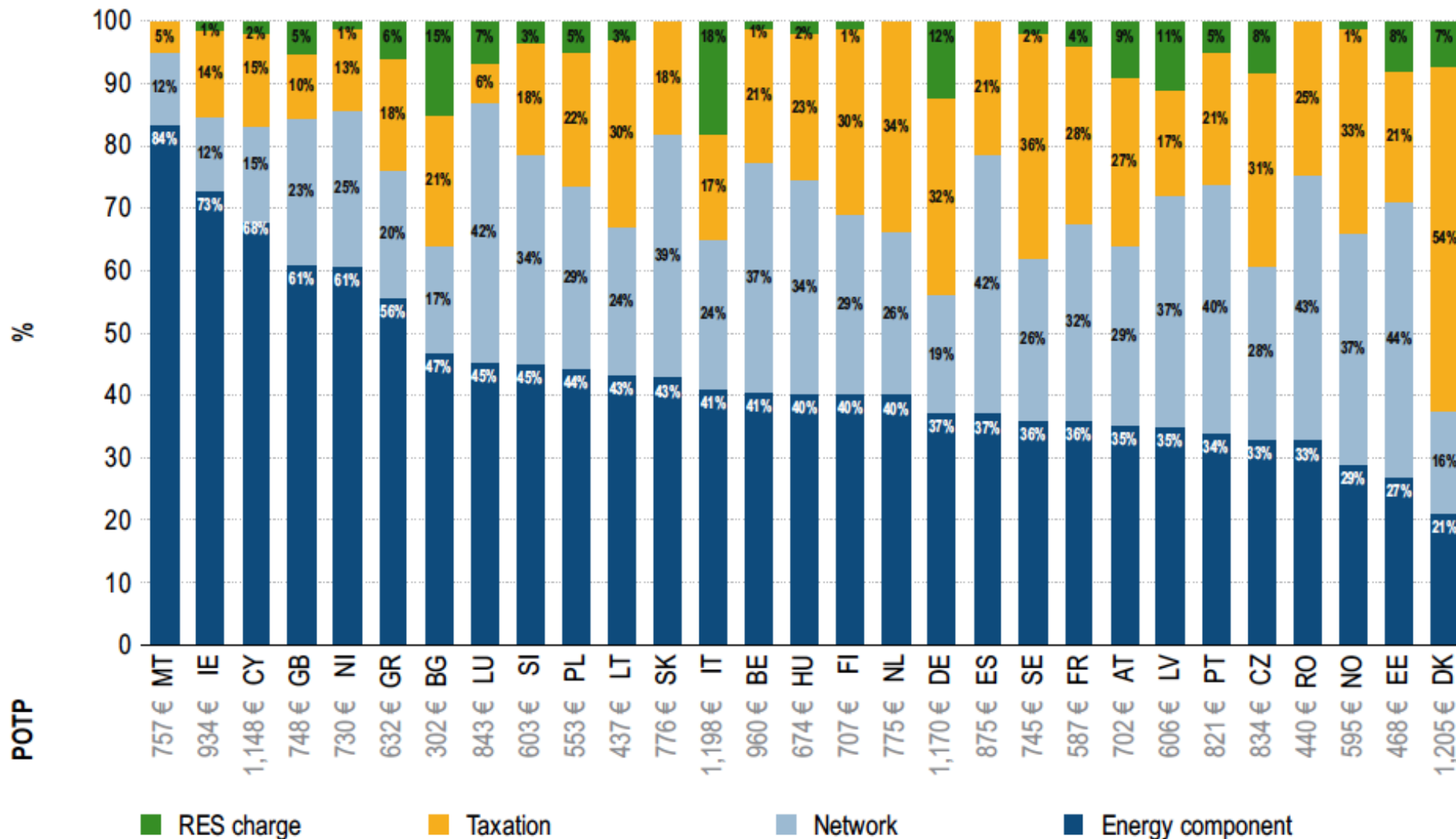
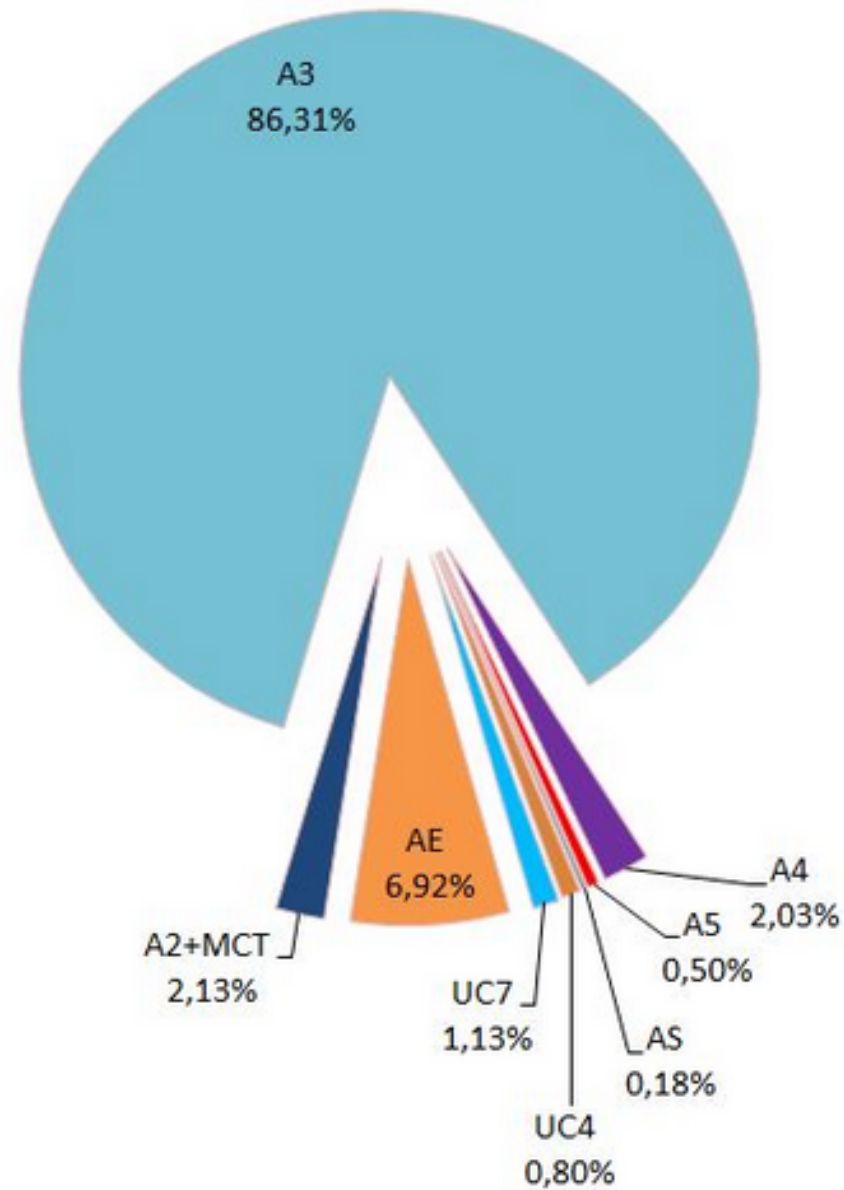


Figure 6: POTP break-down – incumbents' standard offers for households in capital cities – December 2012 (%)



Dettaglio oneri generali di sistema I trimestre 2014

Surcharge break-down relating to the first quarter 2014 in Italy (source: AEEG)



Break-down of the total amount of electricity sold on the Italian market for technology and primary source

TWh	2009	2010	2011	2012	2013	Variazione '13/'12
Fonti tradizionali	200,0	204,6	197,9	175,1	147,9	-15,3%
Ciclo combinato	128,6	149,6	138,5	113,8	92,5	-18,6%
Carbone	23,0	24,4	29,3	32,3	26,2	-18,5%
Altro	48,4	30,6	30,1	29,0	29,3	+1,2%
Fonti rinnovabili	57,7	59,5	59,5	74,1	91,4	+23,7%
Idraulica	40,6	42,2	37,9	35,2	45,3	+29,1%
Idrico fluente	24,1	24,6	23,4	22,3	27,0	+21,4%
Idrico modulazione	16,5	17,6	14,5	12,9	18,3	+42,4%
Geotermica	5,1	5,1	5,4	5,3	5,3	+0,9%
Eolico	6,1	5,6	7,2	10,3	14,1	+36,9%
Solare e altre	6,0	6,6	9,1	23,3	26,7	+15,0%
Pompaggio	5,4	5,8	4,1	3,0	3,3	+13,0%
TOTALE	263,1	269,8	261,6	252,1	242,7	-3,5%
Offerte Integrative/VENF	-	-	-	0,0	-	
Estero	50,3	48,8	49,9	46,5	46,5	+0,1%
TOTALE VENDITE	313,4	318,6	311,5	298,7	289,2	-2,9%

The consequences of this reduced ability of retailers to compare prices fairly:

- ✓ Lack of switching.
 - ✓ New entry into retail energy markets.
- and finally,
- ✓ No means of rewarding the best supplier for their efficiency in producing energy.

Table 2: Switching rates for household consumers in Europe – 2011 and 2012 (ranked according to change between 2011 and 2012)

Country	Switching rates 2012	Switching rates 2011	Difference 2012-2011
Portugal	13.2	1.1	12.1
Belgium*	14.8	9.7	5.1
Slovakia	5.0	1.4	3.6
The Netherlands**	12.6	9.7	2.9
Greece	4.0	1.8	2.2
Slovenia	5.9	4.0	1.9
Denmark	3.7	1.8	1.9
Norway	13.0	11.3	1.7
Spain	11.6	10.0	1.6
Hungary	1.6	0.3	1.3
Sweden	9.9	8.9	1.0
Italy	6.4	5.8	0.6
Czech Republic	7.6	7.4	0.2

Bulgaria*	0.0	0.0	0.0
Cyprus	0.0	0.0	0.0
Estonia	0.0	0.0	0.0
Germany	7.8	7.8	0.0
Latvia*	0.0	0.0	0.0
Lithuania	0.0	0.0	0.0
Northern Ireland*	2.0	3.0	0.0
Romania	0.0	0.0	0.0
Luxembourg	0.1	0.2	-0.1
France	3.6	3.9	-0.3
Austria	1.0	1.4	-0.4
Finland	7.5	8.6	-1.1
Great Britain	12.1	15.4	-3.3
Ireland	10.6	15.1	-4.5
Malta	NA	NA	
Poland	0.6	NA	

Decision-making of end-users

The capital for investment in energy efficiency is negotiable. It must therefore also consider other types of spending and decide between them: at home maybe you would choose to invest in culture or entertainment instead of LED lamps.

You then invest in energy efficiency only if it promises a pay back time lower than alternative investments, and this does not always happen.

When the result in terms of energy savings is modest, the consumer is inclined to reject the option, even if economically advantageous.

In other words, in the case of small gains, there is a built-in tendency to put off making the effort which is considered an inconvenience in view of the expected gain.

LCS-RNet 6th Annual Meeting – Rome (Italy) October 1-2, 2014
Breakdown of the average monthly expenditure of Italian families



CAPITOLI DI SPESA	SPESA MEDIA MENSILE	ERRORE		INTERVALLO DI CONFIDENZA ($p=0,95$)	
		Assoluto	Relativo (%)	Estremo Inferiore	Estremo Superiore
Pane e cereali	77,37	0,48	0,62	76,43	78,32
Carne	110,38	0,76	0,69	108,89	111,86
Pesce	41,39	0,43	1,04	40,54	42,23
Latte formaggi e uova	62,47	0,42	0,67	61,65	63,29
Oli e grassi	15,84	0,20	1,29	15,44	16,24
Patate frutta e ortaggi	83,48	0,56	0,67	82,38	84,59
Zucchero, caffè e drogheria	33,98	0,31	0,90	33,38	34,59
Bevande	43,40	0,41	0,94	42,60	44,21
Alimentari e bevande	468,32	2,55	0,54	463,32	473,31
Tabacchi	20,44	0,37	1,82	19,71	21,17
Abbigliamento e calzature	119,85	1,66	1,38	116,60	123,10
Abitazione	700,04	5,53	0,79	689,19	710,88
Combustibili ed energia	134,49	1,04	0,77	132,46	136,52
Mobili, elettrodomestici e servizi per la casa	116,71	2,18	1,87	112,43	120,99
Sanità	88,15	1,52	1,72	85,18	91,12
Trasporti	350,38	6,76	1,93	337,12	363,64
Comunicazioni	45,94	0,35	0,76	45,26	46,62
Istruzione	29,13	1,33	4,57	26,52	31,74
Tempo libero, cultura e giochi	99,70	1,35	1,35	97,06	102,34
Altri beni e servizi	246,13	3,43	1,39	239,40	252,86
Non Alimentari	1.950,95	13,16	0,67	1.925,16	1.976,74
SPESA MEDIA MENSILE	2.419,27	14,05	0,58	2.391,73	2.446,81

Conclusions – 1

- ✧ Energy-efficient technologies offer considerable promise for reducing the costs and environmental damage associated with energy use. However, these technologies appear not to be used by consumers and businesses to the degree one would expect based on their private financial net benefits (Awareness).
- ✧ Communication to increase the attractiveness and social acceptance of energy efficiency remains the best tool for tackling climate change, for competitiveness and security of supply.
- ✧ Nevertheless, to increase investment in energy efficiency by domestic end-users, a well-functioning single internal energy market needs to deliver tangible benefits to European energy consumers, in terms of greater choice and better prices. In particular, it is suitable: integrating renewable energy into the power exchange, reducing the incentives for renewable energy and moving from the energy bill to general taxation the surcharges.

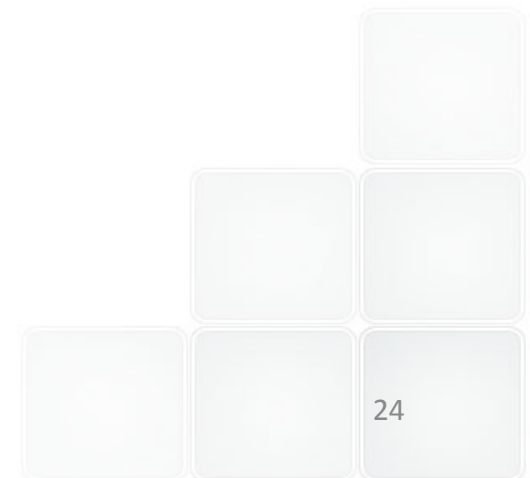
Conclusions - 2

Furthermore, consumer choice can be facilitated by having web comparison tools in place (allowing reliable, comprehensive, and easy ways to compare suppliers), by adopting standardised fact sheets for each retail offer; by publishing easily comparable unit prices in terms of standing charge and variable rates for standard consumption profiles; and by promoting systems/platforms fostering collective switching. These measures do not interfere with the ability of suppliers to set prices.

Thank you for your attention

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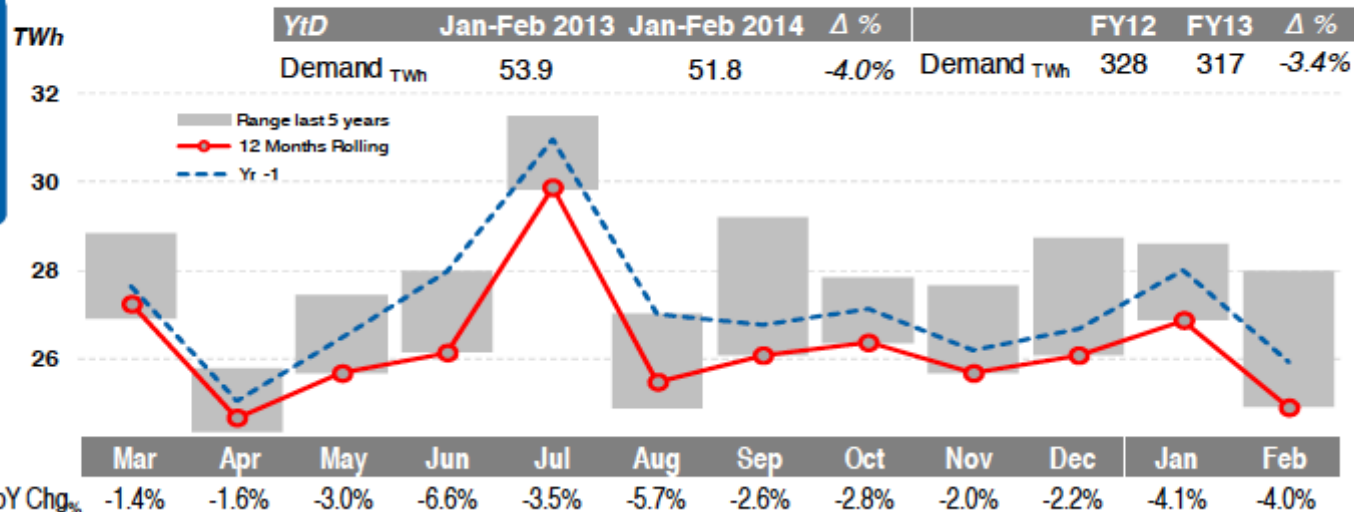
Back-up Slides



Electricity Market Trends

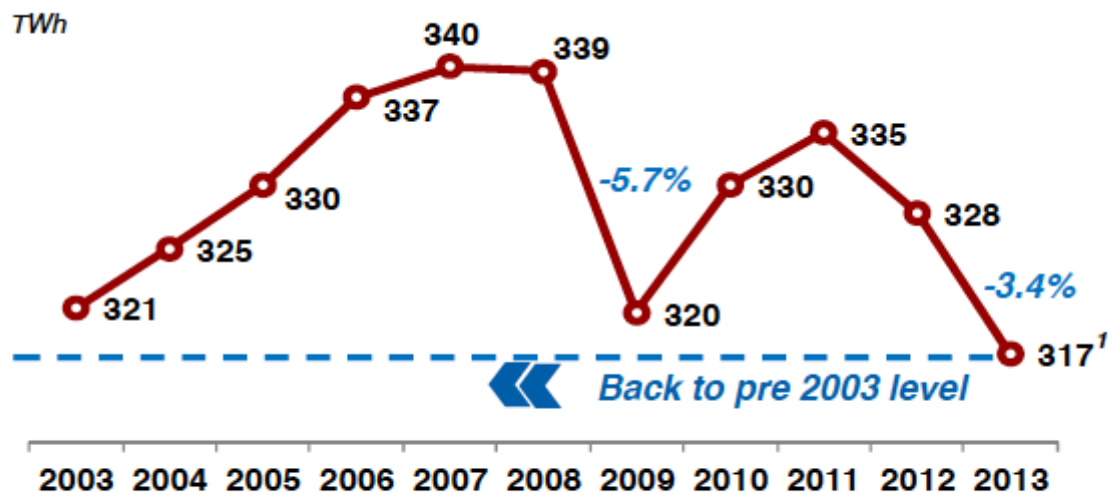
FY13 Energy Demand

-3.4% yoy



Historical Energy Demand

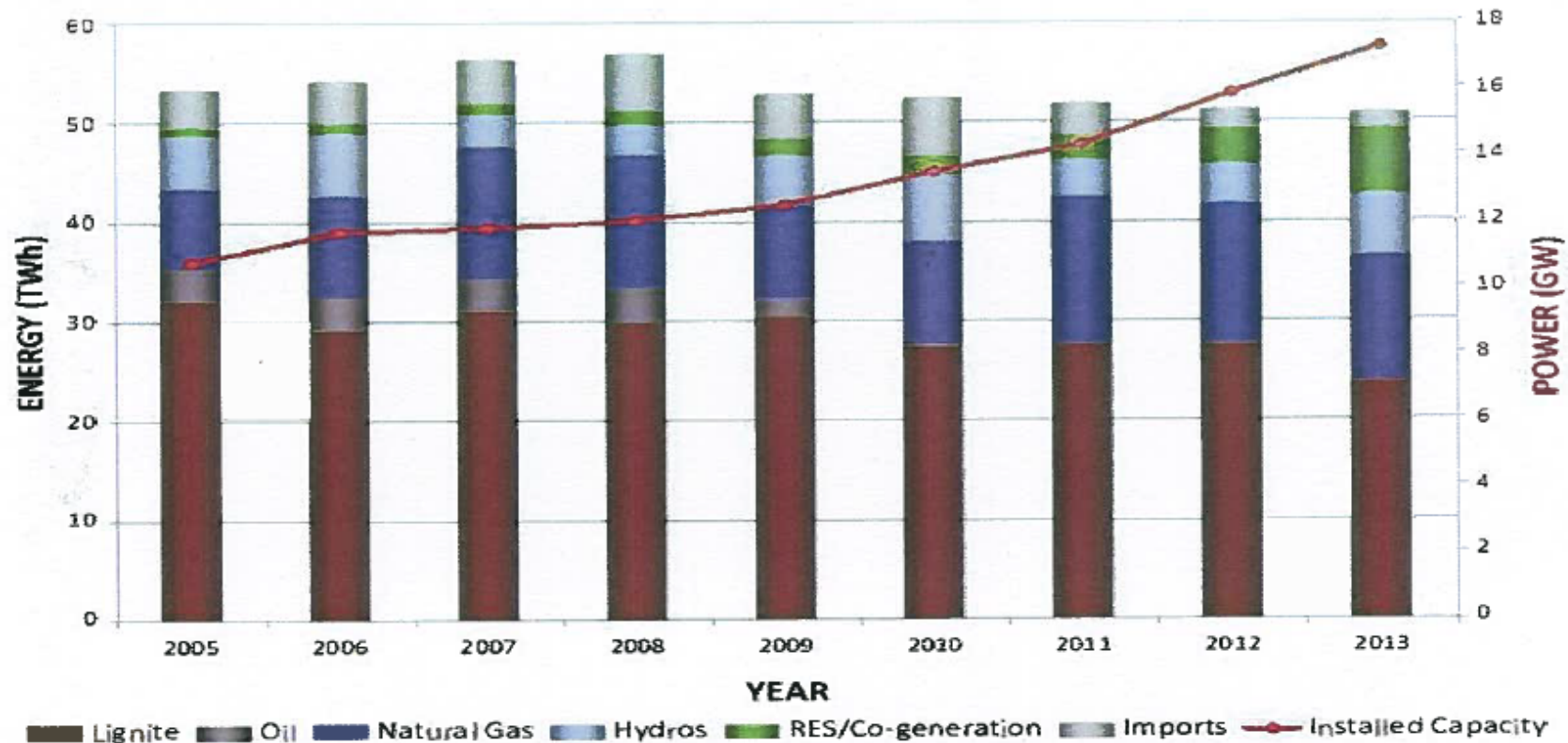
- In 2013 another significant drop
- Back to 10yrs ago



1. 2013 provisional figures

1. Greek Electricity Market Overview

ELECTRICITY DEMAND - ANNUAL CONSUMPTION



Increase of Capacity (mainly due to RES introduction)

VS

Decrease of Demand (mainly due to economic crisis and austerity program)

Electricity demand growth has been affected by the economic crisis

○ CAGR 2008-2012
 ■ LV-MV ■ HV

