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Bucharest Forum
30 September 2011

”Experience of EU Energy Efficiency Obligations – Diverse but Delivering”

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- Do EEOs work?

Why Do We Need EEOs?

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- Energy Efficiency (EE) does not happen to the extent that "the rational economist" would predict due to market barriers
- EEOs only exist because the Government intervened in the energy market to require the energy company to stimulate energy savings in eligible customers' premises and/or homes
- In this sense, they are the same as other environmental interventions into energy markets such as EU ETS Certificates or Green Certificates (Renewables)
- All EEOs in EU operate the same principle – the obligation requires the energy company to prove that their activities resulted in EE improvements by eligible end use customers - for this they are awarded a certificate accrediting the extent of the energy savings achieved

How do EE Obligations Work?

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- Energy retailer/distributor has obligation to save energy in customers' premises/homes; target related to "volume" of energy supplied/distributed/residential customer numbers + financial penalties if company fails to meet its target
- Projects with large energy users can "afford" to have energy saving measures monitored for actual savings achieved
- For small energy users – need simple approach to keep M&V costs down – use "approved" measures for which there are well established energy saving values (known as deemed or ex ante savings)
- Monitoring and verification then is a "measure count" + random "dip check" of the submitted claims for energy savings

What are the Costs & Who Pays?

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- Cost of energy efficiency measures (energy company subsidies + contributions from end customers, landlords, charities, manufacturers etc.)
- Cost of energy company marketing, sales, reporting, planning etc. (in GB estimate ~18% of their direct costs)
- Auditing & verifying of energy saving projects and if target met (in GB carried out by Ofgem (energy regulator) and <1% of energy supplier costs)
- Government to set target every few years + research into energy savings (in GB <<Ofgem costs)

How are Costs Passed Through?

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- If obligation is on an energy retailer in a liberalised market, then cost of EEOs is “a cost of business” like other environmental requirements and passed onto end customers
- If obligation is on regulated part of energy company (e.g. distributor or if the retail price is still regulated), then costs are in the regulated tariff charged to end customers
- In effect, the “polluter pays” principle applies
- However, energy saving benefits alone far exceed the costs to consumers

How are they delivered?

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- Mainly done by bilateral contracts between obligated company and an energy efficiency market actor e.g. insulation company, retailer of appliances, manufacturers, heating installers
- However, in GB energy suppliers establishing, heating companies, insulation subsidiaries & microgen (RE); similar developments in Italy
- In Italian & French White Certificate schemes, accredited parties not just the obliged energy companies can earn WCs in their own right and that these which can be subsequently traded
- Only in Italy has there been significant generation and trading of WCs generated by non obligated parties

EEOs in the EU (2008)

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Country	Obligated Company	Eligible Customers	Administrator
Belgium - Flanders	electricity distributors	residential and non energy intensive industry and service	Flemish Government
France	all suppliers of energy	All (including transport) except EU ETS	Government
Italy	electricity & gas distributors	All including transport	Regulator (AEEG)
GB	electricity & gas suppliers	Residential only	Regulator (Ofgem)
Denmark	electricity, gas & heat distributors	All except transport or covered by EU ETS	Danish Energy Authority

EEOs in the EU (2008)

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Country	Nature of saving target	Current size of target	Estimated annual spend by companies €M & {€/head}
Belgium – Flanders	1st year primary energy	0.6 TWh annual	26 {4}
France	lifetime delivered energy	54 TWh over 3 years	180 {3}
Italy	cumulative 5 year primary energy	2.2 Mtoe in 2008	190 {3}
GB	lifetime delivered CO2	185 MtCO2 in 3 years to 2011	900 {15}
Denmark	1st year delivered energy	0.82 TWh annual	25 {5}

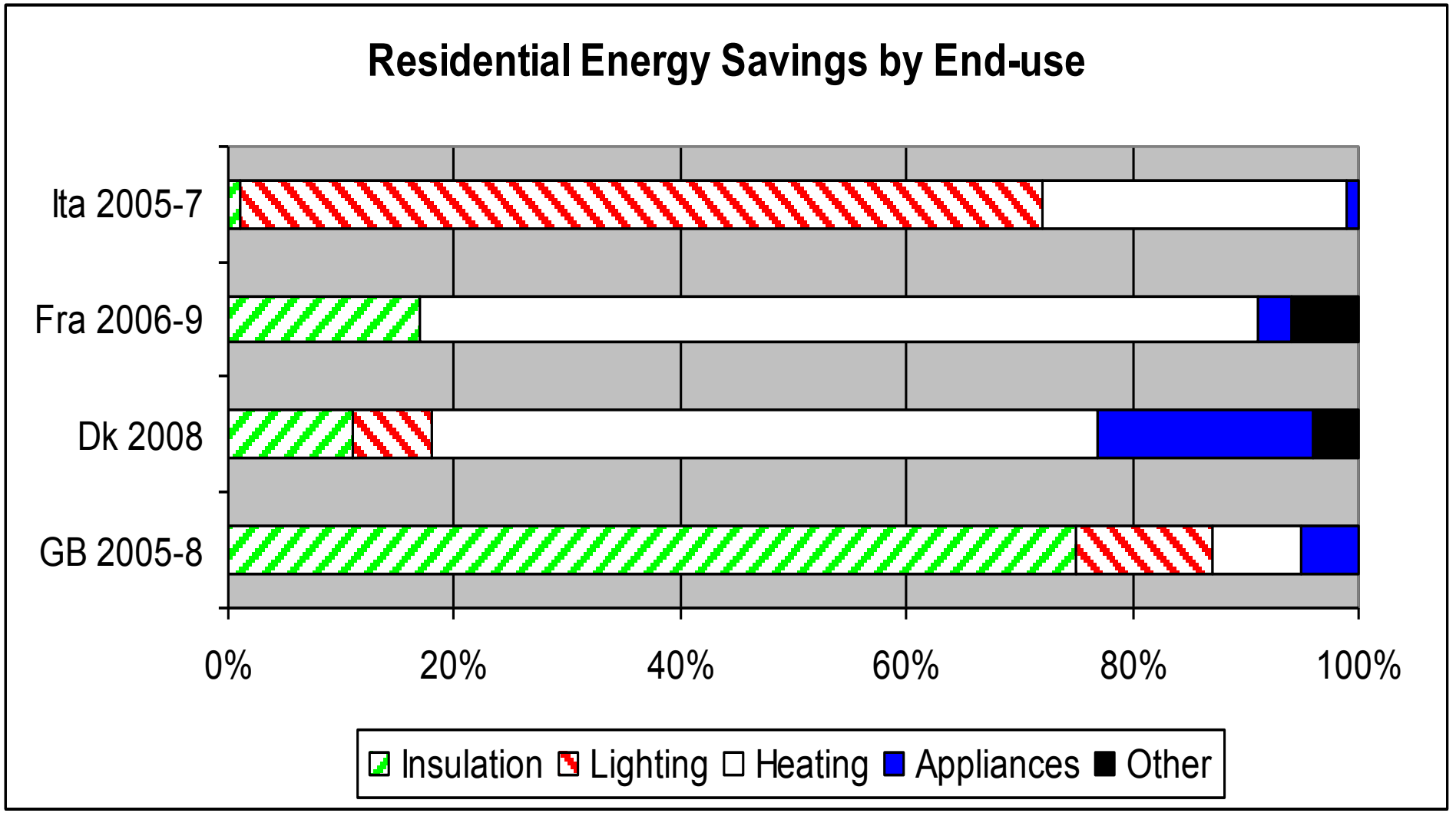
Most Activity in Residential Sector

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Country	Period	% energy savings from residential sector
Belgium - Flanders	2008	58% (mandated)
Denmark	2008	42%
France	2006-9	87%
Italy	2005-8	83%
UK	2005-8	100% (mandated)

Residential Energy Savings by End-use

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Increases in EU EEOs in 2011

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Country	Activity for latest data (year) or new target	Increase over 2008 activity
Belgium - Flanders	2.6 TWh/y (2009)	>30%
Denmark	1.7 TWh/y	>100%
France	345 TWh cumac in 3 years by end 2013 including road transport	Approx. 300%
Italy	5.3 Mtoe cumulative	No change in “new savings” but deemed savings reduced for CFLs & low-flow showers
GB	185 MtCO2 in 3 years by 2011	20% increase + extension to end 2012

Observations on EEOs in the EU -1

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- Core element in all: the energy saving obligation (backed by penalties if target missed); Voluntary markets not expected to emerge
- Relatively few schemes in place (6 + 2 imminent) – they vary quite a lot but all judged to deliver successfully
- Different energy saving targets, different end use sectors covered, different obliged actors - reflect local status of energy market, the EE history of the utilities, climate, energy saving opportunities, culture etc.;

Observations on EEOs in the EU - 2

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- Goals were set fairly low, and have been achieved and at costs below policy makers' expectations; expanded to energy companies now spending ~€2 billion/year; in ~50 operational years experience of EU EEOs, no energy company failed to meet it's overall energy saving target
- Empirical evidence shows they are best suited to deliver low-cost and standard energy efficiency measures, often targeting small energy users where traditional barriers to EE are greatest
- Function in both liberalised energy markets and also where they target monopolistic segments

Is there any evidence that EEOs work – top down analysis? - 1

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- Use GB Government data on residential energy consumption as GB has the longest running and largest EEO
- In GB natural gas provides 80% of all heating & hot water
- Prior to 2005 residential gas demand increasing in range 1 to 2% per year
- But in 2005, 3 important developments which would reduce demand: EEO obligation doubled (72% delivered energy savings in EEO come from insulation measures in gas households); new regulations on boiler replacement meant condensing boilers quickly moved from 36% of the replacement market to >97%; gas price rises for residential customers reduced demand

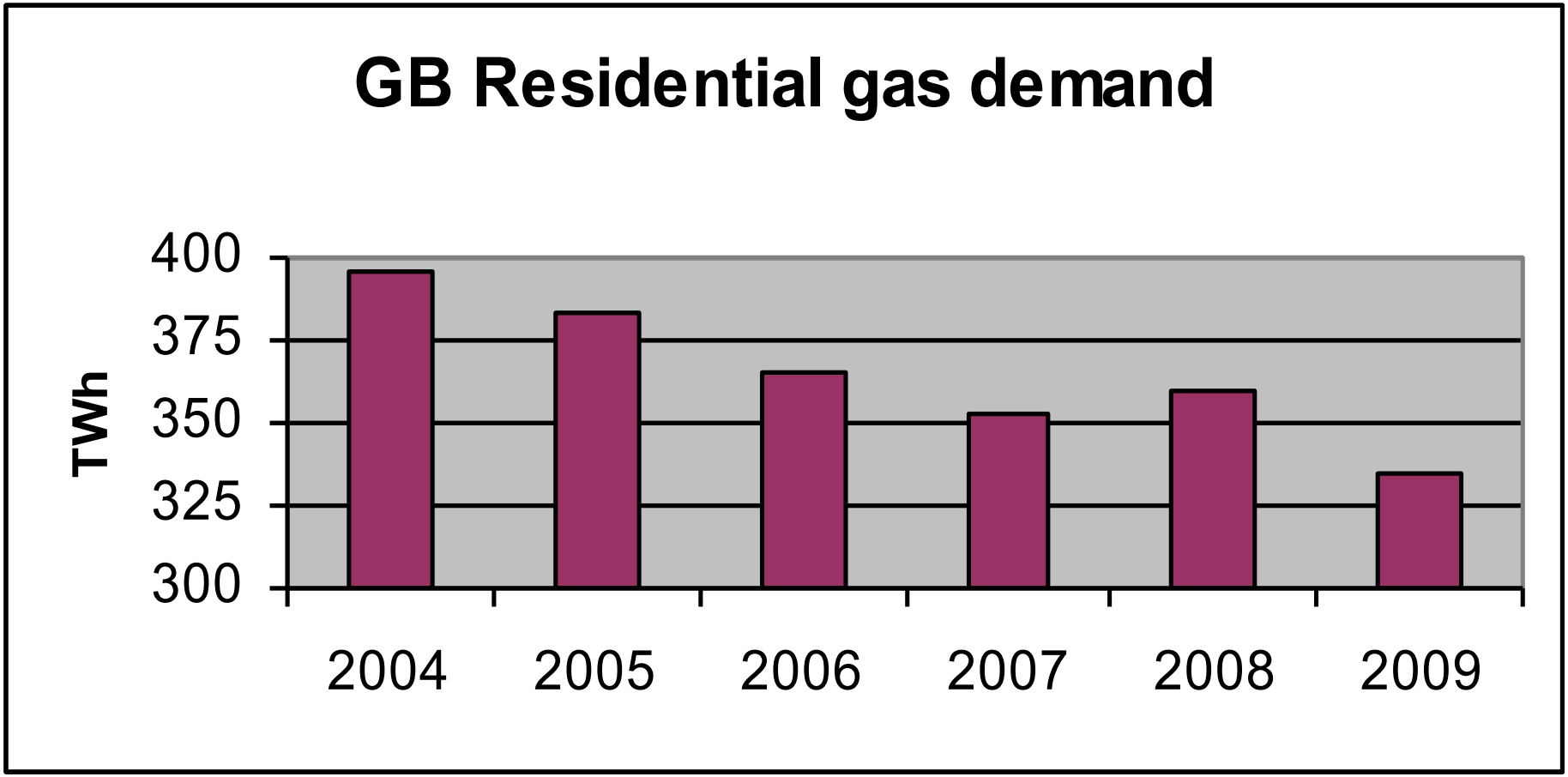
Is there any evidence that EEOs work – top down analysis? - 2

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- Also greater awareness of climate change, behavioural change campaigns etc help reduce gas demand
- Factors increasing demand were between 2004 to 2009, gas customers increased by ~1.6 million (7%); more Degree Days in 2008 & 2009 than in earlier period, so "warmer winters" not an issue
- Complicated analysis by GB Government underway

Reduction in GB Residential Gas Demand in Period 2004-09

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Is there any evidence that EEOs work – bottom up analysis? - 1

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- British Gas individual annual gas consumption data for 4 million customers (~40% of their customer base) have been analysed for the period 2006-10
- Looked at factors affecting demand:
  > Households, population, income and tenure of property
  > External and internal temperatures
  > Energy efficiency measures
  > Changes in behaviour, lifestyles, increased climate change awareness etc.
- Average household consumption fell by 22% over the period!!

Is there any evidence that EEOs work – bottom up analysis? - 2

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- For this 5 year period, conclusions were:
- British Gas' residential natural gas consumption fell annually by 4.9% compound
- Retail gas prices changes are not significantly correlated with household natural gas consumption changes (due to retailer switching/lower tariffs?)
- The economic factors did decrease annual consumption in some years but over period slightly increased consumption
- Behaviour & lifestyle changes etc. reduced by ~2.7%/year
- Reduction in gas customer demand was 3.3%/year as a direct result of energy efficiency measures (mainly insulation and heating)

Conclusions on EU EEOs

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- Despite wide variation in implementation of EEOs & market liberalisation status, they have been successful policy tools
- By reducing the number of units required for household energy services, EEOs help energy affordability for low income households in the transition to a low carbon world
- In the longest running and largest EEO, over the last 5 years they are contributing to a significant reduction in gas demand
- EEOs avoid MS Government having to use public expenditure to stimulate EE – relevant to the current financial problems facing MSs