

Introduction to Suppliers Obligation and White Certificate Schemes in the European Union

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- Analysis of major design choices
- Dominant measures implemented
- Measurement & verification approaches adopted
- Trading
- Transaction and system costs
- Some key issues related to energy efficiency obligation schemes and energy saving targets set in the new proposal for a EU Directive on Energy Efficiency
- Evidences of results achieved by energy saving obligations

- **Market-based instruments** (MBIs) are public policies which make use of market mechanisms (some with transferable property rights) to distribute the burden of a public policy.
- In the **energy sector MBIs** have been used to promote RES-E and to cut harmful emissions (e.g. CO₂, SO₂, NO_x quotas coupled with permit/allowance trading).
- Theoretically MBIs **minimize cost for society** for reaching a certain target (static efficiency) and create incentives to innovate and improve performance (dynamic efficiency).
- These instruments could be of mandatory or voluntary nature

- Bringing **sustainability** to the energy sector:
 - **EU Energy Efficiency Target**: by **2020** the EU should save at least **20 % of its primary energy** in a cost-effective manner;
 - The **Directive on Energy End-Use Efficiency and Energy Services (2006)**: a target of **9% over 9 years**; the Directive mentions White Certificates and leaves the option of the Commission to later on recommend introduction.
 - New proposal for a **Energy Efficiency Directive** (June 2011) imposing suppliers' obligations to MSs or equivalent programmes
 - In 2005 the **EU ETS** has started – now is in the second phase.
- Energy market restructuring and **liberalisation**:
 - Directive 2003/54/EC: all customers are able to choose their gas and electricity supplier by 1 July 2007 at the latest;
 - Effects of liberalization on energy efficiency.

- **Traditional Energy Efficiency Policies:**
 - Energy taxation (at EU and national level);
 - Incentives for investments in energy efficiency (national);
 - Information campaigns (mainly national);
 - Promotion of energy services (ESCOs) (weak EU measures);
 - Minimum Efficiency Requirements (MEPS) for end-use equipment (at EU level) and equipment Labelling (at EU level);
 - Buildings Codes (standards) (at national level);
 - Energy Audits (at national level);
 - Voluntary programmes (mainly in industry at national level, but also for equipment under the Ecodesign directive, these are at EU level);
 - DSM and utilities programmes (not many, at national level or regional level)
- **Innovative policy mechanisms**
 - **Suppliers obligations & white certificates;**
 - Feed-in tariff for energy savings;
 - ‘Cap-and-invest’ schemes.

A possible market-based policy portfolio (compliance market) oriented towards end-use energy efficiency could comprise

- **Energy-savings quota** (**obligation**) for some category of operators (distributors, suppliers, consumers, etc.). The **quota** is achieved by energy **savings** associated to energy efficiency **projects**.
- Projects savings verified **by an independent authority (e.g. the regulator)**
- At the end of the period the subject under obligation must have savings related to projects to show compliance
- In some scheme the saving are **certified by means of the so-called “white” certificates** (certificates for energy savings), ;
- In some scheme the savings or the certificates or the quota **could be traded**;

- Suppliers obligations: schemes where an energy saving target is imposed on energy suppliers (retailers) or distributors, very seldom on generators
- White certificates: the energy savings are certified
- Tradable white certificates: in this case there is trading (among obliged subject or among obliged and eligible subjects)

Justification/rationale for implementing suppliers obligations or white certificates schemes

In countries where suppliers obligations or white certificates are already in place it is found that justification/rationale for implementing suppliers' obligations or white certificates schemes (as an alternative to other energy efficiency policy instruments) typically is:

- Higher cost-effectiveness in the achievement of given saving targets
- Creation of incentives to privately finance energy efficiency (ESCOs, etc.)
- Saving of public money (if compared with classical subsidies for energy efficiency)
- Avoidance of energy price distortion between sectors (if compared with energy taxes)
- Avoidance of the very high transaction costs typically caused by the introduction of energy performance standards
- Higher consistency with liberalized energy markets



- A white certificate is both ***an accounting tool***, which proves that a certain amount of energy has been saved in a specific place and time, and a ***tradable commodity***, which belongs initially to the subject that has **induced the savings** (implemented a project) or **owns the rights** to these savings, and then can be traded according to the market rules, always keeping ***one owner at the time***.
- As for renewable electricity certificates (a.k.a. green certificates), the value of the white certificate is different from the economic value of the saved energy (Euro/kWh). It is determined by the demand and supply (linked to the ambition of the energy saving target and to the cost of saving energy)
- In principle white certificates can also be established for a **voluntary market** (this is happening in the US).



A rather strict focus on savings in ***energy end-use***;

Binding and meaningful energy saving targets expressed in energy units;

Provisions to ensure that energy savings are ***additional*** to a well specified baseline;

Extensive ***monitoring and verification*** systems by independent organisations;

Inclusion of ***penalty systems*** for breaching regulation and non-achievement of targets;

Provisions to promote or even mandate ***transparency and harmonisation*** in energy efficiency project and programme assessments, thereby paving the way for the tradability of certificates;

Creation of Certificates which could be made tradable with a limited set of additional regulations.

The key elements of suppliers' obligations and white certificates schemes:

1. the **creation and framing** of the demand (government set the **overall target** and the rules for its **apportioning to obliged actors**). Targets are expressed in absolute values (then apportioned according to different rules) or as percentage of energy sales.
2. Institutional **infrastructure** and processes (such as measurement and verification, checking compliance, etc.) to support the scheme.
3. the **cost recovery** mechanism, in some cases.
4. A system of **sanctions** in the case of non compliance
5. the **tradable instrument** (certificate) and the rules for issuing and trading,

- **UK** (GB only) has a variation of this policy mix scheme since 2002 (successor of EESoP), limited trading;
- Tradable certificates have been introduced in **Italy** since 2005, and in **France** since mid-2006.
- Flanders (region of Belgium): savings obligations imposed on electricity distributors without certificate trading option;
- Denmark: saving obligations on electricity, gas and heat distributors;
- In the pipeline: Poland and Ireland.
- Romania and Bulgaria are interested in this policy instrument.

	UK (CERT and CESP)	Italy	France	Denmark	Flanders (Belgium)
Obligation period	2002-2005 (EEC-1)* 2005-2008 (EEC-2) 2008-2012 (CERT) 2009-2012 (CESP)	2005-2012	2006-2009 (first period) 2011-2013 (second period)	2006-2009 (first period) 2010-2012 (second period)	2003 –
Target size (ongoing phase)	293 MtCO ₂ lifetime savings in 2012 (CERT) 19.25 MtCO ₂ lifetime savings in 2012 (CESP)	Cumulative savings of at least 22.4 Mtoe in 2012	345 TWh lifetime discounted (over the period January 2011- Dec. 2013)	2.95 PJ annual (first year savings) until 2009 As of 2010: 6.1 PJ/y (first year savings weighted with prioritisation factors reflecting action lifespan)	Approx. 580 GWh (2009 target) 3.5% of the amount of electricity supplied the year before to household and non-residential clients (2.5% in case of less than 2500 clients).
* Obligations on energy suppliers since 1994					

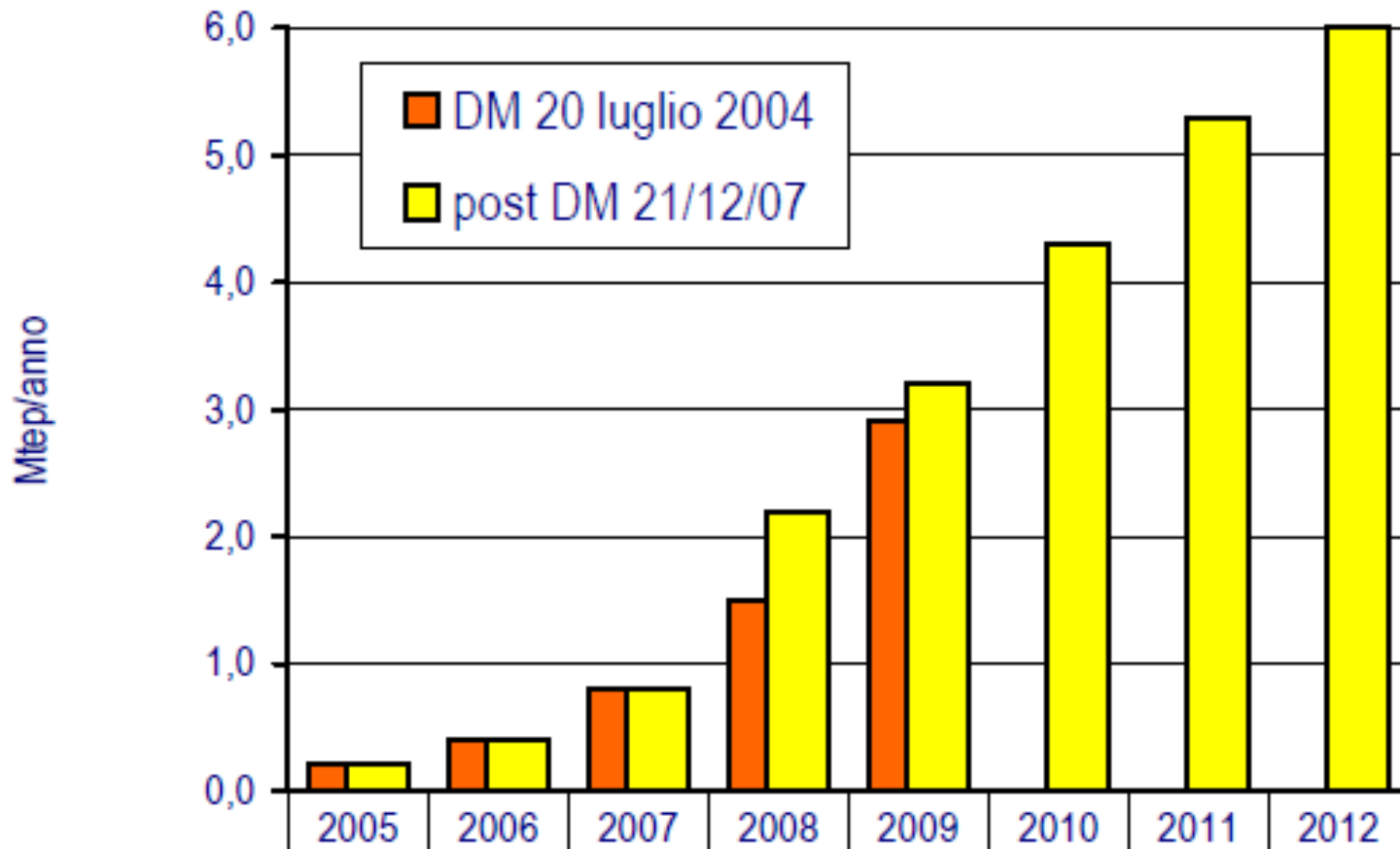
- The results delivered (compliance, dominant projects and sectors) are determined the nature of the projects
 - Size of the obligation
 - Choice of primary or final energy or CO₂,
 - Obligated and eligible actors,
 - Sectors covered
 - Eligible measures and lifetimes of measures and additionality
 - Measurement & Verification of savings (M&V)
 - Cost-recovery mechanisms
 - Interactions with other policy tools.
 - Trading rules
 - Sanctions



- **Energy versus carbon targets:**
 - **Primary energy** (IT and Flanders) – bias on electricity, supply side projects (CHP, small-scale RES) – as part of general energy security and reliability of supply strategy;
 - **Final energy** (DK and FR);
 - **Carbon dioxide** (UK) – complements other CO2 policies.

- **Cumulative versus annual targets:**
 - Multi-annual targets, i.e. Cumulative (UK and FR) – e.g. in the final year of the period
 - Annual targets in the framework of multiannual obligation periods (DK, IT, Flanders)
 - A relatively short obligation period combined with long-term policy commitment allows adjustments of operational modalities, while ensuring investment stability.

- The EEC and CERT are one of the principal policy mechanisms to deliver energy efficiency improvement measures into existing homes in Great Britain. EEC1 and EEC2 continue to deliver energy and carbon savings until 2020

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	Annual energy savings expected by end of 2010		Annual energy savings expected by end of 2016		Annual energy savings expected by end of 2020	
	TWh	MtC	TWh	MtC	TWh	MtC
Measures in the Household Sector:						
Energy Efficiency Commitment Phase 1 (EEC1)	3.1	0.3	3.1	0.3	3.1	0.3
Energy Efficiency Commitment Phase 2 (EEC2)	7.8	0.5	7.8	0.5	7.8	0.5
Carbon Emission Reduction Commitment (CERT)	14.2	1.0	15.5	1.1	15.5	1.1
Supplier Obligation	0.0	0.0	31.2	2.2	50.2	3.5



 DM 20 luglio 2004	0,2	0,4	0,8	1,5	2,9			
 post DM 21/12/07	0,2	0,4	0,8	2,2	3,2	4,3	5,3	6

First Period (07/2006 to 06/2009)

-Target : **54 Twh**

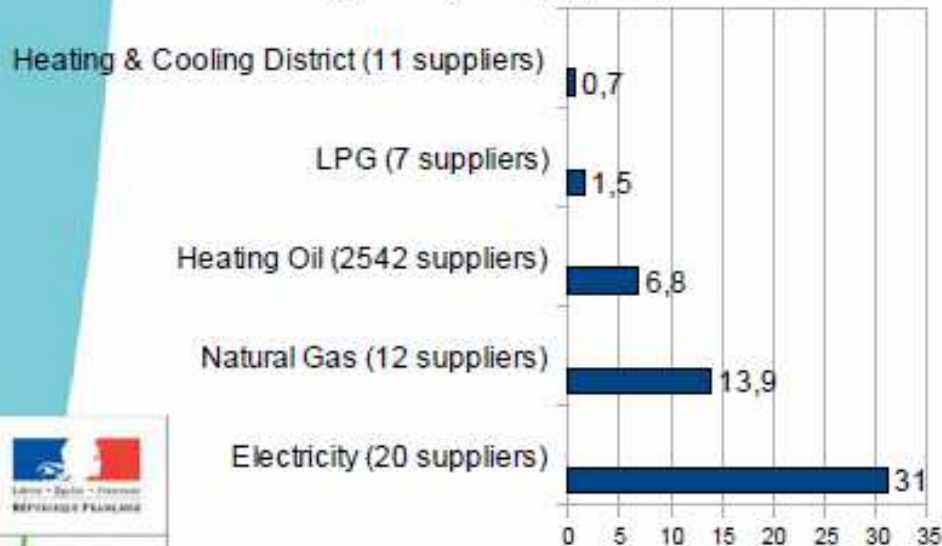
Second period (01/2011 to 12/2013)

-Target : **345 Twh**

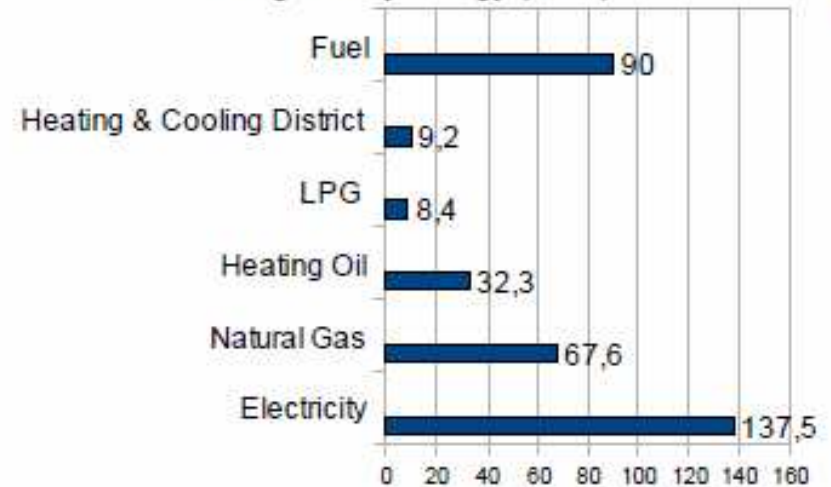
-Added energy supplier : **fuel distributors**

Objective shared between energies then among suppliers in each category according to their sales in the residential and tertiary sector

Obligation by energy (TWh)



Obligation by energy (TWh)



- End-use **sectors covered** (e.g. residential, tertiary, industry and transport);
- Types of projects and/or technologies eligible and modalities under which projects are allowed (e.g. lifetimes)
 - IT – all end-use sectors;
 - UK - residential sector only plus 40% priority group;
 - DK - all end-use sectors apart from transport;
 - Flanders - residential, non-energy intensive industry and service sectors;
 - FR - only excludes projects in industry sectors under the ETS.
- Energy saving obligations and white certificates are considered best suited for **measures in end-use sectors**, excluding generation projects.
 - Some supply-side options: micro cogen, PV and SWH, in Italy grid-connected cogeneration and new district heating (boilers and network)

Energy saving obligations and white certificates are considered **best suited for measures in end-use sectors, excluding generation projects and network**

	UK (CERT and CESP)	Italy	France	Denmark	Flanders (Belgium)
Energy end-use sectors covered	Residential	All	All excl. ETS	All except transport	Residential and non energy intensive industry and service
Restrictions in achieving the target	40% priority group and 15% super priority group. 25% insulation measures (CERT) Low income areas; max 4% by loft insulations; max 4% by cavity wall insulations; max 1% by energy advice.	Until 2008 50% on own energy source	25 TWh cumac max. achievable by information, formation and innovation programmes	None specific	The actions must always consist of financial contribution and an awareness-raising element

Measures related to energy grid loss reduction are eligible in DK (as of 2010) and IT (as of 2011).

Measures “in-between” supply and end-use options are allowed in some schemes (e.g. micro CHP, PV panels, solar water heaters; etc.). Installation of highly efficient CHP of any size is allowed in IT.

The inclusion of the transport sector may be in principle troublesome for various reasons...

Theory suggests that the wider the scope (in terms of sectors covered and eligible measures), the greater the benefits (especially in terms of trading). On the other hand, extensive scope may result in difficult and expensive administration of the scheme.



- A trade-off between harnessing the **full potential of a market-based instrument** and **managing the complexity and cost** of administering the system;
- In theory the wider the scope in terms of types of projects (compliance choices) and the fewer limitations in terms of compliance routes, the greater the benefits of the scheme, especially in terms of **trading and compliance costs**;
- Wide coverage implies more **diverse marginal costs** of compliance among trading parties and greater benefits of trading;
- On the other hand, extensive scope may result in difficult and expensive administration of the scheme.

- **Suppliers** (retail companies) – UK and FR
 - Strong links to the final consumer and may have the motivation to offer value-added services;
 - Uniquely placed to provide information about consumption through billing and metering processes and to inform consumers about measures on offer.

- **Distributors** (DNOs) – IT, DK and Flanders
 - More stable regulated organisations, which are natural regional monopolies and will not go out of business (as may happen with suppliers);
 - With proper tariff regulation, they do not have the strong push to sell 'more kWh', as is in the case of suppliers;
 - However they are disconnected from the end-user and thus may lack motivation to do end-use energy efficiency.

- Small market actors may be excluded (at least initially);
- Target apportionment
 - Based on market share (IT and DK; market share + turnover: FR) or number of consumers (domestic only: UK);
 - Target can increase linearly (all EU schemes) or not linearly with the obliged party size.
- Grid-bound energies only versus wider scope
 - Grid-bound energies (UK, IT and Flanders) or also other regulated energy providers (FR and DK), France also non-regulated (heating oil and transport fuel)
 - Regulated versus non-regulated energy segments
 - Start smaller scale (e.g. grid-bound only) and expand scope
 - The 2011-2013 France obligation has included also transport fuel suppliers who are obligated to realise about 26% of the total target for this period (345 TWh cumac)
 - Market distortions may in principle arise when both actors regulated (e.g. suppliers of residential el. and gas in FR) and actors not subjected to price regulations (e.g. suppliers of transport fuel in FR) are put under obligation.
- Large end-users
 - Are utilities best positioned to deliver savings in an efficient manner?

- Eligible actors are only defined in schemes with trading;
- Eligible actors in Italy are large energy companies, ESCOs, and not obliged distribution companies
- It is interesting to note that ESCOs are not an eligible actor in France, as it is considered that they will do in any case the projects (economic incentive).

Tipologia di soggetto	Percentuale di TEE certificati rispetto al totale				
	fino a 31/5/06	fino a 31/5/07	fino a 31/5/08	fino a 31/5/09	fino a 31/5/10
Distributori elettrici obbligati	9,1%	6,1%	11,4%	9,8%	7,8%
Distributori gas obbligati	23,8%	9,4%	10,1%	8,4%	7,7%
Distributori non obbligati	2,5%	12,2%	1,9%	1,0%	0,4%
Società di Servizi Energetici (SSE)	64,6%	72,3%	76,6%	80,8%	83,5%
Soggetti con Energy Manager (SEM)	-	-	-	0,1%	0,6%
Totale complessivo	100%	100%	100%	100%	100%

Example of Eligible Actor: ESCOs in Italy

- The savings must be beyond current policies or market averages (additionality);
- Baseline shall be set at or above present regulation;
- Sales average and performance of the most commonly used appliance on the market “average-on-the-market” (appliances and equipment);
- Average consumption of the stock of equipment;
- Existing building stock (e.g. in insulation measures for existing buildings in France);

- Ex post evaluation based on “metered” data approach may result too costly for small projects (up to 20%), but guarantees “real” savings.
- The potential domain of excellence of «ex post» metered approach is large savings and large investments, as the rate of transaction costs due to measurement and verification of savings tends to become lower.
- To lower “transaction costs” due to Measurement and verification (M&V) of energy savings, the measurement is often ex-ante
- Nevertheless there can be dangers associated with purely ex-ante schemes (like partial realisation of savings, poor additionality, etc.) if EE measure impact is not well understood.
- Usually the measurement is done by the obliged or eligible subject, while the verification is done by the independent authority
- If the measurement is done ex-ante, the verification could be done ex post

3 main M&V approaches (example of Italy):

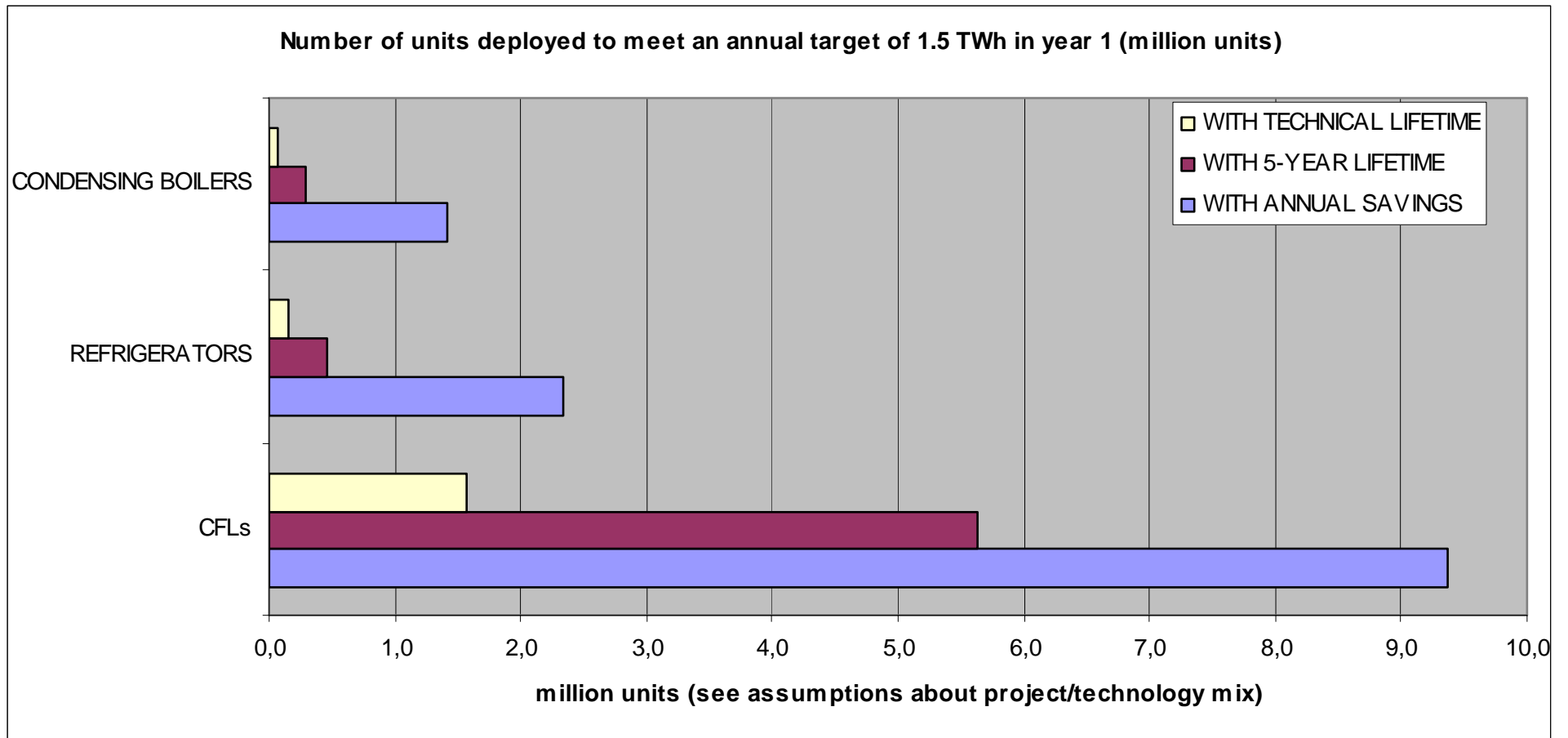
- deemed savings approach (saving per unitary actions fixed ex-ante) with fix default factors including adjustments for free riding, delivery mechanism and persistence: no on-field measurements required;
- engineering approach, fixed model with some on-field measurement,
- a third approach based on monitoring plans: comparison of measured or calculated consumptions before and after the project, taking into account changed framework conditions (e.g. climatic conditions, occupancy levels, production levels); all monitoring plans must be submitted for pre-approval to the authority and must conform with pre-determined criteria (e.g. sample size, criteria to choose the measurement technology, etc.)

	UK (CERT and CESP)	Italy	France	Denmark	Flanders region (Belgium)
Measurement and verification options	Standard values	Standard values (19 measures) Engineering approach (5 measures) Metered baseline method	Standard values (about 240 measures) Case-by-case approval for other measures	Standard values for approx. 200 measures Specific engineering calculation	Case-by-case approval by VEA
Dominant measurement and verification choice	Deemed savings only	Deemed savings	Deemed savings	Specific engineering calculations	NA
Accreditation of savings	Ex-ante	Ex-ante (majority)	Ex-ante	Ex-ante (adjusted first year savings only)	Ex-ante approval

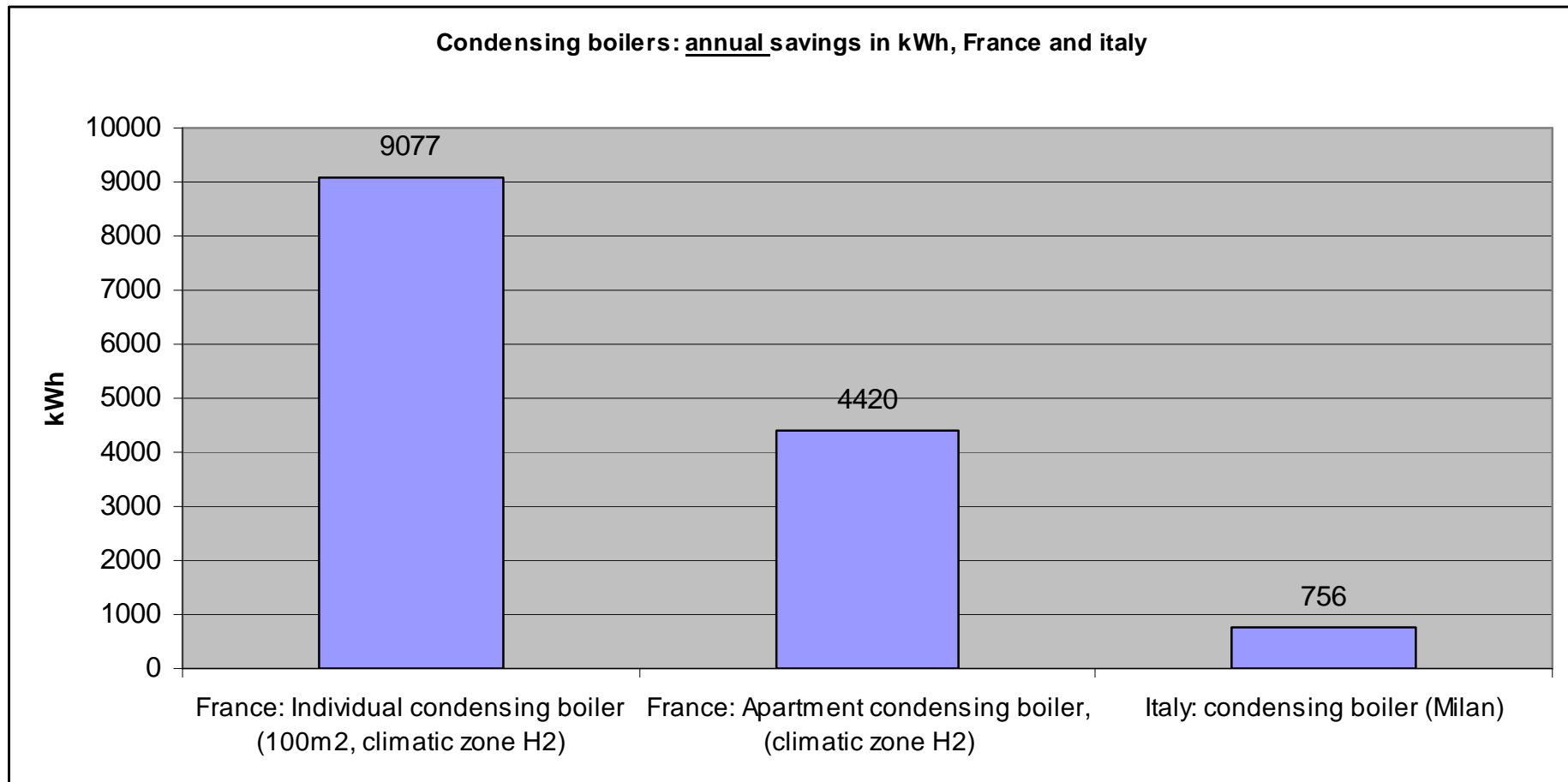
Most of the schemes are dominated by measures with **standardized saving factors**, especially in the residential sector (UK scheme only in the residential sector). Transaction costs for real measurement could be very high.

- Savings from one project could include only the annual (first year) savings or the lifetime of the measure savings.
- Allowing first year savings alone or allowing only short lifetimes of savings may penalise comprehensive solutions that are likely to have longer payback times
- Example of working with cumulative savings and long (technical) lifetimes of measures: the annual savings for cavity wall insulation under the CERT is roughly 3.01 MWh in year 1 to 0.75 MWh in year 40. This results in lifetime savings of approximately 65 MWh, which is 21 times the first year savings.

- Very large difference in the efforts needed by the utilities between annual vs lifetime savings



- Choice of baseline (old replaced equipment efficiency and insulation of building stock)
- Very large difference between France and Italy for annual energy savings!

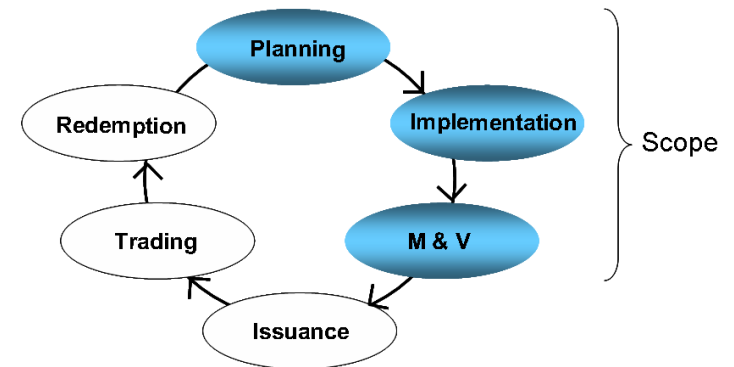


- More than 180 detailed methodologies: 58 in the residential sector, 80 in the commercial sector, 19 in the industrial sector, and 8 in the transport sector.
- Energy savings cumulated over the life time and discounted (kWh cumac)

- Savings calculated and set when a project is submitted;
- A standardized estimate: technology used, weighted for fuel type and discounted over the lifetime of the measure of 3.5 %;
- ‘Comfort factors’ adjustment of carbon benefits, dead-weight factors accounted for.

Life cycle of TWCs

Two research initiatives investigated TCs affecting the development of EE projects (i.e. planning + implementation + M&V).



Source: Mundaca, 2005

Main outcomes

Scale of such TCs may range from approximately 10 up to 40% of total direct investment costs and can affect TWC scheme performance.

There is a negative direct correlation between the burden of TCs and the size and performance of projects.

TCs arising during EE project planning phase may range from 5 to 20% of total direct investment costs (in particular finding information on customers willing to implement EE measures seems critical).

Cost to households:

- Italy: 3.7 Euro/household in 2009 (AEEG estimates go up to 6.4 Euro/hh in 2012).
- UK EEC-2: 6.9 GBP/year per customer per fuel bill (23% below ex-ante estimates).
- UK CERT: 45 Euro/year/household on bills.

- UK EEC-2 cost of conserved energy: 0.6 pence/kWh gas and 2 pence/kWh electricity.
- Italy: 1.7 Eurocents/kWh annual.
- Flemish region: 2.3 Eurocent/kWh primary (first year savings only).
- Denmark 2010-2012: approx. 6 Eurocents/kWh (4.5 Eurocents/kWh in 2006-2009, first year savings only or 0.45 Eurocents/kWh for average lifetime of 10 years).

Administrative cost estimates (implementing authority):

- UK EEC-1: 1 million GBP over 3 years.
- France: 700,000 euro/year.
- Italy: 1 million euro/year.
- Administrative costs are a function of the simplicity of the system.

In most supplier obligation schemes obligated parties are allowed or may decide to choose one of the following actions to comply with the target or otherwise pay non-compliance or under compliance penalty:

- Implement energy efficiency projects directly (IT, UK, FR, Flanders);
- Implement energy efficiency projects via daughter companies (DK, IT);
- Purchase certificates from third parties by bilateral trades or spot market (IT, FR)
- Establish partnerships with contracted installers, retailers, etc. (FR,UK, DK)
- Tender out the implementation of projects (attempted in DK);

In DK distributors are not allowed to directly implement projects other than information and informative bills, unless these projects relate to realisation of savings in own grid



UK Government



The administrator



ScottishPower



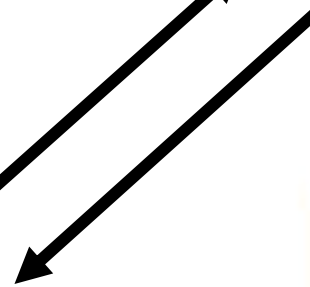
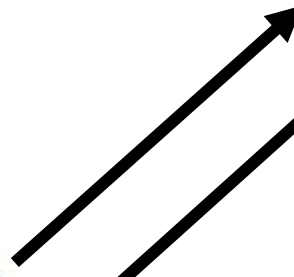
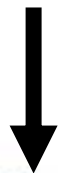
British Gas



The suppliers



The installers



- Until 2009 in all schemes the targets have been met or exceeded (in the sense that the total amount of savings generated or certificates available has achieved or exceeded the overall targets set, but not in sense that every obligated actor has always achieved its own target).
- In **IT** the number of certificates available for target achievement in **2005, 2006, 2007, 2008, 2009, 2010** corresponded respectively to **184%, 240%, 210%, 122%, 102%, 94%** of the targets apportioned among obligated actors during these years
- In the **UK suppliers achieved savings equal to 140% of the target under the EEC-1** and banked their surplus savings into EEC-2. Suppliers also **over-achieved the target in EEC-2 by 44%**, which translated into a carry over of an amount of savings equal to approximately 13% of the original CERT target from EEC-2

- In **FR** **121%** of the target established for the period 2006-2009 and 44% of the target established for the period 2011-2013 was already achieved on June 2011
- In **DK** **savings delivered** during the first obligation period (2006-2009) **amounted to 114%** of the target and the sub-targets established for the companies of all the energy sectors considered (electricity, gas, district heating, oil) were all overachieved.
- In Flanders the **2009 target** was **exceeded by at least a factor of 4**

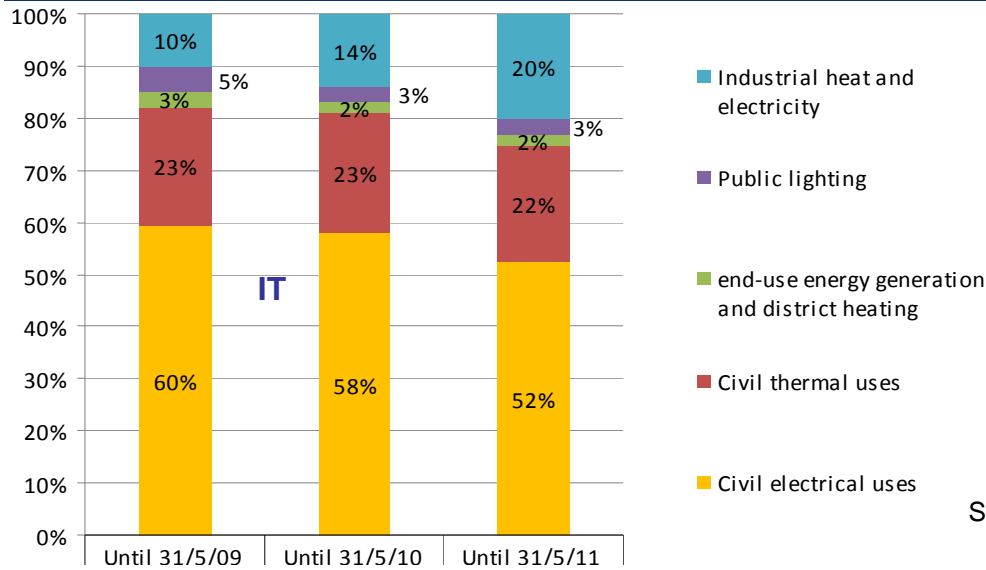
	UK (CERT)	Italy	France	Denmark	Flanders region (Belgium)
Size of certificate	NA	1 toe	1 kWh cumac	NA	NA
Validity of certificate	NA (compliance in 2012)	The entire phase of the scheme (2005-2012)	3 compliance periods (compliance in 2009 and 2013)	NA (only adjusted first year savings count)	NA
Certification threshold size	NA	20 toe/year, 40 toe/year and 60 toe/year for savings evaluated respectively by deemed, engineering and metered baseline methods	1 GWh cumac (projects can be pooled to reach the threshold)	NA	NA
Accreditation of savings	Ex-ante mainly	Ex-ante mainly (with the exception of engineering and metered baseline methods)	Ex-ante mainly	Ex-ante (adjusted first year savings only)	Ex-ante + approval (first year savings only)
Trading* mechanisms	Trading among suppliers	Spot market OTC (dominant)	OTC only	No trading	No trading
Banking, borrowing	Banking of excess savings between phases (EEC2 to CERT)	Banking till 2012 Borrowing for 1 year if under compliance below 40%	Banking three compliance periods	Banking till 2012 As of 2010 borrowing if under compliance below 35% (45% in 2010)	Banking of excess savings

- In **IT** 2010 trades amounted to 92% of the 2010 target.
- In **FR** trades amounted to 1% of certificates issued as of 2011
- In the **UK** EEC-2 horizontal trades accounted for approximately 0.25% of the target.
- In **FR** and **UK** suppliers prefer to position themselves vis-a-vis their clients as suppliers of energy services.

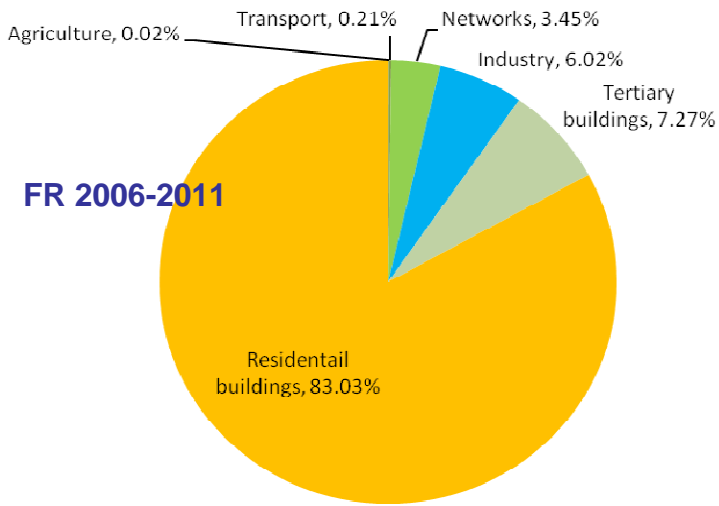
- Questionable whether **trading** is a key element in national systems;
- EU-wide certificate market would be very complex (e.g. need to harmonise measurement methods);
- Buoyant certificate trading is taking place only in **Italy**, where projects are implemented by **ESCOs**;

- **France - limited trading**
 - Suppliers prefer to implement the projects themselves through agreement with equipment suppliers and installers, positioning themselves as suppliers of energy services (utilities do not offer incentives, act as “*project organizers*”).

- UK - **certificate trading is not a feature of the scheme** and no formal certification of attained savings takes place.
 - Most suppliers use the same contractors to undertake the work;
 - Suppliers can only trade once they meet their own energy saving targets;
 - **Agreements with equipment suppliers** and installer to offer "standards" solutions to residential clients (not necessarily their customer base).
 - Banking of savings



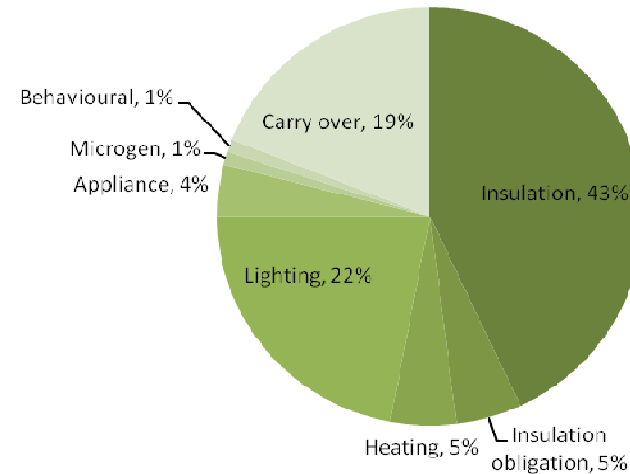
Source: AEEG six annual evaluation report for 2010 obligation



FR 2006-2011

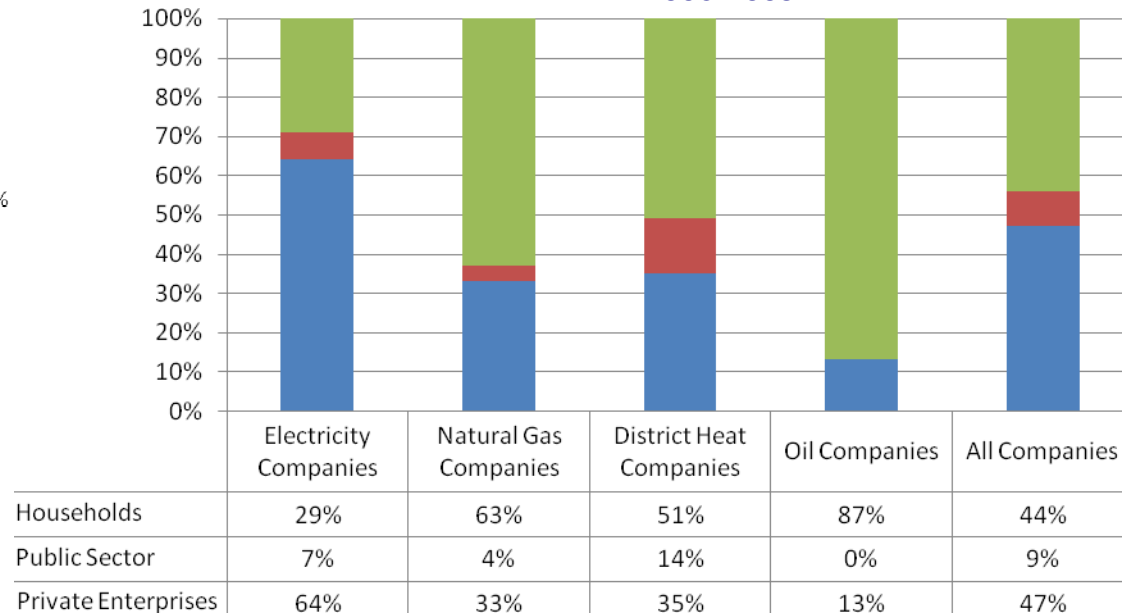
Source: MEEDM and MINEFI. Lettre d'information « Certificats d'économies d'énergie »; August 2011

UK CERT: 04/2008- 03/2011



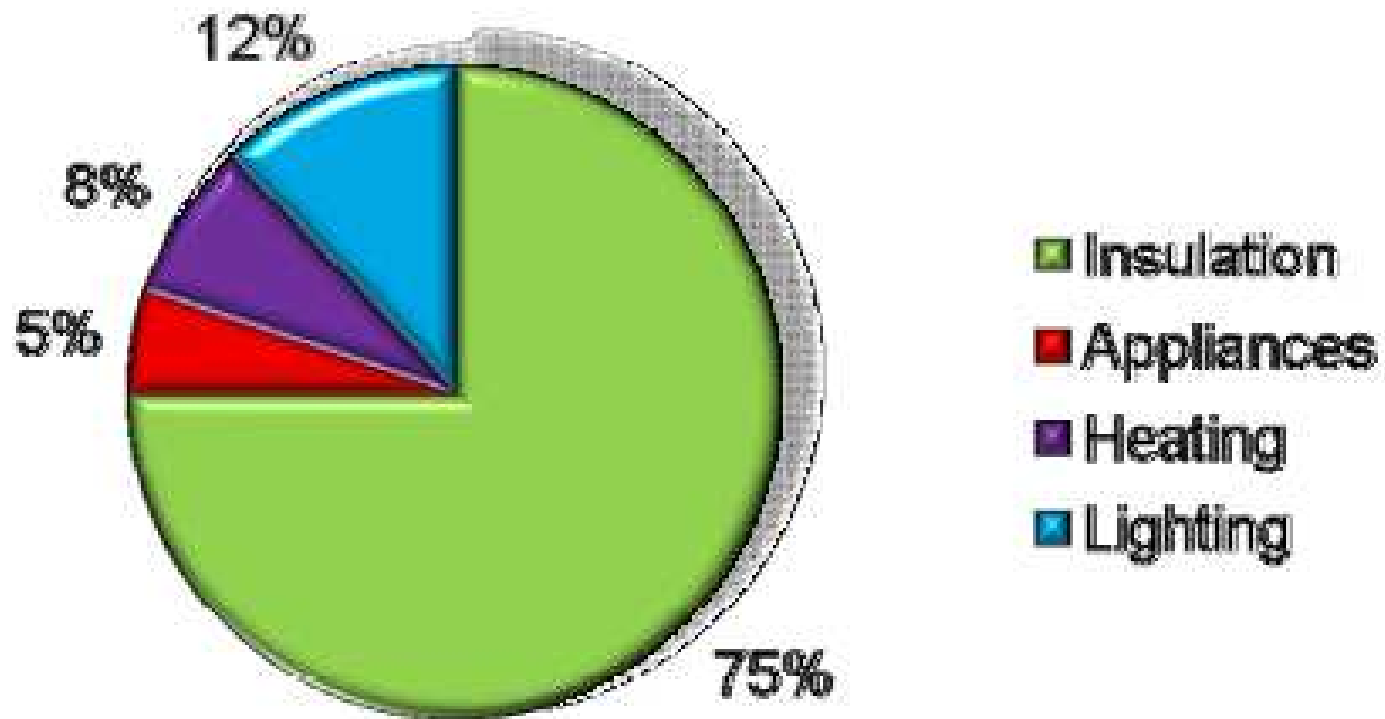
Source: 2011 Ofgem review of the third year of CERT

DK: 2006-2009



Source: JRC Workshop on Experiences and Policies on Energy Saving Obligations and White Certificates, 27-28 January 2011, Varese-Italy

Energy savings in EEC2



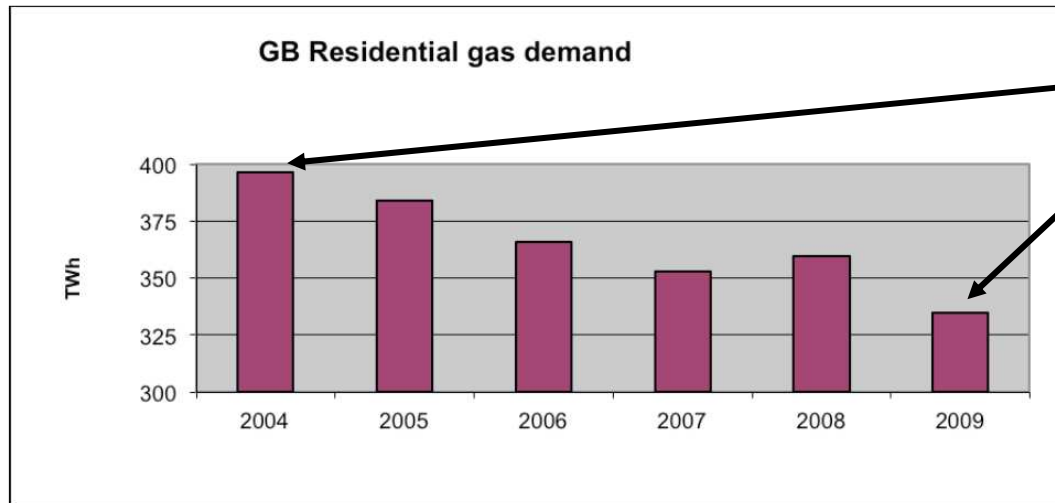
Source: G. Purchas, DECC, UK

EEC 2002 - 2008:

- 5 million households received insulation

CERT April 2008 – Sept 2010:

- 170 MtCO₂ achieved
- >3m households received insulation
- 300 million CFLs distributed



15% reduction in total residential gas demand **despite a 7% increase** in the number of households using gas!

Reduction in GB Residential Gas Demand in the period 2004-2009 (Source: Digest of UK Energy Statistics 2010). No correction made for colder winters of 2008 and 2009

Outcomes of a study performed by British Gas:

- 22% reduction in the gas consumption per household during the period 2006 to 2009 observed over ~4 million of British gas customers...
- Annual reduction in gas customer demand of 3.3% as a direct result of energy efficiency measures (mainly insulation and heating)

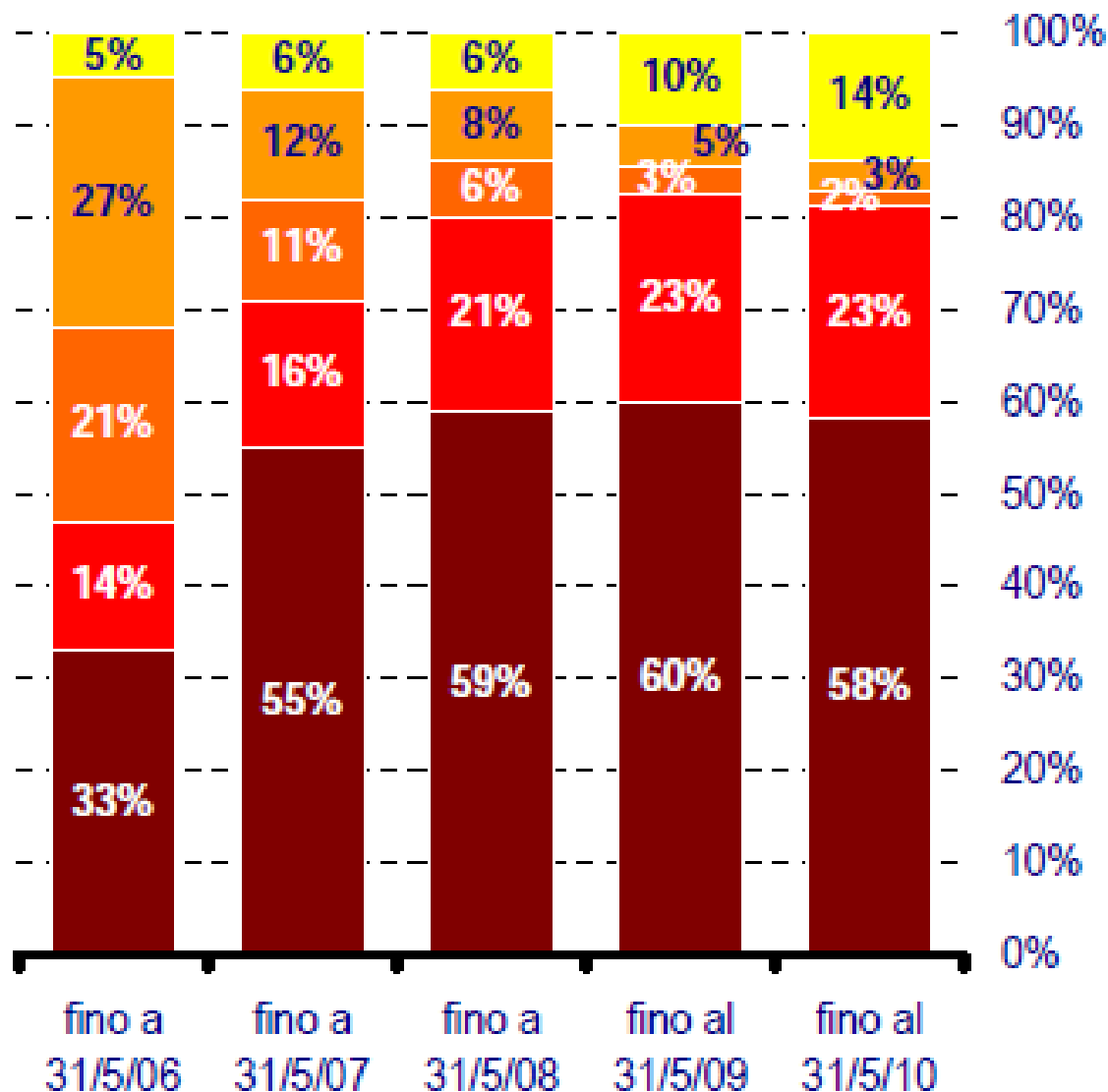
Sources:

- Energy Efficiency Obligations – The EU experience; Eoin Lees, Eoin Lees Energy, UK, 2 March 2012
- British Gas Home Energy Report 2011 – An Assessment of the drivers of Domestic Natural Gas Consumption, February 2011, Centre for Economics and Business Research Ltd

FIGURA 2.6

Evoluzione nel tempo della ripartizione tra settori d'intervento dei risparmi certificati dall'avvio del meccanismo (Fonte: elaborazione dati Autorità)

- Usi termici ed elettrici nell'industria
- Illuminazione pubblica
- Produzione e distribuzione di energia in ambito civile
- Usi termici nel settore civile
- Usi elettrici nel settore civile





- Results of the first obligation period
 - More than 65 TWh delivered at the end of the first obligation period

Référence	Intitulé de l'opération	Part des économies d'énergie certifiées
BAR-TH-06	Chaudière individuelle de type Condensation	14,6%
BAR-TH-08	Chaudière individuelle de type Basse température	11,1%
BAR-TH-07	Chaudière collective de type Condensation	10,4%
BAR-TH-29	Pompe à chaleur de type air / air	9,3%
BAR-EN-01	Isolation de combles ou de toitures	6,8%
BAR-EN-04	Fenêtre ou porte fenêtre complète avec vitrage isolant	6,4%
BAR-TH-09	Chaudière collective de type Basse température	4,0%
IND-UT-02	Système de variation électronique de vitesse sur un moteur	3,6%
BAR-TH-04	Pompe à chaleur de type air/eau	3,5%
BAR-TH-24	Chauffe-eau solaire individuel (DOM)	3,5%

Secteur	Part du résultat total
Bâtiment résidentiel	88,1%
Bâtiment tertiaire	4,4%
Industrie	6,0%
Réseaux	0,9%
Transports	0,6%

- End of march 2011, some figures :
 - 196,2 TWh delivered from the early beginning

Secteur	% kWh cumac
Bâtiment résidentiel (BAR)	83,25 %
Bâtiment tertiaire (BAT)	7,05 %
Industrie (IND)	5,96 %
Réseaux (RES)	3,52 %
Transports (TRA)	0,22 %

Sous-secteur	% kWh cumac
Enveloppe (EN)	17,03 %
Thermique (TH)	69,15 %
Équipement (EQ)	3,87 %
Services (SE)	0,48 %
Bâtiment (BA)	0,41 %
Utilités (UT)	5,54 %
Chaleur et Froid (CH)	2,56 %
Eclairage (EC)	0,97 %

Référence	Intitulé de l'opération standardisée	% kWh cumac
BAR-TH-06	Chaudière individuelle de type condensation	17,79 %
BAR-TH-08	Chaudière individuelle de type basse température	8,15 %
BAR-TH-07	Chaudière collective de type condensation	7,33 %
BAR-EN-01	Isolation de combles ou de toitures	6,13 %
BAR-TH-12	Appareil indépendant de chauffage au bois	5,70 %
BAR-TH-04	Pompe à chaleur de type air/eau	5,43 %
BAR-EN-04	Fenêtre ou porte-fenêtre complète avec vitrage isolant	5,30 %
BAR-TH-07-SE	Chaudière collective de type condensation avec contrat assurant le maintien du rendement énergétique de la chaudière	4,38 %
BAR-TH-29	Pompe à chaleur de type air/air	3,94 %
IND-UT-02	Système de variation électronique de vitesse sur un moteur asynchrone	3,51 %

- **Over-compliance**, in some cases at costs below policy makers' expectations;
- Core element: the energy saving **obligation** (absolute or proportional to sales)
 - Voluntary markets not expected to emerge;
- Focus on **end-use sectors**, coverage of electricity and natural gas, at minimum;
- Best suited to deliver **low-cost** and **standard** energy efficiency measures, often targeting **small energy users**, lowering the transaction costs and contributing to market transformation;
- Function in both **liberalised energy markets** and whereby they target **monopolistic segments**;

- Crucial importance of **measurement and verification**, strong focus on **standardised** saving values;
- **Trading** can bring added value where the targets are set sufficiently high with respect to the saving potential in the sectors covered;
- Trading may be better suited for broader systems, but even in smaller ones it reduces transaction costs;

- The white certificate systems currently in operation in Europe **differ** markedly in their basic design features. The three schemes have shown good results, **meeting or exceeding the targets**.
- UK and France have chosen to impose the obligation on **suppliers** and Italy on **distributors** (grid owners).
 - Suppliers have **strong links to the final consumer** and motivation to market value-added services and the obligations seek to transform their business model away from pure commodity sales and towards energy service sale.
 - Distributors are more **stable regulated organisations**, which are regional monopolies. With proper tariff regulation, these do **not** have the strong push to sell 'more kWh', as is in the case of suppliers.
- **Certificate trading** is taking place only in **Italy**, where projects are implemented by **ESCOs**.

- Questionable whether **trading** is a key element, it could make the scheme more cost-effective but also adds additional costs.
- There is **limited trading in France** as suppliers prefer to implement the projects themselves through agreement with equipment suppliers and installers to position themselves vis-à-vis their clients as suppliers of energy services (utilities do not offer incentives, act as “*project organizers*”).
- Certificate **trading is not a feature of the scheme in the UK** and no formal certification of attained savings takes place, due to lack of formal certification, most suppliers using the same contractors and suppliers can only trade once they meet their own energy saving targets.
- Obligated **suppliers in the UK enter in agreement with equipment suppliers** and installer to offer "standards" solutions to residential clients (not necessarily their customer base).
- Trading is a key feature of the **Italian scheme**, where distribution companies rely on other market actor to implement projects, and these are allowed to sell the certificate on the market.

- Choice of primary or final energy, measure lifetime, obliged parties, eligible measures, and M&V, and cost-recovery determine the nature of the projects (e.g. many CFLs in IT and UK, none in France; building insulation in the UK, boilers in France).
- The dominant measures in France – efficient boilers, heat pumps, insulation and window – are eligible for tax credits.
 - This 'piggy-backing' is also due to the **lack of cost-recovery** (in France residential tariffs are regulated).
 - In contrast, in the UK and Italy (two different models of implicit pass through or explicit cost recovery), obligated parties tend to **subsidise** the energy efficiency intervention (more in the UK).
 - in Italy there are also very large tax credits, so most of the measures for the residential sector are implemented because of the tax credit and not the white certificates, in Italy subsidies are only for CFLs and white goods. Different the case for industrial and street lighting sector.
- Administrative costs are a function of the simplicity of the system.

- The three schemes are dominated by **subsidy measures**, i.e. obliged parties subsidize savings measures partially or entirely (more in the UK and less in Italy – almost none in France).
- The three schemes are dominated by measures with **standardized saving factors**, especially in the residential sector (UK scheme only in the residential sector). Transaction costs for real measurement could be very high.
- It is difficult to give ‘prescriptions’ about the optimal setup concerning the **subjects under obligation**, the **sector covered**, the **eligible parties**, or **trading** rules (no trading, bilateral transactions or exchange).
- A **liquid** market – both in terms of demand and supply – would ensure realization of the economic benefits attributed to market-based instruments. Explicit **property right** and **ownership recognition** is needed with registry and transaction databases
- The **size** of the target, **lifetime** of measures, the redemption period, banking and borrowing of certificates, and the design of non-compliance penalties all have an impact on market liquidity and stability.

In general several *flexibilities* (besides trading) are given to obligated parties to meet a mandatory energy saving target cost-effectively, i.e. :

- a) eligible measures that parties can use;**
- b) the number of eligible end-use sectors that can yield energy savings;**
- c) banking provision for surplus of saved energy or white certificates;**
- d) market engagement of non-obligated parties (e.g. ESCOs)**

Ambitious but reachable targets can trigger a more dynamic usage of all flexibilities by eligible parties and thus active behaviour in TWC markets.

We should not forget that what really matters in target-and-trade schemes is the “target” as such.

Analysis and performance of TWC schemes is quite country- or context-specific.

For well functioning suppliers obligations and white certificates schemes, it is an absolutely prerequisite that all market actors are well informed about their operation and development.

Measures to reduce the administrative burden for both the authorities and eligible actors (e.g., clear and simple institutional framework, ex-ante M&V approach) without hampering the integrity of TWC schemes are needed.

Trading is certainly an inherent and relevant component that could add efficiency, but it is not an objective *per se* in TWC schemes.

Comparative assessments and possible integration/interaction with other energy policy instruments need further investigation.

Ambitious, gradual and realistic energy saving targets are fundamental for TWC schemes to outperform other energy policy instruments.

- Supplier obligations and white certificates are one possible policy tool
 - Combine a project implementation mandate with financing channel;
- Performance depends on design choices and status of energy markets.

Thank you!

We welcome comments

For more information!

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