# European Experience on Tradable Certificates for Energy Savings (White Certificates)

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# Introduction

- Market-based instruments (MBIs) are public policies which make use of market mechanisms 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. $CO_2$, $SO_2$, $No_x$ 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).

# Policy drivers in Europe



- Bringing **sustainability** to the energy sector:
  - EU Energy Efficiency Target: by 2020 the EU should save at least 20 % of its energy consumption in a cost-effective manner;
  - The Directive on Energy End-Use Efficiency and Energy Services: a target of 9% over 9 years; the Directive mentions White Certificates and leaves the option of the Commission to later on recommend introduction.
  - In 2005 the EU ETS has started.

- 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.

# Liberalization and EE



- A possible market-based policy portfolio oriented towards end-use energy efficiency could comprise **energy-savings quota** for some category of operators (distributors, suppliers, consumers, etc.).
- The quota is achieved by **saving** associated to energy efficiency **projects**.
- The savings would be verified by the regulator and **certified by means of the so-called "white" certificates** (tradable certificates for energy savings);
- The savings or the certificates or the quota could be **traded**;

# Key features



Five key elements of white certificates schemes:

- the creation and framing of the demand (government set the overall target and its apportioning).
- the tradable instrument (certificate) and the rules for issuing and trading,
- Institutional infrastructure and processes (such as measurement and verification) to support the scheme.
- the cost recovery mechanism, in some cases.
- A system of sanctions in the case of non compliance

# European Schemes



- **Great Britain** has a variation of this policy mix scheme since 2002, without trading;

- Tradable certificates have been introduced in **Italy** (in 2005), and since July 2006, in **France**.

- *Poland* has announced in its NEEAP the implementation of a white certificate system in 2009. In *Flanders* (region of Belgium) and in *Ireland* there are savings obligations imposed on electricity distributors without certificate trading option; saving obligations on electricity, gas and heat distributors in *Denmark*.

# Nature of tradable certificates



- 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).

- In principle white certificates can also be established for a **voluntary market** (this is happening in the US).

# Key Issues with ESC (1)



- An ESC is both a tradable **commodity that carries a property right** (one owner at the time till redemption), and also an **accounting tool**, which can be used for any type of EE programme or project verification (e.g. tax credits, or EE financing mechanism, ESCO investor client relation). Therefore there could be some interest for ESC also to monitor other policies in addition to the one based on obligations for distributors or suppliers.

- **Administrative and transaction costs** have been indicated as possible drawback for ESC schemes compared to other policy instruments. Administration costs could be very high both on the public institutions (e.g. set up the scheme, monitoring and verification, issuing of certificates, tracking of certificates, running the certificate market, etc.). Transaction costs for project implementers can have a high fixed or constant component regardless the size of the project and, depending on the size and nature of projects, can exceed 40% of total investment cost (Mundaca and Neji 2007).

# Key Issues with ESC (2)



- Are **utilities** the best organisations to deliver energy efficiency ? (according to the ESD this is now an obligations). It can be argued that other actors (e.g. ESCOs, equipment suppliers, retailers) could be better placed to deliver energy efficiency to the final users, therefore an ESC scheme open to other actors could be more cost-effective and effective.

- Are ESCs driving towards the lower cost energy saving options? How to incentivise specific technologies and long payback projects.

- **Trading or no trading**: the size of the market, the number of actors involved, and the role that utilities would like to play (in house energy efficiency or outsourcing the expertise) determine the benefits of trading (reduction of overall costs). For example in France, EDF and Gas de France, the two utilities with the largest targets, tend to implement project by themselves to position the companies as energy service providers, while in Italy the majority of ESCs are delivered to ESCOs (and one of the aim was also to develop an ESCO market)

# Key Issues with ESC (3)



- On which **actors** should the obligations be placed? From a practical points of view final users tend to be excluded. It can be argued whether it would be more appropriate to set the obligations on distribution companies (more stable, and less interested in energy sales) as in Italy or on retail companies (more dependent on sales, but closer to the clients, could also be less stable than distribution companies) as in France and UK.

- Linked to the above point is the issue of **cost recovery**: normally distribution companies are regulated companies, and their tariff are regulated, in this case a small wire charge could be used to pay the costs these companies incur to implement ESC up to their saving target (either a fix cost recovery as in Italy or based on the real cost of the ESC). Suppliers are usually outside the regulated tariffs and so free to charge their customers for the energy efficiency projects.

- Another very important issue not much debated is the initial **ownership of the ESC**, which should be with the initiator of the project. For example association of end-users, representing end-user that have implemented EE projects could receive the ESC, or retailers/manufacturers offering rebates for EE products (what should be the size of rebate? I suggest that the end-user should be involved.

# International integration of ESC (1)



- We have three national schemes, covering national markets with very different rules, aims, measurement methods.
- An international scheme would raise the issue of equity - citizens in country paying for efficiency projects taking place in another country and benefitting other citizen. If the overall aim of ESC is to reduce CO2 this issue could be overcome as CO2 is a global problem, and EE project in certain countries may cost less. The equity issue is not present in the EU ETS where CDM and JI are possible.
- One possibility would be to allow a small share of “foreign ESCs” to enter a national scheme, in few selected project types
- A possible solution could be to create a voluntary international market for ESCs as it exist for RECs; these ESCs could be used for carbon offset or part of the voluntary carbon market (still EE is not trusted as a major CO2 emission reduction, and there is the risk of double pay for an EE project).

# Issues for international harmonization (1)



Baselines:

- 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 installed stock;
- Building stock or equipment stock (e.g. in insulation measures in France);

# Issues for international harmonization (2)



## 3 M&V approaches:

- deemed savings approach with default factors for free riding, delivery mechanism and persistence: no on-field measurements required;
- engineering approach, 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);

# **Projects**:

- Sectors: residential, commercial, industry (including ETS), transportation.
- Energy sources: electricity, gas, heating oil, transport fuels, district heating and cooling.
- Technologies: appliances, boilers, insulation, lighting motors, vehicles, CHP, etc.

## **Size of certificate**:

- The ESC can be based on final or primary energy.
- The ESC can include the annual savings, the life time saving (discounted or not?), or the saving under the life of the ESC scheme (e.g. five years)
- Size and denomination of the ESC (MWh, Toe, Carbon, etc.)

# Conclusions



- The white certificate systems currently in operation in Europe differ markedly in their basic design features. The UK and Italian scheme have shown good results.

- There is the need to harmonise many key characteristic such as the M&V, lifetime, eligible projects, and technologies, across the EU before white certificates can be introduced on a wider basis.

- A first step could be set up an international **voluntary** certificates market, the main issue here is to create credibility for EE savings, and demand (carbon market). For the mandatory market (compliance) there are major obstacles, such as the different aims of the schemes (CO2, security of supply, national competitiveness, etc.), the equity issue, the national EE and ES targets (would foreign ESC count toward the ESD target?), etc. An initial suggestion would be to allow a small share of the national target (or the individual company level target) to be met by foreign ESCs.

# Thank you!

**We welcome comments**

**For more information!**

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# First Results in France



- By the end of Februray 2008, 220 certificates have been delivered to 58 beneficiaries, corresponding to 14,0 TWh (with 4,5 TWh in the last months). 13,9 TWh resulting from standardised measures and 92 GWh via specific projects
- The certified savings are divided as follows:
  - Residential buildings (95.4%)
  - Commercial buildings (2.0%)
  - Industry (1.8%)
  - Networks (0.6%)
  - Transport (0.3%)

# First Results in France



The 10 standardised projects more frequently implemented are:

| Référence | Intitulé de l'opération standardisée | % kWh |
|---|---|---|
| BAR-TH-06 | Chaudière individuelle de type Condensation | 20,7% |
| BAR-TH-08 | Chaudière individuelle de type Basse température | 15,9% |
| BAR-EN-04 | Fenêtre ou porte fenêtre complète avec vitrage isolant | 8,3% |
| BAR-TH-29 | Pompe à chaleur de type air / air | 7,3% |
| BAR-EN-01 | Isolation de combles ou de toitures | 7,0% |
| BAR-TH-07 | Chaudière collective de type Condensation | 6,4% |
| BAR-TH-24 | Chauffe-eau solaire individuel (DOM) | 5,9% |
| BAR-TH-04 | Pompe à chaleur de type air/ eau | 3,7% |
| BAR-EN-02 | Isolation des murs | 2,9% |
| BAR-EQ-01 | Lampe fluo-compacte de classe A | 2,8% |