Climate Protection Through Energy Efficiency in the EU and Germany
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White Certificates in Italy

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This is not an official document of the Italian Regulatory Authority for Electricity and Gas
A market-based instrument

- **Command and Control component:** End-use Energy Efficiency Obligation placed on electricity and natural gas DSOs

- **Four options to comply with the EEO:**
  1. develop own energy saving projects on final consumers
  2. develop energy saving projects on final consumers jointly with third parties
  3. **buy white certificates (or energy efficiency certificates – EECs)** attesting that a certain amount of energy has been saved by a third party via energy saving actions on final consumers ➔ **Market-Based component**
  4. do nothing and pay the sanction for non compliance

- **Rationale for trading (market-based component):** the possibility to trade certificates will guarantee, at least in principle, that **savings will occur where it is more economic:**
  - parties with relatively high marginal costs of saving energy will be able to buy certificates from parties capable to realize savings at relatively lower marginal costs;
  - the overall cost of meeting a certain target should thus be minimized
Major steps of the scheme

- **Legislative framework introduced in 2001** (EEO on distributors in 1999 and 2000)
- **Regulatory framework developed throughout 2002-2004** via consultation of all interested parties
- **Limited revision of the legislative framework in 2004**
- **Fully operational since January 2005**
- **Extended and revised in late 2007**
“Model of Governance”

◆ **Government:**
  - targets
  - **obliged parties** (including apportionment rules)
  - eligible parties
  - eligible measures
  - some M&V rules, i.e.: *ex-post* accreditation for a conventional lifetime
  - trading ‘routes’
  - **enforcement mechanism:** general criteria for setting the penalty, grace period
  - **cost-recovery:** general principle(s)
  - **responsibilities** regarding the definition of the implementing regulation, the administration of the system, the monitoring of results
“Model of Governance”/2

◆ Regulator (AEEG):

- technical rules for projects design, development and evaluation
- technical rules for the issuing of EECs (e.g. how may types, unit, lifetime)
- technical rules for the functioning of the EECs market (jointly with the Electricity Market Operator)
- definition of sanctions for non compliance
- criteria and rules for cost-recovery
- day to day administration, e.g. project evaluation and certification of energy savings; annual compliance check with the targets and EECs redemption
- monitoring of results and proposals to the Government: publishes an Annual Report and two Interim Reports on the results delivered by the mechanism with proposals to improve its effectiveness
The Demand Side
The targets
( primary energy )

Source: AEEG
The Obliged Actors

◆ Obliged actors (in year t)
  ➢ electricity and natural gas distributors (> 50,000 customers as of 31 December of the year t-2)

  (> 100,000 customers as of 31 December 2001 for the first three years of implementation)

◆ Apportionment rule:
  ➢ relative market share
    (total market in the first three years of implementation)
  ➢ automatic adjustment mechanism in case of supply surplus > 5%
The Supply Side
Eligible Projects and Eligible Actors

◆ Eligible projects
  - all end-use sectors (plus PV > 20 kW)
  - only “hard” measures
  - early actions (2001-2004)

◆ Banded obligation (50% constraint) (in the first three years of implementation)

◆ Projects can be implemented by
  - electricity and natural gas distributors
  - companies controlled by electricity and natural gas distributors
  - energy service providers (including ESCOs)
  - big energy end-users (“with energy manager”)
Measurement and Verification (M&V)

What is “special” about M&V of energy savings?

- You can not measure energy savings at the meter
- You have to measure the energy savings via a comparison of the energy consumption before and after the project
- In some cases the “before the project” scenario is not known (data, new installations) and you need to make assumptions (“project baseline”; cf. following slide)
- In other cases the “before the project” scenario is known, but you need to net out the impact on consumption trends of variables other than those on which the energy saving project have an influence
- In other cases measuring everything is not cost-effective
3 types of M&V methods:

1) **deemed** savings (no on-field measurement)
2) engineering **estimates** (partial on-field measurement)
3) energy **monitoring** plans (subject to pre-approval)

Market Transformation measures (e.g. information campaigns, training programs) are eligible only if they are associated to “hard” measures

- provided they meet specific qualification requirements they entitle the hard measure to a “premium” on the amount of certified energy savings

Only additional savings are considered, i.e. over and above spontaneous market trends and/or legislative requirements

Deemed savings and engineering methods developed also with the technical support of external consultants

*Ex-post accreditation of annual savings* + conventional year lifetime of 5/8 years (relative stringency of the EEO when comparing with other countries experiences)
The trading mechanism

- Trading is a central element
- No authorisation needed
- Spot market trading plus OTC
- Electronic EECs Registry directly linked with the AEEG information system for administering projects evaluation
- Electronic trading platform (one session per week)
- Specific market rules and procedures to guarantee access, transparency, security of market deals both for sellers and for buyers, market liquidity
The enforcement mechanism

- Penalties for non-compliance defined by AEEG
- No pre-defined unit penalty; case-by-case assessment on the basis of general criteria
- Minimum overall penalty: 25,000 euro
- Maximum overall penalty: 155 Meuro
- Grace period: one year if non-compliance < 40%
The cost-recovery mechanism

- Costs born by distributors may be recovered via electricity and gas tariffs according to criteria and mechanisms defined by AEEG:
  - obliged distributors, up to the target
  - including purchasing of EECs from third parties
  - no pass-through but standard allowed cost (efficiency goal)
  - €/unit of primary energy saved ⇒ flat and technology-neutral (efficiency goal)
  - except transport uses
  - updated on an annual basis according to a pre-defined formula (inversely linked to past trends in energy prices=avoided energy costs)
**A user friendly system**

**Autorità per l'energia elettrica e il gas**

**Sistema Efficienza Energetica**

- **A) Request submissions**
- **B) Check requests status**
- **C) Questions**

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**Benvenuto Cariat Roberto (Utenza di test Autorita per l'energia)**

<table>
<thead>
<tr>
<th>Dati anagrafici</th>
<th>• Visualizza e modifica i dati archiviati</th>
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</thead>
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| Inoltro di nuove richieste | • Richiesta di verifica preliminare di conformità alle Linee guida  
• Proposta di progetto e di programma di misura  
• Richiesta di verifica e certificazione risparmi |
| Richieste Presentate | • Visualizza e stampa il contenuto delle richieste già presentate e verificane lo stato di avanzamento |
| Altro | • Invia segnalazione all'Autorità  
• Cambia password |
A user friendly system/2

**Informazioni quantitative sull’intervento**

<table>
<thead>
<tr>
<th>Zona climatica - Destinazione d’uso dell’edificio</th>
<th>Impianto di riscaldamento alimentato a</th>
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<tbody>
<tr>
<td>A, B Abitazioni</td>
<td>gas</td>
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Seleziona il valore dei parametri da utilizzare per il calcolo e premi il tasto "Aggiungi" per inserire una nuova combinazione.

Si ricorda che per la richiesta in oggetto il periodo di riferimento su cui vengono calcolati i risparmi indicati nel seguito è pari ad un semestre.

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<tbody>
<tr>
<td>Superficie di vetro sostituita [m²]</td>
<td>Zona climatica - Destinazione d’uso dell’edificio</td>
<td>Impianto di riscaldamento alimentato a</td>
<td>Risparmio Specifico lordo annuo [tep/anno/m²]</td>
<td>Coefficiente</td>
<td>Risparmio netto conseguito [tep]</td>
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| 30000 | A, B Abitazioni | gas | .002 | 100% | 30 |

Calcola Tutti

3.7 Risparmio totale netto conseguito [tep] 30

3.8 Eventuale risparmio addizionale riconosciuto per campagna di supporto [tep] 1.5

3.9 Risparmio totale netto di cui si richiede la verifica e certificazione [tep] 32

Source: AEEG
Results achieved
Period 2005-2008

◆ 3.7 million toe saved against a target of 3.3 million toe:

- 77% electricity savings; 19% natural gas savings; 4% other fuels savings (cf. following slide)
- 90% of savings delivered via projects for which simplified M&V methodologies exists (mostly deemed savings)
- 80% of savings delivered by energy service providers (including ESCOs)
- significant trading, with an increasing share on the spot market (transparency)

Source: AEEG
Breakdown of certified energy savings:

- It has gradually promoted the entrance into the energy services market of new actors
- It has gradually promoted the development of new forms of collaboration between different market actors
- It has promoted a growing number of information campaigns and training programs

Source: AEEG
Avoided energy costs for participating customers

Value of saved energy for domestic users (taxes included)

- Gas oil for heating
- Natural gas (average national tariff)
- Electricity (for an average consumption of 2700 kWh/yr)

*cf. tariff contribution = 100 euro/toe*

and market prices always below this value

⇒ large “private” economic gains

Source: AEEG
Market prices

Extention of the scope for the tariff contribution
Proposal to extend the tariff contribution to other forms of energy

From banded to un-banded EEO

Source: AEEG
**Conclusions and lessons learned/1**

- **It is working** in delivering energy savings, in a cost effective way, mainly via “mass market” measures and technologies that are already cost-effective, and via energy service providers (including but not limited to ESCOs)

- **Major regulatory challenges:**
  - criteria and rules for **M&V of energy savings**
  - criteria and rules for **cost-recovery** (flat and technology neutral versus differentiated)
  - definition of **sanctions** for non compliance (pre-defined versus determined *ex-post* on a case by case-basis)

- **If you go for a market-based instrument, then leave the market work**

- **Regulation needs to look for a balance** between apparently conflicting goals e.g.:
  - exploiting the **ECONOMIC EFFICIENCY** potential of a MBI calls for
    - **DIVERSITY** of technological and cost options via a **BROAD SCOPE** (eligible measures and parties) but a broad scope inevitably entails **HIGHER ADMINISTRATION COSTS** (e.g. limits the scope for robust simplified M&V approaches)
    - **NO REGULATORY ACTION LIKELY TO INTERFERE WITH THE MARKET** e.g. technology neutral tariff contribution + no predefined penalty, but this could lead to **RISK OF WINDFALL PROFITS (AVERAGE COST), SPECULATIVE BEHAVIOUR AND MARKET TURBULENCE**
  - **ROBUST M&V RULES** inevitably means **HIGHER ADMINISTRATION COSTS** ➔ trade-off between economic efficiency and accuracy?
Conclusions and lessons learned/2

- **Importance of the market component**: price signals key to highlight market disequilibrium and the need for corrective legislative and regulatory measures ➔ need to increase market transparency

- **Model of governance**: split the day-to-day administration and the updating of the technical regulation (deemed savings) with a technical agency in charge of the former and the Regulator/Government focusing on general technical rules, economic regulation and monitoring

- **Not a panacea ➔ need for**:
  - complementary, structural initiatives to facilitate consumers access to information as well as to credit
  - complementary policy tools such as energy labels and minimum energy efficiency requirements
  - market studies and statistics to help identify and monitor the technological baseline and to give incentives where they are more needed

- **Do not work in a vacuum ➔ need for policy coordination in order to avoid over-incentives and alteration of market forces**
References

In Italian:
◆ www.autorita.energia.it/ee/index.htm (including the first three Annual Report on the White Certificates Mechanism)

In English:
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