Energy Efficiency Policy for End-Users

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The experience of the Italian Regulatory Authority for Electricity and Gas with Tradable White Certificates

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The Regulatory Authority for Electricity and Gas (1)

- **Established** in November, 1995 and fully **operational** since April 1997
- **Independent** entity
- **Works with full autonomy and independence of judgement** within the general policy guidelines laid down by the Government and the Parliament and in due account of relevant EU legislation
- **Presents and Annual Report** to the Parliament and the Prime Minister on its activities and on the state of electricity and gas services
- **The decision-making process includes full consultation with stakeholders** (e.g. market operators, consumers and environmental associations)
- **Appeals against Authority's decisions** can de lodged with the regional Administrative Court of the Lombardy Region
- **Funded through** annual contributions paid by the service providers

The Regulatory Authority for Electricity and Gas (2)

- Guarantees the **promotion of competition and efficiency** and ensures **adequate quality standards** in the electricity and gas sector.
- **Major activity fields:**
  - Tariff setting
  - Definition of service quality standards
  - Definition of technical and economic conditions for access and interconnection to the networks
  - Advice on market structure and promotion of competition
  - Settlement of disputes and complaints
  - (since 2001) Definition of technical and economic regulation, administration, monitoring and enforcement of the **White Certificates Mechanism for the promotion of end-sue energy efficiency**

The Italian White Certificates Scheme

Major steps of the scheme

- **First operational tradable certificates scheme specifically focused on end-use energy efficiency to be designed and implemented world-wide**
  - cf. following slide
- **Legislative framework introduced in 2001; regulatory framework developed throughout 2002-2004 via consultation of all interested parties (plus revision of the legislative framework); fully operational since January 2005; extended and revised in December 2007**
- **Definition of technical and economic rules + administration + monitoring and enforcement of the whole mechanism under the Regulator's (AEEG) responsibility**

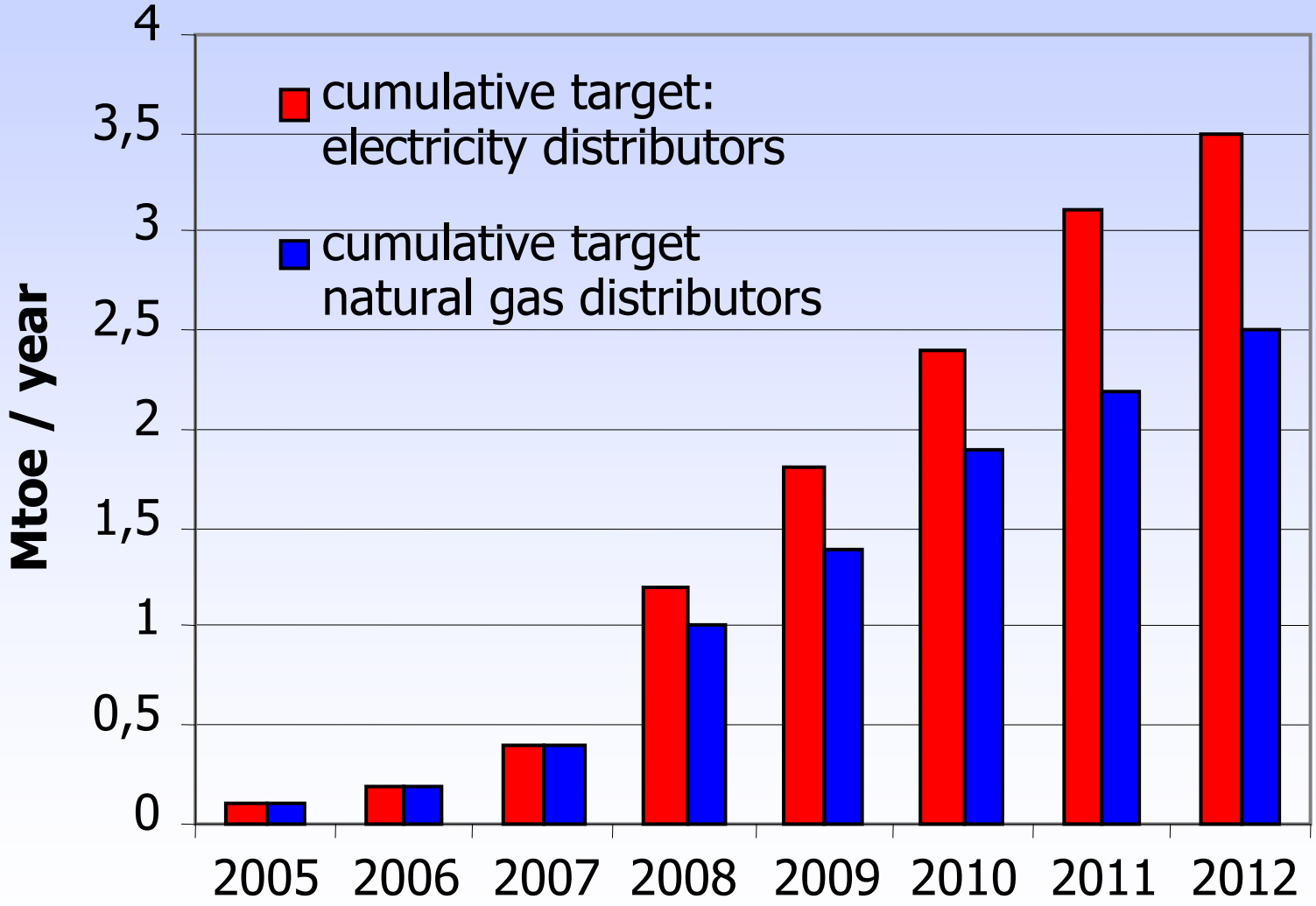
End-Use Energy Efficiency Obligations in the EU

Design Feature	UK	France	Italy
Energy efficiency metric	Carbon	Delivered energy	Primary energy
Obligation period	3 year	3 year	1 year
Policy scope	Households only	Non-EUETS	All end-uses
Obligation holder	Energy supplier	Energy supplier	Energy distributor
Main delivery agents	Energy suppliers	Energy suppliers	Energy service companies
Price regulation	None	To be defined	Distribution charge
Trading actors	Energy suppliers only	Energy suppliers, public sector and businesses	Any

The basic structure and key features

- **Demand driver: annual primary energy saving targets on (major) electricity and natural gas distributors; 2005-2009 + 2010-2012**
- **Supply-side: fully open-ended; only "hard" measures; early actions; eligible parties include "energy service providers" and companies controlled by DNO; strong "additionality rule"**
- **Ex-post accreditation of annual savings + conventional average 5 year lifetime; ➔ relative stringency of the targets when comparing with other countries experiences**
- **Trading: central element; no authorisation needed; spot market + OTC; specific rules and procedures to guarantee transparency and positive conclusion of deals**
- **Cost-recovery mechanism: no "pass-through" but standard allowed cost (technology-neutral)**

The targets


Mtoe / year
4
3,5
3
2,5
2
1,5
1
0,5
0
cumulative target: electricity distributors
cumulative target natural gas distributors
2005
2006
2007
2008
2009
2010
2011
2012

“Model of Governance”

- **Government:**
  - **targets**
  - **obliged parties**
  - **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

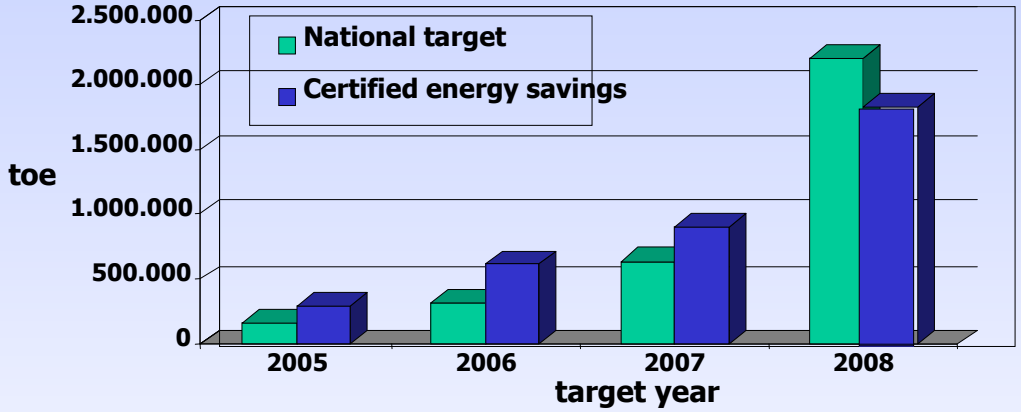
Regulator (AEEG):

- 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)
- criteria and rules for **cost-recovery**
- definition of **sanctions** for non compliance
- 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* on the results delivered by the mechanism with proposals to improve its effectiveness

Results achieved

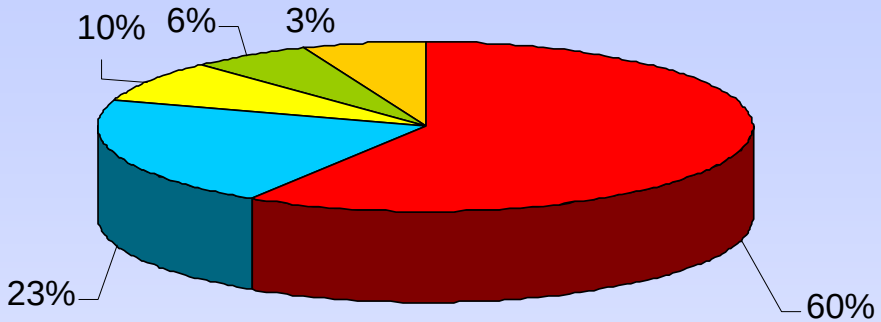
Period 2005-2008

- **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)**

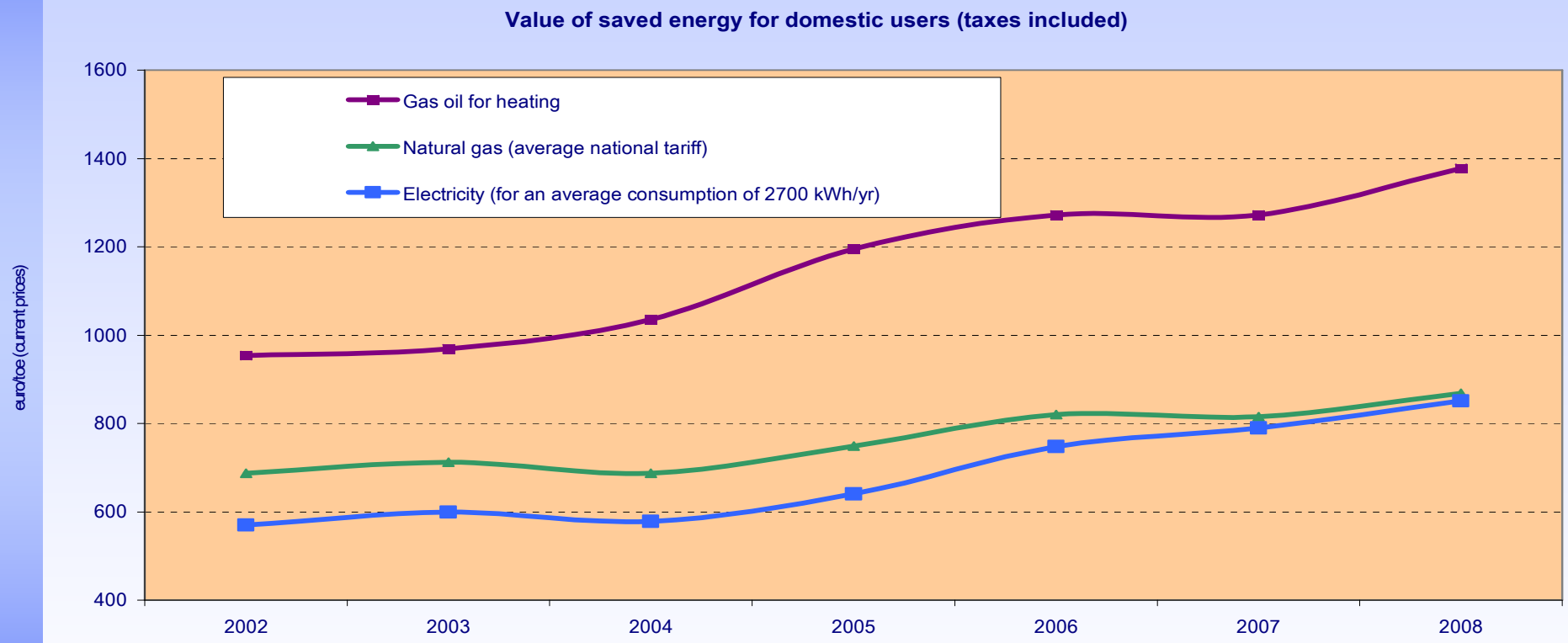
- **Breakdown of certified energy savings:**



Electricity uses in the household sector
Fuel savings for heating purposes in the residential se
Industrial uses
Public lighting
CHP and disctrict heating for domestic uses

- 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**

Avoided energy costs for participating customers



cf. tariff contribution = 100 euro/toe

➔ large "private" economic gains

Major Regulatory Challenges and Criteria

Challenges and general criteria

- **Major regulatory challenges:**
  - criteria and rules for the **measurement and verification of energy savings – M&V**
  - criteria and rules for **cost-recovery**
  - definition of **sanctions** for non compliance
  - **possible trade-offs**

Possible regulatory trade-offs (1)

1) Exploiting the **economic efficiency potential of a MBI**

ASKS FOR

Diversity of technological and cost options ➔ a **broad scope** (eligible measures and parties)

BUT

A broad scope inevitably entails **high(er) administration costs** (e.g. limits the scope for robust simplified M&V approaches)

➔ **Trade-off between economic efficiency and accuracy/robustness?**

Possible regulatory trade-offs (2)

2) Robust M&V rules

INEVITABLY MEANS

High(er) administration costs

➔ Trade-off between economic efficiency and accuracy/robustness?

Possible regulatory trade-offs (3)

3) Exploiting the **economic efficiency potential of a MBI**

ASKS FOR

No regulatory action likely to interfere with the market, e.g.:

- flat (i.e. technology-neutral) tariff contribution
- no pre-determined penalty

BUT THIS COULD LEAD TO:

- risk of windfall profits (average cost)
- risk of speculative behaviours and market turbulence

AEEG approach to M&V (1)

- **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

AEEG approach to M&V (2)

- **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)

project/M&V complexity

- **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

Conclusions

- **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 mut not limited to ESCOs)**
- **Basic design choices are key in determining outcomes, regulatory challenges and trade-offs**
- **Regulation needs to look for a balance between apparently conflicting goals (e.g.: economic efficiency, simplicity, low transaction costs, robustness of energy savings/"efficiency integrity")**
- **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

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WEB Site: http://www.autorita.energia.it/ee/index.htm (in Italian)

References

In Italian:

- **www.autorita.energia.it/ee/index.htm (including the first three *Annual Report on the White Certificates Mechanism*)**

In English:

- **Pavan M. (2008) – *Tradable energy efficiency certificates: the Italian experience*, in Energy Efficiency (2008) I: 257-266, Springer Ed.**
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