The Italian experience
White certificates in electricity and gas
A regulatory view

Arturo Lorenzoni

Bocconi University, Milan

2008 BP MADRID FORUM ON ENERGY & SUSTAINABILITY

April 16, 2008

Structure of the talk

- Legislative outline
- The targets adopted
- Description of the mechanism
- The results achieved so far
- Strength and weakness of the Italian mechanism

Legislative background

ß The Decree for the implementation of the EU Directives 96/92/EC and 98/30/EC (decree 79/1999 and 164/2000) first introduced measures to increase energy efficiency in relation to the concession to electricity and gas distributors respectively

ß A first attempt to make operational the obligation on distributors failed in 2001, as the decree to make effective the market was never issued

ß In July 2004 (twin decrees July 20, 2004, DM2004) the market for Tradable White Certificates (TWC) was designed, shifting the obligation to the year 2005

ß The market was defined by some “Delibera” from the Autorità per l’Energia Elettrica ed il Gas (AEEG), (200/04, 213/04, …)

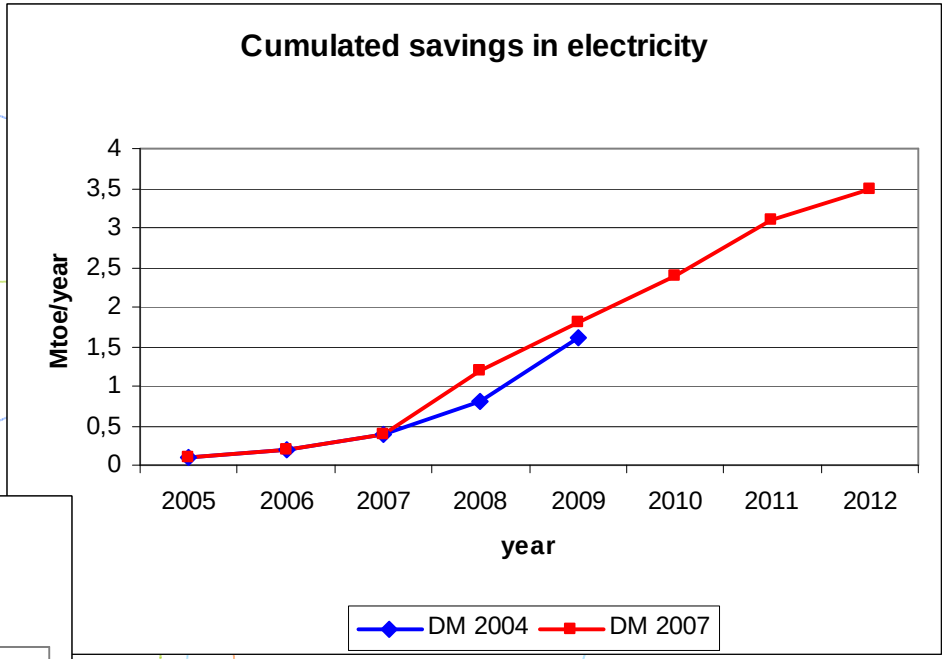
ß An increasing target was set for the years 2005 – 2009, for cumulated 2,9 Mtoe in electricity and gas

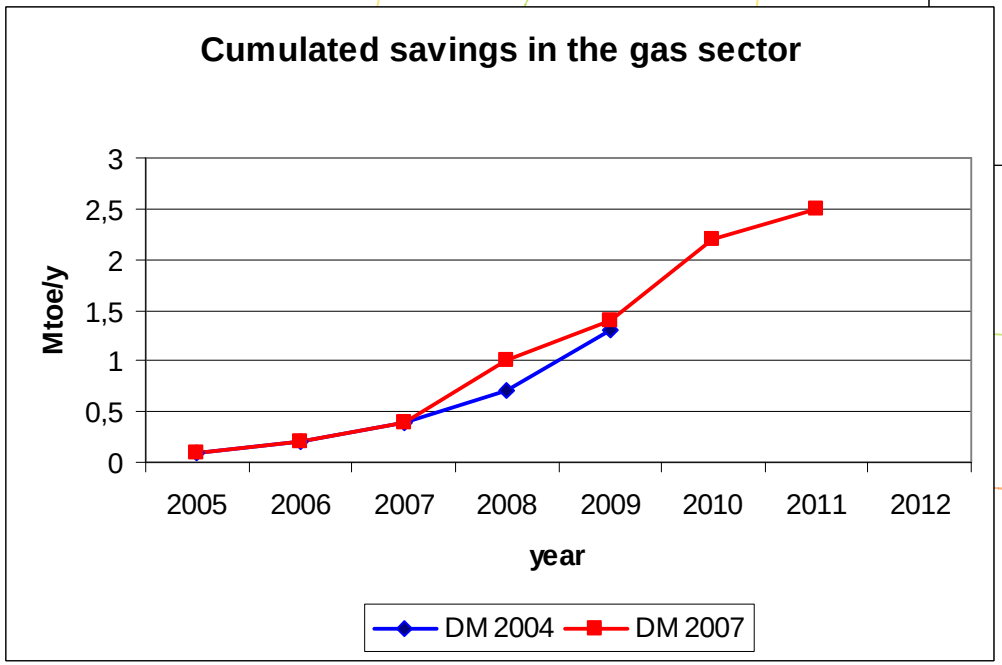
ß In the first year of obligation, the savings achieved in the 4 years 2001 – 04 were eligible for the release of TWC

ß The framework has been partially redesigned by the decree December 21, 2007 (DM2007) and the consequent AEEG deliberations 344/2007, 345/07, EEN1/08

The targets of the TWC programme

As a consequence of the oversupply in 2006-2008, the obligation for these years has been updated and higher targets have been given for 2010-12





From 2008, in case of oversupply by ESCos exceeding 5% on the target of one year, the target in the following year is automatically increased for the same amount

In case of discontinuity of the market after 2012, AEEG will purchase the TWC for the remaining years of validity (if issued after 2008).

How the overall target is assigned among distributors

- At the start of the market only the distributors supplying more than 100.000 customers (at 31/12/2001) were charged with the obligation
- In December 2007 the threshold was moved to distributing companies with 50.000 customers (in year t – 2)
- The overall target is divided according to the following criteria:

$$R_{i,t} = R_{tot,t} * \frac{E_{i,t-2}}{E_{tot,t-2}}$$

Where:

Ri,t **is the saving that the distributor i has to achieve in year** ***t*****;**

Rtot,t **is the national target of savings in year** ***t*****;**

Ei, t-2 **is the energy distributed by utility** ***i*** **in year** ***t-2*****;**

Etot, t-2 **is the total energy distributed in year** ***t-2*** **by the distributors with more than 50.000 users connected.**

TWC and energy sources

There are three types of TWC:

- type I**, related to measures that reduce the final use of *electricity*;**
- type II**, related to measures that reduce the final use of *natural gas*;**
- type III**, related to savings of *other fuels.***

Until 2007 distributors had to cover at least 50% of their obligation with TWCs related to their sector. This constraint has been removed by DM2007

Issue and trade of TWCs

The energy savings to gain TWCs have to be achieved with demand side measures and can be done by:

- **Electricity and gas distributors;**
- **Companies controlled by them;**
- **Energy Service COmpanies (ESCO);**
- **Public administrations or companies with an Energy Manager (above a threshold (DM2007)).**

The investments have to be certified by the regulator AEEG, that issues the TWCs for 5 years (8 years for some measures in the building sector).

The distributors have to present to AEEG an amount of TWC equal to their annual obligation.

They can bank the TWC and use them in each of the 5 years of validity.

TWC can be traded on a specific market created by GME (www.mercatoelettrico.org)

How energy savings are evaluated

AEEG with the deliberations 103/03 and 200/04 defined the guidelines for the evaluation and certification of energy saving measures.

There are three different kinds of savings' acknowledgment:

- **standard evaluation, for simple and replicable actions;**
- **analytic evaluation, for actions whose savings have to be calculated on the base of known parameters;**
- **custom evaluation, for special projects.**

Standard and analytic actions are regulated by technical evaluation forms prepared by the regulator AEEG.

There is a minimum dimension of projects in terms of energy saved per year

There is clearly a trade off between the needs to keep transaction costs low and to have savings properly accounted and certified

The guidelines definition is a dynamic process constantly under revision

Cost recovery

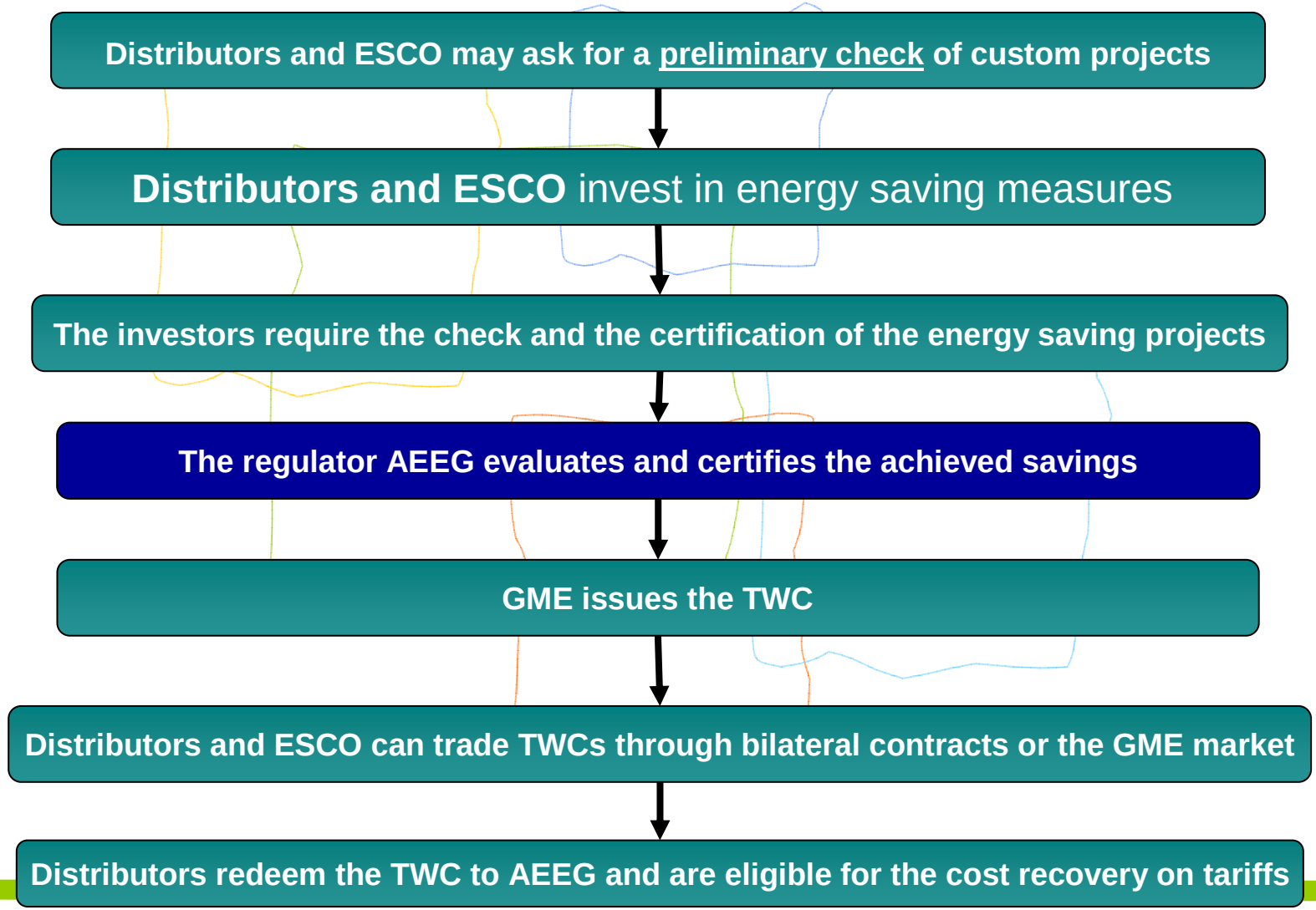
- **Whenever an investment grants a reduction of primary energy consumption (always for the TWCof type I and II issue), a cost recovery is accomplished.**
- **DM2004 and the deliberations 05/04 e 170/04 gave the possibility to recover the costs for the investment in the distribution tariff with a standard amount of 100 € per saved toe (i.e. 22 €/MWh (18 after DM2007) or 82 €/km^3)**
- **The cost incurred to purchase TWCs is lower than the income in tariff**
- **The idea is that in any case the benefit for consumers stands well above the cost paid in the tariff**
- **DM2007 requires an update of the rule from 2009: the recovery should be linked to the average price of TWC traded in the previous year**

Gas electricity and penalties for non fulfilment

- Under DM 2004 at least 50% of the obligation had to be fulfilled with TWC referred to the energy source that was distributed by the utility,
- DM2004 foresaw penalties based on a rolling benchmark: a distributor had a penalty
  - achieving less than 50% of its obligation or
  - being below the ratio between the issued TWC and the overall obligation

  This approach was not applicable for administrative reasons as it was "proportional and in any case greater than investments needed to compensate the non-compliance"
- The DM 2007 gives no constraints and the distributors can choose the preferred type of TWC. This has been done to reduce the price gap between gas and electricity sectors
- A distributor achieving at least 60% of its target can compensate in the following year without any fine
- The distributor that will not meet 60% of its target will be fined
- Price and quantity of the TWC traded on the market have to be communicated to AEEG, that makes this information public

How the TWC release works



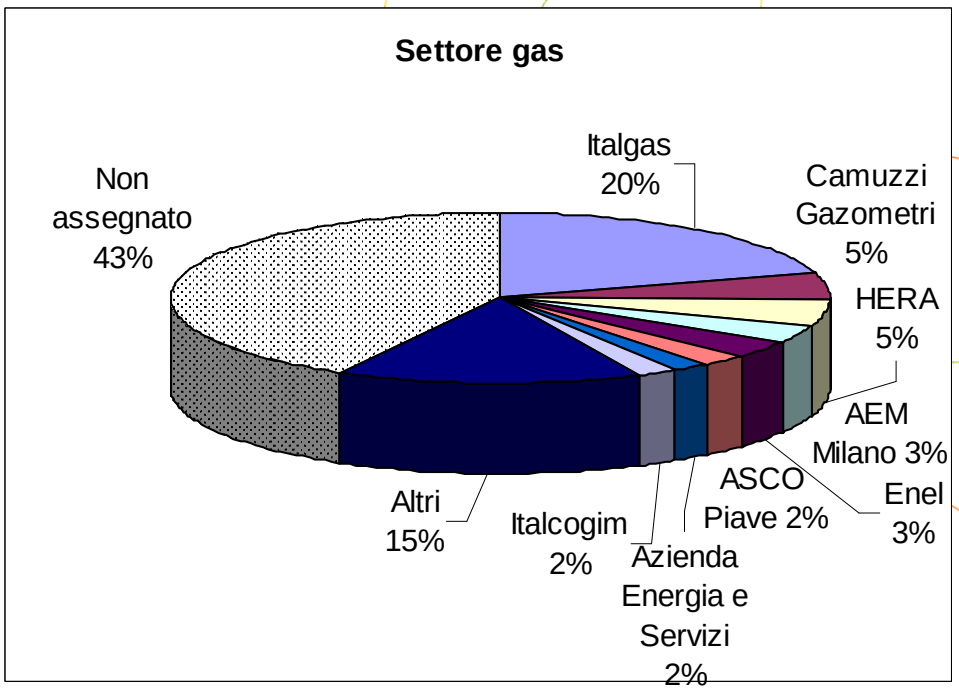
Regulator's duties

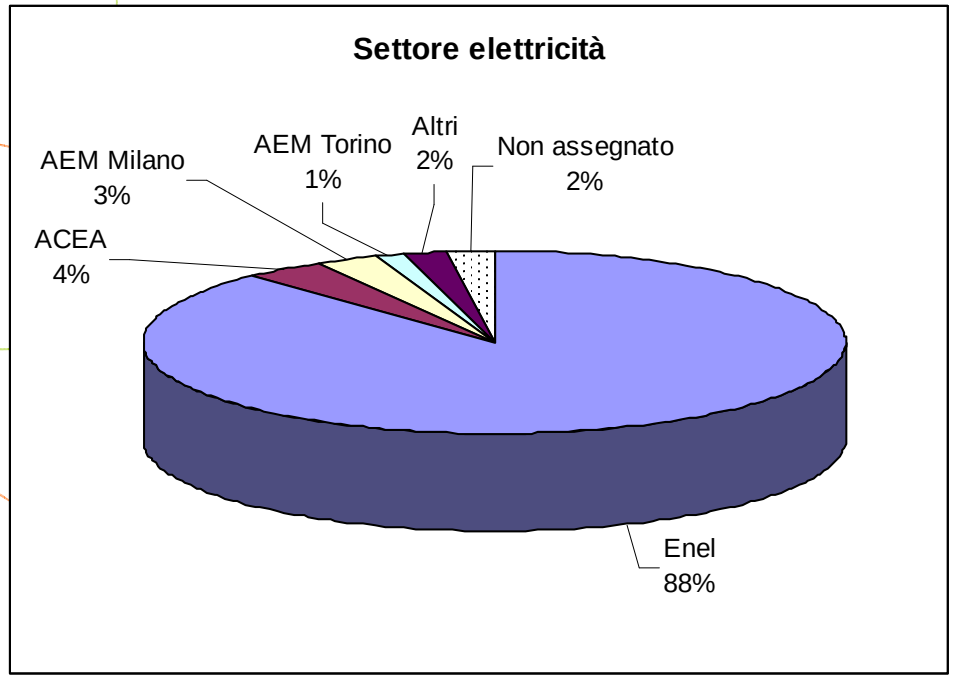
AEEG:

- issues *Guidelines for the design, implementation and evaluation of projects*
- sets criteria and rules for cost recovery via electricity and gas tariffs and penalties for non-compliance
- defines TWC market rules (together with GME, Electricity Market Operator)
- (upon request) checks *ex-ante* project conformity with legislative as well as *Guidelines* rules
- requires to GME the issues of TWC
- checks compliance and redeems TWC
- makes ex-post evaluation and certification of energy savings
- publishes annual report on market results and proposals concerning possible modification of the system

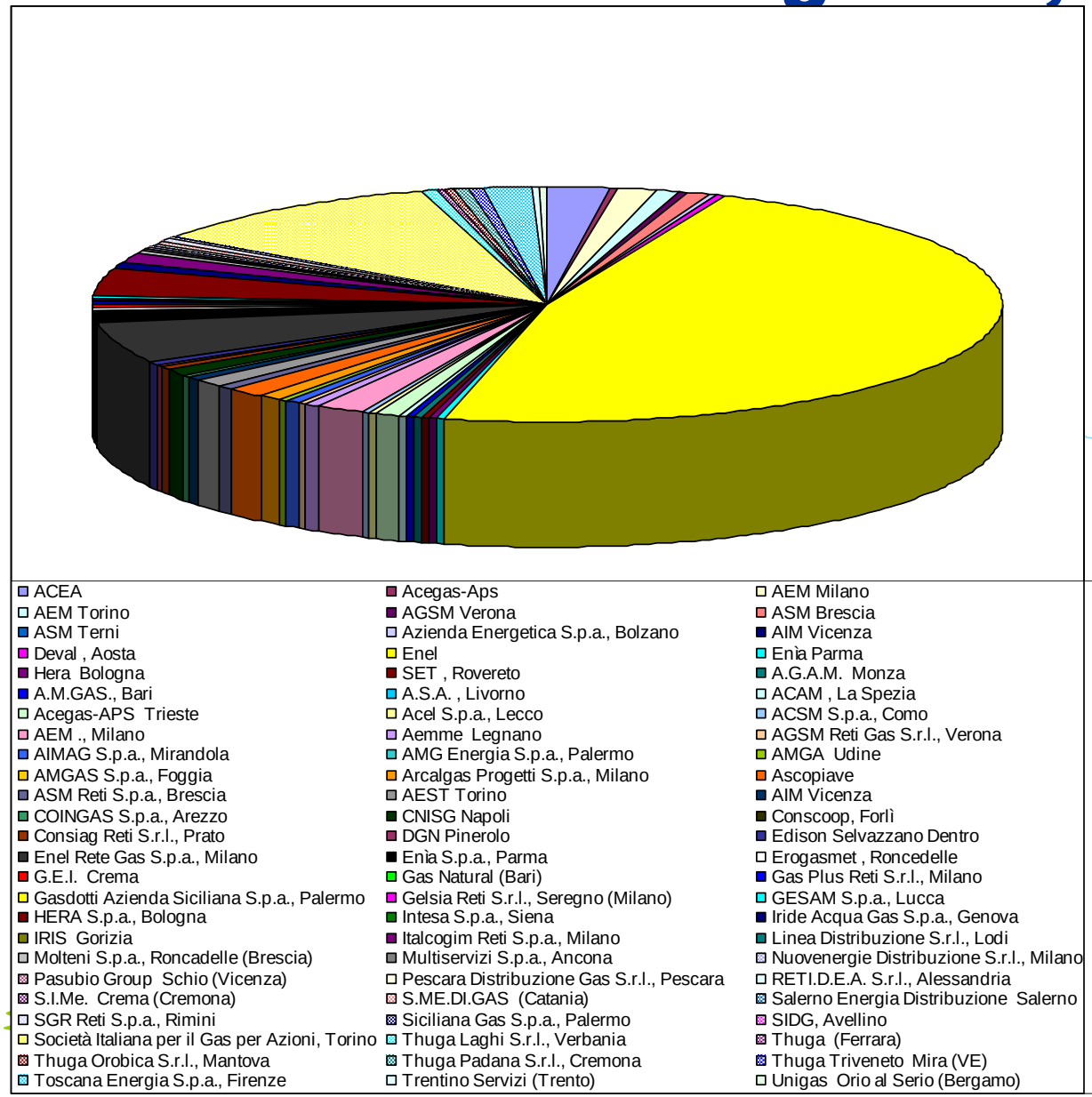
The targets assigned to obligated distributors, 2006

The regulator AEEG used to split the overall target on the total electricity and gas distributed in Italy. So, the share of electricity distributed by the utilities below the threshold (100.000 customers until 2007), was not allocated (del. 213/04)





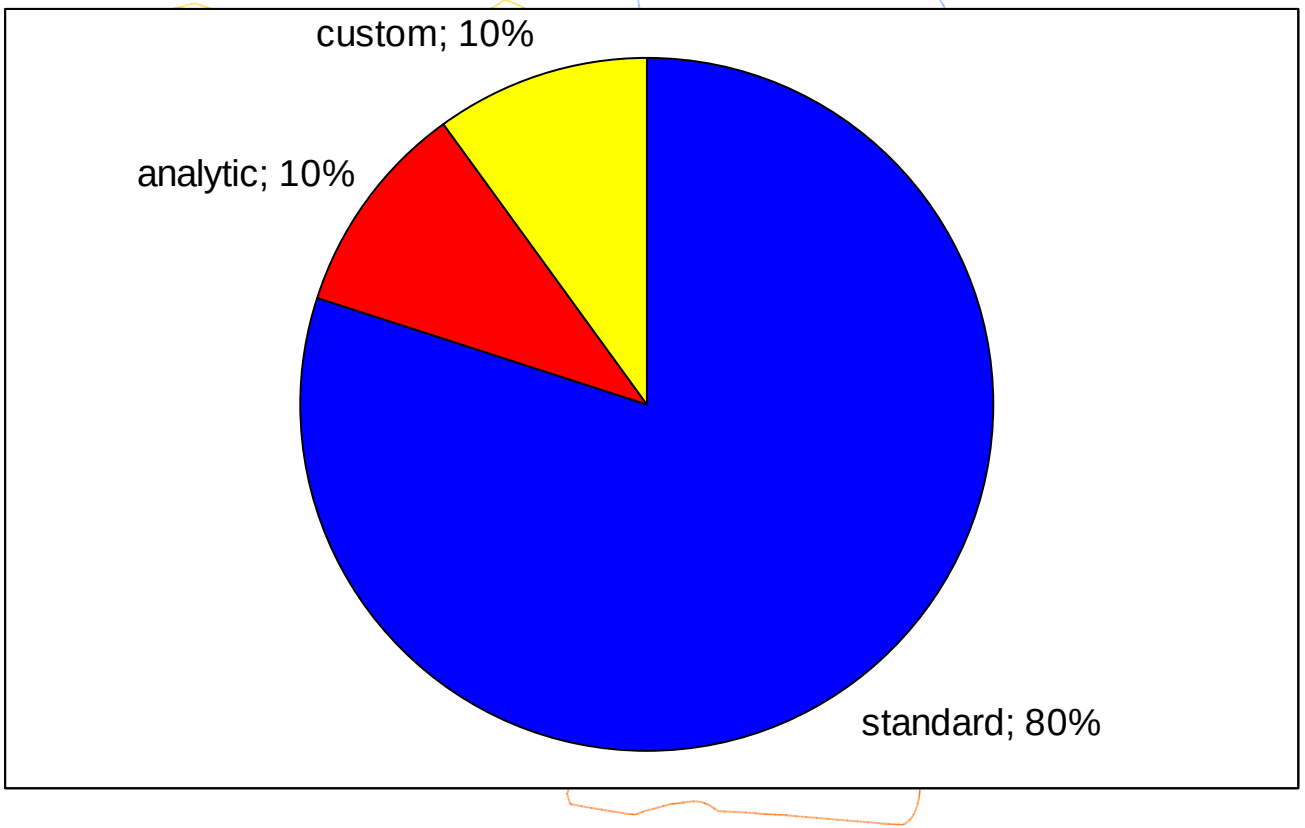
The target assigned to distributors with obligation, 2008



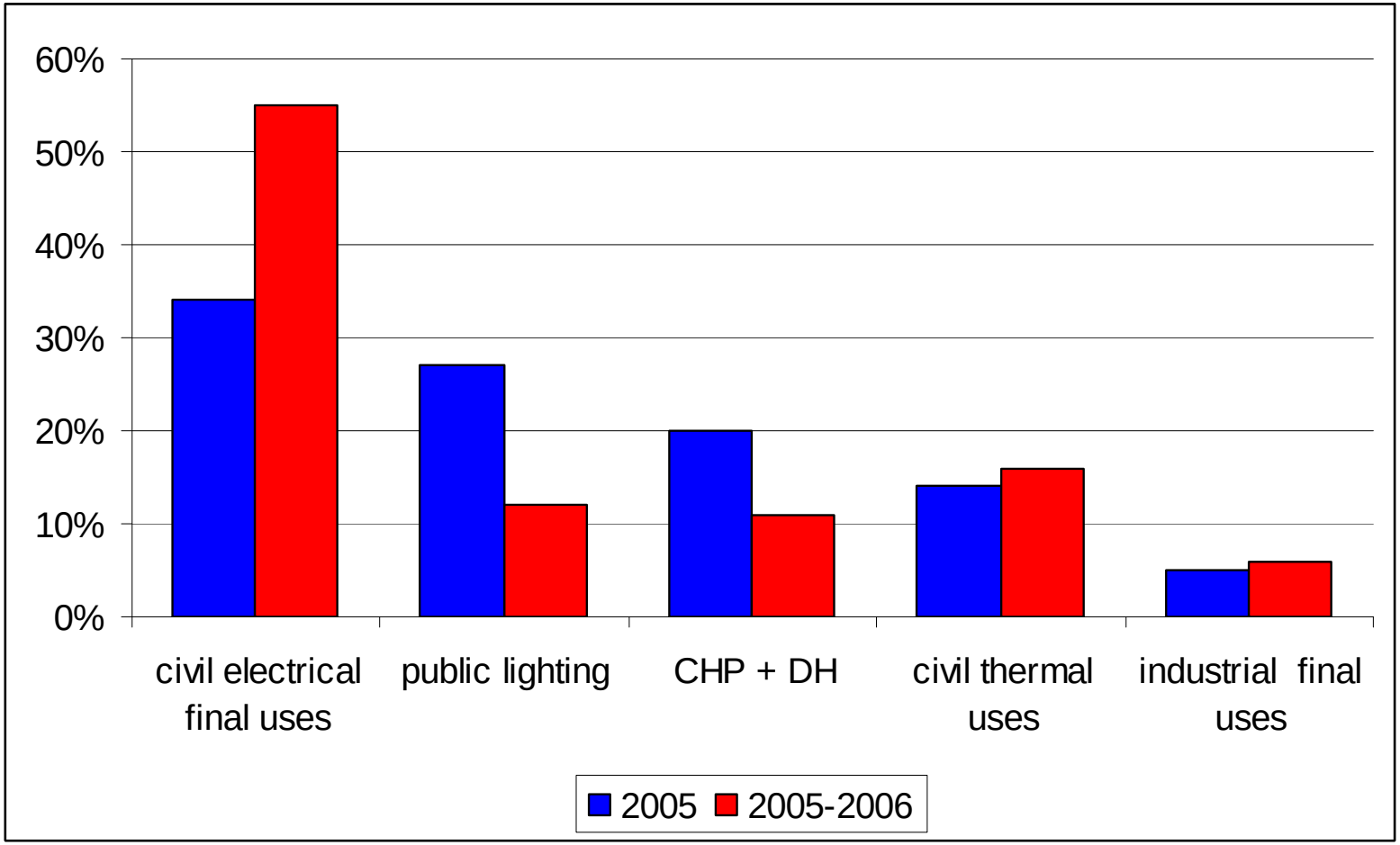
With the creation of a single electricity and gas TWC market the market share of ENEL, the major electricity distributor in Italy is influencing less the price setting.

All the target is allocated to obligated distributors

2005 and 2006 type of measures



Areas of action for TWC emission



Who gained TWCs

	Market 2005	Market 2005-6
Obligated electricity distributors	9,1%	6,1%
Obligated gas distributors	23,8%	9,4%
Non obligated distributors	2,5%	12,2%
Energy Service Companies (ESCO)	64,6%	72,3%
Total	**100%**	**100%**

A snapshot on the first 2 years of TWC market operation. A market of the seller

1 TWC= 1 toe	Total issued	Redeemed 05	Redeemed 06	Available June 07
type I	696.606	119.522	248.676	328.408
type II	154.180	25.799	72.664	55.717
type III	39.995	206	506	39.283
total	890.781	145.527	321.846	423.408

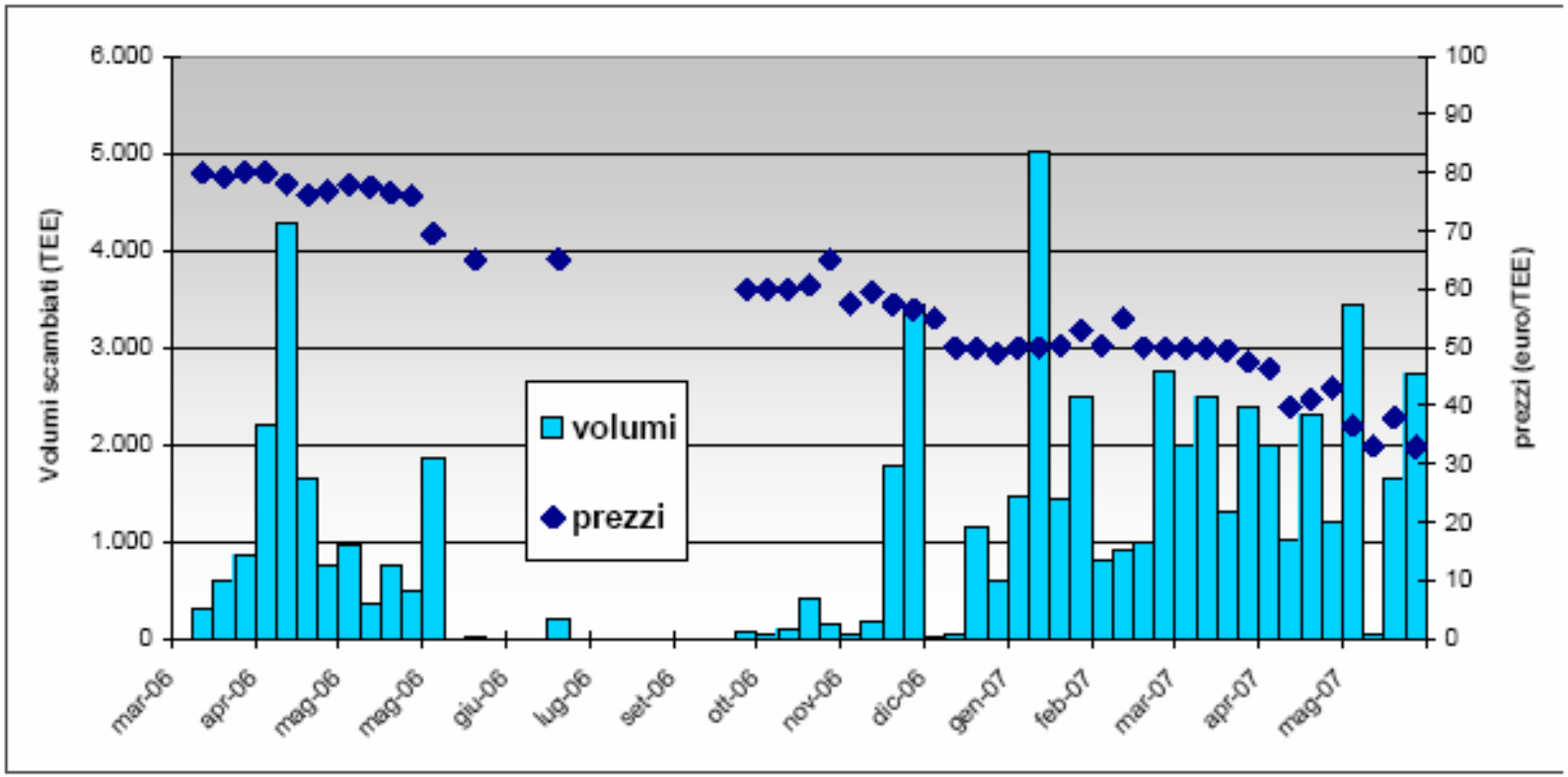
The 2005 market (closed on May 31, 2006)

	total traded	bilateral contracts	GME market	Average price (€/toe)
type I	119.522	104.498	15.024	77,04
type II	25.799	15.713	10.086	94
type III	206	170	76	33,84
total	145.527	120.381	25.186	

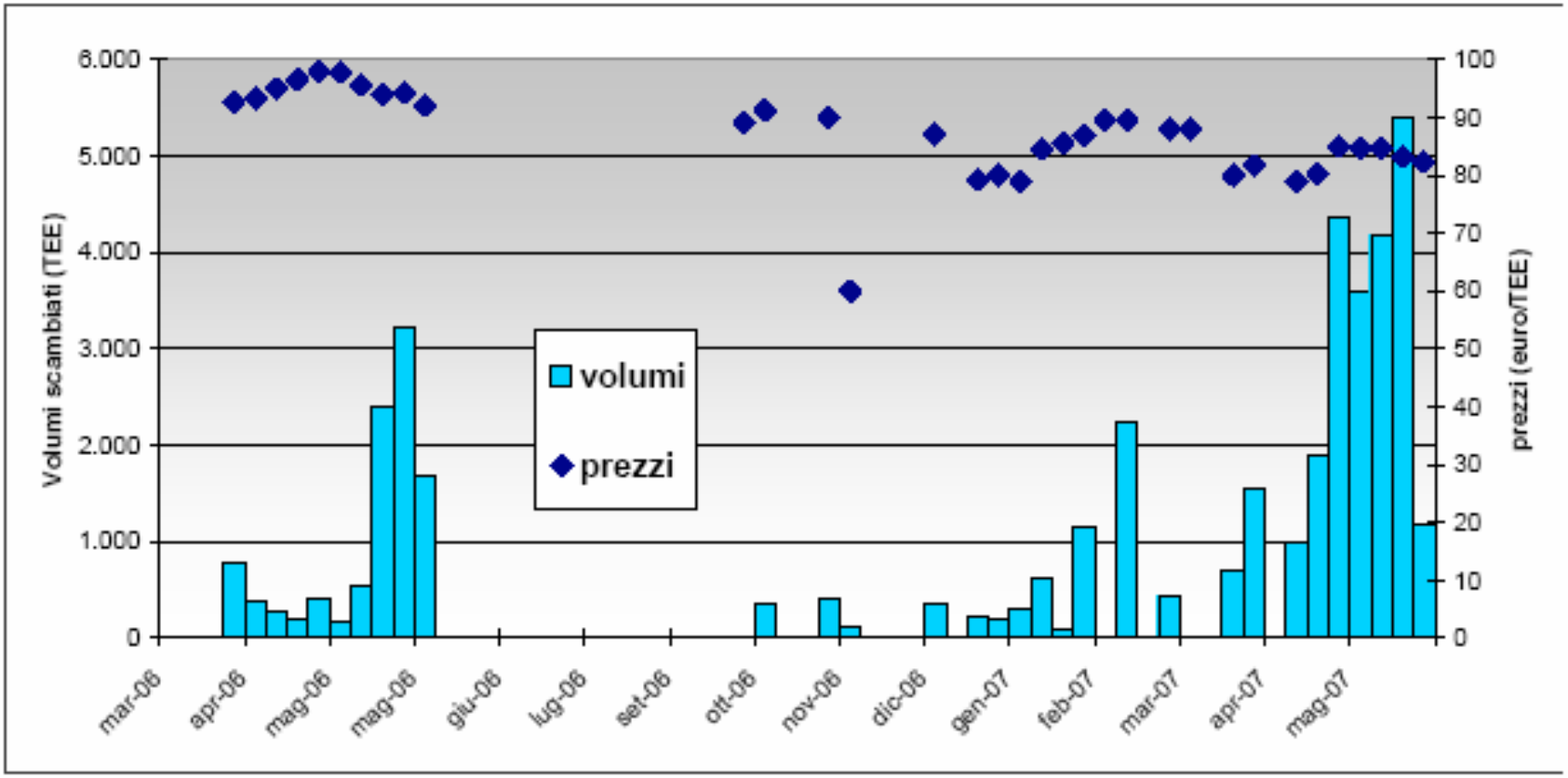
The 2006 market (closed on May 31, 2007)

	total traded	bilateral contracts	GME market	Average price (€/toe)
type I	248.676	202.232	46.444	47,71
type II	72.664	42.242	30.422	84,08
type III	506	506	0	0
total	321.846	244.980	76.866	

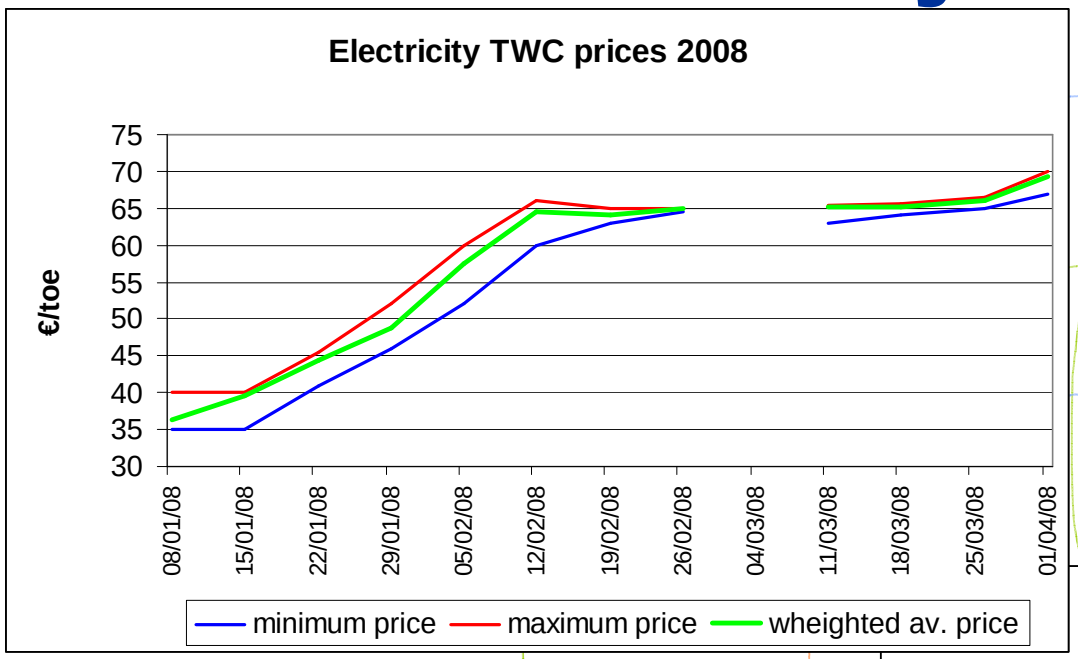
The market for electricity TWC (type I) in 2005 - 2006



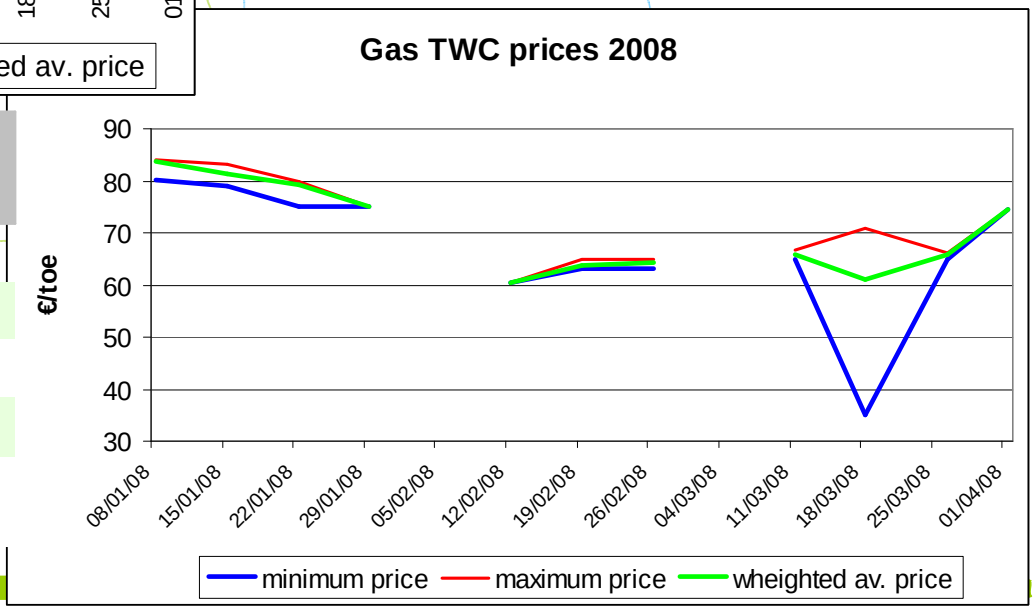
The market for gas TWC (type II) in 2005 - 2006



The convergence of gas and electricity TWC prices



GME market sessions 2008,



Tradable White Certificates (TEE)

Type of TWC	I	II	III
min price (€/toe)	35,0	35,0	18,0
Max price (€/toe)	70,0	84,0	40,0
Weighted av. (€/toe)	55,6	71,8	23,0
n. traded TWC	74.332	12.703	957

updated 01/04/2008

How does the TWC system perform in relationship to the targets of the Directive 2006/32/CE?

- The EU Directive set minimum targets for energy efficiency increase in 9 years (2007 – 2015)
- At the end of the period an increase of energy efficiency is required such to obtain savings for 9% of the average final consumption of the 5 years before the issue of the Directive
- It means some 11 Mtoe in 2016 for Italy
- Even if the accountability of TWC is not directly comparable, the TWC system is expected to lead to savings for 6 Mtoe in 2012, more or less in line with the target of 11 Mtoe in 2016 of the energy efficiency plan of EU Directive 2006/32/EC

Conclusions

- The market has seen an oversupply in the first three years of operation
- The market has been redesigned in January 2008 to fix some incoherences (cost recovery, quota assigned, disparities among gas and electricity, exclusion of some operators, penalty system)
- It remains a market heavily regulated, which requires continuous interventions
- A positive effect is the creation of new companies and new jobs in the area of energy saving
- Most of the public administrations are now sensitive to the energy saving issue and require the release of TWC in their investments
- ESCOs are still concentrated in some areas and it is important to spread the attention to TWC to all the country
- It is important to check the credibility of penalties

The Italian experience
White certificates in electricity and gas
A regulatory view

arturo.lorenzoni@unibocconi.it

2008 BP MADRID FORUM ON ENERGY & SUSTAINABILITY

April 16, 2008