What's Up in Italy? Market Liberalization, Tariff Regulation and Incentives to Promote Energy Efficiency in End-Use Sectors

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ABSTRACT

Increased energy efficiency is one key tool to reduce greenhouse gas (GHG) emissions from the energy system. In a liberalized electricity and gas market new types of incentives should be defined and introduced to promote the market development of new energy technologies and demand-side management programs. The shared understanding is that these incentives should base upon market mechanisms in order to avoid undue subsidization, market opacity and discrimination.

This paper explores recent developments in the promotion of energy efficiency in end-use sectors in Italy, with particular reference to the introduction of an "energy efficiency certificates" trading scheme combined with an "energy efficiency obligation" placed upon electricity and gas distributors, and a cost recovery mechanism via electricity and gas rates. The implementation of such an innovative policy tool-kit poses a number of technical questions and challenges spanning from the choice of the more appropriate impact valuation approaches for energy savings projects, to the setting up of the trading mechanism itself, to the design of effective monitoring and non-compliance schemes, to the sharing of benefits and costs among the different players (users, energy retailers and suppliers, component and services providers, etc).

Background

Until recently the promotion of energy efficiency in end-use sectors has not been at the top of the Italian energy and environmental policy agenda. Policy efforts have mainly focused on the supply side of the market, aiming at enhancing the conversion efficiency of the existing capital stock, promoting a shift away from carbon intensive fuels to lower or zero emissions fuels (i.e. renewable sources) and, although to a lesser extent, promoting investments in new capacity and infrastructure.

One reason for this policy choice is possibly linked to the fact that Italy has been traditionally characterized by a relatively low per-capita energy consumption compared to other industrialized countries and this has long (and incorrectly) been interpreted as an indicator of high efficiency in energy use. On the contrary, it is primarily the result of an economic structure characterized by a relatively low share of high energy intensive industries and a significant share of the agriculture and tertiary sector, favorable climatic conditions and a relatively high fiscal pressure on energy-related activities.

In the last few years, driven by the rising environmental concern and the increasing attention being paid to issues related to security of energy supply, a number of studies have explored the technical and economic energy savings potential in the country. These analyses point out that a significant potential exists, although at different levels, in every sector of the economy. These results have fuelled the debate over appropriate ways to promote improvements in the efficiency of energy use.

Kyoto and Beyond

Under the Kyoto Protocol and the subsequent burden sharing agreement among European Union member states, Italy has committed to reducing its GHG emissions by 6.5% between 1990 and 2008-2012. According to 1997 official national estimates this commitment drives Italy to curb national GHG emissions from a forecasted value of about 622 $MtCO_2e$ in 2012, to 555 $MtCO_2e$ by the first commitment period, resulting in a total reduction of 102 $MtCO_2e$, corresponding to an actual reduction target of –18.5% with respect to 1990's emissions level[1].

In November 1998 the Government adopted the second *National Programme to reduce GHG emissions* (NCP hereafter) which singles out six 'key actions' that will deliver this emissions reduction target (cf. Table 1). The overall reduction target, the sectoral targets and the general policy framework set out in the NCP have been put at the heart of the national energy policy independently from the Kyoto commitment.

According to the NCP, policies and measures to promote energy savings in end-use sectors will play a key role in the reduction of GHG emissions nation-wide: about 26% of the whole emissions reduction goal, corresponding to a cut of 24 to 29 $MtCO_2$, will have to be achieved through energy efficiency improvements on the demand side of the energy market. On the supply side, over 20% of the total long term reduction target will have to be achieved through efficiency improvements of power plants; a further 18% will have to be delivered via an increase of energy generation from renewable sources.

Table 1. Key Actions in the NCP and Emissions Impact (MtCO2e)

Key Action	2002	2006	2008–2012
1 Efficiency improvements in power generation	–4 to –5	–10 to –12	–20 to –23
2 Energy saving in transport	–4 to –6	–9 to –11	–18 to –21
3 Promotion of renewables	–4 to –5	–7 to –9	–18 to –20
4 Energy savings in end-use sectors	–6 to –7	–12 to –14	–24 to –29
5 Emission reductions in non-energy sectors	–2	–7 to –9	–15 to –19
6 Sinks	–	–	–0.7
Total	–20 to –25	–45 to –55	–95 to –112

Source: CIPE's Deliberation 19 November 1998, N. 137/98.

The NCP does not lay down specific policy tools to be used in order to pursue the above-mentioned emissions reduction goals; however it does specify that these emissions cuts will have to be achieved via policies and measures that:

- enhance the emission reduction potential of policy measures that have to be introduced in order to comply with EU directives and regulations;
- pursue the modernization of the industrial and energy system and infrastructure and the improvement of energy efficiency in a cost-effective way;
- promote the development of innovative low-emission technologies.

In other words, the great part of the package of measures implemented within the NCP will have to be of a "non-regret" type: together with emissions cuts, they will deliver a number of secondary benefits in terms of efficiency improvements, enhancement of the

[1] As a consequence of the increasing trend of GHG emissions in the period 1997-1999 these numbers are now being revised.

competitiveness of the national electricity supply industry, air quality improvements in towns and cities.

Energy Efficiency and the Opening-Up of Energy Markets to Competition

A further important criterion for the definition of the policy tool-kit to promote the reduction of GHG emissions nation-wide has emerged contemporaneously to the need to implement the two European Directives on the liberalization of the electricity and gas market[2]: the search for policy tools consistent with the new emerging market framework. The common understanding is that, in order to avoid undue subsidization, market opacity and discrimination, 'traditional' policy instruments such as standards and fiscal incentives have to be gradually substituted by incentives based upon market mechanisms.

The process of implementation of the two European liberalization Directives has also given rise to a growing concern over the possible negative environmental impacts of the liberalization process. Many are concerned that as markets become more competitive and prices gradually decline, consumption (and related emissions) increases while utilities adopt myopic behaviours and seek to shed costs, starting from activities which are characterized by high initial investment costs and long pay-back periods, such as renewable sources, R&D initiatives and DSM programs.

With regard to the latter, these concerns have been integrated into the legislative acts which implement the EU Directives in the national electricity and gas market[3]: both acts determine that concessions for distributors shall contain provisions to increase the energy efficiency of end uses, according to quantitative targets to be set by Decree of the Minister of Industry jointly with the Minister of the Environment.

New Mechanisms for the Promotion of End-Use Energy Efficiency

The need to set these targets gave the Government a great opportunity to rethink the structure of the policy instruments used until that date to promote energy efficiency in end-use sectors. In April 2001 two Legislative Decrees were issued (one for the electricity distribution sector and one for the natural gas distribution sector) which set these quantitative targets together with a new and quite innovative policy tool-kit to promote their achievement. The policy package combines command and control type of measures (mandatory quantitative targets) with market based instruments (certificate trading) and elements of tariff regulation (cost recovery mechanisms via electricity and gas rates). The implementation of the whole mechanism is under the responsibility of the Regulatory Authority for Electricity and Gas (AEEG), including the definition of a number of elements which are essential to kick-start its operation.

The following paragraph briefly examines the main provisions set up in the Government decrees and the role of the different markets actors. We will then turn to the analysis of the key issues for their successful implementation and discuss alternative solutions actually been considered by AEEG and put forward to the consultation of interested parties.

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[2] Directive 96/92/CE of the European Parliament and of the Council of December 19, 1996 and Directive 98/30/CE of the European Parliament and of the Council of June 22, 1998 respectively.

[3] Legislative Decree no. 79 of 16 March 1999and Legislative Decree n. 164 of 23 May 2000.

The New Legislative Framework

The two Decrees set mandatory national energy savings targets for the period 2002-2006 (see Table 2). The targets are set in terms of savings in primary energy consumption and have to be intended as cumulative[4]. Quantitative targets for the following years will be set with a joint decree by the Minister of Productive Activities and the Minister of the Environment. At least half of the target set for each single year will have to be achieved via a reduction of electricity and gas end-uses (referred to as the "50% constraint" hereafter). The remaining share can be achieved via primary energy savings in other sectors (i.e. fuel switching)[5].

National targets are apportioned among distributors that serve more than 100,000 customers. Rules for distributors under this threshold are to be issued jointly by the Minister of Productive Activities (former Minister of Industry) and the Minister of the Environment. The apportionment is made each year on the basis of the quantity of electricity and gas distributed to final customers compared to the national total, both measured in the previous year (specific obligation hereafter). Each distributor is subject to the "50% constraint".

Table 2. Mandatory National Energy Saving Targets (2002-2006, Cumulative)

Year	Target (Mtoe)	
	Electricity Distribution Sector	***Natural Gas Distribution Sector***
2002	0.10	0.10
2003	0.50	0.40
2004	0.90	0.70
2005	1.20	1.00
2006	1.60	1.30

Source: Legislative Decrees, 24 April 2001

In order to favour a certain degree of graduality in the implementation of the obligation, the decrees allow savings realized in 2001 to count against the 2002 target, subject to specific eligibility criteria[6]. In addition, a grace period is foreseen according to which distributors will be able to compensate for under-compliance with the 2002 target in the following two years.

The targets do not refer to specific end-use sectors and/or type of projects. An illustrative list of eligible projects is attached to both decrees, but this has to be regarded simply as *illustrative* and therefore 'open'. Supply-side projects are considered not to be eligible to meet the obligation[7].

In order to count against the obligation energy savings projects will have to be implemented: a) by distributors, directly or via controlled companies; b) by "independent companies operating in the energy services sector" (i.e. ESCOs). The maximum lifetime of

[4] I.e. the overall target to be reached in the period 2002-2006 is equal to 1.6 Mtoe for electricity and 1.3 Mtoe for natural gas.

[5] The 50% constraint translate in an electricity consumption target equal to at least 1.5% of the total electricity distributed to final costumers in 1999 (net of auto-consumption). In the case of natural gas, it translate in a reduction of at least 3% of the total natural gas distributed in the same year.

[6] I.e. They have to be part of a voluntary agreement concluded with the Public Administration and are subject to approval by the Authority.

[7] This exclusion is specifically mentioned in the decrees. However, a bit contradictorily, the illustrative list of eligible projects attached to the two decrees include small photovoltaic plants.

each eligible project is conventionally set at 5 years as far as its contribution to the fulfillment of the mandatory targets is concerned.

Criteria and guidelines for the design, implementation and valuation of projects will have to be defined by AEEG at the end of a consultation process which includes also local administrations (regions and autonomous provinces). Regions and autonomous provinces may want to set local quantitative targets as well as criteria for their implementation "*in the framework of the targets and criteria defined in the decrees*" and "*taking into account additional financial needs*".

Projects are not subject to approval *before* their implementation although proponents may ask for an ex-ante eligibility check Each year AEEG will have to make an *ex-post* verification and certification of actual savings achieved by each project presented by qualified actors and will issue "energy efficiency certificates" corresponding to the (certified) volume of primary energy saved. The value of one certificate is therefore expressed in terms of ton of oil equivalent energy saved.

In order to certify savings and to issue energy efficiency certificates AEEG will have to verify that projects have been designed and developed according to the criteria set in the decrees and in the AEEG's *Guidelines on the preparation, implementation and valuation of energy efficiency projects*.

The purpose of the energy efficiency certificates ("EECs" hereafter) is twofold:

1. they serve as an accounting tool to prove that the corresponding amount of primary energy as been saved; to this aim at the end of each compliance period distributors will have to surrender to the AEEG a number of EECs corresponding, in energy value (ton of oil equivalent), to the obligation they were asked to meet in that period;
2. they are allowed to be traded either bilaterally or in a EECs market specifically set up to that purpose by the Market Operator.

The enforcement of the whole policy mechanism is under the responsibility of AEEG, this include the definition of sanctions for non-compliance with the obligation. Sanction proceedings will be put in a specific government-administered Fund to be used to back information and training programs on energy efficiency in end-use sectors.

Costs incurred by distributors for the development of projects in the framework of the two Decrees *may* be recovered via electricity and natural gas distribution tariffs, net of any contributions from other sources. Criteria and mechanisms for this recovery will have to be defined by AEEG. Every year AEEG will have to publish a Report on activities implemented in the framework of the two efficiency decrees. The Report could include proposals concerning possible modifications of the system as defined by the Government.

Key Issues, Challenges and Opportunities

The implementation of the policy framework designed by the Government poses a number of technical questions and challenges, including the choice of the more appropriate impact valuation approaches for energy savings projects, the setting up of the trading mechanism itself, the design of effective monitoring and non-compliance schemes, and the sharing of benefits and costs among the different players (users, energy retailers and suppliers, component and services providers, etc). These key technical issues will have to be

tackled by AEEG, which is presently working at the drafting of a proposal document to be put forward for consultation of interested parties.

The Market for Energy Efficiency Certificates

The introduction of tradable energy efficiency certificates (EECs) is the transposition to end-uses energy efficiency of a principle that has been applied so far to a number of other topics in a number of countries (e.g. emissions reductions, development of renewable energy sources, water rights). Its major aim is to combine the 'guaranteed results' of regulation (i.e. mandatory energy savings targets) with the economic efficiency of market-based trading mechanisms. At least in theory and under strict assumptions, it will allow to achieve the predefined and compulsory targets at the minimum total cost. But this does not at all need to be the case in practice. The success of the EEC-based promotion system depends largely on the way it is designed.

Valuation Approaches

A first issue to be solved is how to ensure that EEC represent 'actual savings', i.e. savings that have been actually realized over and above the spontaneous market trends. This, in turn, calls for the definition of approaches to evaluate the impacts of the vast array of projects eligible within the framework set by the efficiency Decrees. Tackling this issue would require an whole paper. In the following we give a synthetic description of the main criteria and proposals which AEEG is going to put forward for consultation.

The proposals look for a balance between robustness and reliability of savings on the one hand, and simplicity on the other. Where the two above mentioned goals are likely to diverge, AEEG is proposing to go for simplicity in order to kick start the operation of the whole system. To this aim, AEEG is considering three valuation approaches:

1. a deemed savings approach;
2. an engineering approach;
3. a third approach based on monitoring plans which must be submitted for pre-approval to AEEG and must conform with pre-determined criteria (e.g. sample size, criteria to choose the measurement technology, etc.). Energy savings are inferred through the measurement of energy use.

The deemed savings approach will be used for projects for which expected savings are reasonably well understood and direct measurement would therefore be not cost-effective. For every type of project a simple equation is provided together with standard values for each of the parameters included in the equation itself.

The engineering approach will be applied for those projects whose energy saving impact is quite well understood but varies depending on a limited number of identifiable parameters of usage (e.g. number of hours of usage). For this type of project AEEG will identify an algorithm, fix the value of some parameters while asking for the direct measurement of the parameters of usage which are likely to vary significantly case by case.

The third approach will be open only for projects whose performance crucially depend on variables and parameters that change from case to case and is therefore less predictable.

In the deemed savings approach gross savings will have to be converted into net savings through simple multiplication by a default factor which takes into account for free-riding effects and, depending on the type of project been considered, by a second default factor which takes into account the impacts of different delivery mechanisms (e.g. direct installation, sale without installation, discount bonus, etc.). Subsequent year savings will have to be estimated using a default persistence factor specified by AEEG.

For projects that have to be evaluated using one of the other two approaches, the conversion of gross savings into net savings has to be made by documenting an actual net-to-gross ratio[8], while the persistence of savings has to be measured directly. The reference case has also to be specified case by case.

Verification of actual savings realized by each project will be made by AEEG through a careful monitoring of the reporting documentation prepared according to predetermined reporting formats and sent to AEEG by interested parties. Inspections at the customers' site as well as on-site audits of additional project-related documentation duly recorded by distributors and/or ESCO will be randomly carried out by AEEG to support the verification process.

Framing the EECs Market

A second issue to be solved is related to the rules governing the market for EECs, e.g.: who has to buy certificates? Who can buy? Who can sell? How many types of EECs will be issued? Which degree of fungibility, if any, may exist among different types? Which is the size and the lifetime of one EEC? Which its information content? How will trading work in practice?

1. *Who can participate in the market*. AEEG believes that the wider participation in the EECs market should be promoted in order to exploit the potential cost-effectiveness of the instrument. To this aim AEEG is proposing to allow the participation in the EECs market also to those distributors who are currently not subject to the efficiency obligation. Energy services companies will have to meet pre-defined selection criteria in order to be entitled to EECs and be able to exchange those EECs with other market actors. AEEG is proposing to use as selection criteria the legal *status* of the company and the type of contracts that it makes with third parties. Only those companies which are proposing energy savings at zero additional costs to their clients (i.e. contracts whereby the investment required is financed through part of the economic value of the savings achieved[9]) will be admitted to the market.
2. *Types of certificates to be issues and degree of fungibility*. Coherently with the framework designed by the efficiency Decrees, AEEG is proposing to issue three types of certificates, characterized by different degrees of fungibility between each other (see table 3):
    a) type 1 certificate: they attest the achievement of primary energy savings through reductions of electricity consumption;

[8] E.g. comparing the gross savings of customers participating in the program to the change in energy use of a similar group not participating in the program; estimated indirectly through market research, surveys, etc.
[9] Shared saving contracts.

b) type 2 certificates: they attest the achievement of primary energy savings through reductions of natural gas consumption;
c) type 3 certificates: they attest the achievement of primary energy savings through reductions in the consumption of other fossil fuels.

Table 3. Types of Energy Efficiency Certificates Issued by AEEG and Degree of Fungibility among each Others

Certificate Type	Usability/Tradability/Fungibility			
	Electricity Decree		***Natural Gas Decree***	
	Achievement of the target related to the reduction of electricity consumption	*Achievement of the target related to the reduction of primary energy consumption*	*Achievement of the target related to the reduction of gas consumption*	*Achievement of the target related to the reduction of primary energy consumption*
Type 1 certificate	YES	YES	NO	YES
Type 2 certificate	NO	YES	YES	YES
Type 3 certificate	NO	YES	NO	YES

Each certificate will have a pre-defined unit value, to be set by AEEG at the end of the consultation process.

3. *Flexibility mechanisms*. The lifetime of each certificate is set at 5 years. Therefore banking of certificates is allowed while borrowing is not. Banking will allow distributors some additional flexibility in meeting the obligation. In order to contrast possible anti-competitive behaviours AEEG will set a maximum limit to the total number of banked certificates that can be presented for redemption as a percentage of the target that each distributor has to meet.

At the time of writing criteria and rules governing the trade of EECs (both in the market and via bilateral contracts) have yet to be defined. This will include decision concerning the periodicity/frequency of trading, safety rules for buyers and sellers, etc.

Non-Compliance Regime

The efficiency Decrees establish that sanctions for non-compliance with the energy efficiency obligation will have to be "*proportional and in any case greater than investments needed to compensate the non-compliance*". To this respect AEEG is proposing to fix two different types of sanctions: the first type will be raised against distributors which turn out to be non compliant with the '50% constraint'; the second type will be raised against distributors which did not comply with their *overall* obligation.

It is proposed that the unit value of each of the two penalties (expressed in terms of €/toe not saved) be equal to the *maximum* value between a level to be defined at the end of the consultation process and the average market price of the corresponding energy efficiency certificate in the previous year, multiplied by a factor greater than one. The advantage of this option is that the sanction will not act as a potentially distorsive reference price for the energy efficiency certificates exchanged in the marketplace or thorough bilateral contracts. At least to this respect, this would guarantee that the EECs market will send 'good' (i.e. not distorted) signals on the real cost of saving energy. This is particularly important in the first stages of the mechanism, when very little information is available to the regulator on the actual costs of conserving energy. The major disadvantage is that the sanction does not act as a ceiling to the unit cost of certificates thus capping the overall cost of reaching the target.

Two ways of imposing the total penalty for non compliance with the obligation are being proposed: direct payment versus indirect payment, i.e. via a reduction of the total allowed cost (that is to say the total cost recoverable via electricity and gas rate; cf. the following paragraph). Non compliance with the general criteria and rules set out in the two efficiency Decrees and in the *Guidelines* to be issued by AEEG (e.g. discriminatory or anti-competitive behaviour, false information) could result in the imposition of a further sanction.

Costs Recovery Mechanism via Electricity and Gas Rates

As already mentioned, the two efficiency Decrees allow for the possibility to recover via electricity and gas rates the part of the costs borne by distributors for the development of projects which has not been financed via other sources. The definition of criteria and rules for costs recovery is left to AEEG. The only criteria mentioned by the legislator is that AEEG will "*have to take into account*, inter alia*, any net revenue variations (plus or minus) resulting from the need to comply with the obligation*".

Although recent analyses show that a significant energy saving potential could be exploited via the development of projects which are already economically self-sustained or that need a little 'help' to be so, AEEG reckons that this potential has not been exploited so far because of a number of barriers of technical, financial, cultural and institutional nature. AEEG believes that allowing the partial recovery of costs incurred by distributors for the design and development of energy savings projects will contribute to lower these barriers, thus promoting the diffusion of energy efficiency technologies, products and consumption patterns. To this aim in the new tariff system introduced by AEEG previously to the Efficiency Decrees[10], a specific parameter has been included in the *price-cap* formula for annual tariffs adjustment, through which distributors will be able to recover the costs incurred for demand side management initiatives. It is these two parameters that will be used to allow for the (partial) recovery of costs incurred by electricity and gas distributors respectively for the development of projects in the framework of the two efficiency Decrees.

AEEG is proposing that only distributors that are subject to the energy efficiency obligation will be able to recover part of the costs borne for the development of energy saving projects via these tariff components. The rationale for this choice being that non-obliged actors that decide to develop energy savings projects will do so because they see in this a business opportunity linked, *inter alia*, to the tradability of the energy efficiency certificates. The same is true for ESCOs (whose costs could not be recovered via rates).

The level of the tariff components that will be used to cover these costs will be set so as to reflect *standard* "*allowed costs*" related to these activities as opposed to a *passthrough* mechanism of *actual* costs borne by distributors. Such a system, based on standard rather than actual costs, is intended to introduce incentives for distributors to reduce the costs incurred to meet the obligation via energy saving projects, since not all the costs they incur will be passed on to final consumers via electricity and gas tariffs. An average standard cost per unit of primary energy saved will be determined by AEEG.

Based on equity considerations it is proposed that electricity and gas consumers contribute to finance the diffusion of energy efficient technologies only in their respective sectors. Therefore only savings achieved via cuts of electricity and gas consumption will be 'eligible' for cost recovery via electricity and gas rates respectively. In addition, tariffs would

[10] Cfr AEEG's Deliberation 29 December 1999, n. 204/99 and Deliberation 28 December 2000 , n. 237/00.

contribute to financing these savings only up to the occurrence of each distributor obligation. 'Eligible' savings include both savings achieved directly through the development of energy efficiency projects, and savings achieved by purchasing energy efficiency certificates from third parties.

The choice of the level of the average allowed cost per unit of primary energy saved will have to be made by AEEG subject to a number of practical difficulties and constraints:

- the limited national experience with and background knowledge of energy saving projects developed in the country and their related costs;
- the difficulties and the limits of using data transferred from other national (i.e. legislative, social, technological) contexts;
- the limited time at disposal to kick start the whole system put in place by the legislator.

Against this background, AEEG is proposing to fix the level of the average allowed cost per unit of primary energy saved (CR) by looking at the average avoided cost of a unit of energy saved (CE) as a *reference value* indicative of the maximum cost that consumers will have to bear for the achievement of the energy efficiency targets set by the legislator. In other words, from an economic point of view, AEEG is assuming that the cost to consumers of saving one unit of energy should not be greater than the cost they would incur for buying the same unit of energy. An externality adder (α) will be added to the 'private' avoided cost in order to take into account the environmental benefits associated with the savings of a unit of energy and not reflected in its market price.

The decision concerning what percentage (γ) of this maximum reference value (CE + α) will represent the allowed cost recoverable via electricity and gas rates is linked to the hypotheses made on which part of the average cost of a unit of energy saved could *on average* be covered via other sources (e.g.: state, regional or local financing mechanisms, direct customers financing and energy efficiency certificates):

$$CR = \gamma * C = \gamma * [CE * (1+\alpha)]$$

This decision is of course political rather than technical. AEEG's proposals on that issue will also take into account the fact that, according to recent estimates of the National Environmental Agency, the *actual* unit cost (i.e. cost per unit of energy saved) of a number of energy saving projects is much lower than the *avoided* unit cost, even without considering the externality benefits associated with the saving.

AEEG is considering whether to differentiate the *allowed* (i.e. recoverable) unit cost in order to promote specific technologies or to encourage projects focusing on specific classes of customers (e.g. poor customers). In such a case a mechanism should be envisaged to avoid undesired impacts on the EECs market (e.g.. further market segmentation).

As a consequence of the reform of the electricity and gas tariff system operated by AEEG in 1999 and 2000 respectively there will be no "*revenue variations (plus or minus) resulting from the need* [of distributors] *to comply with the obligation*" [11].

The allowed unit cost(s) will be updated regularly by AEEG in order to reflect the evidence emerged from the direct experience with energy saving projects and the associated costs[12], as well as to promote productivity improvements. The recovery mechanism will be

[11] Cfr AEEG's Deliberation 29 December 1999, n. 204/99 and Deliberation 28 December 2000 , n. 237/00.
[12] Also as reflected in the price of EECs.

ex-ante and will operate through the variable part of the tariff (cent€/kWh o cent€/mc). A compensation Fund will be created in order to balance possible surpluses or deficits at the single distributor level.

The Way Forward

Unquestionably the introduction of a certificate trading mechanism driven by an energy efficiency obligation has a number of advantages over more traditional approaches to promote energy conservation in end-use sectors:

a) it secures that a predefined and certain quantitative target is achieved;
b) it enables least cost solutions to be developed therefore limiting the overall costs of meeting this target;
c) it is consistent with a liberalized market framework.

On the other hand, the effectiveness of such a mechanism in delivering the expected results, crucially depends on a number of factors such as: the actual technical-economic potential for savings, the number of actors involved in the market, their diversity in terms of technological options as well as costs, the degree of complexity of the rules shaping the mechanism.

The policy framework recently introduced in Italy is rather ambitious:

- previous policy efforts for the promotion of end-use energy efficiency in the country were fairly limited;
- it is rather extensive in scope: contrary to other countries' past and ongoing experiences it does not focus on specific customers classes, sectors or technologies, but is open to a wide range of demand-side energy saving measures, provided that they meet the general criteria and guidelines set forth by the Government and AEEG; in addition, the number of parties involved is quite large since it includes both distributors and ESCOs;
- it embraces market transformation projects that, although crucial in promoting long lasting changes in consumption patterns, are complex to evaluate and validate;
- it foresees the possibility for regional administrations to set additional quantitative and/or qualitative targets that will inevitably add further complexity to the mechanism;
- it combines the trading mechanism with "command and control" tools and tariff regulation.

Given the wide scope of the policy and the lack of previous experience in the field, total administration and compliance costs are likely to be significant and rather complex to control, at least in the first stages.

In order to exploit the potential advantages and to limit the potential disadvantages inherent in the policy approach designed by the Government it will be crucial:

- to guarantee a gradual phase-in of the whole system;
- to ensure credibility and transparency;
- to define rules and guidelines which combine simplicity and accuracy;

- to allow a wide access to the EECs market for as many and as diverse parties as possible (including "market intermediaries") in order to encourage innovation and competition and to lower economic costs;
- to introduce instruments that allow market actors a certain degree of flexibility in meeting their goals.

Making these apparently conflicting goals compatible with each others is the real challenge facing the regulator.

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