



**ENERGY EFFICIENCY WATCH**

## **Energy Efficiency Policies in Europe**



### **Case Study**

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*Energy Manager Obligation and White Certificate Scheme - Italy*



Co-funded by the Intelligent Energy Europe Programme of the European Union

## Key facts and figures

<b>Country</b>	Italy
<b>Name of policy</b>	Energy Manager Obligation and White Certificate Scheme
<b>Type of policy</b>	The White Certificate Scheme belongs to the policy type “Economic Instruments”. The Energy Manager Obligation belongs to the policy types “Regulation” as well as “Advice and Information”
<b>Target sector</b>	The industry sector is the main target group. The transport sector is also addressed.
<b>Actions targeted</b>	Savings achieved under the White Certificate Scheme must be additional to measures that would be normally implemented, including those implemented to meet new legal requirements. Eligible measures are e.g. the replacement of inefficient equipment, boiler and lighting systems, solar thermal and co-generation. The transport sector is also included.
<b>Duration</b>	For large industrial sites and buildings, it is mandatory to engage an energy manager since 1991. The White Certificate Scheme was introduced in 2005. Both measures are ongoing. An end date is not envisaged.
<b>Overall target and/or achievements</b>	The total expected savings by 2020 from White Certificates over the period 2011-2020 will be 5.45 Mtoe/year. The achieved energy savings in the period 2007-2012 was 3 Mtoe or 35 000 GWh per year (Italian National Energy Efficiency Action Plan 2014).
<b>Overall aim of the policy</b>	The overall target is to promote end-use energy savings both in the residential sector and the industry/commercial and public sectors. The strengthening of the energy services company (ESCO) market was another objective.
<b>Innovativeness</b>	Italy was the first country, which implemented the White Certificate Scheme. The impact of the scheme is high and a large amount of energy savings was realised. Other countries followed the example. Another innovative element is the combination of White Certificates with the energy managers, who existed due to the Energy Manager Obligation.

## Policy objectives

Italy is one of the largest emitters of greenhouse gases in the European Union. In the 1990s, the industry sector was responsible for approximately one third of the energy consumption in Italy. To address these barriers, the National Energy Plan was published including an obligation for industrial companies and public administrations with a very high energy consumption to nominate an energy manager.

Since 1991 it is mandatory for companies with an energy consumption of more than 10,000 toe per year to appoint an energy manager. For other organisations, like public administrations, the threshold is 1,000 toe per year (BMW/AHK 2011). The energy manager’s task is to monitor and control the energy consumption, to establish an energy balance, to reduce the energy demand and to increase the energy efficiency of the company.

The managers receive regular training. In 2010, the number of energy managers reached 2,650. According to FIRE, an Italian organisation representing the interest of the energy managers, it is

possible for companies to save 10-15% of energy simply with an intelligent organisation (BMW/AHK 2011).

In 2004, Italy introduced (as first country worldwide) the White Certificate Scheme (Ministerial Decrees of 20 July 2004). Today, all distributors of electricity and natural gas with more than 50,000 clients are obliged to reach specific quantitative goals of primary energy savings, expressed in tonnes of oil equivalents (toe). Distribution companies can meet the targets either by implementing energy efficiency projects that benefit their customers or through the purchase of White Certificates produced by other participants. The certificates are not only given to the obligated parties but also to voluntary participants (distributors with less than 50 000 customers, energy service companies, entities required to appoint an energy manager, entities which have voluntarily appointed an energy manager, entities that have implemented an energy management system conforming with ISO 50001 (Italian Energy Efficiency Action Plan 2014). To enhance the effect of the Energy Manager Obligation, entities required to appoint an energy manager were included in the list of organisations entitled to obtain white certificates.

The total expected energy savings by 2020 for the period 2011-2020 are 5.45 Mtoe per year (Italian Energy Efficiency Action Plan 2014). To achieve the savings, a large number of projects are eligible. The aim is to increase the energy efficiency with technical improvements, to replace old and inefficient products and to use the best available technologies (BAT). An implementing body must approve the projects. Projects are i.e. the replacement of the lighting system, the insulation of walls and the promotion of combined heat and power generation systems (CHP systems). The policy is already in place since 2005. That is why the programme has a long lasting effect and aims at a dynamic market transformation. BAT is promoted and manufacturers have an incentive to develop and produce energy efficient products.

### Beneficiaries and action targeted

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Savings achieved under the White Certificate Scheme must be additional to measures that would be normally implemented, including those implemented to meet new legal requirements. Reference conditions are thus continuously updated to account for regulatory and market changes. For example, the largest power company of Italy has distributed 7 million CFLs for free in 2007 (Togebly et al. 2007).

Actions qualifying for the White Certificate Scheme are:<sup>1</sup>

- Electric rephrasing
- Electric motors and their application
- Lighting systems
- Electricity leaking
- Actions to promote the use of more appropriate electricity sources or carriers
- Reduction of electricity consumption for heat generation
- Actions to reduce air conditioning energy demand
- High efficiency white goods and office equipment
- Equipment burning non-renewable energy sources
- Actions replacing another energy source or carrier with electricity, in case of reduction in primary energy consumption
- Heating and cooling and heat recovery in buildings heated/cooled with non-renewable energy sources
- Installation of equipment for use of renewable sources by end users
- Electric and natural gas-powered vehicles
- Training, provision of information, promotion and awareness-raising

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<sup>1</sup> only measures to reduce electricity consumption, for more information on gas reduction please refer to Ministry of Economic Development 2013

The following actors benefit directly or indirectly from these measures:

- Customers of the electricity and gas distributors benefit through energy and cost savings due to programmes under the White Certificate Scheme. Manufacturers benefit indirectly because of the higher demand for energy efficient products and technologies.
- Large companies can save energy and costs too, from both policies combined. When more energy is saved than required the companies can sell their White Certificates and thus earn money.
- Energy Service Companies (ESCOs) are not obliged to participate in the White Certificate Scheme but they have the possibility to be part of the programme. With the implementation of energy efficiency measures and the trade with white certificates the energy service market has the opportunity to grow.
- The government benefits indirectly. 60% of the energy saving target, which was set by the EED, can be reached by the White Certificate Scheme. Italy can contribute to protect the environment.

## Design and implementation

The Ministry of Economic Development, together with the Ministry of the Environment and Protection of Land and Sea, sets the annual energy saving obligations and the rules of the White Certificate scheme. Electricity and gas distributors have two choices: They can fulfil the specific targets (obligations) by implementing energy efficiency projects or they can buy White Certificates from other parties in the certificate market. The next table illustrates the number of parties that generate White Certificates (status May 2012):

Types of parties that generate White Certificates	Number as at 31 May 2012
Obligated electricity distributors	8
Obligated gas distributors	23
Non-obligated distributors	14
Energy service companies	329
Companies with an energy manager (CEMs)	22
<b>Overall total</b>	<b>396</b>

Source: Ministry of Economic Development 2013, p. 7

The Energy Service Operator (GSE) performs the technical assessment, verifies the energy efficiency projects and monitors the achieved energy savings. A specific methodology for three types of projects is used to determine the quantification of primary energy savings: standard projects, analytical projects and projects with ex-post calculation.

The savings must be additional to measures that would be normally implemented (difference between ex-ante and ex-post situation). Reference conditions are thus continuously updated to account for regulatory and market changes. Each project is expected to issue certificates for a period of five years (eight years for building envelopes, ten years for high efficiency cogeneration (Di Santo et al. 2014). On 31 May of each year, the GSE verifies whether the obligated parties have achieved their saving targets (Italian Energy Efficiency Action Plan 2014).

The White Certificates represent marketable documents. The Energy Manager Administrator (Gestore Mercati Energetici, GME) operates a platform dedicated to certificate trading and issues the certificate after completing the assessment (Ministry of Economic Development 2013 / Italian Energy Efficiency Action Plan 2014). The White Certificates can be exchanged by means of bilateral contracts, or in the frame of a specific market ruled by GME. A certificate is equivalent to savings of one ton of oil equivalent and has been traded at a value between 95 and 100 Euros.

Three types of White Certificates can be produced and traded. Type I certificates are for savings achieved in the electricity sector, Type II certificates for those achieved in the gas sector, and Type III for those in neither sector (from other fuels).

The GSE calculates the impact of the White Certificate scheme and sets penalties for non-compliance. Tests on the proper implementation of the projects and on-site inspections during construction verify the correct implementation of the projects (Odyssey Mure 2014).

In the first phase of the project, the measures were dominated by deemed saving projects. In 2011, monitoring plans have become the central system for evaluation activities. These plans were introduced including the “tau coefficient” to the saving projects. The coefficient is a multiplier that adds additional energy savings per year to the discounted future savings with a lifespan of five years and more. The result was that the industry sector became a main participant in the system with a share of 95% of certificates.

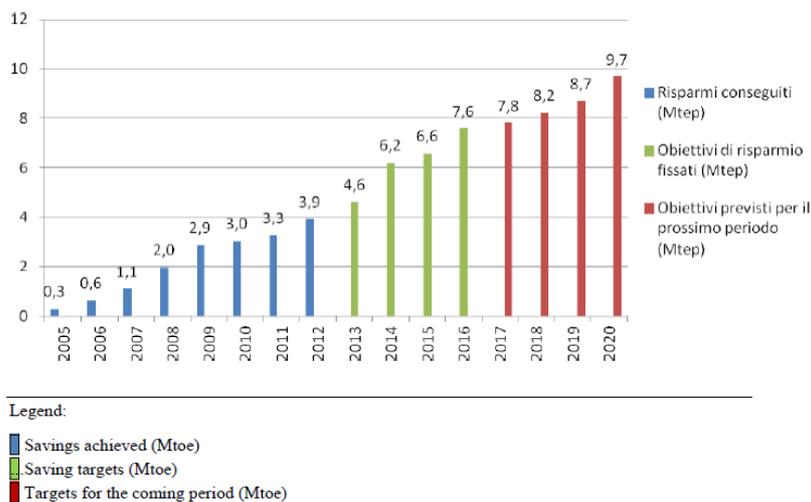
The following points must be addressed in the monitoring plan:

- Process description
- Description of the energy efficiency solution
- Identification of the baseline, and thus of the additional savings
- Definition of the algorithm to calculate the energy savings
- Description of the M&V system (Di Santo et al., p. 9)

### Policy impacts

According to the Ministry of Economic Development, from 1 January to 31 October 2013, more than 14 000 projects were completed and 5 million White Certificates were issued. From the start of the programme until 2014, 6 Mtoe of additional savings were delivered at a cost of EUR 600 million per year (Di Santo et al.). Particularly in the two years 2013 and 2014, the total impact more than doubled due to the changes that made the link with the energy manager obligation bear fruit and led to the majority of savings and certificates now originating from the industrial sector.

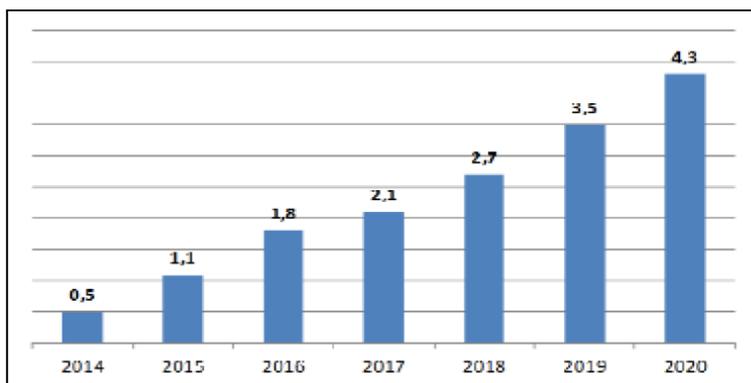
The next figure shows the annual primary energy savings achieved since the introduction of the scheme and those forecast up to the year 2020.



**Figure 1: Past and forecast annual primary energy savings under the White Certificates scheme**

Source: Ministry of Economic Development, 2014b

To estimate the contributions of the White Certificate scheme to the saving targets set out in Article 7 of the EED it is necessary to extract the final energy savings expected to be achieved by new projects up to 2020. The next figure illustrates the annual savings from 2014-2020.



**Figure 2: Expected annual final energy savings under the White Certificates mechanism (Mtoe)**

Source: Ministry of Economic Development 2013, p. 12

## Policy Innovation

Both the White Certificate Scheme and its combination with the energy managers / the Energy Manager Obligation are innovative. Italy was the first country worldwide that introduced the White Certificate Scheme and extended the policy to other target groups like ESCOs and companies with energy managers. For companies with an energy consumption of more than 10,000 toe per year and for public administrations with more than 1,000 toe per year it is mandatory to appoint an energy manager. In parallel, these companies and administrations fulfil the criteria to participate in the White Certificate Scheme. It becomes even more attractive to implement energy efficiency measures. Industry companies can earn money by selling the certificates to energy companies obligated under the White Certificate scheme.

ESCOs are another target group. The high number of ESCOs that participate in the programme underlines the success of the policy, the programme influences the ESCO market positively.

## Lessons learnt 1: Success factors

Success factors are the effective promotion of the programme and actor-specific training programmes (especially in the industry sector) and the integration of voluntary participants like ESCOs and energy managers, to the system. ESCOs consequently acquire expertise in industrial processes. They can use the knowledge and transfer it to other companies.

To minimise the free-rider effect, new rules for allowing new energy efficiency projects only, rather than including existing programmes were introduced (Di Santo et al.).

## Lessons learnt 2: Factors to avoid and possible further improvements

- In the early years of the White Certificate Scheme most projects were concentrated in the civil and service sector. Changes in the system, like the introduction of the “tau coefficient” have now resulted in a steady rise in savings in the industrial sector. Furthermore there are still only very limited projects in the transport sector. The government currently discusses different options to better include the transport sector.
- It might be difficult for small municipal electricity and gas distribution companies and other participants like ESCOs to purchase certificates due to the lack of experience with the trade of certificates.
- In the first years of the programme, low targets and the availability of deemed savings for CFLs let the prices reach a low price of EUR 30/toe (Di Santo et al., p. 4). Other simple measures were implemented and the system was not ready for large scale projects. Consequently, the “tau coefficient” was introduced and allows the inclusion of future savings

(beyond the five years). These large projects relate to e.g. industrial processes and interventions in the transport sector.

### References and further information

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## Disclaimer

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## The Project

In 2006, the European Union adopted the Directive on energy end-use efficiency and energy services ("ESD"). The Directive sets an indicative energy saving target of 9 % by 2016 as well as obligations on national authorities regarding energy savings, energy efficient procurement and the promotion of energy efficiency and energy services. It requires Member States to submit three National Energy Efficiency Action Plans (NEEAPs), scheduled for 2007, 2011 and 2014.

The Energy-Efficiency-Watch Project aims to facilitate the implementation of the Energy Efficiency Directive. This Intelligent Energy Europe project tried to portray the progress made in implementation of energy efficiency policies since the Energy Service Directive via NEEAPs screening and an extensive EU wide expert survey.

[www.energy-efficiency-watch.org](http://www.energy-efficiency-watch.org)

## The Authors

Stefan Thomas, Felix Suerkemper, Thomas Adisorn, Dorothea Hauptstock, Carolin Schäfer-Sparenberg, Lena Tholen, Florin Vondung (Wuppertal Institute)

Daniel Becker, Lucie Tesniere, Charles Bourgault, Sonja Förster (Ecofys)

## List of Abbreviations

**EE** – Energy Efficiency, **EED** – Energy Efficiency Directive, **EPC** – Energy Performance Certificates, **EPDB** – Energy Performance of Buildings Directive, **ES&A Targets** - Energy Savings and Action Targets, **ESCO** – Energy Service Company, **ESD** – Energy Service Directive, **EU** – European Union, **EEW** – Energy-Efficiency-Watch, **MEPS** – Minimum Energy Performance Standards, **MRV** – Monitoring, Reporting and Verification, **MURE** – Mesures d'Utilisation Rationnelle de l'Énergie, **NEEAP** – National Energy Efficiency Action Plan, **R&D** – Research and Development