

BUILDING
ENERGY EFFICIENCY



A Certification System for Building
Efficiency

PORTUGAL

ENERGY PERFORMANCE



Portugal's certification system for buildings encourages efficiency

Portugal has significant potential to save energy and reduce carbon emissions through energy efficiency measures because the country has a much higher national energy intensity than the European Union average – 23.3 percent higher in 2005 and 19.2 percent higher in 2007. Portugal took a first major step toward energy efficiency in 2006 to comply with a directive that required the European Union's 27 member states to adopt measures leading to reduced energy consumption in buildings while maintaining or increasing indoor comfort levels and air quality. The European Union Directive on Energy Performance in Buildings also stated that an energy certification system must be implemented to inform citizens about the thermal quality of buildings at the time of their construction, rental, or sale.¹

Portugal responded to the European Union's directive with a regulation and labeling system for new and existing buildings, called the System for Energy and Indoor Air Quality Certification (SCE). In 2008, Portugal took another important step with the introduction of its National Action Plan for Energy Efficiency, a comprehensive plan consisting of a vast set of energy efficiency policies and measures. The plan aimed to achieve energy savings of approximately 1.8 million tons of oil equivalent per year by 2015, about 10 percent of expected total baseline demand. The Portuguese government expects energy efficiency in buildings will contribute to reaching the 2015 target, through annual energy savings of approximately 200,000 tons of oil equivalent.²

SCALES OF EFFICIENCY

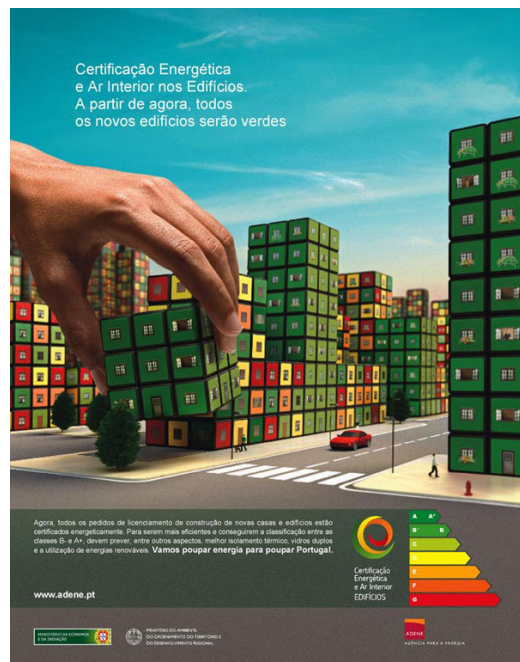
Under the direction of the Portuguese Energy Agency, the System for Energy and Indoor Air Quality Certification classifies buildings on a scale ranging from A+ (highest efficiency) through G (lowest efficiency) and requires a minimum certification grade in the design of new buildings. It was implemented in three phases to give market agents and authorities enough time to adapt to the new framework. During the first phase, beginning in July 2007, only new, large residential and nonresidential buildings (floor area is greater than 1000 m²) were obliged to comply with the new legislation, which requires them to achieve at least a B-certification rating to be approved at the planning stage, before construction begins.³ In the second phase, beginning in July 2008, all new buildings (regardless of floor area) were included in the scheme. Since the third and final phase beginning in January 2009, all existing residential and nonresidential buildings have been required

to obtain a certification rating before the next sale or rental of the property.⁴ Existing buildings not being newly rented or sold are not required to meet any specific level of certification.

To obtain building certification in new and existing buildings, a qualified expert (architect or engineer) must assess the property, including the type of construction (walls, windows, insulation, thermal bridges, ventilation and air-tightness, etc.), and the type and efficiency of the HVAC (heating, ventilation and air conditioning) and hot water systems. Feeding these data into the calculation methodology, the qualified expert establishes the building's energy performance, corresponding to an energy label on a scale with nine different energy efficiency classes. The energy rating is entered into the building's Energy Performance Certificate, together with any recommendations to improve its energy performance and an estimate of nominal carbon dioxide emissions.

The building owner is responsible for obtaining the Energy Performance Certificate, which ranges from USD 185 to USD 310 for an apartment, small shop, office or single family building, but can run up to several thousand US dollars for large nonresidential buildings. Additionally, for each Energy Performance Certificate issued, the Portuguese Energy Agency charges a registration fee of approximately USD 55 per household and USD 310 per nonresidential building, plus value added tax. If a building owner fails to submit an Energy Performance Certificate to the Portuguese Energy Agency when required, they must pay a fine ranging between approximately USD 310 and USD 4,600.⁵

An example of Portugal's public awareness effort to promote energy efficiency in buildings



A Rubik's cube is used to symbolize Portugal's color-coded building certification system.

Source: Portuguese Energy Agency.

In 2009, to help building owners comply with the SCE and encourage the use of renewable energy, the Portuguese government introduced various fiscal incentives. For instance, the deduction related to home loans in the Individual Income Tax increased by 10 percent for class A and A+ level homes; and investing in renewable energy and insulation leads to an Individual Income Tax deduction equal to 30 percent of that investment, up to approximately USD 990 per building.⁶

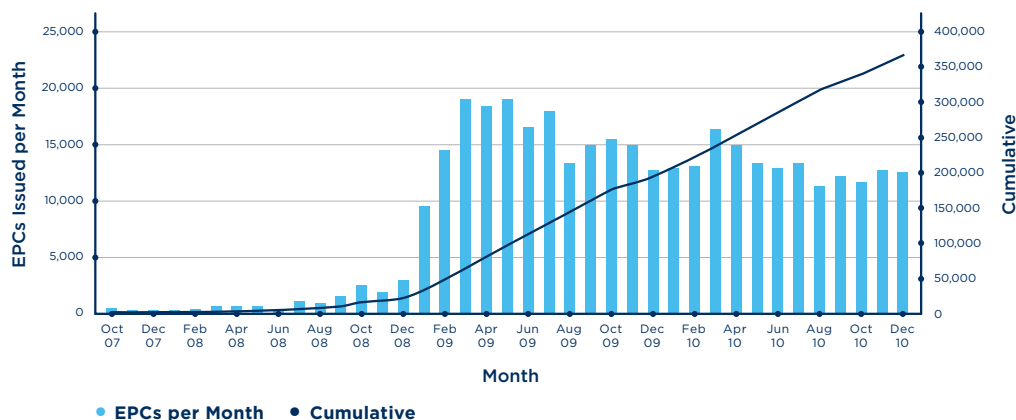
The SCE was promoted through an advertising campaign with the slogan "Let's save energy to save Portugal." SCE marketing appeared on television channels, in the press, on the Internet and on building scaffolding during renovations. By using the image of a Rubik's cube, the authorities explained to the public that under the SCE, buildings will be color-coded according to their energy performance. The ultimate goal is to turn all the cube's sides into the same color, green, meaning economically efficient and environmentally friendly buildings.^{7,8}

SAVINGS BOOST

From the launch of the certification scheme in July 2007 through the end of 2010, more than 350,000 Energy Performance Certificates were issued. About 80 percent

of the certificates were issued after January 2009, following the sale or rental of existing buildings. In 2010 alone, around 180,000 Energy Performance Certificates were issued (about 36,000 for new buildings and 144,000 for existing ones).⁹

Figure 1: Energy Performance Certificates (EPCs) Issued (October 2007–December 2010)



Source: Adapted from Casa Certificada.

About 40 percent of existing buildings that receive certification are rated above the B- threshold, a figure which could increase to 86 percent if all recommended energy-saving measures were installed. Such an investment would reportedly amount to between USD 1,540 and USD 7,990 on average per building, with an average payback period of 6 to 11 years.¹⁰

Certification can play an important role in the efforts to achieve real energy savings in the building sector. However, there are still barriers to overcome.

- Financial concerns about investing in energy efficient technologies have partly been addressed through fiscal incentives, but still pose a challenge to some building owners. For instance, the split-incentive barrier, in which owners pay for efficiency upgrades but tenants reap the benefits, reduces incentive for owners to implement efficiency measures.
- The lack of awareness and information among some consumers regarding the benefits of renewable energy technologies and energy efficiency measures. The government has been trying to change this through ongoing promotional campaigns.
- Training sufficient numbers of qualified experts has proven a challenge and has slowed the timeframe for implementing the SCE. Additional training is also needed to improve the skills of the qualified experts in performing energy audits and recommending efficiency solutions.^{11,12}

Overall, the publicity around the SCE has helped improve awareness of building energy performance among policymakers, builders and owners. Many stakeholders are now aiming for higher goals, including introduction of nearly Zero-Energy Buildings.^{13,14}

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ENDNOTES

Note: all currency conversions to US dollars were calculated using the exchange rate on July 10, 2012 (1 EUR = 1.23 USD).

- ¹ EU Directive no. 2002/91/CE
- ² Sustainable Energy Technology at Work Database. "PNAEE - Portuguese National Action Plan for Energy Efficiency." Web. July 2012. <<http://www.setatwork.eu/database/products/R187.htm>>
- ³ Santos, Paulo, Pedro Mateus, and Eduardo Maldonado. 2011. "Implementation of the EPBD in Portugal. Status November 2010." Portuguese Energy Agency and University of Porto. Web. July 2012. <http://www.epbd-ca.org/Medias/Pdf/country_reports_14-04-2011/Portugal.pdf>
- ⁴ International Energy Agency. 2010. "Energy Performance Certification of Buildings: A policy tool to improve energy efficiency." IEA Policy Pathway. Web. July 2012. <http://www.iea.org/publications/freepublications/publication/buildings_certification-1.pdf>
- ⁵ Santos, Mateus, and Maldonado, 2011, *op cit.*
- ⁶ *Ibid.*
- ⁷ *Ibid.*
- ⁸ Fragoso, Rui. 2012. "Energy Efficiency in Buildings in Portugal - using the Energy Performance Certification System." Portuguese Energy Agency presentation at Solar Energy and Architecture - Innovation and Development, Campus da Caparica, March 30, 2012. Web. July 2012. <http://eventos.fct.unl.pt/solar-architecture2012/files/adene_-_solar_energy_and_architecture.pdf>

- ⁹ Santos, Mateus, and Maldonado, 2011, *op cit.*
- ¹⁰ European Council for an Energy Efficient Economy (ecee). 2009. "Successful Energy Performance Certification Schemes in Two Member States: An ecee case study." Web. December 2012. <<http://www.ecee.org/buildings/CaseStudyEPCschemes.pdf>>
- ¹¹ Santos, Mateus, and Maldonado, 2011, *op cit.*
- ¹² International Energy Agency, 2010, *op cit.*
- ¹³ Santos, Mateus, and Maldonado, 2011, *op cit.*
- ¹⁴ Fragoso, 2012, *op cit.*

Figure References

Figure 1: Energy Performance Certificates (EPCs) Issued (October 2007 – December 2010)

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