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Real Estate market, energy rating and cost. Reflections about an Italian case study

Kristian Fabbri^a, Lamberto Tronchin^{b*}, Valerio Tarabusi^b

^a*Faculty of Architecture – Alma Mater Studiorum University of Bologna - Italy*

^b*DIENCA – Alma Mater Studiorum University of Bologna - Italy*

Abstract

The Directive EPBD introduced Energy Performance Certificate (EPC) an energy policy tool. The aim of EPC is to inform building buyer about energy performance (and energy cost) of buildings. They represent a specific energy policy tool to orientate building sector and retail market toward higher energy efficiency building. The Real Estate market was built in different periods, and in each of these periods the building envelope or the heating plant had different kinds of energy performance. Therefore, in real estate, each building-period has a determinate incidence respect total existing buildings, and they have different energy consumption incidence respect total energy national consumption. The EPBD recast highlight the relation between building elements or technical building system, energy rating and cost-optimal levels of minimum energy performance requirements. In present paper a discussion about Directive's news, Italian EPC and real estate market prospective is presented. Furthermore we proposed a reflection about link between energy cost, energy rating and building property value.

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1. Introduction

The Directive 2002/91/Ce [1] (EPBD) introduces Energy Performance Certificate (EPC) of building in European Union member States. The aim of Energy Performance Certificate is: The energy performance

* Corresponding author.

E-mail addresses: lamberto.tronchin@unibo.it

certificate for buildings shall include reference values such as current legal standards and benchmarks in order to make it possible for consumers to compare and assess the energy performance of the building.

With Directive 2010/31/UE (EPBD recast) [2] on the European Council of March 2007 reaffirmed the Union's commitment to the Union-wide development of energy from renewable sources by endorsing a mandatory target of a 20 % share of energy from renewable sources by 2020. Directive 2009/28/EC [3] establishes a common framework for the promotion of energy from renewable sources.

In preamble (15) of Directive 2010/31/UE Recast (EPBD recast) remark home many building have an impact on long-term energy consumption. "Given the long renovation cycle for existing buildings, new, and existing buildings that are subject to major renovation, should therefore meet minimum energy performance requirements adapted to the local climate". EPBD recast targets are ambitious and resolute, especially for new buildings. The directive introduces the National Plans for increasing the number of "Nearly zero energy buildings", also defines a building with "zero, or very low, amount of energy required, should be covered to a very significant extent by energy from renewable sources" (Article 2 comma 2 Directive 2010/31/EU - EPBD recast).

However new buildings are a small percentage of all existing building stock. The new "urban units" for year in Italy are about 230.000 – 250.000, [4] compared with 20.441.788 existing "urban units" [5]. New building incidence is 1.1% - 1.2% of existing building stock: any "nearly zero building" energy policy could be incisive without energy policy for energy building retrofit through energy saving, energy efficiency and/or renewable energy integration.

Another interesting aspect of EPBD is the introduction of "cost-optimal level" concepts. "Comma 14. 'cost-optimal level' means the energy performance level which leads to the lowest cost during the estimated economic lifecycle". Cost-optimal level evaluation takes into account each "building elements" and "technical building systems" cost, lifespan and related energy saving. For example cost-optimal level of window or boiler depends on: lifespan, cost, maintenance cost (for boiler) and energy saving relate to windows or boiler installation.

The Economic evaluation should be specified with not many and brief economic indicator, for example Net Present Value (NPV) and/or Simple Pay Back Period (SPB). These indicators aren't related to market.

In the Energy Performance Certificate are reported the Energy Classification of building from worst performance (Class G) to better energy performance (Class A or A+) in order to explain saving energy and/or relative economic cost for owner and/or building users

The Energy Labeling is a good tool for real estate market and for defining several benchmarking value in order to address the development policies by legislator, town planning or long term planning [6].

Cost optimal levels could be used:

- 1) To define minimum energy requirements for new buildings;
- 2) To define technical solution to increase energy efficiency scheduled in Energy Performance Certificate.

About the last item will be studied economic and social indicator to support technological choices [7].

The Energy Performance Certification of building has done by "independent expert" (Article 10 Directive 2002/91/CE), therefore several subjects could evaluate energy performance and apply Energy Classification.

In European Union Directive 97/75/CE [8] introduced Energy Labeling for household appliance, with result to eliminate household appliance with energy performance worse. The labeling to communicate energy performance of building with Energy Classification, is an "Energy Policy tool", to stimulate real estate market toward low or zero energy performance building (in case of new building) or to stimulate energy retrofit.

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