

## REAL ESTATE VALUATION IN ROMANIA UNDER EUROPEAN DIRECTIVE ON THE ENERGY PERFORMANCE OF BUILDINGS 2010/31/UE

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**Abstract:** *The most recent European Directive on energy efficiency is 2012/27/UE, whilst the current European Directive regarding the energy performance of buildings is 2010/31/UE. Presently, the European legislation is almost fully transposed into the Romanian legislation such as Law no. 159/2013 that amends and completes Law no. 372/2005 on energy performance of buildings and which came into force starting 19 July 2013, OUG 18/2009 on increasing the energy efficiency of residential buildings or OUG 69/2010 on thermal rehabilitation of residential buildings financed by bank loans with subsidized interest. Such European and national energy efficiency regulations imposed in the last years led, in the real estate valuation field, from “if” to “when” and “how” a real estate’s sustainable features will impact its market value. The present article undergoes an analysis of the impact that European and Romanian regulations on buildings energy efficiency have upon the real estate valuation field, through specific valuation standards in force (TEGoVA, RICS), and reveals the key issues the Romanian valuers should take into consideration when valuing sustainable real estate.*

**Keywords:** *energy efficiency, sustainable buildings, green buildings, real estate valuation*

### 1. Introduction

In the last two decades a special focus was placed on assets such as green buildings, as a new concept was born and taken over – the concept of sustainable development. The basis of this concept is the report of Brundtland Commission “Our Common Future”, presented and published in 1987. According to this report the sustainable development is defined as “the development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [17].

On the other had, there is no recognized international or European definition for sustainable buildings but, generally, such a building is considered to be one placed on its land tract, designed, built, operated, modernized and reused in a way that allows it to be environmentally friendly and that ensures the efficient use of the natural resources existing onsite or nearby.

The literature presents sustainable buildings also as “green”, “passive”, “ecological”, “natural” or “nearly zero” energy buildings.

Among the main principles of sustainable development presented in different European directives are the promotion and protection of fundamental human rights, active involvement and information of citizens in decision making, integration of economic, social and environmental politics through impact assessments and consultation with the stakeholders, the use of knowledge to ensure economic and investment efficiency and the “polluter pays” principle, which is main the driver of the real estate activity.

According to the *European Directive 2010/31/EU on energy performance of buildings*, buildings all over the world are responsible for approximately 50% of total energy consumption, for 40% of total CO<sub>2</sub> emissions and for 50% of the total waste, while buildings in the European Union are responsible for 40% of total consumption energy and for 36% of total CO<sub>2</sub> emissions [7]. Consequently, the main objectives pursued by the above mentioned Directive and also by the *European Directive 2012/27/UE* are:

- A 20% reduction in energy consumption of existing buildings by 2020.
- All new buildings must be nearly Zero-Energy Buildings (nZEBs) as of January 1, 2019 for government buildings and the January 1, 2021 for the remaining buildings.
- A 80-95% reduction in CO<sub>2</sub> emissions by 2050 (compared to 1990 levels) by implementing the principles of sustainable development.

The entry of green buildings into the real estate market created a new challenge for valuers everywhere. Mankind is becoming increasingly aware of the harmful impact that its activity has upon the environment and is trying to find innovative solutions to reduce it. In the construction industry, these solutions are translated into governing regulations that require the use of sustainable building projects and materials, renewable energy and water supplies, BMSs (Building Management Systems) and more.

Some of the green features presently used for sustainable real estate development around the world are:

- The real estate connectivity to the community by quick access to the transportation system or special paths for cyclists, which reduce travel costs and carbon emissions.
- The best location of the building on its land tract is particularly important because location might have environmental impact.
- Smart landscaping can overshadow or provide good lighting of certain areas of the building as well as a smart design and placement of windows together with differentiated levels of glass protection depending on the orientation to the cardinal points.
- The use of raw construction materials or those from indigenous renewable sources and efficient construction techniques in terms of energy and resources used [14] [15].

The *Romania Green Building Council* underlines some of the innovative construction techniques used for green building [16]. The green roofs have many advantages such as carbon dioxide absorption, allow only very small amounts of heat transfer from outside to inside the building, allow air freshening and have a pleasant and natural look.

The solar panels are one of the most efficient thermal power generation systems, allowing autonomy achievement. The temperature conversion cooling systems reduce energy consumption by 90% and compensate ventilation gap created by the new building insulating systems, ensure thermal comfort, and the energy consumption is greatly reduced compared to that of conventional HVAC devices.

Insulation of exterior walls with natural materials such as wool, hemp or cotton fibers is energy efficient and biodegradable and do not cause any kind of side effects on human health.

Bio washable paints eliminates emissions of harmful substances and those used as thermal insulation have increased efficiency by 10% compared to traditional paints.

All of these green features are very new on the market and real estate valuers must live up to expectations and be prepared for when the market begins to recognize these characteristics and take them into account within the valuation process. In conclusion, in this global context, it is important also for Romanian real estate valuers to become aware of sustainable features of the buildings and land at the same time with the market participants that tend to gain awareness of sustainable development.

National real estate markets already have internal regulations which must be applied in order to obtain an energy performance certificate. At the same time, in the same country, but

from the international market point of view, an investor or an owner may choose to build green by meeting the requirements of sustainability measurement systems.

Such systems are LEED - *Leadership in Energy and Environmental Design* developed in USA and internationally recognized and applied, BREEAM - *Building Research Establishment Environmental Assessment Method* developed in UK which also became an international sustainability measurement system, DGNB - *Deutsche Gesellschaft für Nachhaltiges Bauen* developed in Germany and many others. These systems permit the investor or owner to allocate to its building or project an additional energy performance certificate with a view to obtaining various types of benefits.

At present, valuers take into consideration and analyze only part of the features related to the property sustainability, such as the land contamination risk. But there are other features which, when recognized by the market, may impact the real estate value, such as:

- Sustainable locations
- Renewable power sources
- Efficient water supply systems
- Ecological building and insulation materials
- Quality of the interior air
- Means of recycling water or waste
- Building's capacity to adjust to the market requirements as regards the incorporation of sustainability features
- Sustainable building designs and configurations

As new technologies and/or regulations in the constructions field are in place, and new fiscal measures are taken or the existing legislation is amended in order to comply with the sustainable development principles adopted in a state, it is recommended that the valuers acknowledge these regulations and monitor their effects on the real estate market. When these effects become significant and are recognized by the market players, the valuers must take them into consideration within the valuation process.

## **2. Literature Review**

The main questions concerning investors, developers and owners of sustainable buildings is whether their building cost is higher than the cost of similar properties which do not have energy or water efficiency systems or other green features, and what would the financial and non-financial benefits be, as well as the associated risks resulting from owning or leasing them.

A report prepared by Greg Kats together with Leon Alevantis, Adam Berman and others (2003), which analyzes the costs and the financial benefits of green buildings in California, mentions that a small initial investment of less than 2% of the building costs used in order to incorporate the green building features within a project produces savings during the entire lifetime of that building amounting to ten times the initial investment.

Broughton, in its series of three articles "Costs, Savings and Value" mentions the conclusions of several researches performed on the same topic, namely that most owners, developers and professionals in the constructions field interviewed consider that the strong points of building and using green buildings reside in their investment value, in the attraction of tenants, the decrease of operational expenses, the increase of the investment-related profit, the productivity of the tenants, but also that it is necessary to better understand the cost-benefit relation [4] [5] [6].

The above-mentioned report also shows that the average cost premium is 1.84% (analysis performed on a sample of 33 LEED certified green buildings) and that the average savings

related to the water and energy consumption amount to 30-34% and 29-55% respectively, depending on the LEED certification of the building (analysis on a sample of 168 LEED certified green buildings).

Thus, as the cost-benefit relation becomes more transparent and the benefits resulting from the investment in sustainable properties are recognized by the market players, the sustainable features of the properties will influence their value, and the valuers will have to take into account these characteristics in the valuation process and also include a special section on this topic in their valuation report.

Lorenz and Lüzkendorf (2008) present the main reasons why it is very important to immediately take into consideration the sustainability features of the properties in the real estate valuation activity [9].

It is also mentioned that the valuation reports should contain a dedicated section clearly describing the green features of the subject property and two statements of the valuer mentioning its opinion regarding the benefits resulting from these features on one hand and the impact of these benefits and potential related risks on the value of the property on the other hand.

These recommendations are in line with those presented in the RICS valuation guidelines *Sustainability and residential property valuation*.

However, the authors consider that the sustainable features should not be compulsory taken into account in all cases and at high detail level if the market does not recognize them. They must be considered in the valuation process to the extent of their impact upon the comparable properties within the subject property market.

### 3. Energy Efficient Building Regulations and Valuation Standards

Since 2005, the European legislation such as *European Directive 2010/31/UE on the energy performance of buildings* is almost fully transposed into the Romanian legislation. The most recent national regulation on this issue, namely the *Law no. 159/2013*, amends and completes *Law no. 372/2005 on energy performance of buildings*. It came into force starting July 19, 2013. Such European and national energy efficiency regulations imposed in the last few years led, in the real estate valuation field, from “if” to “when” and “how” a real estate’s sustainable features will impact its value.

By the end of 2013, Romania should ensure the modernization of the urban cogeneration and heating systems and the rehabilitation of at least 25% of the buildings with multiple levels, thus resulting in significant energy savings, reduced carbon dioxide emissions and reduced energy bills. In 2020, the percentage should reach 35% of the multileveled residential, administrative and commercial buildings, and 40% by the end of 2030. In addition to the thermal rehabilitation of the existing buildings, efforts should be made for the design and construction of new buildings with very low energy consumption, within 15-50 KWh/sqm/year, or even with zero consumption buildings so called “nearly zero-energy buildings”.

#### 3.1. Romanian Legislation Related to Sustainable Buildings Development

The Romanian legislation in force regarding the energy performance of the buildings includes mainly the following [3]:

- *Law 159/2013* for the amendment and completion of *Law 372/2005 regarding the energy performance of buildings* and related methodology

- *Government Emergency Ordinance 63/2012* amending and supplementing *Government Emergency Ordinance 18/2009 on increasing the energy efficiency of residential buildings and related methodology*
- *Government Emergency Ordinance [69/2010](#) on thermal rehabilitation of residential buildings financed through bank loans with subsidized interest.*

Law 159/2013 admits as of major public interest the correct information of the buildings' owners/administrators through the Energy Performance Certificate (EPC) [11]. According to article 13<sup>1</sup>(1), the law imposes the obligation for the investor, owner or administrator to obtain a building or building-unit CPE in case it is sold or rented, prior to perfecting the contract.

The law presents the building energy audit as a specific procedure aimed at obtaining data on energy consumption profile of the audited building. It is based on thermal and energy analysis of the building, together with identification and quantification of measures that may be implemented in order to achieve energy savings.

The energy performance certificate is a document prepared according to the methodology for calculating the energy performance of buildings. It is an effective and transparent tool for the analysis of actual energy performance of a building or building unit, whose purpose is to inform, raise awareness and motivate users, decision-making authorities and participants in the housing market and construction.

There are two types of EPCs:

- (a) EPC used for buildings or single family homes, and
- (b) EPC used for apartments.

The certificate shows the energy performance of a building or of a building unit; it includes data regarding the energy consumption in buildings/units of buildings and, if there is potential to significantly reduce consumption, it can be accompanied by recommendations to reduce thereof. Its validity period is 10 years from the date of issue/registration specified in CPE, except the case when the respective building is under major renovation.

Romania has adopted as definition for a major renovation the definition which imposes application of the test by comparing the renovation cost of the building envelop and/ or its technical systems with the building tax value, excluding the value of the land on which the building is located.

This law applies to certain types of real estate properties, whether newly constructed or in operation:

- Residential real estate such as detached houses, blocks of flats
- Commercial real estate such as office buildings, trade related buildings, hotels, restaurants
- Special real estate such as schools, hospitals, sports facilities
- Other types of energy consuming buildings – industrial, agricultural real estate, etc.

On the other hand, the law does not cover protected buildings and monuments, as part of built areas protected according to the law, or buildings with special architectural or historical value which, if the methodology requirements applied, it would unacceptably alter their character or appearance; buildings used as places of worship or for other religious activities; temporary buildings intended to be used for periods of up to 2 years, within industrial areas, workshops and non-residential buildings in agriculture that need a low consumption of energy; residential buildings which are intended to be used less than 4 months per year; independent buildings with a usable area of less than 50 square meters.

The features of the energy audited buildings taken into consideration in order to calculate the buildings energy performance are grouped as follows:

- Building position on its land tract
- Building orientation
- Climate parameters

- Ventilation characteristics of the building envelope and of other interior partitioning elements
- Characteristics of heating and hot water supply, including the degree of tightness in contact with the air in the unheated areas
- Characteristics of the air conditioning system
- Characteristics of the ventilation system
- Characteristics of the lighting system
- Characteristics of passive solar and solar protection systems
- Natural ventilation
- Indoor climate conditions

Those features may be completed, as appropriate, with other elements, relevant for enhancing the energy performance such as: active solar systems, other heating systems, including electrical systems, based on renewable sources, electricity produced through the cogeneration technology, heating/cooling stations of a block of flats or of a district, natural lighting.

The energy performance indicators of a building are its energy performance class, the total specific energy consumption (in kWh/sqm per year) and the CO<sub>2</sub> equivalent emissions index (in kgCO<sub>2</sub>/sqm per year).

Depending on the specific annual energy consumption of the analyzed building and of the reference building, as well as the ones corresponding to heating, ventilation/ air conditioning, lighting of the spaces and hot water (determined by calculation), the building is positioned on an energy scale, in one of the 7 energy performance classes: from class A – characterized by the lowest energy consumption, 70 kWh/sqm per year to class G – corresponding to the highest energy consumption, 500 kWh/sqm per year.

Law 159/2013 on the energy performance of buildings subjects to direct attention of real estate valuers the following information that may impact on the assessment process, namely:

- In case of new buildings the law requires a study on the possible use of high-efficiency alternative systems such as decentralized energy supply systems based on renewable energy, cogeneration, heating or cooling, heat pumps, ground-air heat exchangers, heat recovers. The valuer will be able to take into account in the HABU analysis, if appropriate, the information contained in this study.
- As of December 31, 2020 new buildings will have to have energy consumptions close to zero, except for new buildings owned by the state or government administrations, for which the starting date to apply this rule is 31 December 2018.
- Starting the law's entry into force the investor, owner or manager of the building is required to provide the prospective buyer or tenant, prior to perfecting the sale, purchase or lease, the EPC copy, so that they can learn about the energy performance of the building or building unit which is to be bought or leased; the owner is required to submit the original EPC to the new owner of the building.
- The law requires that the investor, owner or manager of the building or building unit include in ads for sale, buy or rent information regarding the performance indicators of the building as in EPC.
- In case of buildings owned or managed by public authorities and of buildings within which institutions providing public services operate (having a floor area of 500 m<sup>2</sup>), the law requires that the building's EPC be displayed in a publicly accessible and visible place.
- For buildings with a total useful floor area over 250 m<sup>2</sup> owned or managed by public authorities or in which institutions providing public services operate, the EPC must be displayed in an accessible and visible place to the public starting July 9, 2015.

As regards the *Emergency Government Ordinance 63/2012 on increasing the energy efficiency of residential buildings* it applies to buildings constructed prior to 1990 [10].

The principal types of intervention works permitted under this ordinance are thermal envelopes rehabilitation, thermal rehabilitation of the heating systems, and installation, where appropriate, of alternative energy production systems from renewable sources.

### **3.2. Valuation Standards Useful for Sustainable Real Estate Valuation in Romania**

Presently, only a reduced number of valuation standards and information papers applicable to sustainable real estate are available for European valuers [3]. Romania adopted and applies the *International Valuation Standards* since 2004, through The National Association of Romanian Authorized Valuers - ANEVAR. The current edition of *ANEVAR Standards 2012* comprises the *International Valuation Standards 2011* and *ANEVAR Guidance Notes 2012*. The *International Valuation Standards 2011* does not comprise any standard or guidance note with this topic. In this context, the only useful information would be those issued by TEGoVA - The European Group of Valuers' Associations and RICS - Royal Institution of Chartered Surveyors, of which main issues are presented below.

TEGoVA presented in 2012 the European Valuation Application EVA 8 - *Property Valuation and Energy Efficiency* and the Information Paper - *Sustainability and Valuation*, whilst RICS issued in 2011 the Information Paper - *Sustainability and Residential Property Valuation*. These are the only standards currently available for application by the European valuers.

EVA 8 - *Property Valuation and Energy Efficiency* is elaborated according to the *European Directive 2010/31/EU* and comprises definitions and comments, part of them extracted from the directive [13].

Paragraph 4.3 states that the valuer must take into consideration the energy performance rating of the building subject to valuation and use a recognized basis of valuation, like the market value.

Besides the regular activities of the valuer, such as valuation for sale, for financial reporting, for secure loans etc., in the light of the *European Directive 2010/31/EU* the client may request the valuer to provide assistance in order to decide whether the planned renovation of the property can be included in the major renovations category. If so, the client is obliged to make sure that, through those renovation works, the building will meet the minimum energy performance requirements.

EVA 8, paragraph 5.3.4, stipulates that, as per the above Directive, a major renovation is a “renovation where the total cost of the renovation relating to the building envelope or the technical building systems is higher than 25% of the value of the building, excluding the value of the land upon which the building is situated or if more than 25% of the surface of the building envelope undergoes renovation” [13].

As the Directive does not stipulate the value type to be estimated in this case, it is the market value that is generally considered as type of value to be estimated. Therefore in order to be able to answer this question, the valuer must know which of the two testing alternatives is applied by law in the country where the valuation mission is performed.

EVA 8 also proposes the methodology to be applied when the cost - value alternative is applied (para. 5.3.7).

- In the first stage, the valuer will estimate the value of the real estate as a whole (the improved land).
- In the second stage, the valuer will estimate the value of the land assuming it is not improved.
- In the third stage, the valuer will deduct the value resulting in stage two from the value obtained in stage one and will obtain only the value of the building.

According to the test, if the renovation cost exceeds 25% of the building value, the work is considered as major renovation, and the client must ensure, through renovation, a minimum energy performance for the building.

Paragraph 5.3.8 stipulates that, in case of interior renovation only, it is possible that the second test, which considers the renovation of over 25% of the building envelope area to be a major renovation, may not be applied.

In the case of valuation at the market value, the standards states that the valuer should take into account the EPC (para. 5.4.11) of the valued building, if it exists and is valid.

RICS' Information Paper recommends valuers (para. 5.3.1) to collect, during the stage of property inspection, data regarding the energy and carbon emission performance of the buildings [12].

Moreover, it recommends (para. 6.3.3) that the valuation report should include detailed descriptions of the green features or lack of green features of the property and statements in which the valuer describes the benefits of these features or the risks associated with the presence of unsustainable features and on the impact of these benefits and/or of the risks to property value over time.

#### **4. Applicability of the Three Approaches to Value in Sustainable Buildings Valuation**

There is no need for new valuation approaches and methods development in order to value sustainable real estate [8]. The real estate valuation approaches and methods, such as recognized and applied in valuation practice in Romania (according to the ANEVAR Standards in force), the market approach, cost approach and income approach, remain applicable in the case of sustainable real estate also, but with specific amendments.

The following are observations and recommendations for the application of the three approaches to valuation in the case of sustainable buildings.

Market approach can be applied to sustainable buildings valuation, taking into account the same conditions as in case of conventional buildings: the valuer must have data on a sufficiently large number of comparable sustainable buildings, verified through a rigorous analysis, data based on which he/she can quantify the necessary adjustments of differences between the comparable properties and the subject property.

Currently, the number of green buildings constructed or traded in Romania is low, this being one of the major disadvantages of the current applicability of the market approach in valuing sustainable buildings in Romania, except the case of apartments located in rehabilitated buildings.

One method to take into account, where relevant, the green features of the buildings within this approach, is to apply the relative comparisons analysis by introducing in the market data grid elements of comparison aimed as relevant green features of the subject and comparable buildings.

For buildings or building-units (apartments) heaving an energy performance certificate (EPC), the valuer can extract information on their green features directly from the certificate.

Significantly, this information is represented by energy classes assigned to the heating, lighting, air conditioning, ventilation systems of the subject and comparable buildings. Thus is relatively easy for the valuer to establish which green feature of the comparable property is superior or inferior to the same green feature of the subject property.

The cost approach can also be applied in case of green buildings, but the valuer must take into account a number of factors that must be considered from another angle now.

It is universally recognized that the construction costs of green buildings might be higher than for conventional buildings. Certain forms of depreciations may be lower than in case of conventional buildings, such as functional obsolescence caused by a deficiency.

On the other hand, until the market starts to recognize the green features of buildings, a sustainable building may have a functional obsolescence caused by a recoverable or unrecoverable superadequacy.

Green building elements integrated in the subject building have economic and useful lives greater than in case of conventional building elements, because they are made of durable construction materials.

One of the major drawbacks of the cost approach is that it does not allow consideration of intangible benefits that the integration of green features in the building brings, such as increased productivity, tenants' or employers' satisfaction regarding healthy indoor living or working environment, company's brand association with an environmental friendly building etc.

The income approach can be applied to sustainable trade related property, and all the more, in the current market conditions it is the most recommended.

When applying any of the methods of this approach (income capitalization and discounted cash flow), valuers should pay attention to the following issues highlighted through specialist market researches of sustainable buildings compared to conventional buildings:

- Types of lease agreements/contracts – it is observable the occurrence of a new type of lease contract, generically called green lease. This type of lease allows the sharing of costs for various services between the owner(s), tenant(s) and manager(s), which may affect the cash flow generated by the property.
- Lease period - there is market evidence that sustainable buildings can attract tenants more rapidly than conventional buildings, and also it is assumed that these buildings have the potential to retain tenants for longer lease periods.
- Rent level - it is considered that the rents charged for sustainable buildings may increase mainly due to the energy efficiency of the building and water supply system, which implies a significantly lower level of utilities operating expenses.
- Occupancy rate - may significantly increase.
- Operating costs - thanks to innovative cutting edge technologies incorporated into green buildings that reduce energy and water consumption, operating costs may be lower, especially those with electricity and water, building repairs and maintenance and thus the real estate's market or investment value may increase [1].
- Net operating income (NOI) - may significantly increase.
- Capitalization rate, discount rate - risk premium attached to sustainable buildings is smaller, thus cap rate and discount rate may be lower.
- Terminal capitalization rate - may be lower as a result of a better capacity of the sustainable building to attract buyers/ investors.
- Reversion - due to lower physical and functional depreciation of sustainable buildings (because of the use of sustainable building materials and innovative construction technologies), reversion may be higher.
- Real estate tax, income tax - the state may grant to owners real estate tax and income tax incentives [2].

## 5. Conclusion

This paper presents the impact of European Directive on the newest Energy Performance of Buildings 2010/31/UE upon the real estate valuation in Romania, via the Law no. 159/2013 on energy performance of buildings. The real estate valuers must always be aware of the latest regulations in the sustainable development field which impact upon the constructions field.

As the green features of buildings become recognized by the market players, the real estate valuers will have to request, collect and store information on these features and apply the approaches to valuation taking account of them.

In order to better conduct the required field inspection of a real estate, the valuer may use standard field inspection data sheets that include sustainable features consistent with the EPCs and/or other sustainability measurement systems, such as LEED, BREEAM, DNGB etc.

In the Romanian real estate market there are still few sustainable real estate, but the European and worldwide trend is clear as regards the building activity of such properties. Even in this almost inactive market for sustainable real estate, the Romanian valuers will have to value this type of buildings for transaction purposes or else. In order to do this they can apply the recognized valuation methods within the three approaches to value, but with specific amendments presented within this paper.

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