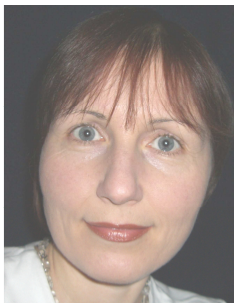


BOTTOM-UP OR TOP-DOWN INSTRUMENTS FOR MORE SUSTAINABLE BUILDINGS?



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Summary

Real estate valuation methods – referred to as bottom-up methods in this paper - are applied when buildings are purchased or sold, either privately, in connection with real estate funds, or in the course of mergers and acquisitions. They have the potential of being powerful instruments for pointing out the sustainability performance of a building, and thus could have an impact on a market transition towards sustainable buildings. However, property valuation is carried out by comparing sustainable buildings with conventional market representatives, and methods are based on the experience of valuers gained in the past. Ecologically sustainable buildings have a positive impact on the economy which is not considered at present. Marketing does not focus on these aspects, and users do not demand them. Thus, sustainability performance is hardly taken into account in property valuation. There is a lack of awareness on both sides which needs to be bridged by policy instruments – referred to as top-down instruments in this paper. The European Energy Performance of Buildings Directive (EPBD) and the Thematic Strategy on the Urban Environment have the potential to provide appropriate instruments for considering sustainability aspects in property valuation. This paper presents an approach how to balance top-down and bottom-up instruments by utilizing the method of benefit analysis.

Keywords: Property valuation, building assessment, life cycle assessment, whole life cost, sustainable buildings

1 Introduction

Supporters of sustainable construction argue that sustainable buildings are characterised by stable values, thus promoting the market penetration of these buildings. The example in **Fig. 1** points out the underlying assumption: buildings are durable goods, and during their lifetime they are subject to several valuations, for instance in the course of purchase and sale or in the course of accounting.

Fig. 1 exemplifies two buildings, representing the same value at the time of construction and five years afterwards, but differing in value after ten years: while realty 1

with the sustainable building shows stable value, realty 2 with the non-sustainable building decreases in value due, for instance, to vacancies as a consequence of strongly increasing energy prices.

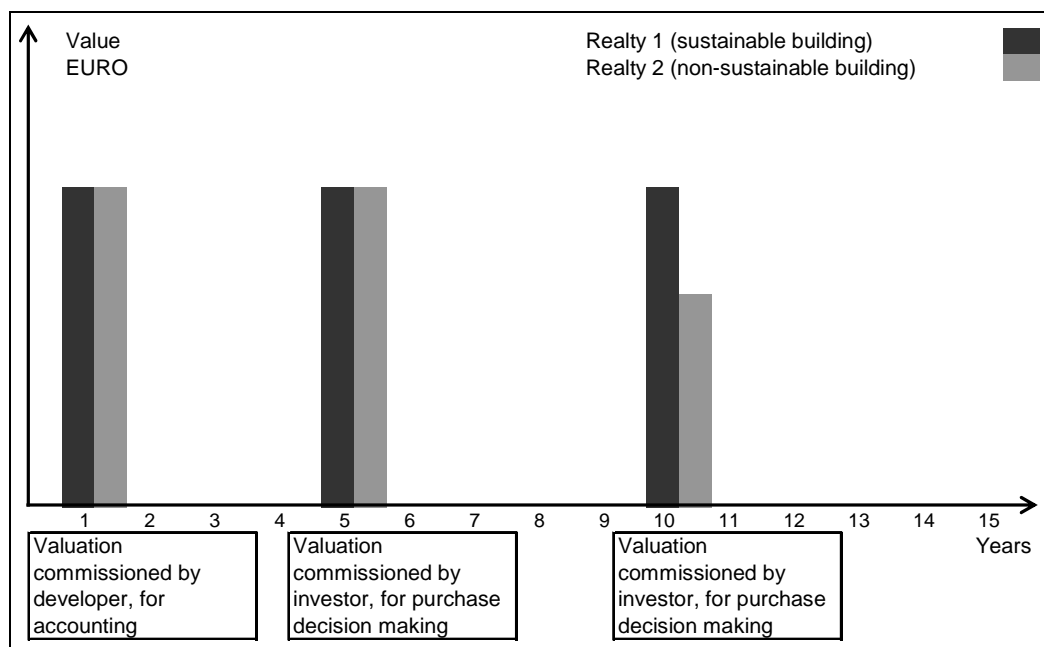


Fig. 1 Realty deals after five and ten years: exemplary changes in value (own source)

However, stable value of sustainable buildings will only contribute to market penetration if valuation methods clearly highlight the quality of sustainable buildings in terms of monetary value, thus making it possible to differentiate between sustainable buildings and non-sustainable ones.

2 Do property valuation methods indicate sustainable building qualities?

In order to explore this issue more deeply, three valuation methods were analysed regarding their potential to promote market penetration of sustainable buildings: „Due Diligence Real Estate“, „Property Valuation“ according to the Austrian property valuation legislation, and “Property Rating” according to TEGoVA. It was investigated to what extent the quality of sustainable buildings is expressed in property valuation at present and how the routine should be improved to present the quality of sustainable buildings more effectively in future. It was demonstrated that all three described valuation methods are suitable for the consideration of building related sustainability aspects. Sustainability aspects can either be taken into account and can be reflected in the valuation result with the currently applied method, or it is feasible to further develop the method according to the requirements. [1]

Among others, all three methods are based on the technical documentation of the buildings to be assessed. This is essential to quantify the impact of the building quality on the economic performance of the property. However, depending on the method, technical documentation is carried out at different levels.

While costly Due Diligence Real Estate is always based on a detailed building analysis, providing the grounds for the monetary assessment carried out by using the technique of discounting cash flows, Property Valuation according to Austrian legislation seldom uses building specific data due to limited financial resources. The latter is carried out based on guiding values and approximate values, gained from experience. However, sustainable buildings are equipped with innovative technologies and materials which have an impact on operation costs and future risks. Differences regarding operation, maintenance and durability compared with buildings equipped with conventional technologies and materials are not reflected in these guiding values. However, the consideration of building specific data in evaluation is imperative to differentiate sustainable buildings from non sustainable ones in property valuation. [see also 2]

The following figure shows the relation between building quality aspects and economically important factors, such as the vacancy risk, which is an input parameter for property valuation calculations.

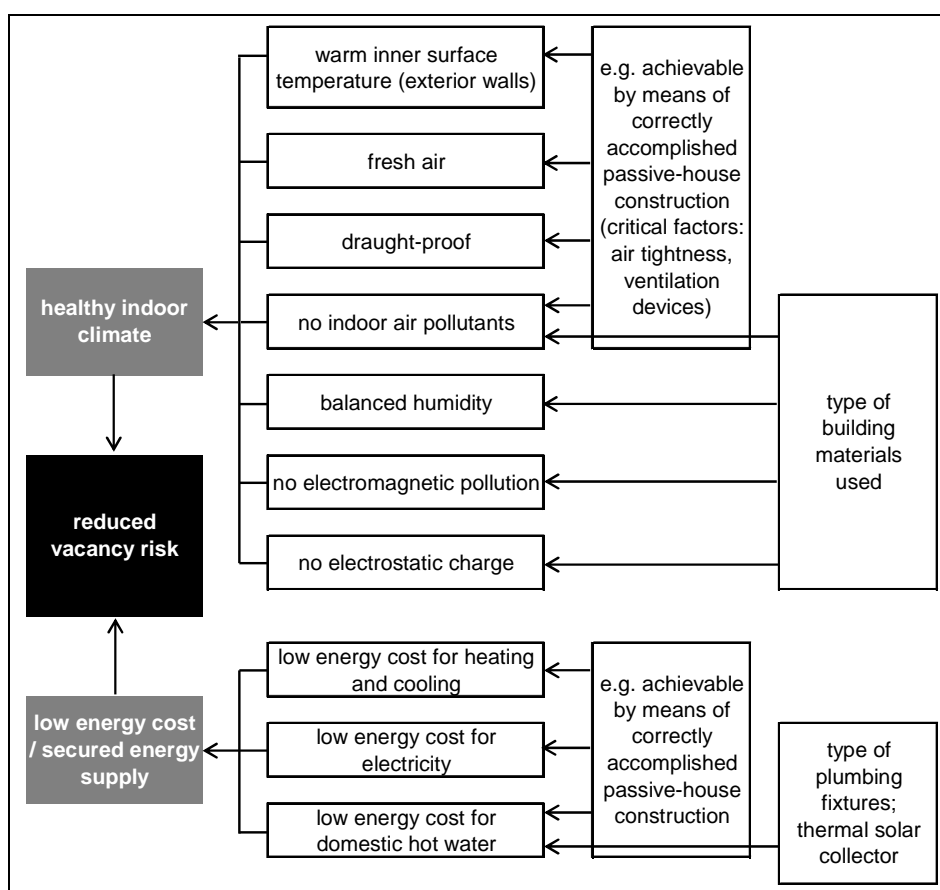


Fig. 2 Relation between building quality aspects and vacancy risk (own source)

Usually, vacancy risk is estimated a percentage of the annual gross yield, irrespective of the building quality. Often, building specific data are not available or are cumbersome to collect, and even if they are available, there is the question whether economic experts will be in the position to assess technical building quality effectively and accurately, and to relate technical building quality aspects to economic calculation parameters. Buildings are becoming more and more complex and technologies are rapidly changing.

Here, green and sustainable building assessment systems come in: they have the potential to play an important role because they provide detailed building related data such as energy consumption, materials, comfort. In addition, they provide an assessment result with regard to the building quality, which can be used by non-technical experts. **Fig. 3** illustrates the potential relation between sustainable building assessment systems and economic property valuation methods by means of the Austrian example Total Quality building assessment system (TQ).

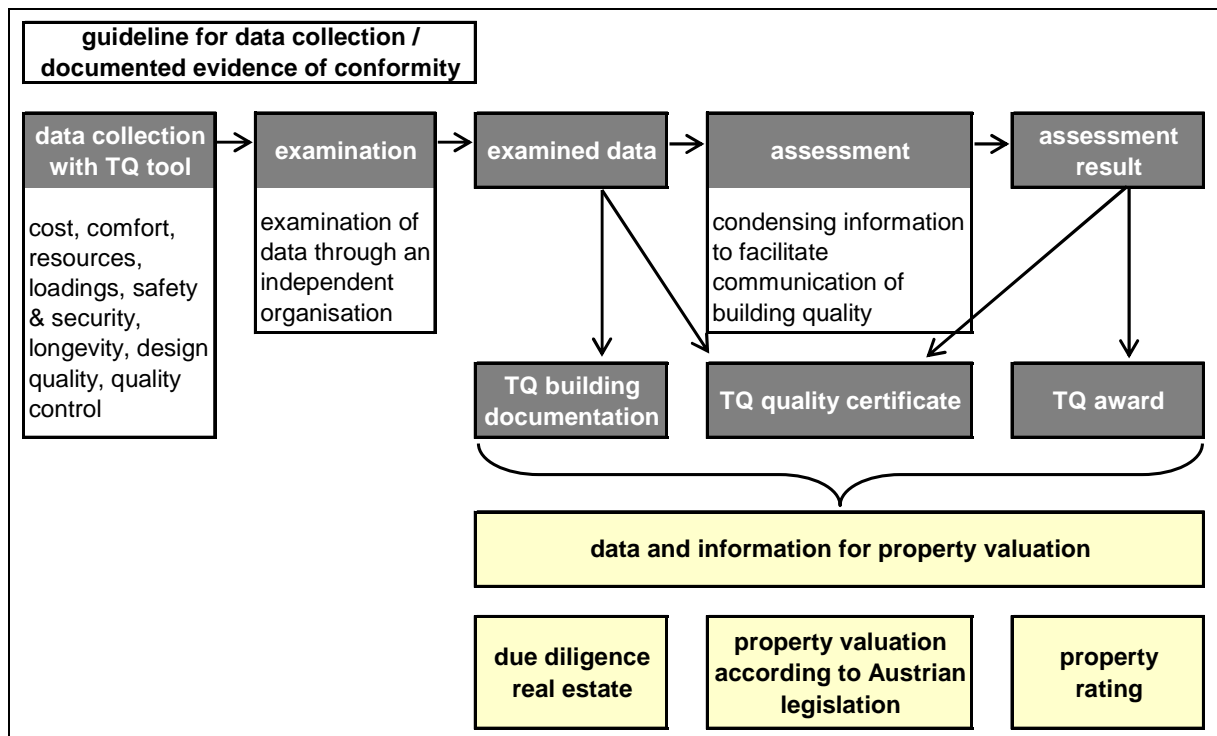


Fig. 3 Relation between the sustainable building assessment method TQ and property valuation methods (own source)

TQ is carried out voluntarily, and currently there is no demand for TQ building certificates by property valuers. TQ is mainly used by developers as internal quality control system and TQ building certificates are presented to financing institutions in the course of project financing. The assessment system spreads slowly and is far from being part of the valuation process, although the TQ assessment system considers exactly those aspects which will influence the property valuations results if they are properly taken into account: income from rent, operating costs and future risks (being considered by the amount of the interest rate) influence the property valuation results substantially, depending on the quality of indoor climate, the level of energy consumption and security of energy supply as well as the amount of whole life costs. These are parameters which have the potential to create a demand on the market; there is the underlying assumption that demand is not developed yet because the economic impact of building quality is not well known.

However, even if the relation between technical building performance and economic impact on valuation is clearly displayed, at the end of the objectively performed valuation the valuation result will always be weighted according to market demand.

This step is part of the property valuation methods and must not be omitted. Therefore, the challenge is to create demand for sustainable buildings on the market.

In this respect, recent developments at EU-level will most likely promote sustainable buildings: The energy certificate according to EU directive 2002/91/EG will make the building energy performance visible and will thus create awareness and demand; in future, economic transactions will be possible only when presenting the building energy certificate to interested customers.[3] There are plans to stretch regulations in EU directive 2002/91/ from energy issues to other building-related sustainability aspects, such as comfort, emissions, water management. The EU Thematic Strategy on the Urban Environment clearly states that the extension of the energy certificate is needed to increase the transparency on the building market. [4]

3 Short-term solution: combining monetary valuation with benefit analysis

Under current market conditions, application of the benefit analysis can help promoting sustainable buildings: combining the monetary valuation with a benefit analysis referring to key sustainability parameters makes it possible to consider sustainable building qualities in purchase decision making. Benefit analysis is based on non-monetary information and allows for an informed decision making regarding the future impact of factors which may potentially influence the future valuation result.

The pragmatic solution described below is based on the sustainability oriented TQ building assessment method which is also based on the benefit analysis. For each criterion a target value is defined, and the degree of achieving the target is displayed by means of a defined number of points. The TQ building assessment is carried out in great detail, requiring high effort; therefore it will hardly be possible to make the TQ building assessment the standard method for being combined with the results of a property valuation. However, TQ building assessment can be used as the basis to develop a simplified streamlined approach. In terms of activities to introduce comprehensive building passports at EU level according to the EU Thematic Strategy on the Urban

Environment, the following assessment categories and criteria for conducting a benefit analysis are suggested:

- “Total energy consumption” with the sub criteria „energy efficiency“ and „renewable energy”
- “Indoor environment” with the sub criteria „air quality“ and „comfort“
- “Life cycle cost” in the sense of “whole life cost” with the sub criteria „production costs“, „operation costs“ und „external costs“

The benefit analysis is based on expert reports, which are provided by the experts in their respective fields (see **Fig. 4**). As shown, one of the three fields of expertise is already regulated by the EU directive 2002/91/EG and the corresponding national laws. The other fields of expertise being “indoor climate” and “whole life costs” can be controlled in future regulations based on the EU Thematic Strategy on the Urban Environment.

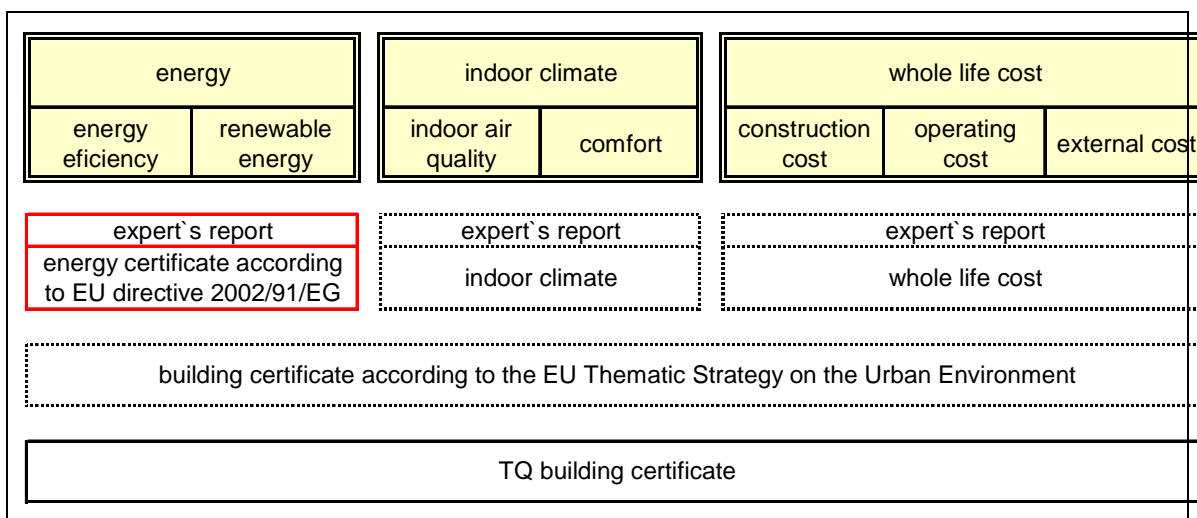


Fig. 4 Sustainable building qualities and their coverage through various building certificates (own source)

However, there is no need to wait for EU-regulations for voluntary sustainable building assessment systems such as TQ are available, covering key sustainability aspects of buildings and presenting them in the assessment reports. On a voluntary basis, those reports or parts of them can already be used for the benefit analysis of buildings which were assessed by means of sustainable building assessment systems.

Fig. 5 displays both, the property valuation and building assessment result which could be part of a property valuator's report in the near future. It becomes evident that a good valuation result, referring to a specific date in the presence, does not necessarily reflect future risks regarding external costs, security of energy supply and indoor quality, which may result in bad valuation results in future. The type of presentation shown below will allow for an informed decision making, in some cases in favour of the more sustainable and "less valuable" building.

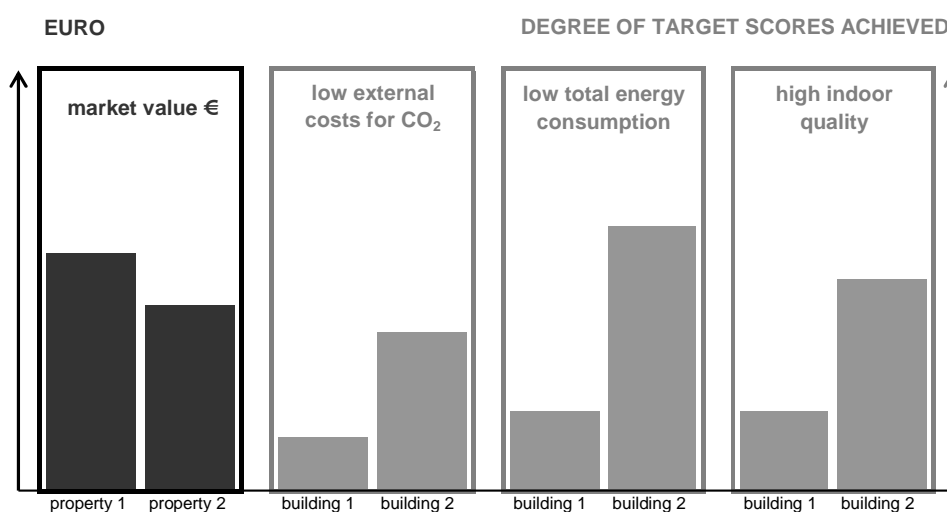


Fig. 5 Comparison of two properties in terms of monetary value according to usual property valuation methods (black colour) and in terms of sustainability assessment (grey colour) (own source)

4 Further development of property valuation methods is needed

Combing property valuation with sustainability oriented benefit analysis is a pragmatic short term solution for considering sustainable building qualities in property valuation. In the long run, further development of property valuation methods is needed, such as grading interest rates not only regarding location and type of building but also regarding sustainable building quality. Information for the differentiation of interest rates according to building quality can be collected through targeted investigations and long-term property surveys as well as through the implementation of a property transaction data base, in order to provide the information for investigating the relationship between building related sustainability aspects, values and prices. Instructions for the utilisation of building specific data and revised as well as new approximate values need to be integrated into the standard works of real estate industry in order to reach the relevant target group. The structure of valuation software makes it possible to integrate respective instructions regarding features of sustainable buildings, their impact on valuation parameters as well as approximate values and guiding values into help texts and text modules.

5 Building market must be shaped by policy instruments

As at the end of the objectively performed property valuation the valuation result is always weighted according to market demand, valuation methods are rather unsuitable for supporting innovations such as sustainable buildings. Sustainable buildings will be only differentiated positively from conventional ones provided there is sufficient market demand.

Thus, market development needs to be promoted by means of socio-economic policy instruments such as the energy certificate and the comprehensive building pass according to EU Thematic Strategy on the Urban Environment. It is essential to apply targeted policy instruments so as to shape the market accordingly also due to the fact that property valuation methods never refer to the building as such but always to the sum of building and location. In fact, the location of the property can be the crucial factor in decision making, especially in terms of office buildings, where the location can be the most important decision making criterion. This depends on the type of business and requirements regarding image as well as logistics. This argument provides another reason for the limited effectiveness of market based valuation methods for the widespread implementation of sustainable buildings and calls for regulatory instruments such as improved building codes to discard non-sustainable building practices and increase the level of sustainable building quality for all.

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