

DOI: 10.21625/essd.v1i1.18.g5**Sustainability and energy performance in the real estate market.**Andrea Ciaramella¹¹*Department of Architecture, Built environment and Construction Engineering, Politecnico of Milan***Abstract**

One of the main economic benefits associated with the sustainable character of buildings is certainly the reduced use and energy consumption. The savings can be very significant, especially when considering that a non-residential building, from an energy-efficient point of view, can achieve a power savings of 30% (Kats, 2003). This, combined with the rising energy prices and growing awareness of environmental issues, has gradually shifted the demand towards buildings with good sustainable features; as a result, the concept of "sustainability" has become a real "driver" for designers" (Turner and Frankel, 2008).

However, it is appropriate and interesting to understand whether and to what extent a general trend, widely shared, is recognized by the market in terms of value.

To simplify, it is appropriate to distinguish between the evidence of statistical data and considerations that have significant but only qualitative characteristics, then highlight statistics that demonstrate the relationship between the building performance in terms of sustainability and the corresponding market value and, at the same time, raise the motivation and guidance of end users and investors to see if the market can push towards sustainability because of its issues, such as economic benefit and convenience, and not only opportunities and responsibilities.

Keywords: building performance, energy performance, market value, sustainability

1. Buildings sustainability and real estate market: a literature point of view

Green building certifications continue to rise year after year. In 2013, a Wharton Initiative for Global Environmental Leadership (IGEL) study estimated that the market for green buildings in the United States, including both new and retrofits, is likely to rise from \$85 billion in 2012 to \$200 billion by 2016.

This scenario is certainly a result of the growing awareness that a sustainable approach is an added value for any industry, at different levels. However, it seems necessary to understand whether and to what extent a general trend, so widely shared, is recognized by the market in terms of value; or if investors, promoters and market operators recognize a "market premium" to buildings characterized by a specific sustainable performance.

In the international literature there are different points of view: some authors as Mancini G.R. and Birt B.J. (2009), Barrientos J.L. (2007), Scofield J. (2009) argue that, regardless of the LEED certification, the energy use varies considerably between different buildings, so it is invalid that a certified building ever reaches appreciable levels, particularly in terms of energy saving. Pivo G. and Fisher J.D. (2010), however, argue that the savings in terms of energy consumption (per square meter per year) in the Energy Star certified buildings is 12.9% higher compared to a "normal

building." This study, which analyzes the net income of 7,627 properties within 10 years, identifies a market premium of 2.7% for Energy Star buildings ¹.

In summary, despite the limited availability of data and information in a position to give statistical evidence to the qualitative considerations, we can say that the analyzed studies show that the character buildings "green" or with proven energy performance have these features (Miller, Spivey, Florance, 2008):

1. They can get the highest rents: the Energy Star certified properties have got a market premium, in terms of rental costs, of 4.8%, corresponding to about \$ 1.26 / sqf; Energy Star certified office buildings got a 3% market premium in the period 2004-2007; Energy Star or LEED certified office buildings got a 2% market premium in 2007-2009; Energy Star and LEED certified office buildings got a market premium about 6%; in general, the market premium for Energy Star-certified buildings varies between 7% and 9%, while for LEED certified buildings varies between 15% and 17%.
2. They can have greater market opportunities (divestment): Energy Star certified buildings are able to obtain a higher market value of 13.5% in comparison to similar-free 15 certification; with reference to the transactions concluded during the period 2003-2007 it is shown that LEED certification increases the sale price of buildings by 10%, while Energy Star entails an increase of 5.8%; office buildings Energy Star certified got a premium market, in terms of sales price of 19% in the period from 2004 to 2007; office buildings, Energy Star to LEED certified, got a market premium of 13%; in general, the market premium referring to the Energy Star certified buildings sale is 31% while for LEED certified buildings is 35% .
3. They can help maintain higher employment rates: in 2008, the Energy Star certified buildings reached a level higher occupancy rate of 2-4% compared to similar buildings; the average yield (compared with appropriate adjustment factors with values related to vacancy rates) over the period 2004-2007, of LEED and Energy Star certified office buildings was 9%; in 2007-2009; it was 5%; in 2010; LEED certified buildings reached higher occupancy rates of 16-18% and those Energy Star certified of 10-11%.
4. Have lower operating costs: Energy Star buildings involve 30% lower operating costs than comparable non-certified ones.

Although difficult to quantify and often overlooked, there are, for some authors, other benefits: greater visibility and best picture for the housing stock and an increased employee productivity (resulting in lower turnover and reduced absenteeism) (Pogue, Gough and Davis, 2009). Just for the latter, some studies believe that it can lead to increased employee productivity when moving to a sustainable building (Lucuick, 2005), and that this increase will translate into an equivalent energy savings for companies (Romm and Browning, 1999).

However, it should be noted that the characteristics, such as reducing the rate of absenteeism or staff productivity, can not always be directly related to the sustainability characteristics of buildings and do not provide direct economic benefits; some studies claim that sustainable products are too expensive (both as regards the production, both for what concerns the corresponding sale price on the market), especially when it is not possible to clearly ascertain the environmental quality in terms of cost / opportunities (Miller and Mahenc, 2007)

¹ Energy Star is a program of the Agency for Environmental Protection (EPA) and the US Department of Energy; it is a voluntary scheme, established in 1992 with the aim of measuring the energy efficiency of products / systems. The first products Energy Star branded were PCs and monitors. Since 1995, the method was extended to the heating and cooling systems in buildings. To date in the United States 1.2 million homes have been certified.

The conclusion of the authors, based on the analyzed statistical data, is that the reduction of energy consumption is crucial to a market premium, more than a LEED certification.

In this regard, it is appropriate to consider that the Energy Star tradition in the United States nearly 20 years and that, as is apparent in many other contributions and studies, the perception that an energy efficient building involves lower operating costs during its useful life seems particularly popular in the market.

In general, with respect to these data, it can be concluded that:

- All authors agree that the link between the market value and buildings sustainable requirements is still at the beginning and that studies and analyses are needed in the coming years.
- More than a willingness to face higher costs for "green" buildings, there is a demand for a reduction of the fees for buildings without any green performance.
- The studies are all based on the US market and most of the data are related to buildings in California.
- The evidence of the data does not distinguish the different rating levels.
- Some authors (Miller et al, 2008) consider that certain requirements by the government and some corporate standards over time could lead to a decline in interest on non-certified buildings.
- A probing test is related to building performance over time and how the "green" performance and the adaptability and flexibility of buildings meet the tenants' requirements and influence them in renewing the leases; as long as nothing has been proven that the end users are more likely to renew their contracts, this figure is not shown.

The existing data are mainly linked to the value of the lease payments; the number of transactions is considered small to support scientifically-proven conclusions.

The recent recession has caused a reassessment of what real estate asset managers consider the most important factors in choosing a new building; in addition to the necessary financial considerations, we are seeing a growing attention to the issues that refer to a cultural horizon of technical and functional performances. Despite the experts' share that enhance the performance of a building requiring more investment, the impact that sustainability issues have on a typical real estate investment decision-making process or of active management has not declined at all.

Recent surveys show that property owners see sustainability as an increasingly determining factor in the decision process but, at the same time, believe that there is no corresponding market premium (Morri and Soffietti, 2011). A survey of two cohorts of real estate stakeholders, either members of the Green Building Council Italia or commercial real estate investors, was carried out by means of an online questionnaire. Based on 270 responses, it can be inferred that, while the importance of green building is widely acknowledged, caution is still prevalent regarding expected gains. In fact, the majority of respondents perceive the increase in rent and price premiums as being equivalent to additional costs.

Several studies have been conducted into the relationship between sustainability and market value in real estate, by critically analyzing the research and the applicability of sustainability and value research in valuation practice. According to Warren Meyers (2012), as regards the relationship between sustainability and market value, the valuation profession is not provided by research that would allow the incorporation of normative theories on the value of sustainability in valuation practice. This review highlights the lack of evidence and the applicability of current research into sustainability and value to the valuation profession in providing guidance and information in valuing real estate incorporating sustainability.

Some other authors (Lorenz and Lützkendorf, 2011) think that changes are required in the processes of gathering, processing and presenting property-related information, as well as in the methods for determining individual valuation-input parameters and for explicitly stating formerly implicit assumptions and qualitative judgement. The required changes should be supported by actions that could be undertaken by the professional and valuation-standard-setting bodies and organisations within the valuation world. These actions include: embracing and improving marketing of the qualitative nature of the valuation service; the development of educational materials and formal guidelines; the provision of dedicated market research to assist valuation practitioners operating in different market segments, geographic regions and local sub-markets; and adjusting and further developing existing valuation standards to enable and support individual practitioners in offering a two-tiered valuation service to clients.

2. Investors, end users and sustainable buildings: a market point of view

The contributions in this direction are made by consulting firms, such as GVA Grimley, Cushman & Wakefield, Atisreal, Jonel Lang Lasalle, DTZ, Deloitte.

Cushman & Wakefield, in 2010, carried out a field survey, interviewing senior executives of 500 European companies invited to give their views on sustainability and more specifically on Green Buildings. The results of this survey were then compared with those of a similar study conducted in 2009. Nearly 70% of respondents across Europe consider "important" sustainability, and over 40% said it is "very important" or "essential" for their business, regardless of the performance of the housing market.

However, when it comes to buy or lease of new space across Europe, there is a distinct virtual division: 50% of respondents believe that the green credentials play a significant and/or key role while the remainder believe they are not significant by giving them a limited or no role.

The number of companies owning or occupying a green building has increased from 15% to 21% from 2008 to 2010. Sweden, with more than 50%, is the nation that has the highest number of surveyed companies that occupy buildings certified in term of sustainable performance. In addition, almost half of the organizations that still do not occupy a green building would be interested to change. Positively, the number of respondents who do not occupy a green building and who are not at all interested in doing so has fallen from 32% to 28%.

The widespread feeling is that larger companies (those with more than 5,000 employees) are taking the first steps in optical green, indicating the direction to follow. Of these, 80% occupy or would like to occupy a green building; while with decreasing the company size decreases also the intentions towards sustainable real estate, showing a low propensity of small and medium companies to occupy a green building. We have to consider that the real estate market has suffered a lot in recent years and that has affected the strategic decisions within the companies; managers, in fact, prefer to focus primarily on the cost reduction through the optimization of spaces and the reduction in operating costs. For the 30% of surveyed companies the most important factor for choosing a green building would be the "reduction of energy consumption and water use." This is true not only for large but also for small (i.e. those with less than 1,000 employees) and medium-sized enterprises (1001 to 5000 employees).

However, there are obstacles in the dissemination of green practices, which are perceived as real barriers; about 20% of those surveyed said to be bound to the existing lease, especially the British and German companies (where over 30% of respondents indicated that this is the most important factor). In addition, most of the executives surveyed complains of a shortage of green real estate and higher rents, compared to standard buildings. However, the main obstacle for many respondents is the lack of buildings deemed suitable to the needs of companies. This is a negative trend that will likely continue for the next few years until there will be a greater supply; in order

to attract tenants, new buildings must be built to the highest environmental standards; consequently, this should favor the expansion of the green buildings across Europe.

The importance of environmental requirements was also emphasized by a recent study published in the American Journal of Public Health, stating that green buildings positively affect public health. In fact, it is stated that workers who have moved from conventional to green building offices reported a lower absenteeism rate and were more productive. Therefore, in Europe, there is a widespread feeling that the perception of the green building character qualities will greatly increase in the coming years and with it the importance of sustainability in the long-term decisions, i.e. on development strategies and future commercial operations.

One of the first market research studies (GVA Grimley, 2007 From green to gold - A unique insight into sustainable investment attitude) has highlighted a rather limited proportion of investors interested in trying buildings in some way identified as "sustainable." The research, however, indicates that they all identify as "important for the future" a sustainable performance.

Another research (Bowman and Will, 2008) referred to the Australian market, found the absence of a clear direct relationship between market value and buildings "Green Star" certified, but highlighted that, in the view of investors, Green Star buildings are considered more able to respond to market changes in the future (literally in research are defined "future proofed") and to better ensure the prospects of long-term return on investment.

Atisreal (2008) interviewed 135 companies, headquartered in the UK, about their orientation. Also, in this case, there is no evidence but only a general propensity of operators, all agree, especially in perspective, that sustainable buildings will be characterized by: lower risk; greater market (in particular, less time and more ease of sale); market premium. However, it should be noted that this survey shows that operators are considering the cost of achieving sustainable buildings is still very high.

A similar research study (Meyers et.al, 2008) refers to the market in New Zealand noted the propensity of investors to replace poorly performing buildings in their portfolio with sustainable buildings, but only in the face of proven ability to enhance the outcome in terms of efficiency. That means that investors are willing to spend more, but only if the investment's objective proves to be on cash flow. Some specific cases show interesting trends: in Australia the development of sustainability investors is growing: VicSuper has invested 10% of the portfolio in large Australian and international companies that have been shown to have the best sustainable business strategies in their specific sector.

Another example is provided by Australia's Investa Property Group, a real estate investment company that currently manages \$ 6.2 billion in assets and employs more than 56 buildings; 30 of these buildings have sustainable features and have got a Green Star evaluation. The company is very active in the objective of reducing energy consumption, water, waste and harmful emissions. Because of this "sustainable" approach, Investa has been included in the Dow Jones Corporate Sustainability Index. Following this recognition, the company has grown in value on the stock market (www.investa.com.au / InvestorInformation, 2006).

DTZ has carried out an investigation referring to the market in Paris (2009). 50% of respondents would consider acceptable a 5-10% fee increase for 'sustainable' headquarters; but only 21% said they were interested in renting a green building. Many of the respondents think that the fee increase should be justified by an equivalent reduction in management /maintenance costs (reduced consumption and overall energy bills).

Among the most recent research studies is one developed by Jones Lang Lasalle together with CoreNet Global; it has a global nature and is not related to a single market. The survey involved 400 CEOs; 60% of respondents were willing to pay a higher fee (up to 10% more), for LEED, BREEAM or equivalent labelled buildings. The research also points to a limited supply of buildings with these characteristics on the market and, for this reason, probably a

propensity/willingness to pay more for a product considered rare and not for reasons related to the performance of buildings. One of the most interesting emerging trends is the increased propensity to invest in buildings owned by companies. The majority of respondents (57%) confirmed that it is regarded as a period of one to three years as the payback period for investments aimed at improving the energy performance of buildings; 9% of respondents would be willing to consider a longer payback period.

In the work done by IPF (Dixon et al, 2008), 50 companies that have leased office space in the UK were surveyed. The research (UK Occupiers demand for sustainable offices 2006-2009), dating back to a few years ago, showed how the issue of sustainability had a minor importance compared to the criteria traditionally used in choosing their spaces. The same consideration emerges from a similar survey by Knight Frank (2008), referring to the city of London. However, it is worth considering that most of the respondents deal with buildings of recent construction, and therefore the performance of buildings (especially in terms of energy consumption) are already, in fact, excellent.

The research McGraw-Hill Construction-CBRE Survey conducted with the University of San Diego (2010), in which 79 percent of respondents (owners) expect green buildings to attract more tenants. Both tenants and property owners have started including elements of sustainability in leases. Commonly referred to as green leases, they include an upfront establishment of sustainability goals and allocation of implementation responsibilities between the owner and the tenant. The challenge here is inclusion of clauses to deal with non-compliance on either side, which is yet to become a common practice. Also, it is relatively easier for landlords and tenants to include green features in new leases than it is to retrofit them into existing leases or renewals.

Sustainability is becoming an important influencer on the design of overall business strategy of tenants. According to a 2013 United Nations Global Compact's Global Corporate Sustainability report, 19 - approximately 63 percent- of the respondents are aligning their core business strategy to advance their sustainability goals. In fact, per a 2012 Deloitte CFO survey, 93 percent of CFOs believe that there is a direct link between sustainability programs and business performance. The increased focus on CRE is validated by its substantive contributions to the total natural capital costs of businesses. Real estate-related natural impact makes up a significant portion of the total for the financial services (38 percent in 2012) and retail (32 percent in 2012) industries.

3. Conclusions

In conclusion, in relation to literature, case studies, evidence of the market, the investigation by the operators, it is possible to identify the emerging following elements:

The relationship between the market recognized value and characteristics in terms of sustainability of buildings still seems to be low in statistics: most of the analysis is conducted in the United States, where the Energy Star protocol has a history of at least 25 years. It is true that the data analyzed results indicate, albeit in a limited measure, a "risk premium" for sustainable buildings; however it is difficult to recognize with certainty a formal evidence of the relationship "sustainability" - "market value".

Many of the studies and analyzed reports reaffirm as prevalent the theme of energy efficiency and consumption control and this can significantly affect the sales prices and rents; in essence, be able to demonstrate the timing of payback or rate of return on investments in interventions to reduce consumption or, even better, to illustrate the cost of the life cycle of the interventions, could lead to more easily recognize a market premium .

It is, however, no doubt that, as many observers and experts point out, over time it will most significantly grow the demand of "sustainable places/buildings" or, more precisely, energy performance, and this will be reflected on the value of the leases, but above all on the level of investment risk and depreciation; it is probably fair to say that this qualitative trend will lead to a

depreciation of underperforming buildings rather than to an increase in the value of sustainable buildings and low energy demand.

In the future, the funding possibilities will probably be also affected by "sustainable" requirements for buildings; however, it is appropriate to recognize that the banking system, although some few large specialized lenders in real estate and infrastructure sectors, rarely plays considerations and / or due diligence about the riskiness of loans, but rather considerations of creditworthiness of the promoters.

Above all, ethical and social motivations will influence the choices and orientation of the market and then of the supply. This element will probably be destined to play a decisive role, not dictated by laws or regulations, but by increased awareness and attention by all the stakeholders.

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