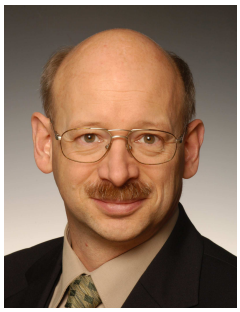
SUSTAINABILITY ASSESSMENT AND/OR PROPERTY RATING ?

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Summary

In recent years a variety of tools for assessing a building's environmental friendliness or contribution to sustainable development have been developed, tested and applied. However, in most cases these tools and the assessment results obtained from their application have not been used to inform and influence property investment decision making processes. This is now beginning to change. Due to the growing interest of public authorities, investors, banks and insurance agencies in green / sustainable buildings and particularly in socially responsible property investments (SRPI) the demand for building assessments as an informational source for decision making is rising. Almost independent from the discussion and debate in the area of 'sustainable building' – which has now been kept vividly alive since many years within the scope of the worldwide series of 'Sustainable Building' conferences – banks and rating agencies are now beginning to integrate sustainability issues into their tools for property rating and risk assessment. Within the current paper the authors report on this development, discuss differences and similarities of sustainability assessments and property ratings and investigate how these approaches could complement each other.

Keywords: Basel II-process, sustainability assessment, risk assessment, property rating, building performance, building file

1 Introduction

Progress has been made in the development of design strategies, the technical development of building products, materials and construction techniques as well as of planning and building assessment tools. However, this largely technocratic approach had an insignificant impact on the financial appraisal of sustainable buildings and the transformation of property markets. It is an important but insufficient driver to successfully implement sustainable buildings and to achieve sustainable practice within the property investment industry. Apparently, the question on how the further market share of sustainable buildings can be fostered and how existing barriers can be overcome is still highly topical within the

sustainable building discourse. In order to strengthen the demand for sustainable buildings several strategies or activities are possible.

These include, for example:

- Realizing change in societies' values and concerns in combination with strengthening the willingness of individuals and corporations for taking responsibility towards society and the environment;
- Uptake of a leading role through the public authorities (e.g. realization of demonstration projects, introduction of sustainability requirements into tendering procedures and in relation to the use of public funds for buildings and other construction works);
- Changing the general 'framework' (e.g. building legislation and taxation);
- Introduction of specific subsidy programs;
- Development of sustainable property investment products (e.g. 'green' REITs, sustainable property funds);
- Introduction of CO2-certificate trading schemes for the property and construction sector;
- Acknowledgment of the financial benefits of sustainable buildings (e.g. through investors and tenants);
- Consideration of sustainability issues within the property sectors' methods and instruments (e.g. risk analysis, valuation, and transaction analysis) in order to report and communicate the advantageousness of sustainable buildings.

The current paper focuses on the latter point by addressing a series of issues associated with integrating sustainability issues into property rating and property risks analyses by using information obtained from sustainability assessments.

2 Consequences of Basel II – The rise of property ratings

The application of new, international banking capital adequacy rules called Basel II requires banks to take a much more sophisticated approach with regard to the risks they take in lending [1]. As a consequence, property ratings will increasingly be conducted for lending purposes. In a very general sense, a rating is a procedure which illustrates the assessment of a thing, a person or situation, etc. on a (given) scale in order to improve the informational basis for decision-making. This is not a new concept. In today's banking practice, ratings are used, amongst other issues, to predict the probability of default (PD) of granted loans based on historical credit data. Banks have developed sophisticated rating instruments which enable them to predict the probability of default of individual or corporate borrowers subject to a wide range of rating criteria and/or performance information. However, similar and equally sophisticated instruments that can predict the probability of default as well as the bank's loss in the event of the default of loans secured by property assets do not (yet) exist; this is mainly due to a lack of information on property characteristics and attributes associated with historical credit data. Nonetheless, Basel II requires banks to develop such property rating systems[1] as a precondition for the application of the so-called 'advanced internal rating based approach'. This approach for determining the bank's equity capital is perceived to be beneficial since it allows banks

[1] However, the required property rating systems will need to be tested and approved by the national banking supervisory authorities.

to calculate the required amount of equity capital by themselves. As a consequence, banks and banking associations are keen on developing appropriate property rating systems. A wide range of different rating systems are currently being tested, under further development or are already applied in practice. In addition, consulting agencies are offering property rating services to the public.

Property ratings are designed to fulfil two basic roles within banks' property financing processes. These are (1) property risk analyses before granting property loans, and (2) determination of capital adequacy requirements. **Fig. 1** shows a stylized representation of the role of property and borrower rating systems within the process of granting a property loan under the advanced internal rating based (IRB) approach of Basel II. It also shows the interrelation between valuation and property rating which form the basis for determining lending conditions. In general, lending conditions consist of loan amount and interest rate. The loan amount mainly depends on the market or mortgage lending value of the property. And the interest rate depends on several factors which are also portrayed in **Fig. 1**.

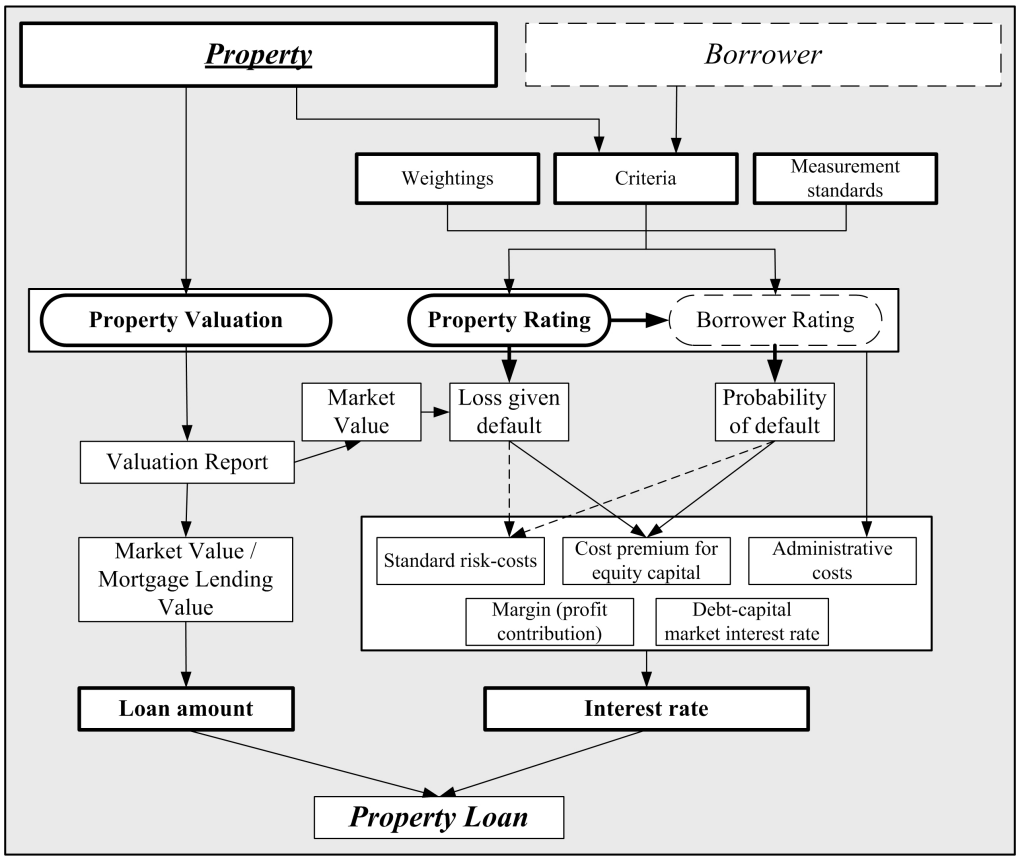

Fig. 1 Determination of financing conditions for property

The standard risk costs and the cost premium for equity capital normally depend on the risks associated with the property and with the borrower. These risks are assessed through ratings which result in an estimation of the possible loss in the event of loan default and of the probability of loan default. In order to conduct the ratings banks evaluate different kinds of information on the property and the client by making use of rating criteria, weightings and measurement standards in order to derive at rating results or risk scores. However, in property project financing or in cases where the bank's major security for the

loan consists in the property asset to be financed, the rating almost exclusively focuses on the property asset. Then the qualities of the property asset determine both the possible loss in the event of loan default and the probability of loan default; i.e. the rating of the borrower becomes almost unimportant and the rating of the property becomes decisive for determination of the interest rate. This case will deserve further attention below.

Tab. 1 Rating criteria list and weightings [3]

Property and Market Rating for office buildings			**Weightings**	
			2. Level	**3. Level**
Criteria Class 3 'Property'			**20,0%**	
3.1	Architecture / Type of construction		20,0%	
	3.1.1	Design Quality		25,0%
	3.1.2	Illumination / Shading		15,0%
	3.1.3	Quality of the layout / Functionality		60,0%
3.2	Fitout		10,0%	
	3.2.1	Quality of the building's technical and security equipment		25,0%
	3.2.2	Quality of information and communication technology		25,0%
	3.2.3	Internal fixtures and fittings		35,0%
	3.2.4	Social facilities		15,0%
3.3	Structural condition		15,0%	
	3.3.1	Age / year of construction / construction era		20,0%
	3.3.2	Degree of modernisation / Revitalisation		40,0%
	3.3.3	Maintenance situation / Maintenance backlog		40,0%
3.4	Plot situation		25,0%	
	3.4.1	Plot layout / Topography		25,0%
	3.4.2	Geological condition and archaeological aspects		20,0%
	3.4.3	Contaminations		20,0%
	3.4.4	Internal and external accessibility / infrastructure		20,0%
	3.4.5	Appurtenant structures / External facilities		15,0%
3.5	Ecological sustainability		10,0%	
	3.5.1	Building materials		40,0%
	3.5.2	Energetic performance / energy demand / energy consumption		35,0%
	3.5.3	Emissions		25,0%
3.6	Profitability of the building concept		20,0%	
	3.6.1	Space efficiency (rentable floor area / gross floor space)		30,0%
	3.6.2	Operating costs (in € per m² of gross floor space)		50,0%
	3.6.3	Public burdens (planning regulations, fire safety requirements, historical interest)		20,0%
Criteria Class 4 'Quality of the property cash flow'			**30,0%**	
4.1	Tenant and occupier situation		20,0%	
	4.1.1	Number of tenants, tenants' solvency and image, appropriate mix of tenants		60,0%
	4.1.2	Duration and structure of rental contracts		40,0%
4.2	Rental growth potential / Value growth potential		30,0%	
	4.2.1	Rental growth potential		50,0%
	4.2.2	Value growth potential (estimated change of re-selling price)		50,0%
4.3	Letting prospects		20,0%	
4.4	Vacancy / Letting situation		10,0%	
4.5	Recoverable and non-recoverable operating expenses		10,0%	
	4.5.1	Level of operating costs		65,0%
	4.5.2	Possibility of attributing management and operating costs to the tenants		35,0%
4.6	Usability by third parties and/or alternative use		10,0%	

3 Application of existing property rating tools

The basic functioning of property ratings can be explained by referring to a rating approach originally proposed by TEGoVA [2] and further development through the German Association of Public Banks [3]. The rating system contains four main criteria classes –

these are market, location, property and quality of the property cash-flow – and up to 4 levels of sub-criteria classes that are weighted according to their influence on the medium-term sales prospects of the individual property in its relevant market. The rating system employs a scale that ranges from 1 (excellent) to 10 (disastrous). The average rating is set at 5 because the 'disastrous' rating is designated for specific circumstances only. **Tab. 1** shows the list of rating criteria, indicators and weightings for the criteria classes 'property' and 'quality of the property cash flow'.

The list of rating criteria and indicators shown above makes clear that property rating represents a possible platform to combine the interests and instruments of the banking and property investment industry with the concerns and instruments of the sustainable building community. This is because the rating system contains direct as well as several indirect connecting points for the integration of sustainability issues into the processes of property financing and property risk analysis.

In order to investigate the sensitivity of the overall property rating result on changes in the assessment of those criteria relevant for evaluating the contribution of buildings to sustainable development, the authors performed several test-ratings. These test-ratings have been carried out on the basis of 3 fictional buildings (multiple family-dwellings) representing a superior, an average and a poor building in terms of its contribution to sustainable development by using a special list of criteria. The assessment of the following criteria has been varied in order to represent the different degrees of sustainability: quality of the layout / functionality; quality of the building's technical and security equipment; degree of modernization; internal and external accessibility / infrastructure; building materials; energetic performance; emissions; operating costs; level of operating costs; and usability by third parties.

All other rating criteria have been assessed by an average rating score. In addition, interdependencies between different rating criteria have also been taken into account (e.g. the circumstance that an improved energetic performance usually leads to lower heating costs, and thus, lower operating costs). Furthermore, the assessment of the regional property market conditions has also been varied (very good, average and poor market conditions). The results of these test-ratings are displayed in the following **Tab. 2.**

Tab. 2 Test-rating results

Multiple-Family Dwelling	**Rating Scores**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Very good property market conditions										
Superior building (in terms of sustainability)			**2.9**							
Average building (in terms of sustainability)				**3.6**						
Poor building (in terms of sustainability)					**5.3**					
Average property market conditions										
Superior building (in terms of sustainability)			**3.4**							
Average building (in terms of sustainability)				**4.2**						
Poor building (in terms of sustainability)						**5.9**				
Poor property market conditions										
Superior building (in terms of sustainability)				**4.3**						
Average building (in terms of sustainability)					**5.0**					
Poor building (in terms of sustainability)							**6.7**			

These results show that – depending on the viewpoint – improved chances or reduced risks of sustainable buildings can be expressed and communicated by making use of already existing property rating systems; in this case by using a rating system from Germany. As expected, a superior building quality under poor property market conditions clearly has a more significant impact on the overall rating result. In summary, the property rating systems (which are currently being developed and implemented within the banking industry as a consequence of Basel II) contain several connecting points that allow the advantages of sustainable buildings to be displayed as well as the disadvantages of unsustainability to be treated as additional risk factors. This may finally lead to preferential lending conditions for sustainable buildings. Furthermore, property professionals can adopt these property rating systems in order to communicate reduced property risks (and opportunities) to clients.

From the authors' point of view the issue of avoiding and reducing property specific risks through sustainable buildings is of particular interest in connection with socially responsible property investments (SRPI). Examples for the relationship between characteristics and attributes of sustainable buildings and reduced property specific risks can be found in **Tab. 3**. Besides taking responsibility towards society and the environment socially responsible investors are primarily interested in the financial advantages of sustainable buildings and respective investment options. However, the quantification of these financial advantages in monetary terms is not yet always possible. Therefore, ratings can be used for the description and portrayal of reduced property specific risks.

Tab. 3 Links between sustainable design features and reduced property specific risks

Characteristics and attributes of sustainable buildings	**Examples for reductions in / avoidance of property specific risks**
Flexibility and adaptability	Reduction of risks through changes market participants' preferences (obsolescence) and through restricted usability by third parties
Energy efficiency and savings in water usage	Reduction of risks through changes in energy and water prices; reduced business interruption risks (e.g. caused by power outages) through facilities that derive energy from on-site resources and/or have energy efficiency features
Use of environmentally friendly and healthy building products and materials	Reduction of litigation risks and of being held liable for paying compensations to construction workers and building occupants
High functionality in connection with comfort and health of user and occupants	Reduction of vacancy risks or of loosing the tenant(s)
Construction quality, systematic maintenance and market acceptance	Lower risks of changes in property values
Compliance with / over-compliance of legal requirements in the areas of environmental- and health-protection	Reduction of risks from increasingly stringent legislation (e.g. expensive retrofitting or losses in property values)

4 Informational sources for property ratings

As demonstrated above, banks and rating agencies start considering sustainability issues within their property rating and risk assessment systems. Therefore, banks and rating agencies now require appropriate and reliable sources of information to feed their rating and risk assessment systems with information on sustainability related performance characteristics of property assets. In most instances, however, this kind of information and the questions associated with its provision lies outside the typical realms of the banking industry.

Through the introduction of energy performance certificates within the European Union the problem of assessing and obtaining information on property assets' energetic quality will be solved on an area-wide basis in the near future.

Given the current stage of implementation the layout and assessment standards for preparing these energy performance certificates will not be uniform throughout the European Union. Nonetheless, the certificate will contain information on resource use (e.g. primary energy demand) as well as on impacts on the global environment through CO2-emissions during the occupation phase (in some countries, however, this latter information will only be contained in the certificate as a supplement on an optional basis).

Concerning other relevant questions – for example, on the technical and functional building quality, on the environmental and health-related friendliness of building products, on occupant satisfaction and comfort, on resource use and resulting environmental impacts resulting from construction, maintenance, demolition and disposal of buildings, or on expected maintenance costs during the occupation phase – the provisioning of appropriate information is much more difficult compared to the easily accessible energy performance certificates.

From the authors' point of view it needs to be noted in this context that the quality and scope of building descriptions which are typically used for transaction purposes or within property price databases does no longer fulfil current requirement. One approach for improving this situation can be seen in the further development of building documentations in the form of building files of building passports. Within some markets, particularly within European housing markets, building files are already available to a certain extent; examples for this are represented through the Home Information Pack which will be introduced from 1 August 2007 onwards in the UK or through the building files according to the German guideline on sustainable building [4].

For example, the German building file contains information on the following issues: description of the building and of its structural design, information on structural and fire safety, lighting, heat insulation and energy demand, sound insulation, water use, treatment of waste, quality of internal fittings, technical building equipment (heating, ventilation, air conditioning), information on required and already undertaken maintenance and servicing works, as well as a documentation of occupancy costs and of certain resources used during occupation.

In order to facilitate and ease the assessment of buildings the focus of buildings files and passports should be placed much more on performance-related information concerning functionality, serviceability, durability, accessibility, and maintainability, etc. Within Europe an intense engagement with questions concerning the further development of buildings files currently takes place; see for example [5]. Also the EU thematic strategy on the urban environment [6] contains plans for an extension of energy performance certificates towards building files to include other key environmental and sustainability

elements, such as indoor air quality, accessibility, noise levels, comfort, and environmental quality of the materials and the life-cycle cost of the building.

Regardless of these developments in the area of building files and passports, the demand for sustainability assessment results within the banking and rating industry is growing and can be expected to rise further. If the results of building assessment tools are to be used to support the rating process, then the flow of information can be organised in different ways. These are schematically depicted in **Fig. 2** below.

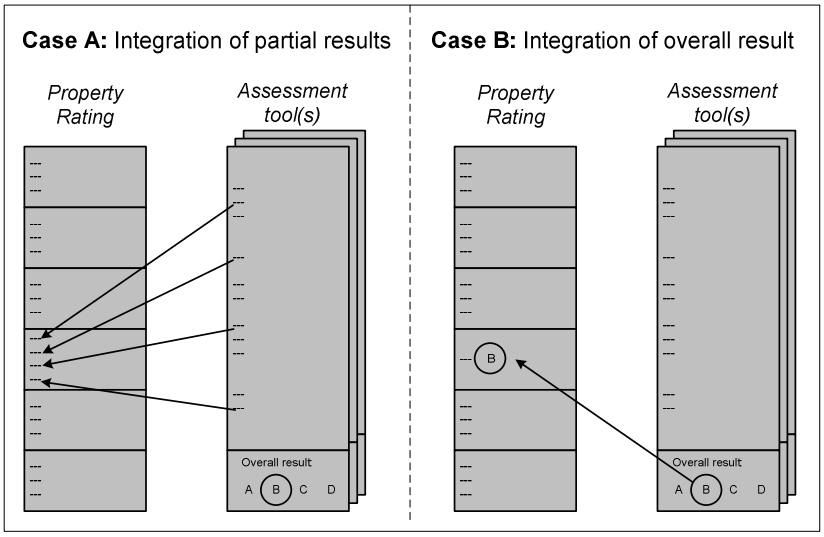

Fig. 2 Different forms of integrating building assessment results into property ratings

On the one hand, partial results of sustainability assessments could be used to provide the informational basis for certain aspects of property ratings (e.g. energy performance and/or environmental and health-related friendliness of building products). This requires, however, that sustainability assessment results are not only available in the form of labels or certificates; instead, detailed information on the assessment results must remain accessible. Alternatively, the overall sustainability assessment result could be integrated in a highly aggregated format into property ratings as a separate rating category. Apparently, this latter option represents a more straightforward approach. However, experiences on how to integrate and weight sustainability assessment results within the context of property ratings do not yet exist.

5 Approach for describing an overall/integrated building performance

From the authors' point of view it is necessary to combine or link the approaches of describing, assessing, and communicating the contribution of building to sustainability development (i.e. sustainability assessments) with the goals and targets of the trend towards socially responsible property investments (SRPI); for more information on SRPI see, for example [7]. These goals and targets consist in following primarily economic interests by simultaneously taking responsibility towards society and the environment. For this reason, the concept of an integrated building performance which is currently pursued by CEN TC 350 Sustainability of Construction Works [8] and which focuses on life-cycle costs as the only economic aspect is not sufficient. The following **Fig. 3** shows the concept of an integrated building performance that also includes property performance aspects for

the description and assessment of income streams (cash-flows), property value, and chances and risks.

	Functional / technical aspects	*Social aspects*	*Environmental aspects*	*Economic aspects*
Benefits	Functionality Serviceability **Functional Performance**	Comfort Security Health User Satisfaction User Participation **Social Performance**		Income Value Risk avoidance Chances **Property Performance**
Expense	Quality Durability Adaptability **Technical Performance**		Resource depletion Impacts on environment **Environmental Performance**	Construction cost Operation cost **Cost Performance**

Fig. 3 Integrated building performance (extended version)

Only such an extended approach allows linking or correlating – in the sense of a truly integrated assessment – the development of cash-flows and property values with functional performance aspects, environmental impacts, life-cycle costs and/or occupant satisfaction and comfort.

6 Conclusions and Outlook

For the further market transformation and market penetration of sustainable buildings it is required, that even more private and institutional investors decide investing into such buildings. One precondition for this is the description, assessment and portrayal – based on commonly accepts methods and rules – of a positive contribution to sustainable development. This lies in the traditional dominion of sustainability related planning and assessment tools. However, another and equally important precondition is that technical, functional, environmental and social building qualities can be translated into the categories of financial benefits and risk reduction. Without doubt, these latter categories are of primary interest for potential investors.

Amongst other approaches, this can be realised through an integration of sustainability assessment results into the methods or property rating, risk assessment and property valuation. Methods and tools for assessing buildings' contribution to sustainable development can therefore become a major source of information within property investment decision making processes. In summary, the use of information from existing methods, instruments and tools developed by the sustainable building community ('green' building rating systems, LCA-based assessment tools, post-occupancy evaluations, energy labels, etc.) can be harnessed to inform the processes of property financing and risk analysis. This will increase the demand for such methods and instruments. As a consequence, their future role within property markets can be extended and more precisely described within an overall system of measures and instruments that contribute to the market transformation of the construction and property sectors.

A more detailed explanation of the issues discussed within this paper can be found in a paper forthcoming in a special issue of **Building Research & Information** [9].

The paper contains selected findings of a recent research project („BASEL-II-konforme Gestaltung des Objekt-Rating als Voraussetzung für eine kostengünstige Finanzierung von nachhaltigen Bauvorhaben") undertaken by the authors and financially supported by the German Federal Office for Building and Regional Planning (Bundesamt für Bauwesen und Raumordnung, BBR).

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