

**The importance of Property Valuation in ensuring financial stability
and the linkages between property values and sustainability**

RICS Valuation Conference

8 February 2011, Stockholm, Sweden

***Property Valuation
& Sustainability***
The Role of Valuation Professionals

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&

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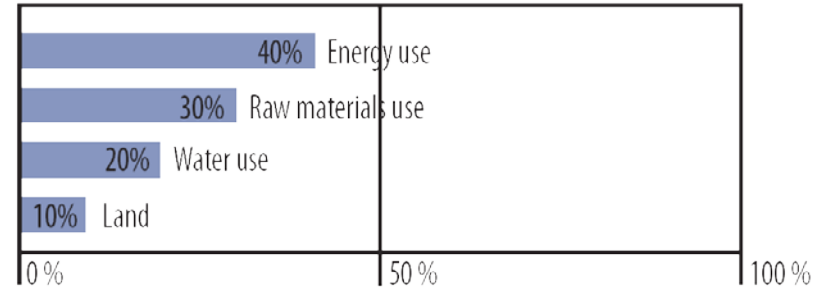
Agenda

1. Why is property valuation important?
2. Understanding of Sustainable Buildings
3. Reasons for integrating sustainability considerations into the valuation process
4. Brief literature overview
5. Approaches for integrating sustainability issues into the valuation process
6. The Role of the Valuer
7. Outlook (Important issues to address)

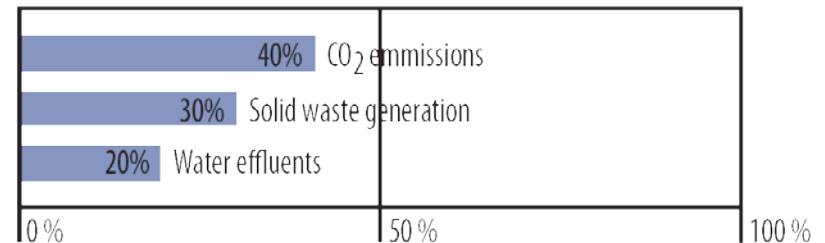
Background – Share of the Built Environment

- 40 % of total energy use
- 40 % of CO₂-emissions
- 30 % of raw material and resource use
- 30% of waste generation

SHARE OF THE BUILT ENVIRONMENT IN RESOURCE USE



SHARE OF THE BUILT ENVIRONMENT IN POLLUTION EMISSION



Source: UNEP, 2006

In OECD countries the built environment is the largest single cause for resource use and pollution emission!

Confusion of Terms

Sustainable Buildings

Low-energy Buildings

High-Performance Buildings

Green Buildings

Passive Buildings

Healthy Buildings

Zero-emission Buildings



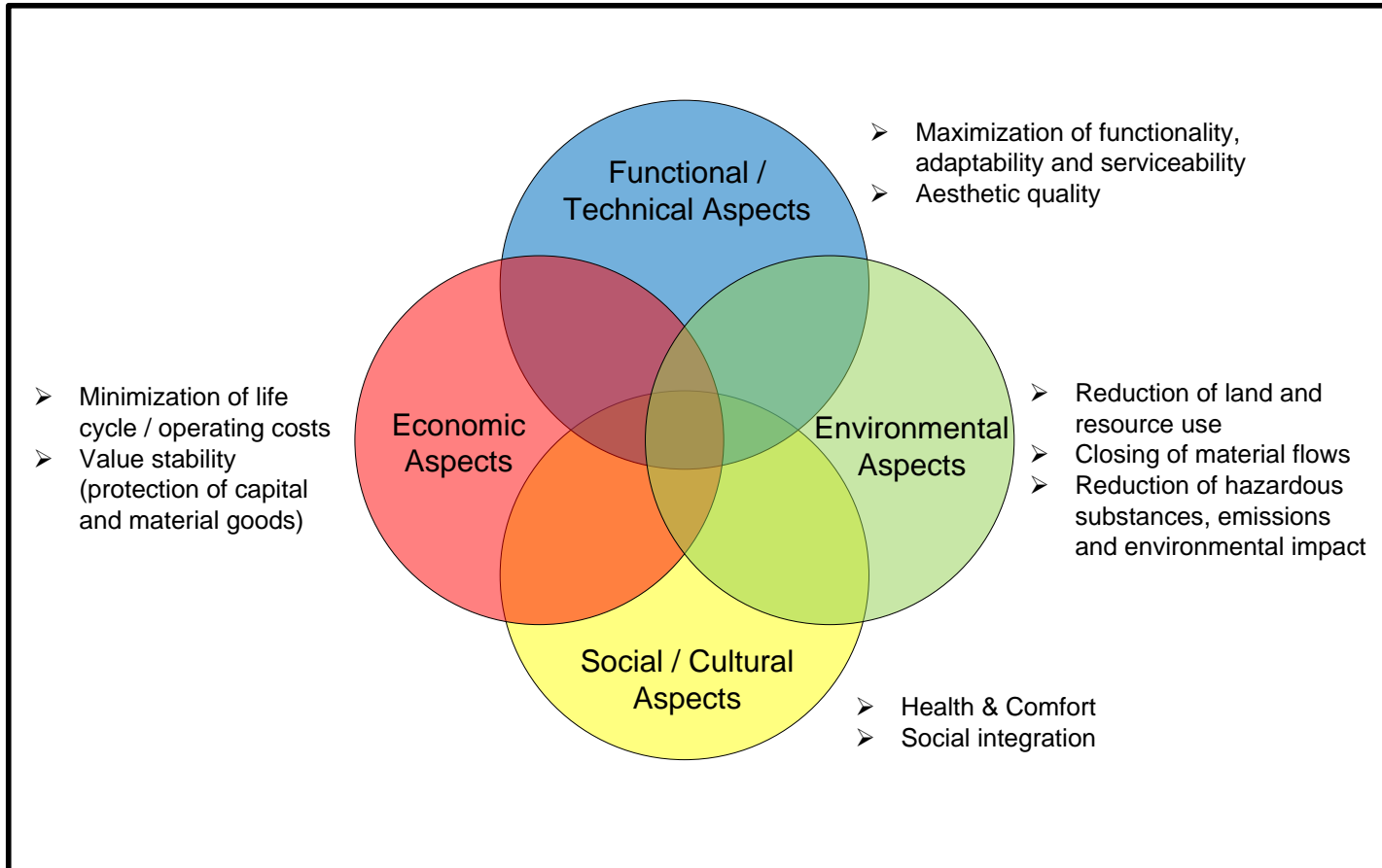
Understanding of Sustainable Buildings

Typology	Aspects						
	Functionality	Comfort / Health	Energy	Water	Environmental impact / Resources	Life cycle costs	Income / Value
Low-energy Buildings			○				
Healthy Buildings		○					
High-Performance Buildings	○	○	○	○			
Green Buildings I		○	○	○			
Green Buildings II		○	○	○	○		
Sustainable Buildings I	○	○	○	○	○		
Sustainable Buildings II	○	○	○	○	○	○	
Sustainable Buildings III	○	○	○	○	○	○	○



Source: Adopted from Prof. Lützkendorf, Karlsruhe Institute of Technology

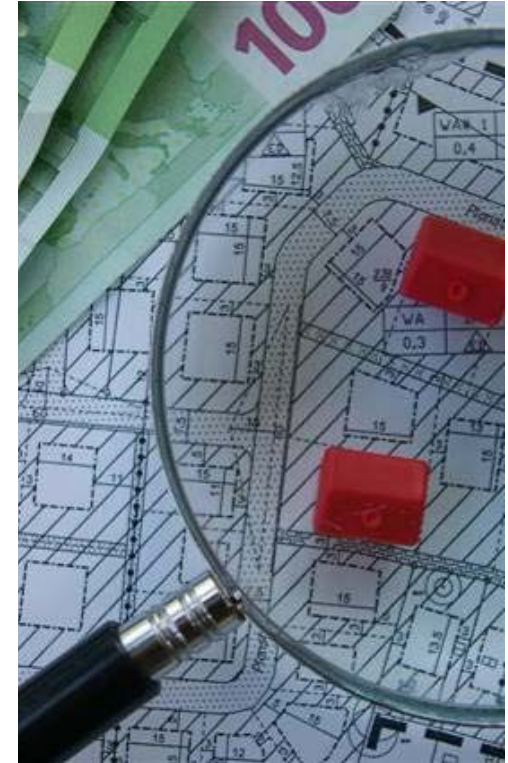
Requirements for Sustainable Buildings



“Sustainable buildings squeeze the maximum utility for owners, users and the wider public out of the lowest possible use of land and throughput of energy and raw materials.”

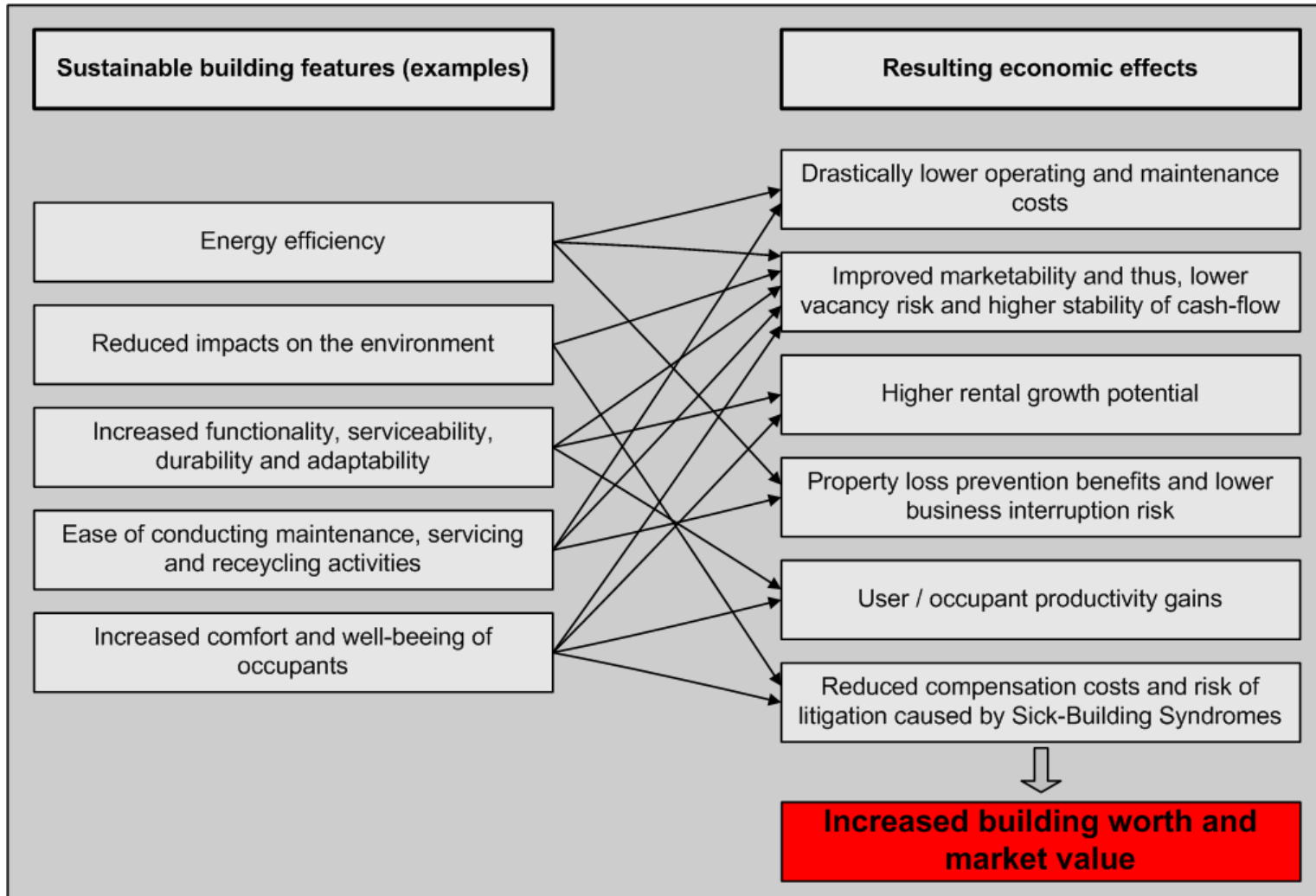
Why is property valuation critical within the sustainable development discourse?

- Valuations are carried out in almost any phase of the building life cycle.
- Valuers are the “independent axis around which property information flows”.
- Valuers act as “information managers” in often highly intransparent property markets.
- Arguments used in negotiations between the parties in a transaction process are usually based on advice given by professionals acting on both sides.



➔ Valuers do not “make the market“ but their advice and the nature and scope of their services influence property market outcomes.

Sustainable Design & Resulting Economic Effects



Source: Lützkendorf, T. and Lorenz, D., 2005, Nachhaltigkeitsorientierte Investments im Immobilienbereich – Trends, Theorie und Typologie, 10th Symposium on Finance, Banking, and Insurance, Universität Karlsruhe, 14-16 December 2005

“Hard” empirical evidence – an overview, Part I

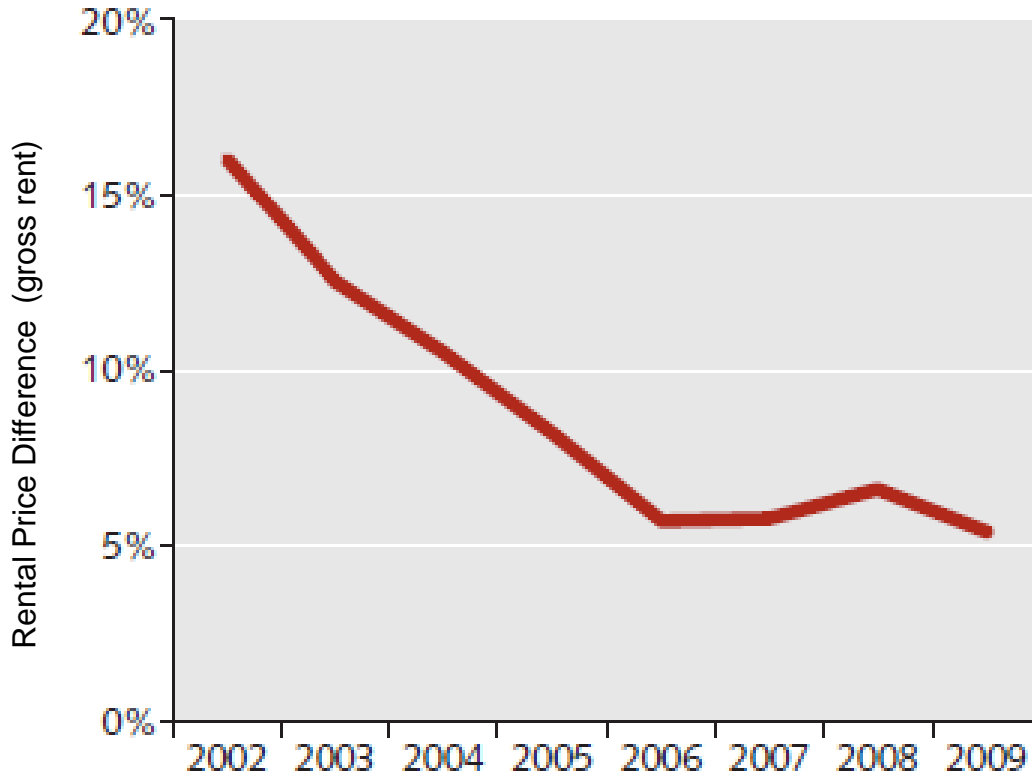
<i>Study/Authors</i>	<i>Country</i>	<i>Property Type</i>	<i>Sustainable Credentials</i>	<i>Observed impact on</i>	<i>+/-</i>	<i>Magnitude</i>
Australian Department of the Environment, Water, Heritage and the Arts, 2008	Australia	Residential Homes	Energy Efficiency Rating, EER, (0 to 10 stars in 0.5 star increment)	Selling Price	+	1.23 % – 1.91 % for each 0.5 EER star
Brounen and Kok, 2010	The Netherlands	Residential Homes	Energy Performance Certificate (Class A, B, C)	Selling Price	+	2.8 %
City of Darmstadt, Rental Index, 2010	Germany (Darmstadt)	Residential multi-family houses	Primary energy value below 250 kWh/m ² a	Rental Price	+	0,38 €/m ²
			Primary energy value below 175 kWh/m ² a			0,50 €/m ²
Eichholtz, Kok and Quigley, 2010	USA	Office Buildings	LEED	Selling Price	+	11.1 %
				Rental Price	+	5.9 %
			Energy Star	Selling Price	+	13 %
				Rental Price	+	6.6 %
Fuerst and McAllister, 2010	USA	Office Buildings	LEED	Occupancy Rates	+	8 %
			Energy Star		+	3 %
Fuerst and McAllister, 2008	USA	Office Buildings	LEED, Energy Star	Selling Price	+	31 % - 35 %
				Rental Price	+	6 %
Griffin et. al, 2009	USA (Portland / Seattle)	Residential Homes	Built Green, Earth Advantage, Energy Star, or LEED	Selling Price	+	3 % - 9.6 %
				Selling / Marketing Time	-	18 days
Pivo and Fischer, 2010	USA	Office Buildings	Energy Star, close distance to transit, location in redevelopment areas	Net Operating Income (NOI)	+	2.7 % - 8.2 %
				Rental Price	+	4.8 % - 5.2 %
				Occupancy Rates	+	0.2 % - 1.3 %
				Market Value	+	6.7 % - 10.6 %
				Income Returns / Cap Rates	-	0.4 % - 1.5 %

“Hard” empirical evidence – an overview, Part II

<i>Study/Authors</i>	<i>Country</i>	<i>Property Type</i>	<i>Sustainable Credentials</i>	<i>Observed impact on</i>	<i>+/-</i>	<i>Magnitude</i>
Pivo and Fischer, 2011	USA	Office, retail, industrial and apartment properties	Walkability (distance to educational, retail, food, recreational and entertainment destinations), measured as a Walk Score from 0 to 100	Market Value (office, retail)	+	0.9 % for each unit increase in Walk Score
				Market Value (apartment)	+	0.1 % for each unit increase in Walk Score
				Net Operating Income (office, retail)	+	0.7 % for each unit increase in Walk Score
				Income Returns / Cap Rates	-	0.007 % for each unit increase in Walk Score
Salvi et. al, 2008	Switzerland	Residential Homes	MINERGIE Label	Selling Price	+	7 %
		Residential Flats		Selling Price	+	3.5 %
Salvi et. al, 2010	Switzerland	Residential Flats	MINERGIE Label	Rental Price	+	6 %
Wameling, 2010	Germany (Nienburg)	Residential Homes	Primary energy demand per m ² and year (kWh/m ² a)	Selling Price	+	Ca. 1,40 €/m ² per reduced kWh/m ² a
Wiley, Benefield and Johnson, 2008	USA	Office Buildings	LEED, Energy Star	Rental Price	+	7 % - 17 %
				Occupancy Rates	+	10 % - 18 %
Yoshida and Sugiura, 2010	Japan (Tokyo)	Large residential condominiums	Tokyo Green Labeling System	Selling Price	-	6 % - 11 %

1. Selected finding of a recent study from Switzerland

Rental price differences for MINERGIE-labeled flats in Switzerland



Source: Salvi, et. al, 2010, *Der Minergie-Boom unter der Lupe*, Center for Corporate Responsibility and Sustainability, Universität Zürich

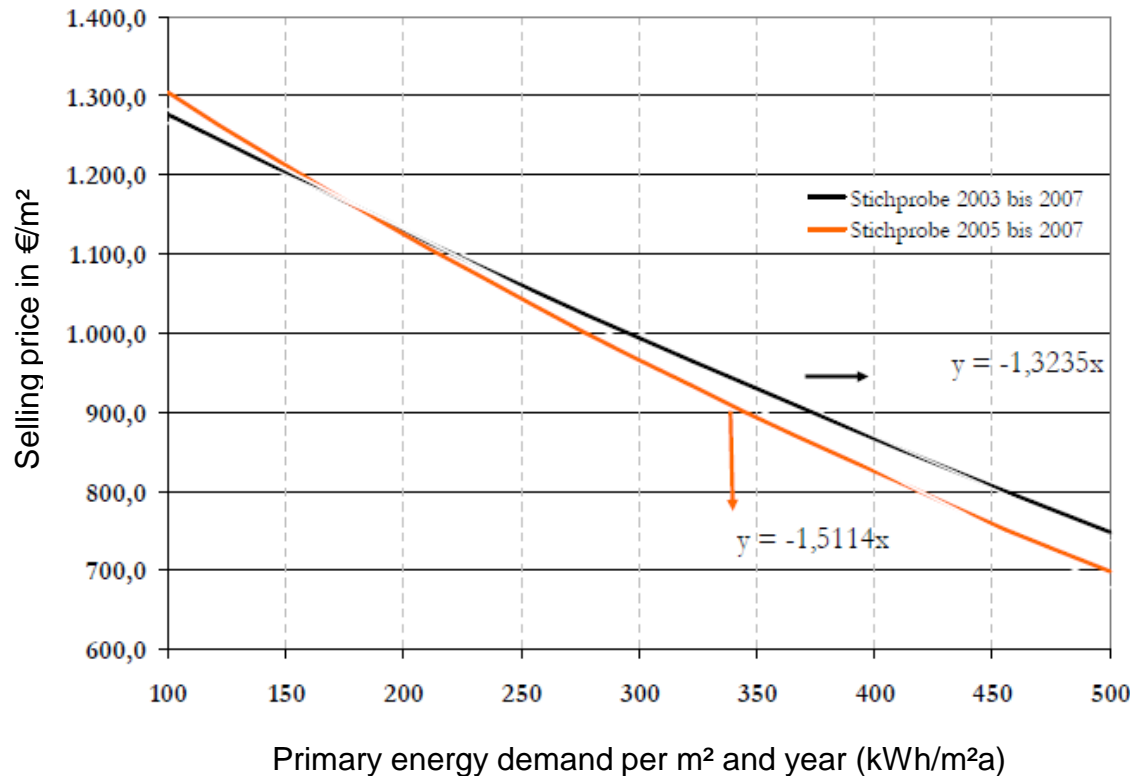
Conclusion & Remarks:

In Switzerland, sustainable / energy efficient building practices are becoming the norm in new construction.

In the medium to long term it is expected that current price premiums for sustainable / energy efficient buildings will turn into price discounts for the conventional, existing building stock.

2. Selected finding of a recent study from Germany, Nienburg

Relationship between selling price and primary energy demand (single family houses) in the city of Nienburg



Source: Wameling, T. (2010), *Immobilienwert und Energiebedarf. Einfluss energetischer Beschaffenheiten auf Verkehrswerte von Immobilien*, Fraunhofer IRB Verlag, Stuttgart

Conclusion & Remarks

In the city of Nienburg selling prices for single family houses increase by ca. 1,40 €/m² per reduced kWh/m²a.

Due to a lack of data, empirical results at this level of detail are very rare. However, they would be highly valuable for valuers operating in different regional and local property markets.

3. Selected finding of a recent study from Japan, Tokyo

Impact of “green” credentials on selling price: average green building (large-scale residential condominium) in the Tokyo Metropolitan Area

	Median Score	(1) OLS	(2) LAD	(3) Quadratic Size & Age	(4) Green x Age
1. Reduction of thermal loads	0.5			0.0457	
2. Renewable energy	0				
3. Energy saving	0				
4. Eco-friendly materials	0.5	-0.0393	-0.0287	-0.0286	-0.0319
5. Longer life of building	0.67	0.0869		0.1005	0.1099
6. Water circulation	0.5				
7. Greening	0.33		-0.0469	-0.0296	
8. Mitigation of heat island	0				
(A) Sum of itemized scores		0.0476	-0.0756	0.088	0.078
(B) Baseline effect		-0.1125		-0.1966	-0.1888
Total effect (A+B)		-0.0649	-0.0756	-0.1086	-0.1108

Conclusion & Remarks

Green labeled buildings may also trade at a discount; in this case between 6 % and 11 %.

This effect was ascribed to the buyers’ skepticism of non-familiar environmental technologies and limited knowledge of future maintenance costs.

Source: Yoshida, J. and Sugiura, A., 2010, *Which “Greenness” is Valued? Evidence from Green Condominiums in Tokyo*, Munich Personal RePEc Archive, MPRA Paper No. 23124

4 Key arguments for an integration of sustainability considerations into the valuation process

1. Transactions observed in the market place as well as already foreseeable market developments require it.
2. Poor property valuation (i.e. a continuation of valuation business as usual) can lead to a misallocation of capital and has already led to an “underinvestment” in sustainable buildings.
3. Identification of mispriced assets (hypothesis: conventional properties can be sold “overpriced”; sustainable buildings are offered “too cheap”). This results in investment opportunities for “enlightened” investors.
4. The professional ethics of the valuation profession and the resulting responsibility towards society imply that valuation professionals take action.

Integration of sustainability issues into the valuation process

The methodological and conceptual basics were developed between 2000 and 2007 with key contributions coming from:

- Australia 
- Austria 
- Canada 
- Germany 
- Japan 
- Norway 
- Switzerland 
- UK 
- USA 

(29 publications including journal papers, conference proceedings, special reports, presentations and published speeches – a full list of references is available on request)

From 2008 onwards the topic went “mainstream”, culminating in the:

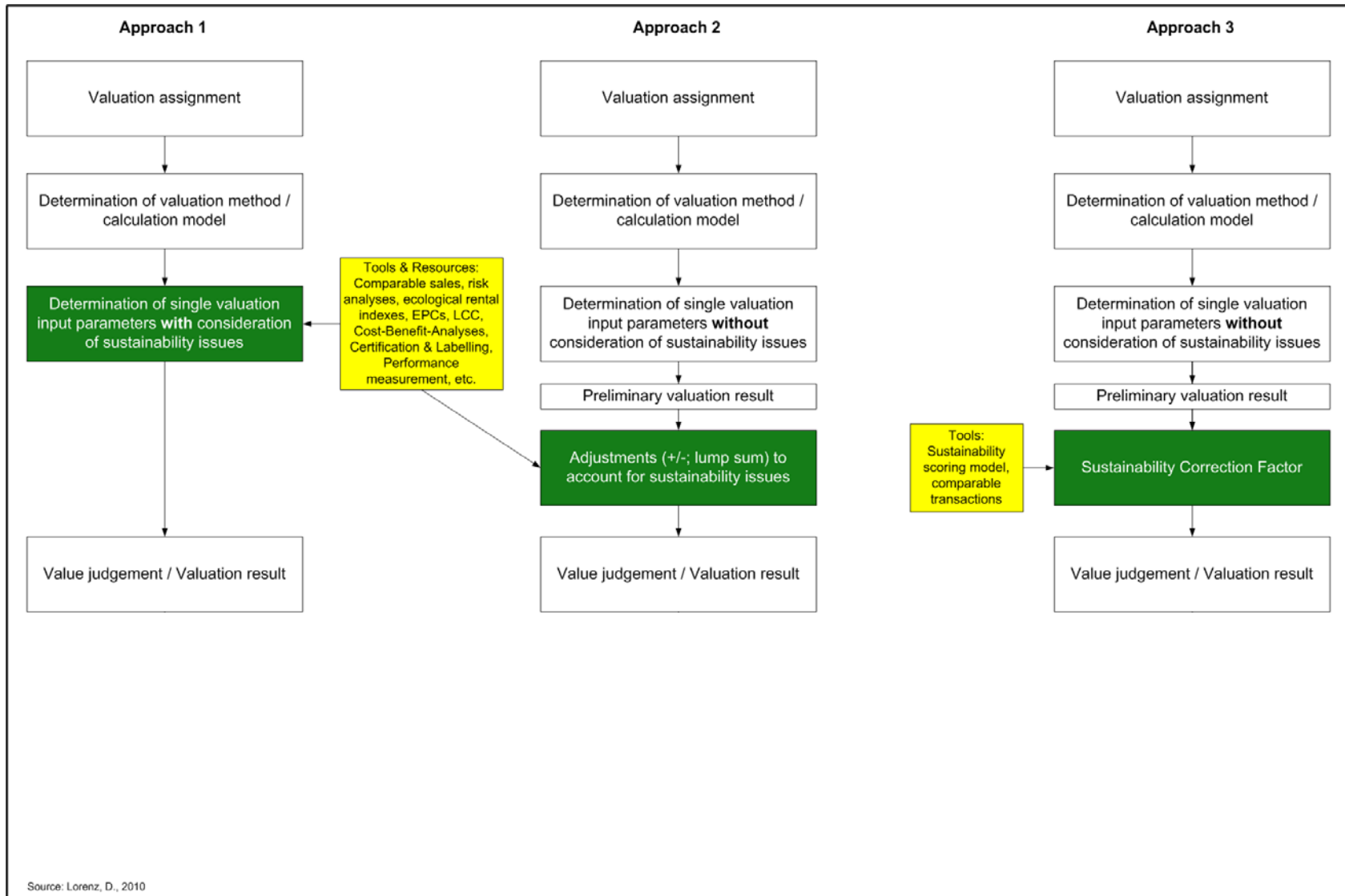
- Publication of the RICS Valuation Information Paper No. 13
- First educational course on the valuation of green buildings offered by the Appraisal Institute in the USA

On-Topic research projects and initiatives

Country	Authors / Contributors	Project Title	Source / Website
Australia	Richard Bowman, John Wills, and others	<i>Valuing Green – How green buildings affect property values and getting the valuation method right</i>	http://www.gbca.org.au/resources/valuing-green/1466.htm
Austria	Susanne Geissler, Maïke Groß, Otto Bammer, Maria Fellner, Martin Treberspurg, Mariam Djalili, Roman Grüner, Bernhard Lipp, Karin Sammer, Klaus Wolfinger	<i>“Neue Immo-Standards” – Leitfaden zum Umgang mit Energieeffizienz und weiteren Nachhaltigkeitsparametern in der Immobilienwertermittlung</i>	http://www.energyagency.at/geb-aeude-raumwaerme/aktuelle-projekte/immo-standards.html
European Union	Sven Bienert, Christian Schützenhofer, Gerrit Leopoldsberger, Kerstin Bobsin, Klemens Leutgöb., and others	<i>IMMOVALUE - Improving the market impact of energy certification by introducing energy efficiency and life-cycle cost into property valuation practice</i>	http://www.immofvalue.org
Germany	Henry Schäfer, Thomas Lützkendorf, Christian Gromer, Christoph Rohde	<i>ImmoWert - Integration von Nachhaltigkeitsaspekten in die Wertermittlung und Risikobeurteilung von Einzelimmobilien und Gebäudebeständen</i>	http://www.baufachinformation.de/literatur.jsp?bu=2010079001759
Japan	Masato Ito, Tomonari Yashiro, and others	<i>Environmental Added Value of Real Estate</i>	http://www.sumitomotrust.co.jp/csr/innovation/real-estate/01english.html
Switzerland	Erika Meins, Hans-Peter Burkhard, Peter Christen, Regina Hardziewski, Niels Holthausen, Silvia Makowski, and others	<i>Economic Sustainability Indicator (ESI) – ESI-Immobilienbewertung</i>	http://www.ccrs.uzh.ch/
USA	Scott Muldavin, Andy Fuscas, John J. D'Andrea, Sue Ragen, Geoffrey Lewis, Maureen Muldavin, Theddi Wright Chappell, Tim Lowe, and others	<i>Green Building Finance Consortium (GBFC) - Value Beyond Cost Savings</i>	http://www.greenbuildingfc.com
UK	Sarah Sayce, Louise Ellison, Judy Smith	<i>The Sustainable Property Appraisal Project</i>	http://www.sustainableproperty.ac.uk/sri-index.htm

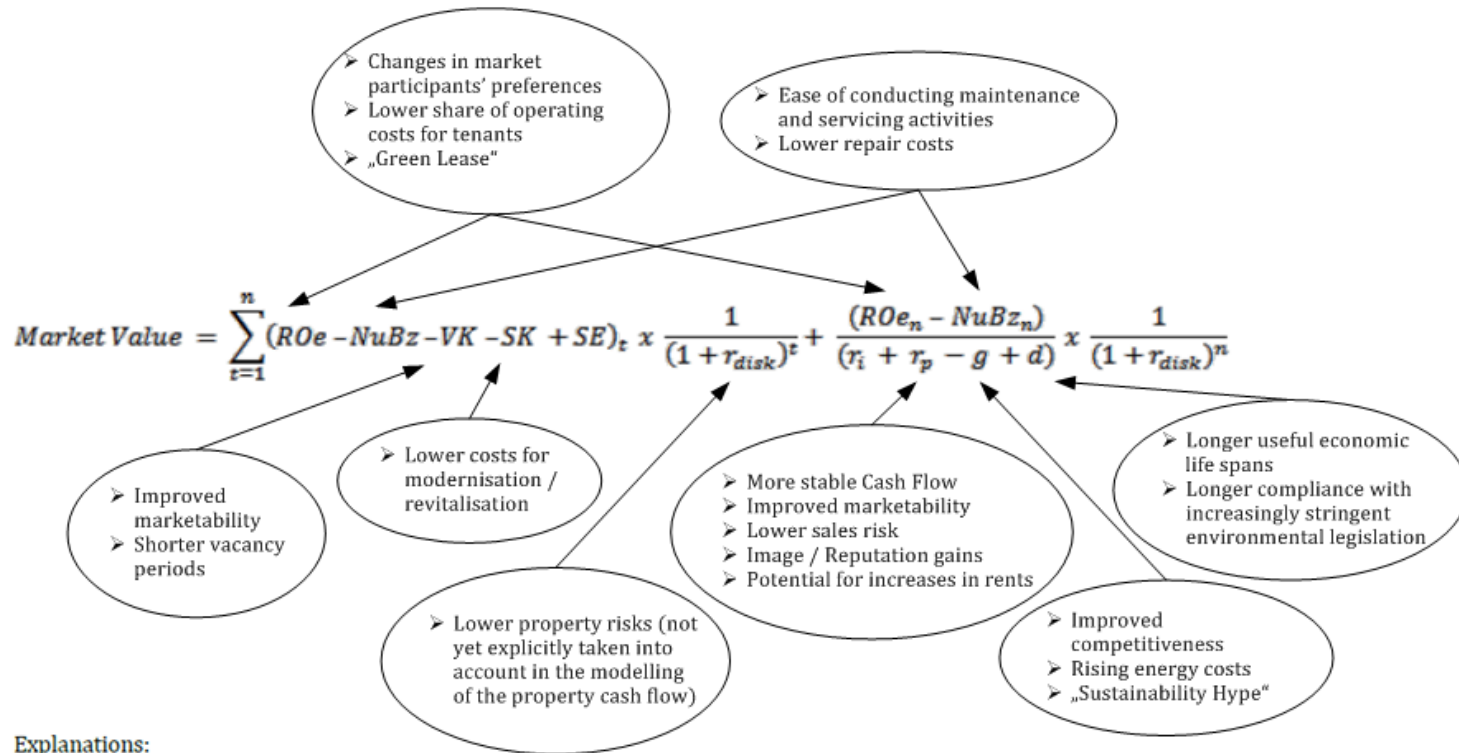
Source: Lorenz, D. and Lützkendorf, T., 2010, *Sustainability & Property Valuation: An International Literature Review*, Karlsruhe Institute of Technology, Research Report

General approaches for an integration of sustainability issues into the valuation process



Example: Discounted Cash Flow

Discounted Cash Flow (DCF)

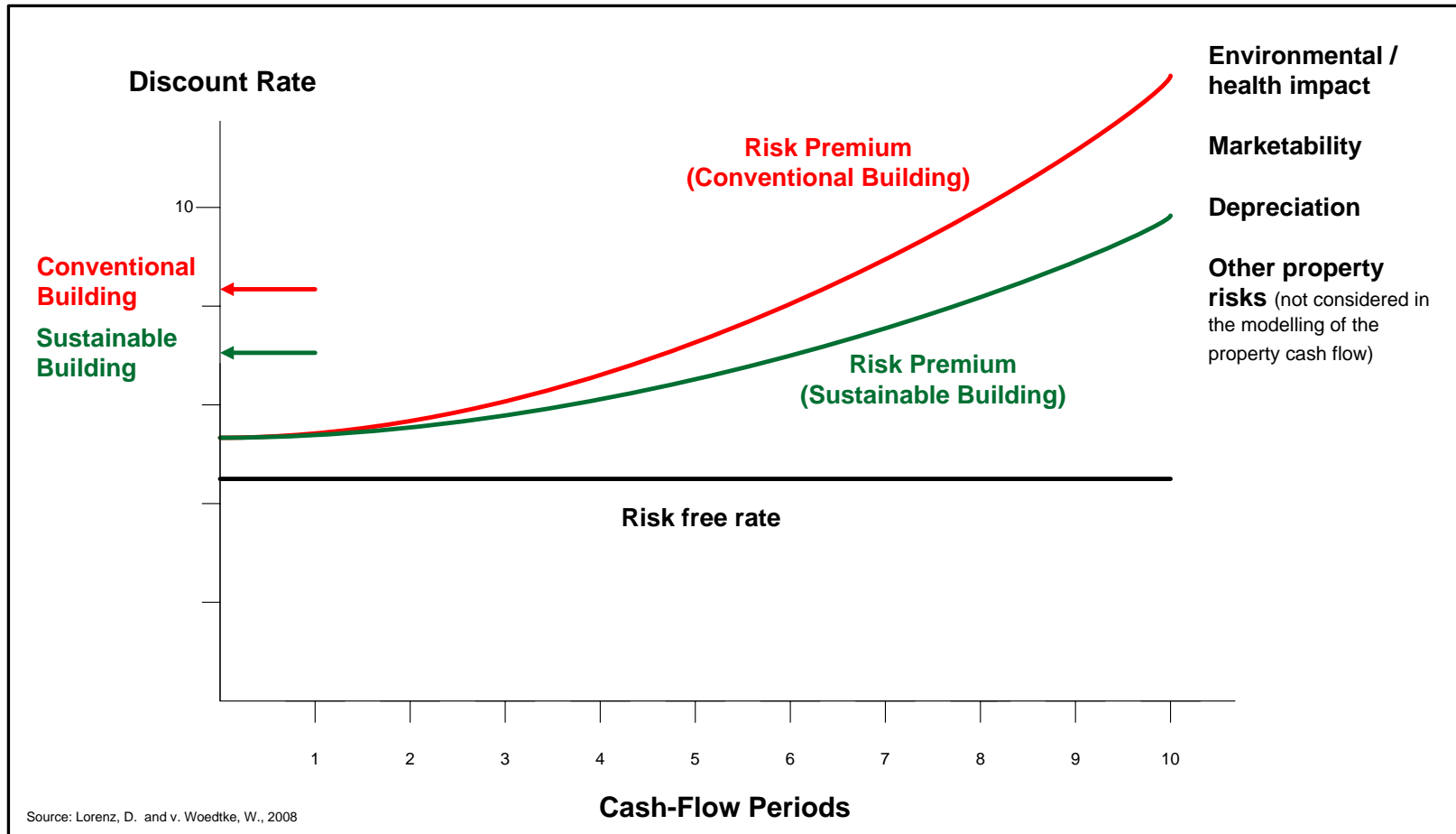


Explanations:

n:	time frame in years	$NuBz_n$:	Operating costs non attributable to tenants in year n
ROe:	Gross rental income	r_i :	Risk free rate
NuBz:	Operating costs non attributable to tenants	r_p :	Risk premium
VK:	Marketing costs	g:	Growth rate
SK:	Other costs (e.g. modernisation, etc.)	d:	Depreciation
SE:	Other income (e.g. advertising on building facade, etc.)	$\frac{(ROe_n - NuBz_n)}{(r_i + r_p - g + d)}$:	Terminal Value of the building in year n
r_{disk} :	Discount rate		
ROe _n :	Gross rental income in year n		

Source: Lorenz, D. and Lützkendorf, T., 2010

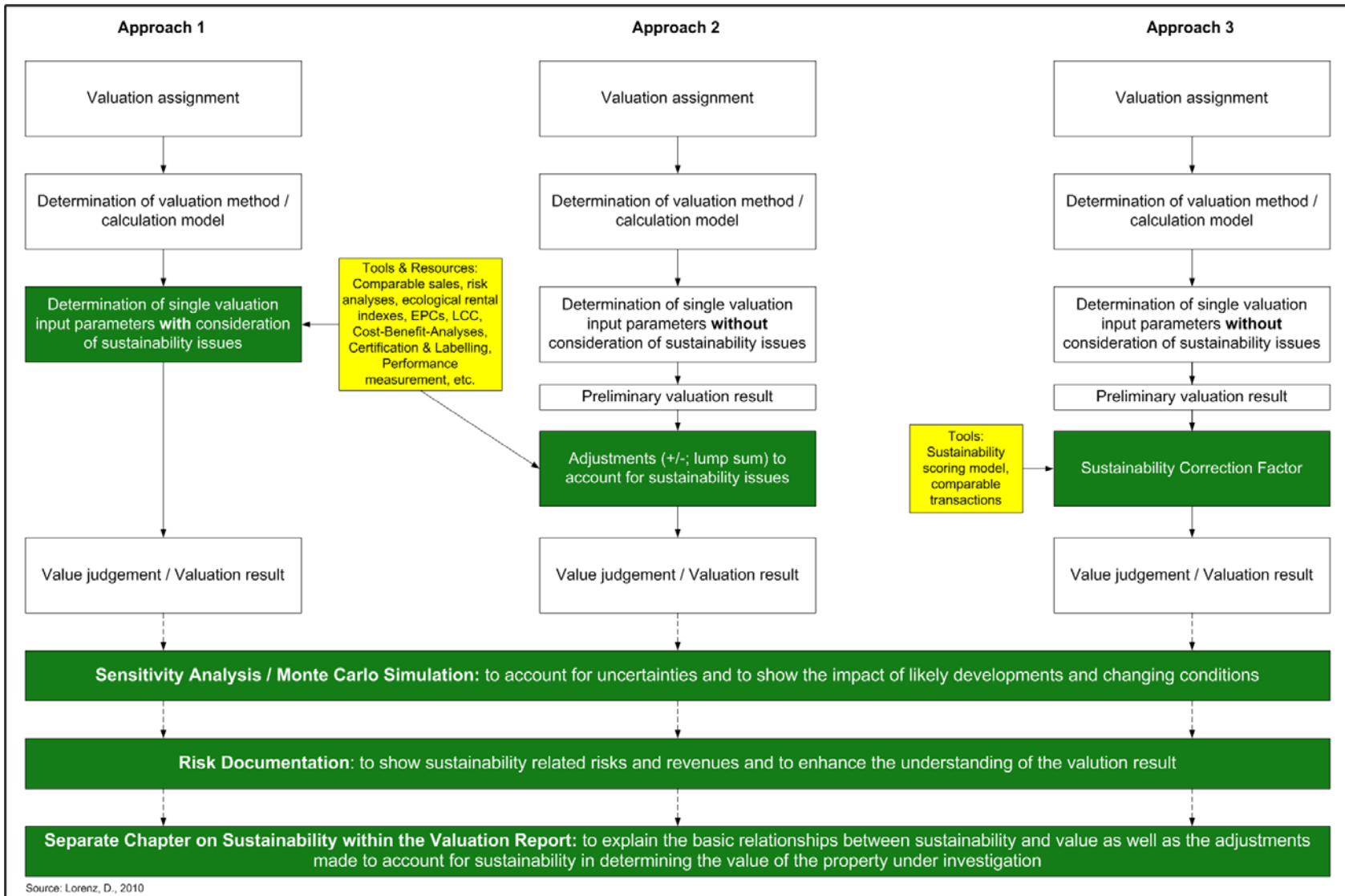
DCF-methodology “dictates” the pricing of sustainability issues today!



“DCF tells us these influences should be being priced now!”

Dr. Paul McNamara, June 2008, Co-chair UNEP FI Property Working Group

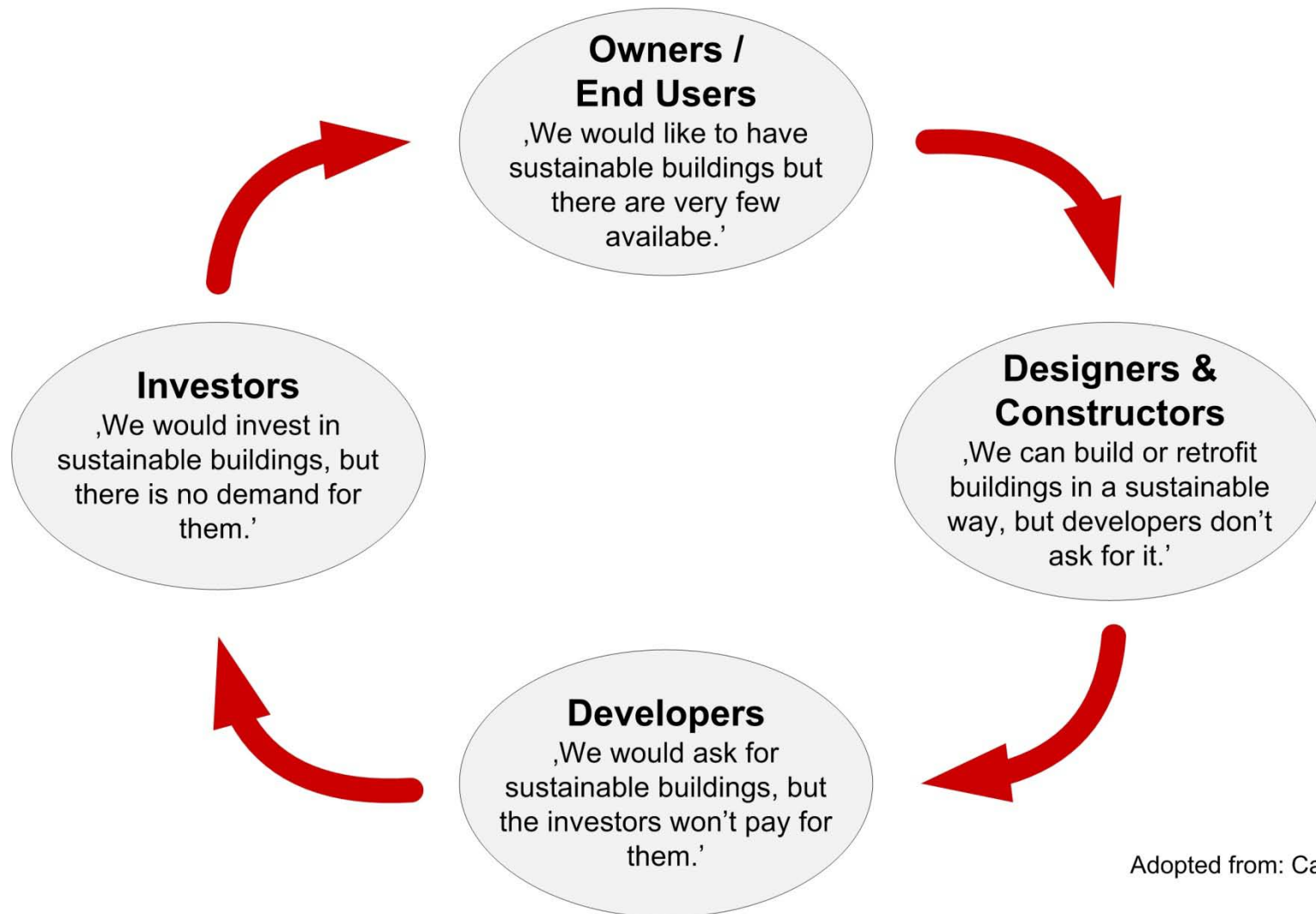
General approaches for an integration of sustainability issues into the valuation process



Key conclusions from an international literature review

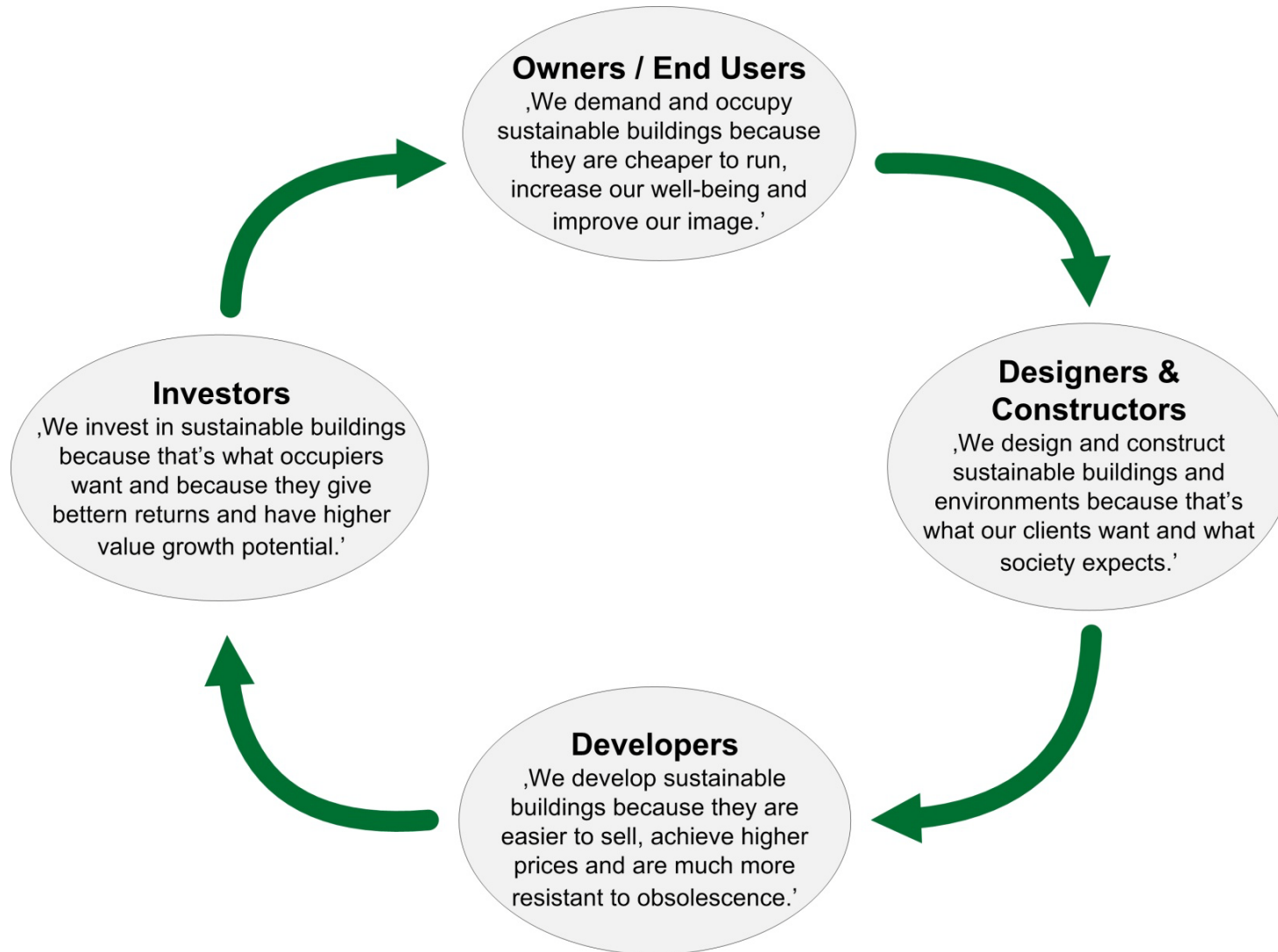
- No straightforward or automated formula to account for sustainability issues exists.
- The extent and approach of reflecting sustainability in value estimates strongly depends on regional and local market conditions, property type, conventions, etc.
- New ways of gathering, processing and presenting property related information are required (in particular: **extension of property transaction databases**).
- Sustainability in valuation is also an issue of increasing transparency: clients needs to understand the valuer's thought process.
- Widespread implementation requires **awareness, education and training** of property professionals.

The Vicious Circle of Blame

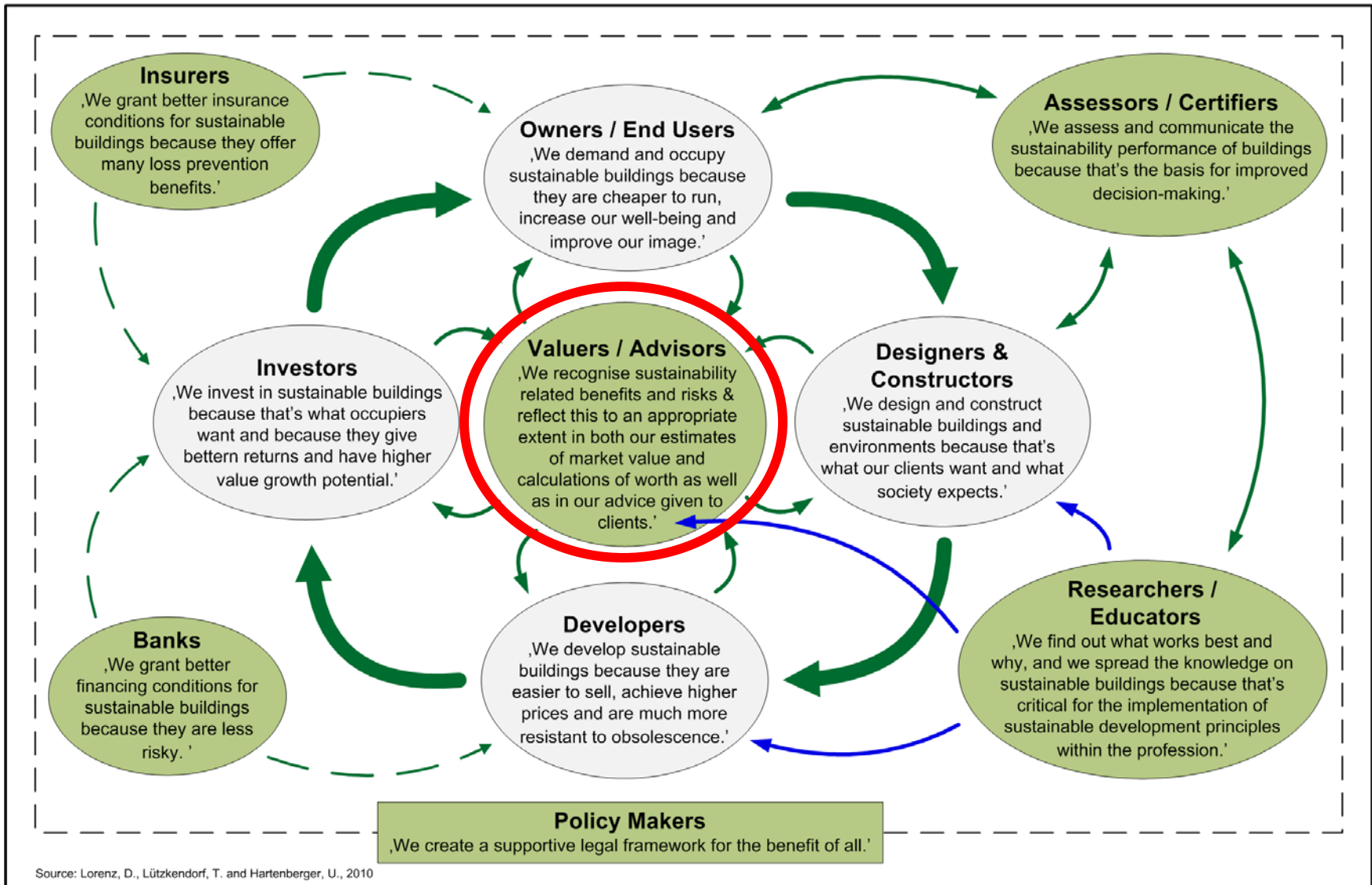


Adopted from: Cadman, D., 2000

In theory, each of these statements can be turned into a positive, turning the vicious circle into a virtuous circle



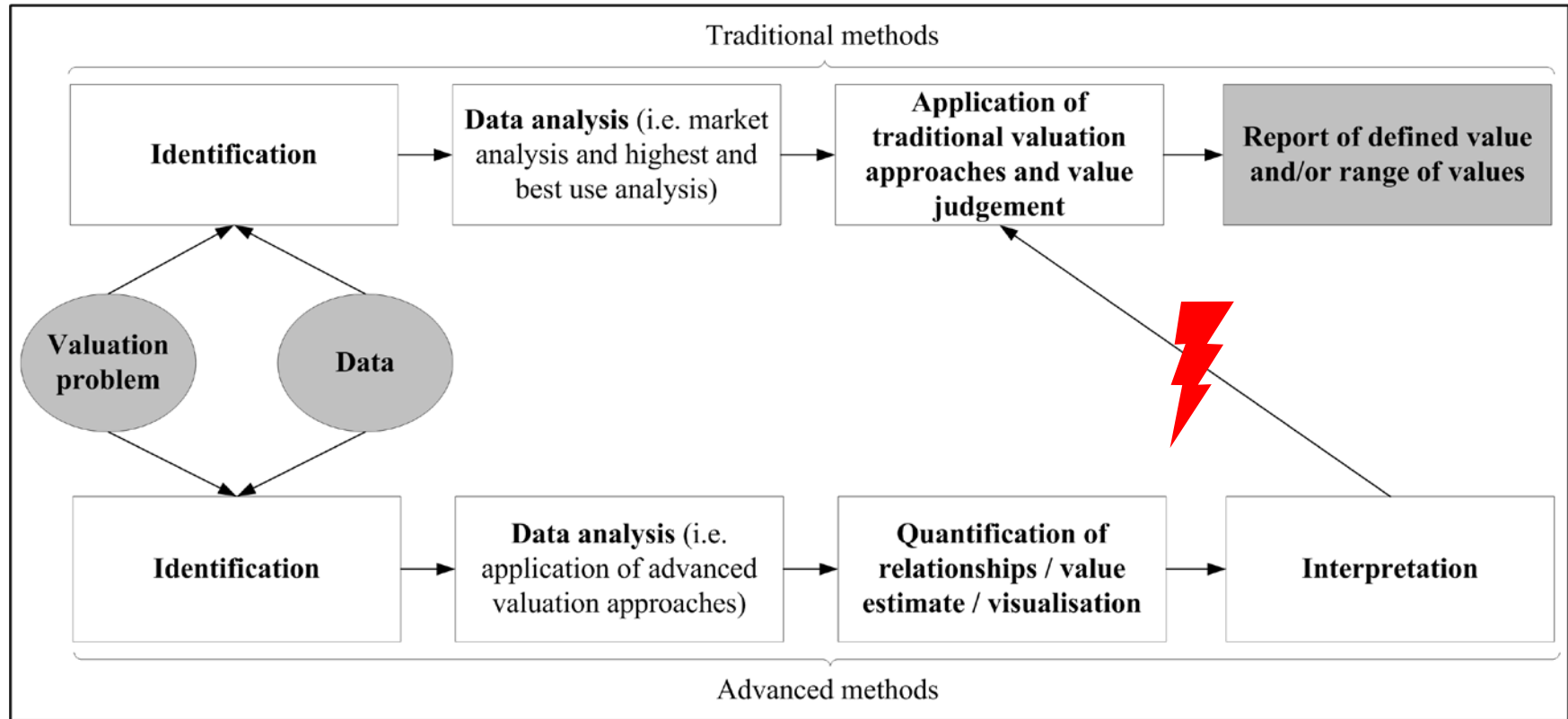
Role of Valuation Professionals: Turning the Vicious Circle of Blame into Loops of Feedback and Adaptation



Outlook – Import issues to address

- **Education and Training** (sustainability thinking needs to be integrated into curricula & training programs of property professionals)
- **Market Analysis** (improvement of the evidence base for regional and local sub-markets)
- **Establish the necessary data standards** for analysing relationships between sustainability aspects and financial variables
- **Further develop practical / technical guidance and guidelines** for a consideration of sustainability issues in professional practice (including valuation, risk analysis, portfolio management, reporting, etc.)
- **Stimulate debate on & provide the theoretical underpinning of the moral / ethical dimension of professional practice.**

The Property Valuation Process



➔ Lack of empirical validation (**in most local markets**) requires property professionals explicitly explaining their **expert opinion** on both the benefits of sustainable & risks of conventional design and on why and how this impacts on estimated property values!

Key Problem: Quality of building descriptions in transaction databases

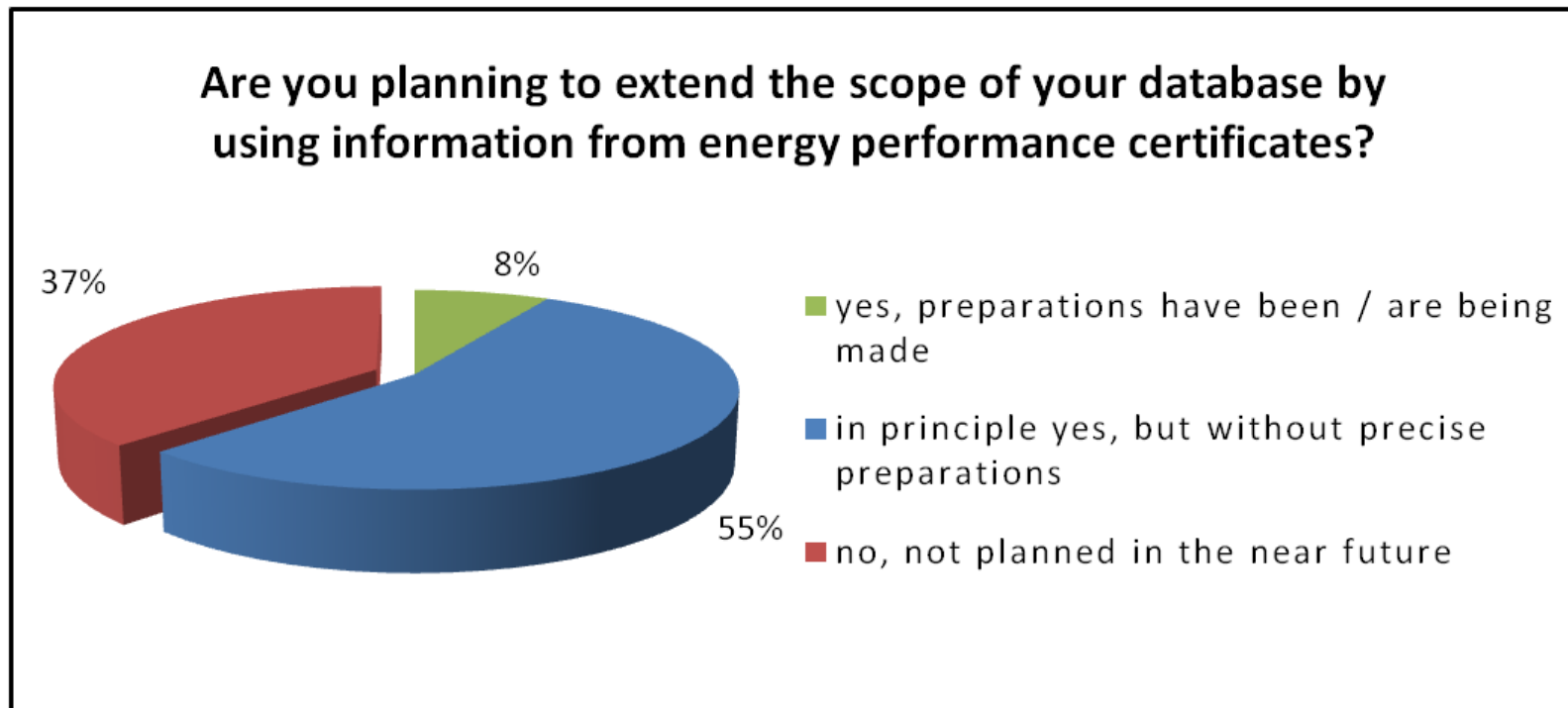
	Type	Brief Explanation	Examples
1	Characteristics based description	Statement on the availability, number, age or size of particular building features or components	Floor area, central heating, green roof, number of rooms, flexible walls, suspended ceiling, etc.
2	Experience based description	Subjective and mainly qualitative judgement mainly based on implicit assumptions	Building quality is considered 'good' because of sound structural condition, favourable layout, equipment, etc.
3	Attribute based description	Judgement or classification based on quantifiable technical and/or physical building characteristics	Heat and sound insulation class, degree of efficiency of heating system, share of renewable materials, etc.
4	Performance based description	Measurement of direct impacts that result from the building's technical and physical characteristics	Primary energy demand, CO ₂ -emissions, life-cycle-costs, annual maintenance costs, etc.



Excursion: German Property Transaction Data Survey Energy Performance Certificates – Part I

Survey among 240 (out of about 500) German valuation expert committees

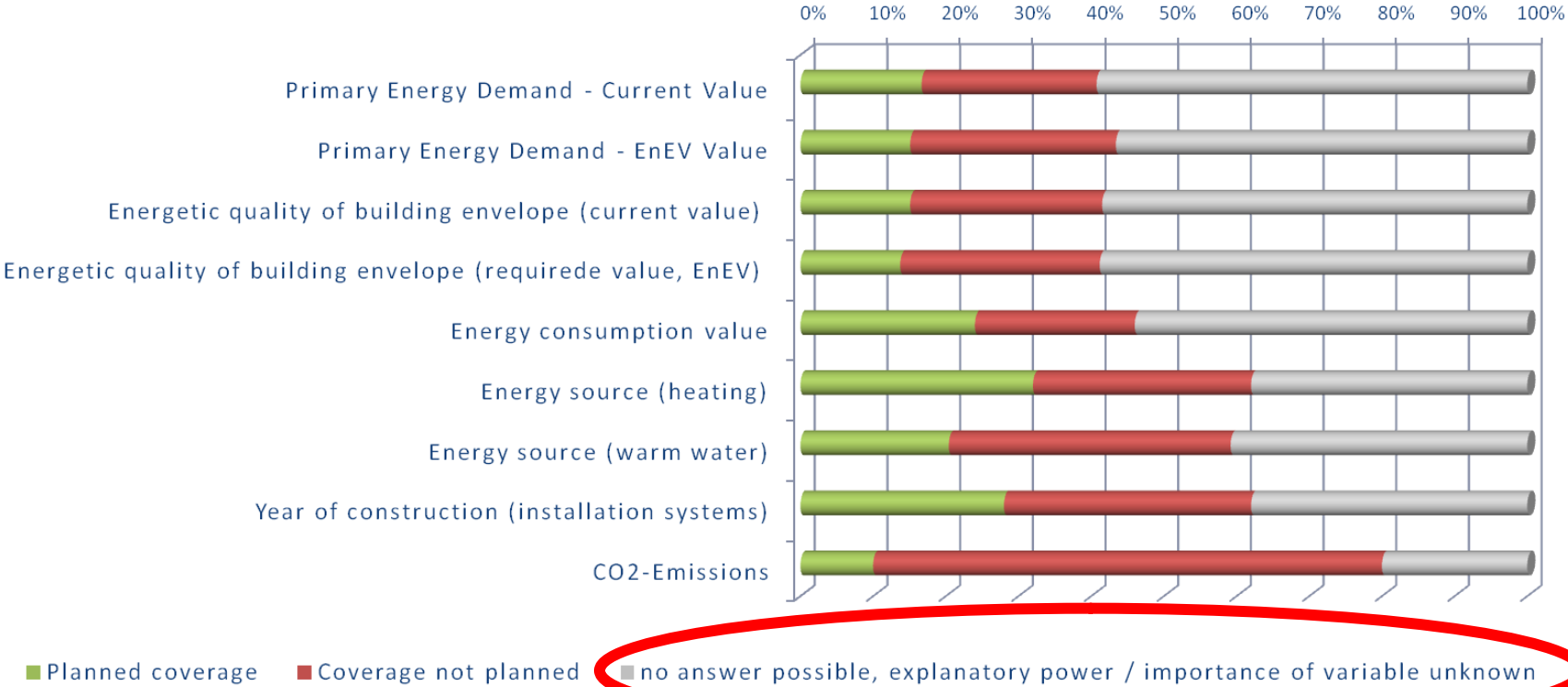
- **64** questionnaires were fully completed → **response rate: 27 %**
- Combined, these 64 valuation expert committees record an average of **155.000 property transactions each year.**



Source: Kertes, J., Lützkendorf, T. and Lorenz, D., 2008, German Property Transaction Data Survey, Universität Karlsruhe

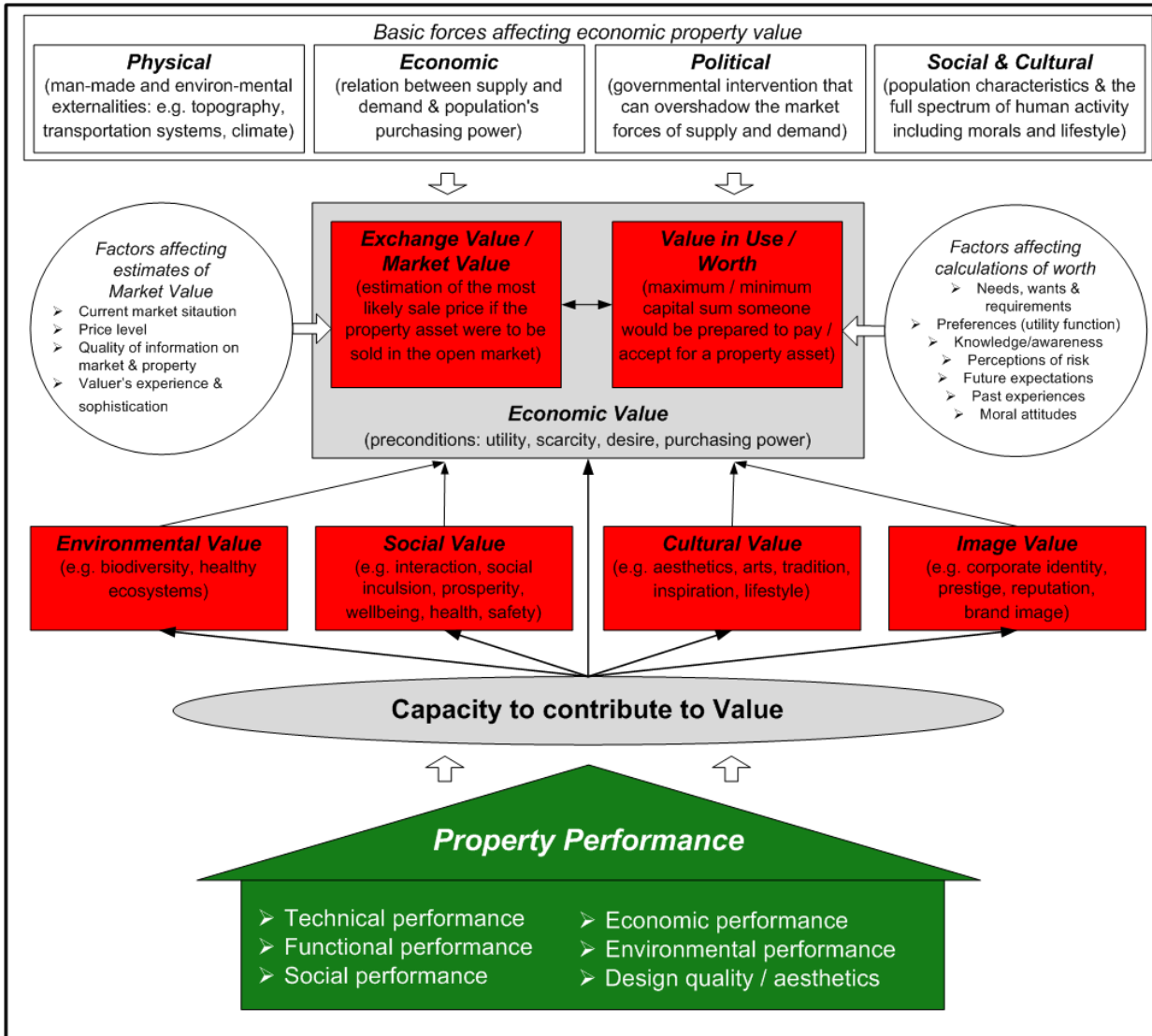
Energy Performance Certificates – Part II

What kind of data from energy performance certificates will be captured?



Source: Kertes, J., Lützkendorf, T. and Lorenz, D., 2008, German Property Transaction Data Survey, Universität Karlsruhe

Property performance affects value in many different ways



It's all about Value:

"The value of goods arises from their relationship to our needs, and is not inherent in the goods themselves. With changes in this relationship, value arises and disappears."

Carl Menger, 1871, Principles of Economics

Figure created after: RICS, 1997; Pearce and Barbier, 2000; McParland et al., 2000; Appraisal Institute, 2001; Kohler and Lützkendorf, 2002; Gaddy and Hart, 2003; Morris Hargreaves McIntyre, 2006; CABE, 2006; Macmillan, 2006.

Widened understanding of the concept of value

Categories of Value	Actors								
	Owner-occupier	Investor (direct and indirect)	Developer / Constructor	Bank	Insurance company	Tenant	User / Inhabitant / Visitor	Government	Society / Community
Physical Value (embodied energy and resources)	○		○					○	○
Market Value / Exchange value (most likely sale price)	●	●	●	●	●			○	○
Worth / Value in Use (value for an individual)	●	●	●	○		●	○		
Social Value (interaction, inclusion, prosperity, health, safety)	●	○	○		○	●	●	●	●
Cultural Value (tradition, arts, aesthetics, inspiration, lifestyle)	○	○	○			●	●	●	●
Emotional Value (feelings, positive experiences, wellbeing)	●	○	○			●	●	○	●
Image / Sign Value (social status, reputation, prestige, identity)	●	●	●			●	○	○	○
Environmental Value (biodiversity, healthy ecosystems)	○	○	○	○	○	○		●	●



Source: Lorenz, D., 2010

First Open Question: Reflecting the market vs. informing the client

The Role of the Valuer:

Is to reflect the market,
and nothing else?

(even if markets have
“gone crazy”)

Is to reflect the market & to inform the client on

- the benefits of sustainable & risks of conventional design,
- the wider environmental and social impacts,
- the implications this could have on the likely value development of the subject property?

(even if sustainability aspects are not yet
fully reflected in today’s market prices)

Answer to this question has far reaching consequences for the presentation of valuation results and regarding the content and format of valuation reports. But answer depends on ...

Second Open Question: Obligation towards society vs. obligation towards the client

Do valuers have an informational duty (or moral responsibility) regarding the issue of sustainability; i.e. do they have an obligation towards society at large or only towards clients and shareholders?



*“The objects of the Institution shall be to [...] **promote the usefulness of the profession for the public advantage** in the United Kingdom and in any other part of the world.”*

Quote from the Royal Charter of the
Royal Institution of Chartered Surveyors (RICS)

Thank you very much for your attention!

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