The importance of Property Valuation in ensuring financial stability and the linkages between property values and sustainability
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Property Valuation & Sustainability
The Role of Valuation Professionals

Dr. David Lorenz FRICS
Lorenz Property Advisors – Chartered Surveyors &
Karlsruhe Institute of Technology (KIT)
Chair of Sustainable Management of Housing and Real Estate
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)
In OECD countries the built environment is the largest single cause for resource use and pollution emission!
Confusion of Terms

Sustainable Buildings  
High-Performance Buildings  
Healthy Buildings  
Low-energy Buildings  
Green Buildings  
Passive Buildings  
Zero-emission Buildings
# Understanding of Sustainable Buildings

## Aspects

<table>
<thead>
<tr>
<th>Typology</th>
<th>Functionality</th>
<th>Comfort / Health</th>
<th>Energy</th>
<th>Water</th>
<th>Environmental impact / Resources</th>
<th>Life cycle costs</th>
<th>Income / Value</th>
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</thead>
<tbody>
<tr>
<td>Low-energy Buildings</td>
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<td>Healthy Buildings</td>
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<td>High-Performance Buildings</td>
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<tr>
<td>Green Buildings I</td>
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<td>Green Buildings II</td>
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<td>Sustainable Buildings I</td>
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<td>Sustainable Buildings II</td>
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<td>Sustainable Buildings III</td>
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</tbody>
</table>

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

Sustainable building features (examples)

- Energy efficiency
- Reduced impacts on the environment
- Increased functionality, serviceability, durability and adaptability
- Ease of conducting maintenance, servicing and recycling activities
- Increased comfort and well-being of occupants

Resulting economic effects

- Drastically lower operating and maintenance costs
- Improved marketability and thus, lower vacancy risk and higher stability of cash-flow
- Higher rental growth potential
- Property loss prevention benefits and lower business interruption risk
- User / occupant productivity gains
- Reduced compensation costs and risk of litigation caused by Sick-Building Syndromes

Increased building worth and market value

### “Hard” empirical evidence – an overview, Part I

<table>
<thead>
<tr>
<th>Study/Authors</th>
<th>Country</th>
<th>Property Type</th>
<th>Sustainable Credentials</th>
<th>Observed impact on</th>
<th>+/-</th>
<th>Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Department of the Environment, Water, Heritage and the Arts, 2008</td>
<td>Australia</td>
<td>Residential Homes</td>
<td>Energy Efficiency Rating, EER, (0 to 10 stars in 0.5 star increment)</td>
<td>Selling Price</td>
<td>+</td>
<td>1.23 % – 1.91 % for each 0.5 EER star</td>
</tr>
<tr>
<td>Brounen and Kok, 2010</td>
<td>The Netherlands</td>
<td>Residential Homes</td>
<td>Energy Performance Certificate (Class A, B, C)</td>
<td>Selling Price</td>
<td>+</td>
<td>2.8 %</td>
</tr>
<tr>
<td>City of Darmstadt, Rental Index, 2010</td>
<td>Germany (Darmstadt)</td>
<td>Residential multi-family houses</td>
<td>Primary energy value below 250 kWh/m²a</td>
<td>Rental Price</td>
<td>+</td>
<td>0,38 €/m²</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Primary energy value below 175 kWh/m²a</td>
<td></td>
<td></td>
<td>0,50 €/m²</td>
</tr>
<tr>
<td>Eichholtz, Kok and Quigley, 2010</td>
<td>USA</td>
<td>Office Buildings</td>
<td>LEED</td>
<td>Selling Price</td>
<td>+</td>
<td>11.1 %</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>Rental Price</td>
<td>+</td>
<td>5.9 %</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Selling Price</td>
<td>+</td>
<td>13 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Rental Price</td>
<td>+</td>
<td>6.6 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Occupancy Rates</td>
<td>+</td>
<td>8 %</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td>3 %</td>
</tr>
<tr>
<td>Fuerst and McAllister, 2010</td>
<td>USA</td>
<td>Office Buildings</td>
<td>LEED</td>
<td>Selling Price</td>
<td>+</td>
<td>31 % - 35 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Rental Price</td>
<td>+</td>
<td>6 %</td>
</tr>
<tr>
<td>Fuerst and McAllister, 2008</td>
<td>USA</td>
<td>Office Buildings</td>
<td>LEED, Energy Star</td>
<td>Selling Price</td>
<td>+</td>
<td>3 % - 9.6 %</td>
</tr>
<tr>
<td>Griffin et. al, 2009</td>
<td>USA (Portland / Seattle)</td>
<td>Residential Homes</td>
<td>Built Green, Earth Advantage, Energy Star, or LEED</td>
<td>Selling / Marketing Time</td>
<td>-</td>
<td>18 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Net Operating Income (NOI)</td>
<td>+</td>
<td>2.7 % - 8.2 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Rental Price</td>
<td>+</td>
<td>4.8 % - 5.2 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Occupancy Rates</td>
<td>+</td>
<td>0.2 % - 1.3 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Market Value</td>
<td>+</td>
<td>6.7 % - 10.6 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Income Returns / Cap Rates</td>
<td>-</td>
<td>0.4 % - 1.5 %</td>
</tr>
</tbody>
</table>
### “Hard” empirical evidence – an overview, Part II

<table>
<thead>
<tr>
<th>Study/Authors</th>
<th>Country</th>
<th>Property Type</th>
<th>Sustainable Credentials</th>
<th>Observed impact on</th>
<th>+/-</th>
<th>Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pivo and Fischer, 2011</td>
<td>USA</td>
<td>Office, retail, industrial and apartment properties</td>
<td>Walkability (distance to educational, retail, food, recreational and entertainment destinations), measured as a Walk Score from 0 to 100</td>
<td>Market Value (office, retail)</td>
<td>+</td>
<td>0.9 % for each unit increase in Walk Score</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Market Value (apartment)</td>
<td>+</td>
<td>0.1 % for each unit increase in Walk Score</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Net Operating Income (office, retail)</td>
<td>+</td>
<td>0.7 % for each unit increase in Walk Score</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Income Returns / Cap Rates</td>
<td>-</td>
<td>0.007 % for each unit increase in Walk Score</td>
</tr>
<tr>
<td>Salvi et. al, 2008</td>
<td>Switzerland</td>
<td>Residential Homes</td>
<td>MINERGIE Label</td>
<td>Selling Price</td>
<td>+</td>
<td>7 %</td>
</tr>
<tr>
<td>Salvi et. al, 2010</td>
<td>Switzerland</td>
<td>Residential Flats</td>
<td>MINERGIE Label</td>
<td>Selling Price</td>
<td>+</td>
<td>3.5 %</td>
</tr>
<tr>
<td>Salvi et. al, 2010</td>
<td>Switzerland</td>
<td>Residential Flats</td>
<td>MINERGIE Label</td>
<td>Rental Price</td>
<td>+</td>
<td>6 %</td>
</tr>
<tr>
<td>Wameling, 2010</td>
<td>Germany (Nienburg)</td>
<td>Residential Homes</td>
<td>Primary energy demand per m² and year (kWh/m²a)</td>
<td>Selling Price</td>
<td>+</td>
<td>Ca. 1,40 €/m² per reduced kWh/m²a</td>
</tr>
<tr>
<td>Wiley, Benefield and Johnson, 2008</td>
<td>USA</td>
<td>Office Buildings</td>
<td>LEED, Energy Star</td>
<td>Rental Price</td>
<td>+</td>
<td>7 % - 17 %</td>
</tr>
<tr>
<td>Yoshida and Sugiura, 2010</td>
<td>Japan (Tokyo)</td>
<td>Large residential condominiums</td>
<td>Tokyo Green Labeling System</td>
<td>Selling Price</td>
<td>-</td>
<td>6 % - 11 %</td>
</tr>
</tbody>
</table>
1. Selected finding of a recent study from Switzerland

Rental price differences for MINERGIE-labeled flats in Switzerland

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.

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

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

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

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.

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.
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

<table>
<thead>
<tr>
<th>Country</th>
<th>Authors / Contributors</th>
<th>Project Title</th>
<th>Source / Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union</td>
<td>Sven Bienert, Christian Schützenhofer, Gerrit Leopoldsberger, Kerstin Bobsin, Klemens Leutgöb, and others</td>
<td>IMMOVALUE - Improving the market impact of energy certification by introducing energy efficiency and life-cycle cost into property valuation practice</td>
<td><a href="http://www.imm%D0%BE%D0%B2%D0%B0%D0%BBue.org">http://www.immовалue.org</a></td>
</tr>
<tr>
<td>Japan</td>
<td>Masato Ito, Tomonari Yashiro, and others</td>
<td>Environmental Added Value of Real Estate</td>
<td><a href="http://www.sumitomotrust.co.jp/csr/innovation/real-estate/01english.html">http://www.sumitomotrust.co.jp/csr/innovation/real-estate/01english.html</a></td>
</tr>
<tr>
<td>Switzerland</td>
<td>Erika Meins, Hans-Peter Burkhard, Peter Christen, Regina Hardziewski, Niels Holthausen, Silvia Makowski, and others</td>
<td><em>Economic Sustainability Indicator (ESI) – ESI-Immobilienbewertung</em></td>
<td><a href="http://www.ccrs.uzh.ch/">http://www.ccrs.uzh.ch/</a></td>
</tr>
<tr>
<td>UK</td>
<td>Sarah Sayce, Louise Ellison, Judy Smith</td>
<td>The Sustainable Property Appraisal Project</td>
<td><a href="http://www.sustainableproperty.ac.uk/sri-index.htm">http://www.sustainableproperty.ac.uk/sri-index.htm</a></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Approach 1</th>
<th>Approach 2</th>
<th>Approach 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valuation assignment</td>
<td>Valuation assignment</td>
<td>Valuation assignment</td>
</tr>
<tr>
<td><strong>Determination of single valuation input parameters with consideration of sustainability issues</strong></td>
<td><strong>Determination of single valuation input parameters without consideration of sustainability issues</strong></td>
<td><strong>Determination of single valuation input parameters without consideration of sustainability issues</strong></td>
</tr>
<tr>
<td></td>
<td>Preliminary valuation result</td>
<td>Preliminary valuation result</td>
</tr>
<tr>
<td></td>
<td>Adjustments (+/-; lump sum) to account for sustainability issues</td>
<td>Tools: Sustainability scoring model, comparable transactions</td>
</tr>
<tr>
<td></td>
<td>Value judgement / Valuation result</td>
<td>Value judgement / Valuation result</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value judgement / Valuation result</td>
</tr>
</tbody>
</table>

Source: Lorenz, D., 2010

Tools & Resources: Comparable sales, risk analyses, ecological rental indexes, EPCs, LCC, Cost-Benefit-Analyses, Certification & Labelling, Performance measurement, etc.
Example: Discounted Cash Flow

Discounted Cash Flow (DCF)

- Changes in market participants' preferences
- Lower share of operating costs for tenants
- „Green Lease”
- Ease of conducting maintenance and servicing activities
- Lower repair costs
- Improved marketability
- Shorter vacancy periods
- Lower costs for modernisation / revitalisation
- More stable Cash Flow
- Improved marketability
- Lower sales risk
- Image / Reputation gains
- Potential for increases in rents
- Longer useful economic life spans
- Longer compliance with increasingly stringent environmental legislation
- Improved competitiveness
- Rising energy costs
- „Sustainability Hype”

Market Value = \( \sum_{i=1}^{n} (ROe_n - NuBz_n - VK - SK + SE)_i \times \frac{1}{(1+r_{disk})^i} + \frac{(ROe_n - NuBz_n)}{(r_i + r_p - g + d)} \times \frac{1}{(1+r_{disk})^n} \)

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

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

**Approach 1**
- Valuation assignment
  - Determination of valuation method / calculation model
  - Determination of single valuation input parameters with consideration of sustainability issues
  - Value judgement / Valuation result

**Approach 2**
- Valuation assignment
  - Determination of valuation method / calculation model
  - Determination of single valuation input parameters without consideration of sustainability issues
  - Preliminary valuation result
  - Adjustments (+/-; lump sum) to account for sustainability issues
  - Value judgement / Valuation result

**Approach 3**
- Valuation assignment
  - Determination of valuation method / calculation model
  - Determination of single valuation input parameters without consideration of sustainability issues
  - Preliminary valuation result
  - Tools: Sustainability scoring model, comparable transactions
  - Sustainability Correction Factor
  - Value judgement / Valuation result

**Tools & Resources:**
- Comparable sales, risk analyses, ecological rental indexes, EPCs, LCC, Cost-Benefit Analyses, Certification & Labelling, Performance measurement, etc.

**Sensitivity Analysis / Monte Carlo Simulation:** to account for uncertainties and to show the impact of likely developments and changing conditions

**Risk Documentation:** to show sustainability related risks and revenues and to enhance the understanding of the valuation result

**Separate Chapter on Sustainability within the Valuation Report:** to explain the basic relationships between sustainability and value as well as the adjustments made to account for sustainability in determining the value of the property under investigation

Source: Lorenz, D., 2010
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 need to understand the valuer’s thought process.

Widespread implementation requires awareness, education and training of property professionals.
The Vicious Circle of Blame

**Owners / End Users**
'We would like to have sustainable buildings but there are very few available.'

**Investors**
'We would invest in sustainable buildings, but there is no demand for them.'

**Developers**
'We would ask for sustainable buildings, but the investors won’t pay for them.'

**Designers & Constructors**
'We can build or retrofit buildings in a sustainable way, but developers don’t ask for it.'

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.

**Owners / End Users**
'We demand and occupy sustainable buildings because they are cheaper to run, increase our well-being and improve our image.'

**Investors**
'We invest in sustainable buildings because that’s what occupiers want and because they give better returns and have higher value growth potential.'

**Designers & Constructors**
'We design and construct sustainable buildings and environments because that’s what our clients want and what society expects.'

**Developers**
'We develop sustainable buildings because they are easier to sell, achieve higher prices and are much more resistant to obsolescence.'
Role of Valuation Professionals: Turning the Vicious Circle of Blame into Loops of Feedback and Adaptation

- **Insurers**
  
  "We grant better insurance conditions for sustainable buildings because they offer many loss prevention benefits."

- **Assessors / Certifiers**
  
  "We assess and communicate the sustainability performance of buildings because that’s the basis for improved decision-making."

- **Owners / End Users**
  
  "We demand and occupy sustainable buildings because they are cheaper to run, increase our well-being and improve our image."

- **Designers & Constructors**
  
  "We design and construct sustainable buildings and environments because that’s what our clients want and what society expects."

- **Valuers / Advisors**
  
  "We recognise sustainability related benefits and risks & reflect this to an appropriate extent in both our estimates of market value and calculations of worth as well as in our advice given to clients."

- **Investors**
  
  "We invest in sustainable buildings because that’s what occupiers want and because they give better returns and have higher value growth potential."

- **Developers**
  
  "We develop sustainable buildings because they are easier to sell, achieve higher prices and are much more resistant to obsolescence."

- **Researchers / Educators**
  
  "We find out what works best and why, and we spread the knowledge on sustainable buildings because that’s critical for the implementation of sustainable development principles within the profession."

- **Banks**
  
  "We grant better financing conditions for sustainable buildings because they are less risky."

- **Policy Makers**
  
  "We create a supportive legal framework for the benefit of all."

Source: Lorenz, D., Lützkendorf, T. and Hartenberger, U., 2010
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.**
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

<table>
<thead>
<tr>
<th>Type</th>
<th>Brief Explanation</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics based description</td>
<td>Statement on the availability, number, age or size of particular building features or components</td>
<td>Floor area, central heating, green roof, number of rooms, flexible walls, suspended ceiling, etc.</td>
</tr>
<tr>
<td>Experience based description</td>
<td>Subjective and mainly qualitative judgement mainly based on implicit assumptions</td>
<td>Building quality is considered ‘good’ because of sound structural condition, favourable layout, equipment, etc.</td>
</tr>
<tr>
<td>Attribute based description</td>
<td>Judgement or classification based on quantifiable technical and/or physical building characteristics</td>
<td>Heat and sound insulation class, degree of efficiency of heating system, share of renewable materials, etc.</td>
</tr>
<tr>
<td>Performance based description</td>
<td>Measurement of direct impacts that result from the building’s technical and physical characteristics</td>
<td>Primary energy demand, CO$_2$-emissions, life-cycle-costs, annual maintenance costs, etc.</td>
</tr>
</tbody>
</table>
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?

- Primary Energy Demand - Current Value
- Primary Energy Demand - EnEV Value
- Energetic quality of building envelope (current value)
- Energetic quality of building envelope (requirede value, EnEV)
- Energy consumption value
- Energy source (heating)
- Energy source (warm water)
- Year of construction (installation systems)
- CO2-Emissions

Planned coverage
Coverage not planned
No answer possible, explanatory power / importance of variable unknown

Source: Kertes, J., Lützkendorf, T. and Lorenz, D., 2008, German Property Transaction Data Survey, Universität Karlsruhe
Property performance affects value in many different ways

### Basic forces affecting economic property value

<table>
<thead>
<tr>
<th>Physical</th>
<th>Economic</th>
<th>Political</th>
<th>Social &amp; Cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>(man-made and environmental externalities: e.g. topography, transportation systems, climate)</td>
<td>(relation between supply and demand &amp; population’s purchasing power)</td>
<td>(governmental intervention that can overshadow the market forces of supply and demand)</td>
<td>(population characteristics &amp; the full spectrum of human activity including morals and lifestyle)</td>
</tr>
</tbody>
</table>

**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

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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**

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

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!

Contact details:

Lorenz Property Advisors – Chartered Surveyors
Schwarzwaldhochstr. 47
76571 Gaggenau
Phone: +49 (0) 7204 - 8389
Fax: +49 (0) 7204 - 8105
E-mail: d.lorenz@property-advisors.de
Web: www.property-advisors.de