

« Identification of the Sustainable Building Performance Thresholds generating value »

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mrics

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Sustainability Metrics

TRANSLATION AND IMPACT ON PROPERTY INVESTMENT AND MANAGEMENT

A report by the Property Working Group of the United Nations Environment Programme Finance Initiative
May 2014

Sustainability is no longer a niche issue

The financial business case is clear: energy efficient and sustainable buildings provide an overall better market value for investors.

There is an increasing demand for data to assess the sustainability credentials and performance of companies, portfolios and buildings.

Asset owners and managers are increasingly confused by the ever thickening ‘alphabet soup’ of acronyms relating to building metrics and the organisations behind them.

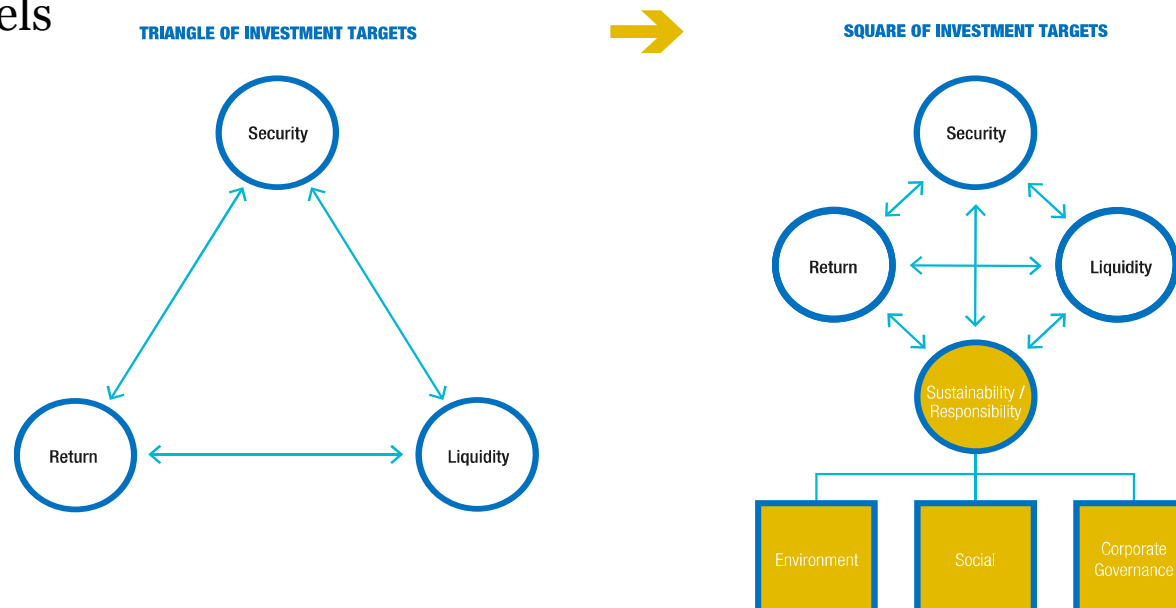


Link to download the publications
www.unepfi.org/publications/property



Needs and options to take action

Sustainability considerations can be embedded within business and decision-making processes at different corporate levels

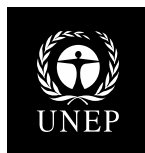
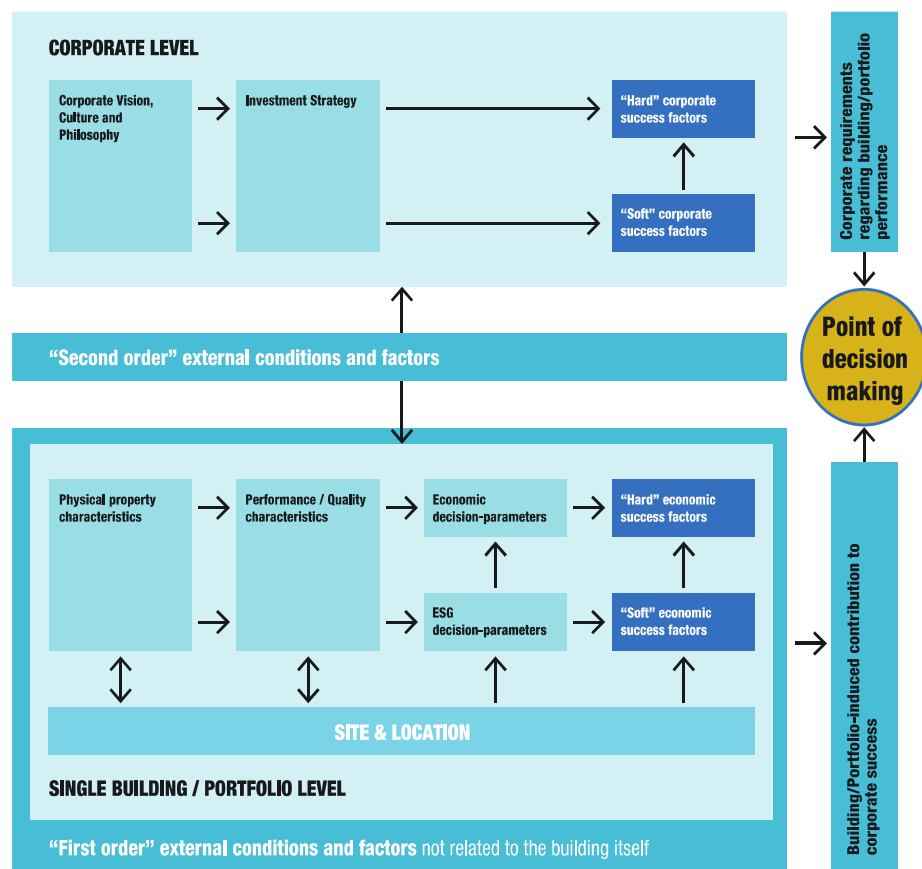


Buildings' sustainability performance will impact on asset and portfolio value, corporate reputation and financial performance

Translating information for decision-making

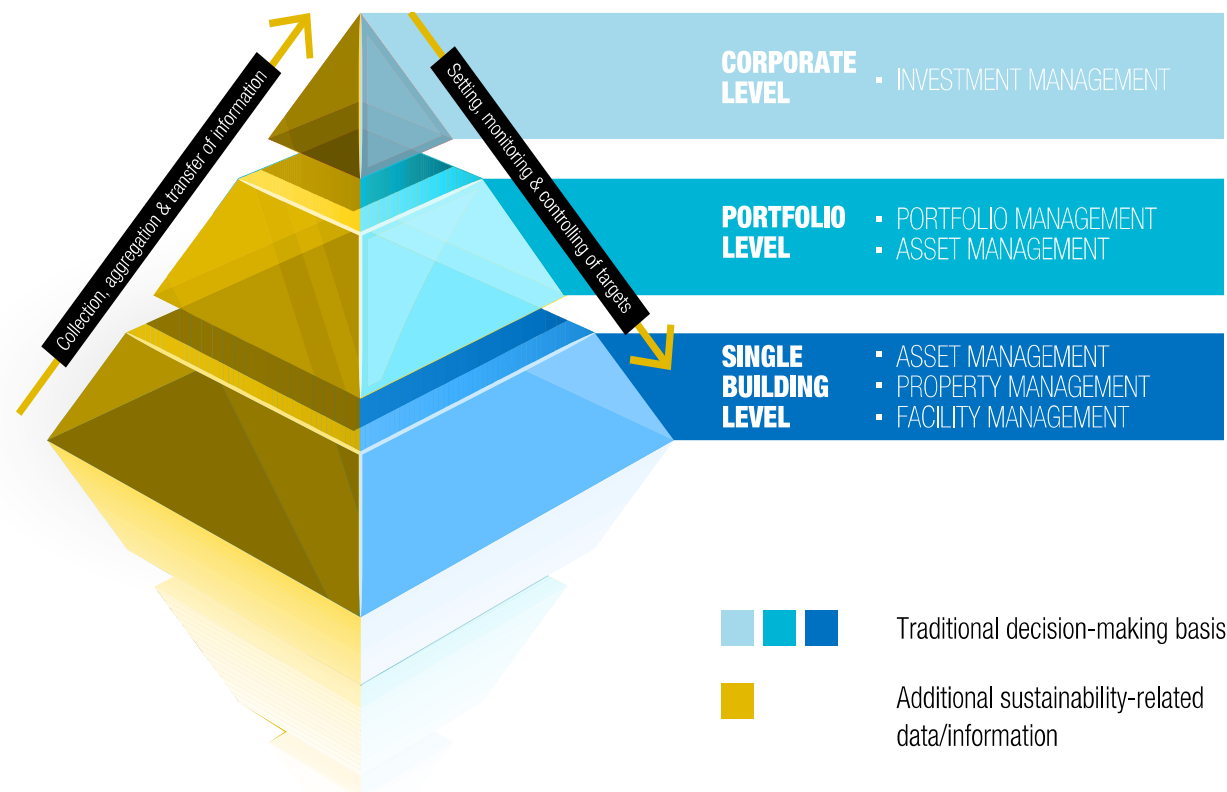


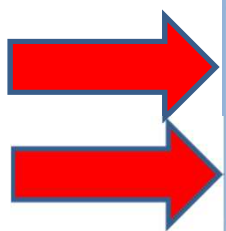
“From the boiler room to the board room.”



How to get there: A selection of recommendations for best practice

Recommendations for Best Practices for Corporate Real Estate Sustainability Management (CRESM)





Summary of EFIG Recommendations (Buildings Sector)	
<i>To Policy Makers</i>	<i>To Markets Participants</i>
Existing Buildings Regulations should be fully implemented, harmonised and consistently enforced across EU Member States	Engage key decision makers (owners and managers) with a clear business case that raises their awareness of the multiple benefits of buildings' energy efficiency renovations with evidence
Future Regulatory Pathways for EU Buildings should provide concerted and consistent regulatory pressure to improve the energy efficiency of buildings	Make it easy to get the right data to the right decision makers
High quality decisions and low transaction costs can only be delivered by easily accessible data and standard procedures	Improve the Processes and Standards for Buildings Labels, Energy Performance Certificates and Energy Codes
Reporting, accounting and procurement procedures must facilitate, and not hinder, appropriate energy efficiency investments in public buildings	Standards should be developed for each element in the energy efficiency investment process
The "at-scale" energy efficiency upgrade of residential buildings can only happen with a concerted address of the specific investment demand and supply drivers of this segment and the engagement and alignment of retail distribution channels	Leverage of private sector finance through optimal use of European Structural and Investment Funds and Member States funds
The targeted address of energy efficiency investment supply and technical assistance through the smart deployment of European Structural and Investment Funds 2014-2020 and Horizon 2020 into risk sharing mechanisms and project development assistance, working with partners with an successful track-record	



Summary of EEFIG Recommendations (Industry & SMEs)	
<i>To Policy Makers</i>	<i>To Markets Participants</i>
Policy framework should positively support strong corporate energy efficiency investment choices at key points in their investment cycle, using a "carrot and stick" approach	Raise energy efficiency opportunities at board-level and implement appropriate strategic resource investments to capture their multiple benefits within the natural company investment cycle
Public resources and facilitation should be engaged to establish dynamic and effective systems for sharing information and technical experience	Financial institutions should more widely adopt existing "best practice" models to stimulate their clients' energy efficiency investments
Ensure EU and national policies and resources are working effectively together to drive R&D and optimal energy efficiency outcomes	Encourage and support collaborative processes and consider R&D whose objective is to reduce the cost of and improve the up-take of energy efficiency investments
Support the clarification of the regulatory, fiscal and accounting treatment and standardisation of Energy Performance Contracts	Standards should be developed for the legal terms in and process to negotiate energy performance contracts
Energy efficiency opportunity identification and investible project pipelines should be supported with Project Development Assistance facilities for SMEs	



RICS

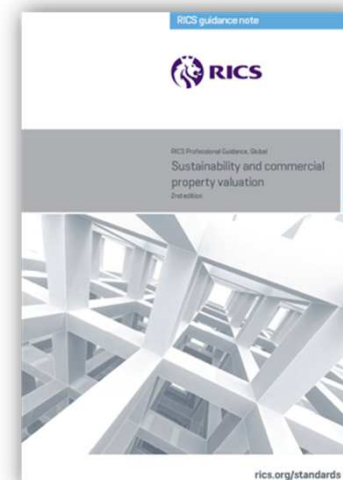
the mark of
property
professionalism
worldwide

Europe

Recent alterations to the RICS' Red Book and the accompanying Guidance Note are by far the ***strongest endorsement of sustainability as a potential value driver and risk factor contained in any professional valuation standard***, nationally or globally.

An important implication arises for clients:

Whenever a client / owner organisation needs a property valuation performed to RICS standards (e.g. for their accounts), there will be a demand for extended information. This entails the establishment of a properly managed internal information flow and an organised information system.



Changing the game: the new RICS Red Book 2014

Sustainability as a potential value driver and risk factor

- **RICS Valuation Practice Statement 4:**

“As commercial markets become more sensitised to sustainability matters, so they may begin to complement traditional value drivers, both in terms of occupier preferences and in terms of purchaser behaviour.”

RICS, Valuation –Professional Standards, 2014, p. 59



- **Therefore valuers are advised to:**

“[...] assess the extent to which the subject property currently meets sustainability criteria and arrive at an informed view on the likelihood of these impacting on value, i.e. how a well-informed purchaser would take account of them in making a decision as to offer price, [...].”

RICS, Valuation –Professional Standards, 2014, p. 59



RICS

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Uncertainty

Sensitivity

Life cycle assessment

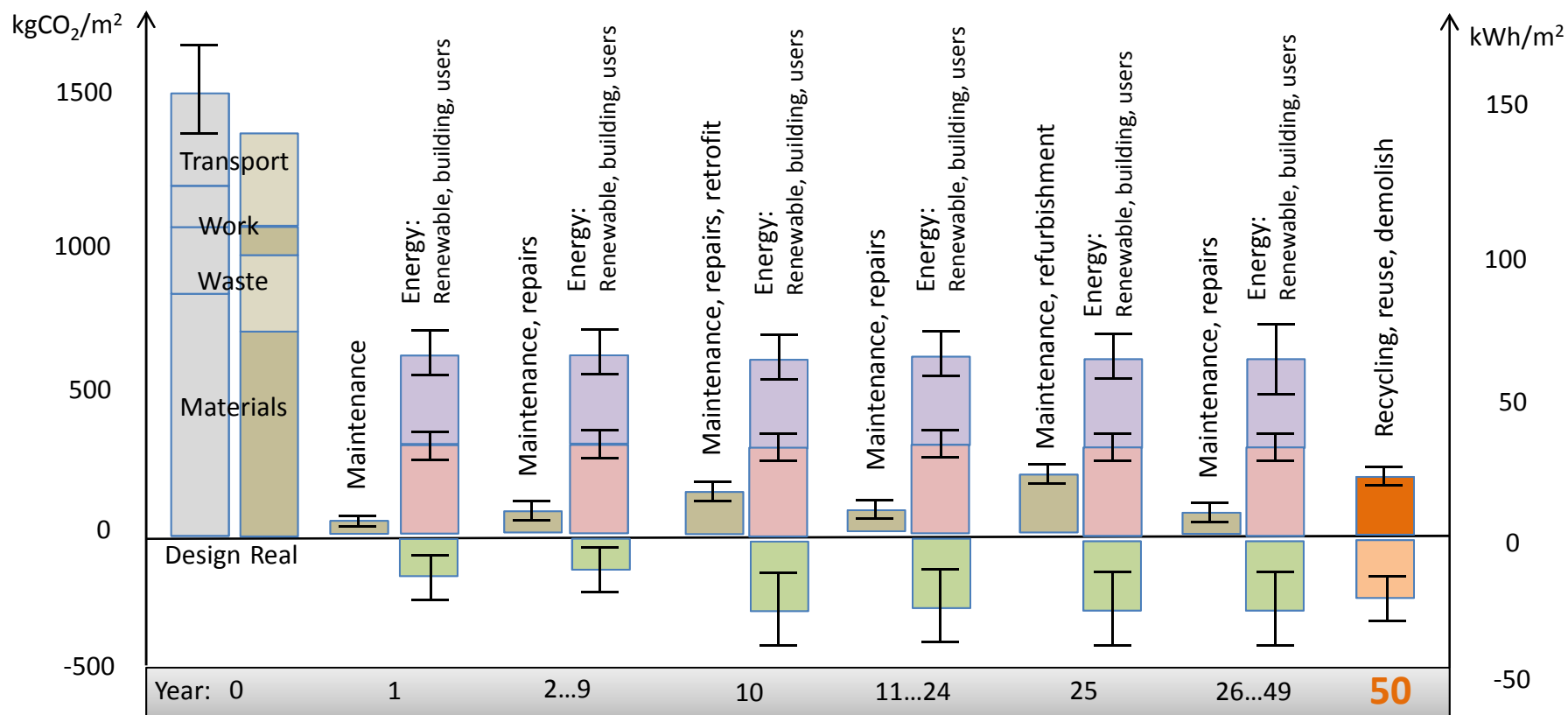
Building Passport

Name:
Address:
Year of completion:
Heated floor area:
Number of occupants:

Designed indoor
climate class:
A/B/C

Measured user
satisfaction:
%

Indoor Environment Quality



Primary kWh/m ²	Embodied: kgCO ₂ /m ²	Operational: kgCO ₂ /m ² ,a	Embodied: kgCO ₂ /m ² ,a	Recycling: kgCO ₂ /m ²	Measured kWh/m ²	Energy kgCO ₂ /pers,a	Travel kgCO ₂ /pers,a	Water m ³ /pers,a
Energy Performance Certificate	Designed carbon footprint of building				Display Energy Certificate	Annual Footprint		
							Recycling of waste %	Landfill waste kg/pers,a

Holistic approach with 8 metrics

Economy

- Lifecycle Cost (EN 15643-4)

Energy

- Imported energy
- Imported primary energy
- Baseload power

Global warming

- Life-cycle carbon footprint (EN 15978)
- Operating carbon footprint (GHG Protocol)

Occupants

- Indoor air quality classification
- Share of satisfied occupants

City of Sydney

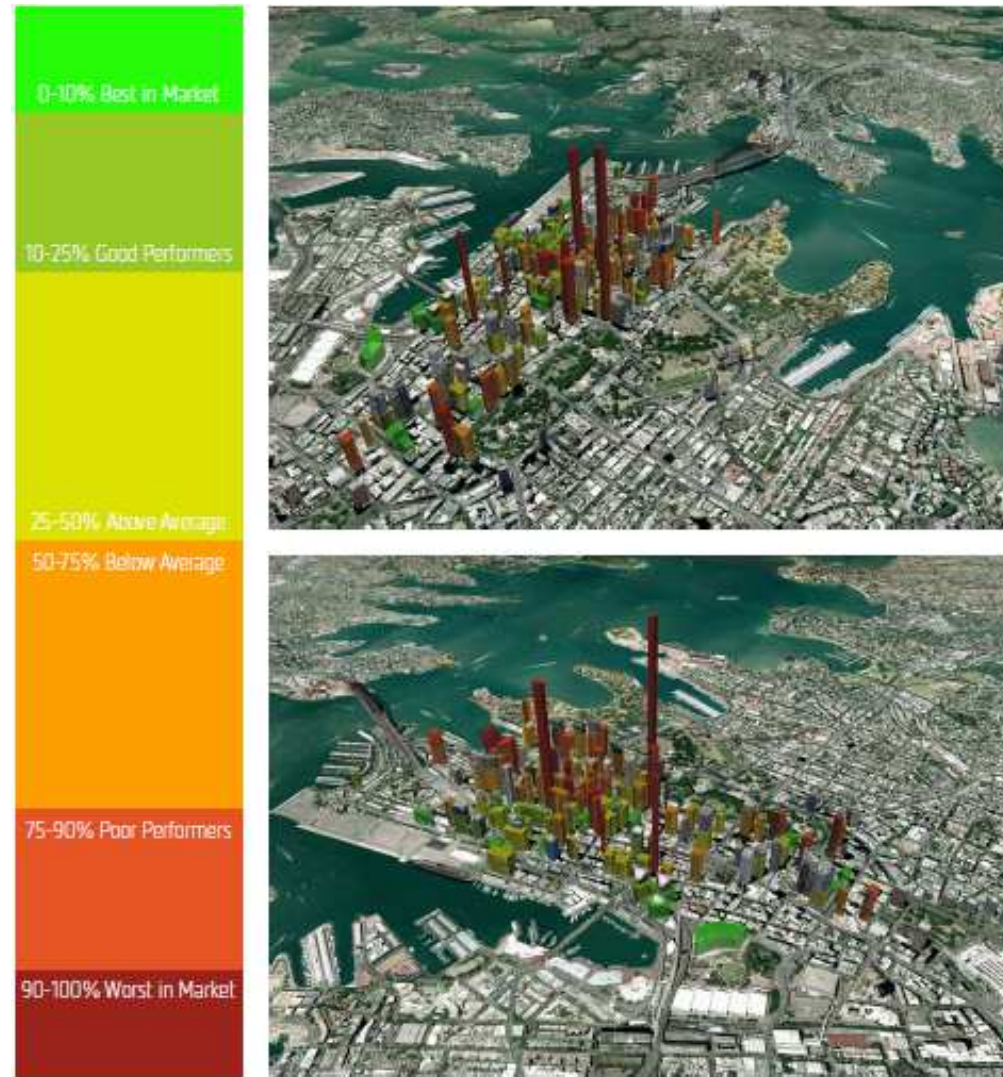
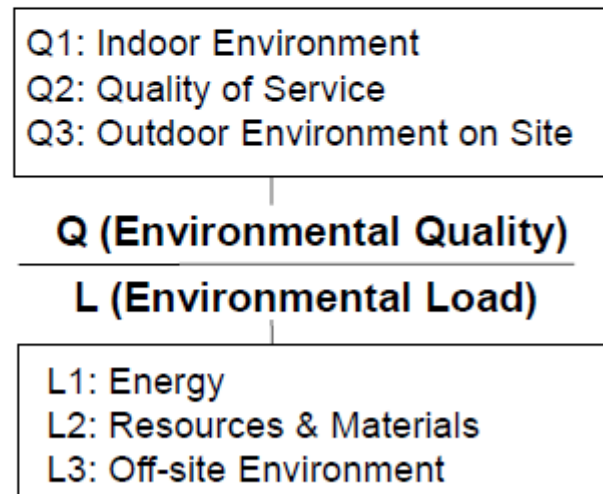


Figure 1. Sydney GoogleEarth Images: Relative Carbon Intensity of Buildings in Dataset

Japanese CASBEE model

- CASBEE stands for **Comprehensive Assessment System for Built Environment Efficiency**
- The assessment result of CASBEE is determined by the value of the **Built Environment Efficiency (BEE)**, a quotient index of **Q (building environmental quality)** as dividend and **L (building environmental loads)** as divisor.



Basic concept of Built Environmental Efficiency (BEE)

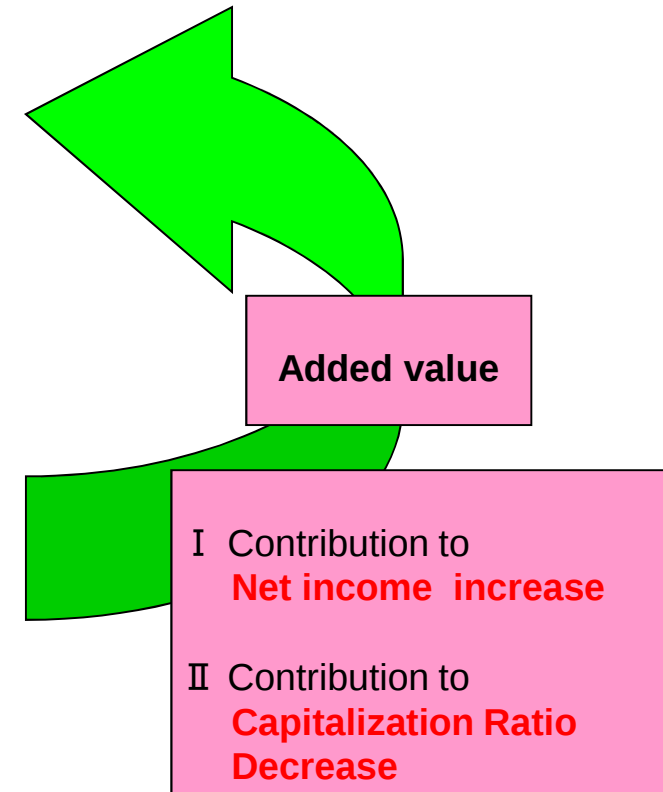
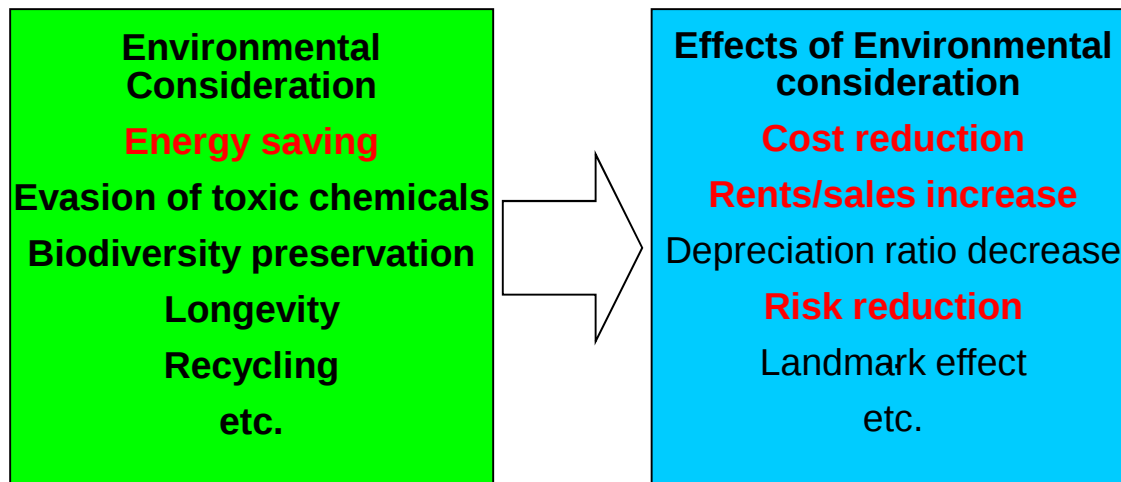
Source: "CASBEE for New Construction" published by IBFC

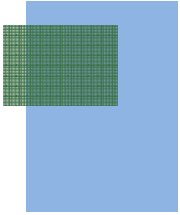
Potential of Added Value Created by Energy Efficiency Retrofit

Value indicated by
Income approach (*) =

$$\frac{\text{Net income that real estate produces}}{\text{Capitalization rate}}$$

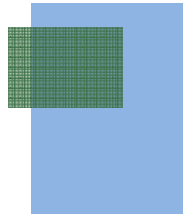
(*in case of direct capitalization)





Sustainability related information

Recommendations for sustainability assessment bodies on the type of information needed by investors and valuers



Sustainability-related data collected by owners and property managers

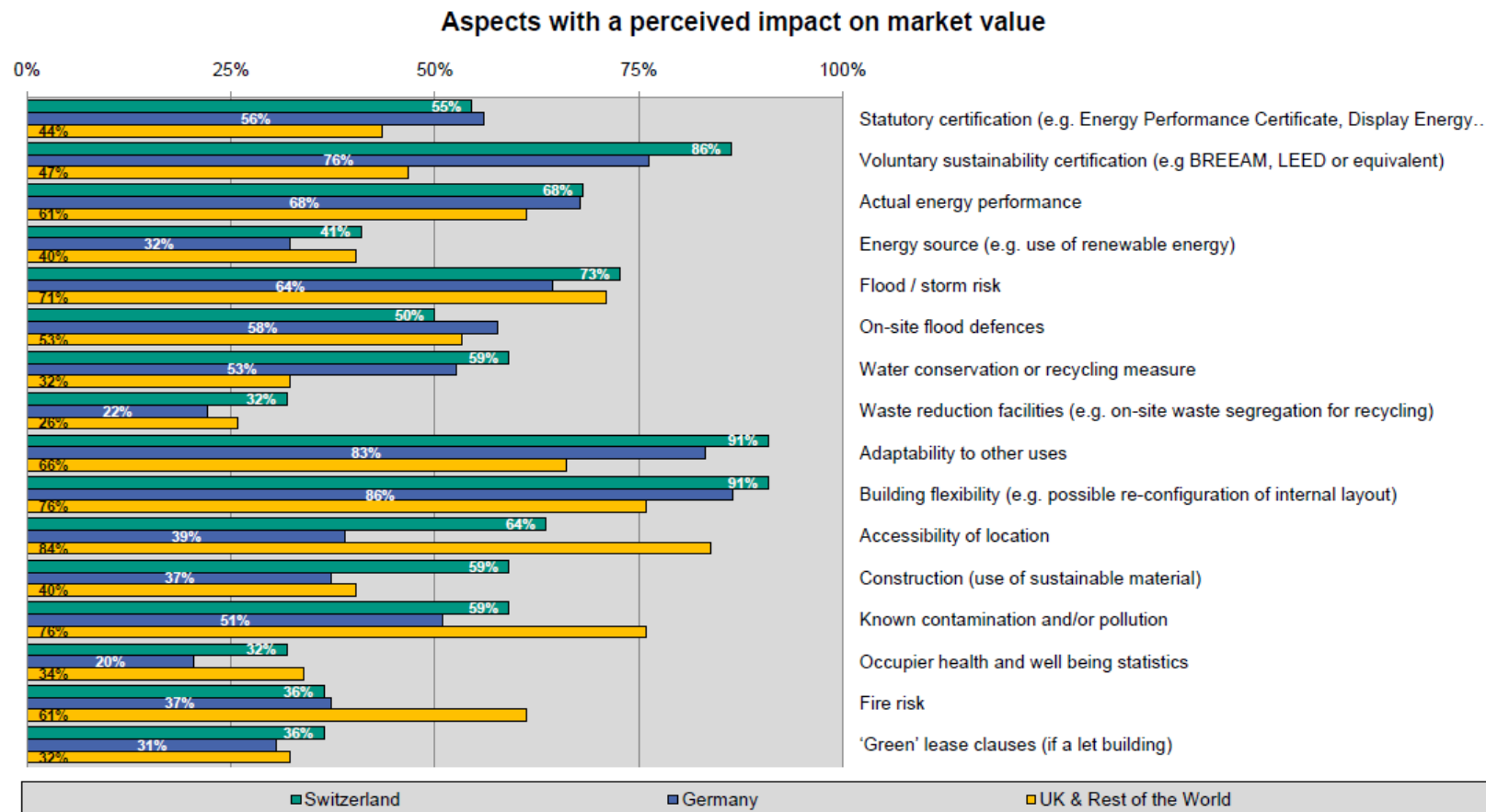
- A large number of sustainability information is already collected by leading companies... But respective data are not yet systematically captured and processed through decision making process.
 - **81%** have some form of “sustainability check” in place. 56% of them use these checks during their financial decision making process.
 - **16%** are able to use the information for sustainability reporting functions.
 - **58%** do not have any form of internal management system in place.
- (Source: UNEP FI, 2014, *Sustainability Metrics*)
- The translation into financial ratios would ensure a better integration of sustainability information into investment decision process.

Sustainability related data perceived by valuers

Valuers are increasingly aware of the impact of sustainability on market value.

Sustainability and Market Value

Responses: CH (22 of 43 ~ 51 %) D (59 of 124 ~ 48 %) UK & Others (62 of 138 ~ 45 %)



Source: Savce, S., Lorenz, D., Michl, P., Quinn, F., and Lützkendorf, T., 2013. RICS members survey on the uptake of VIP 13. work in progress

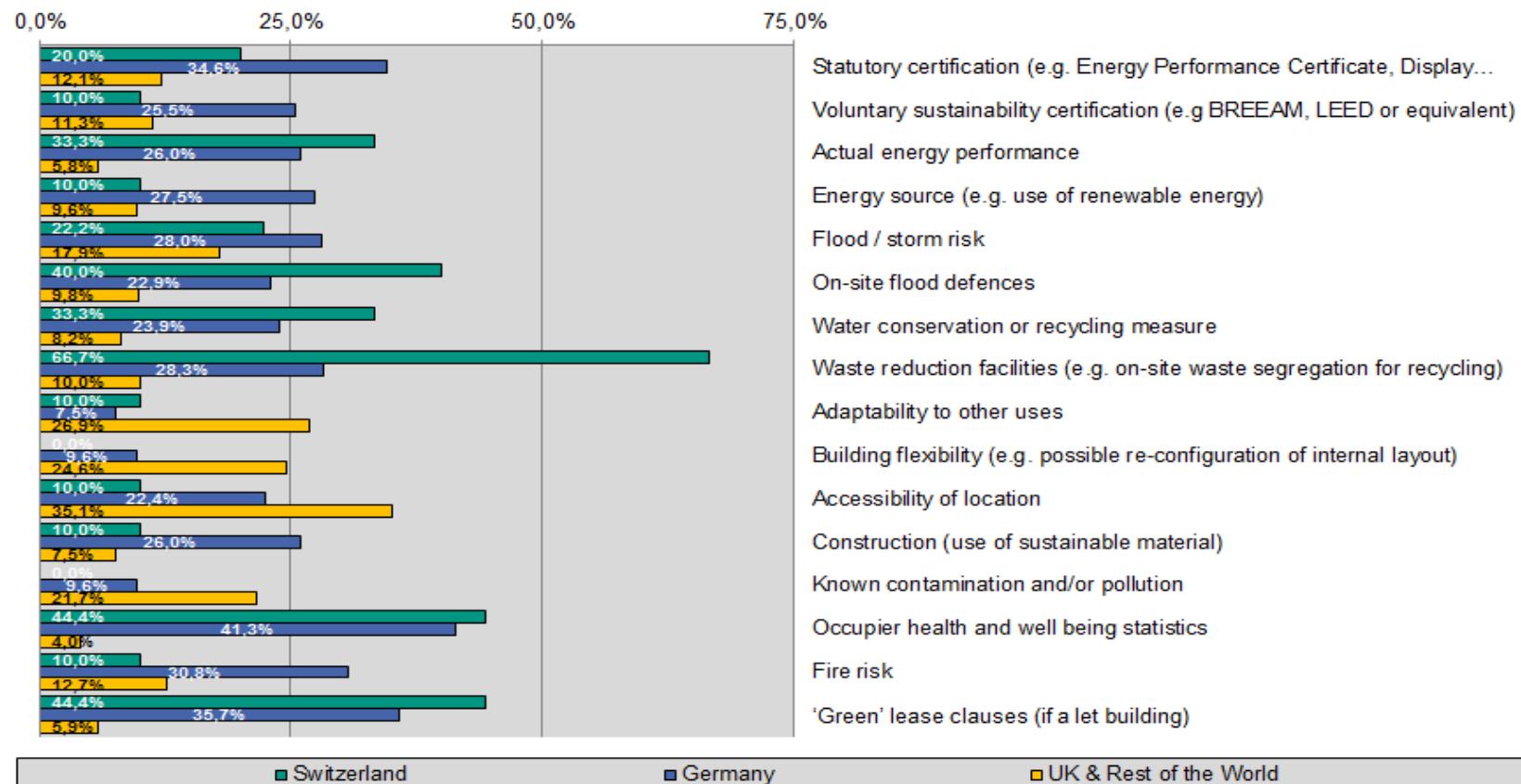
Source: D. Lorenz

Sustainability related data perceived by valuers

Although they increasingly collect sustainability-related information, there is no harmonised framework to integrate these data into valuations.

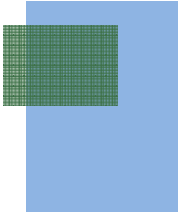
Sustainability aspects and data collection

Responses: CH (23 of 43 ~53 %) D (54 of 124 ~ 44 %) UK & Others (42 of 138 ~ 45 %)



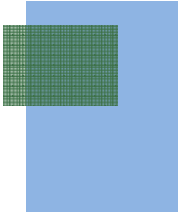
Source: Sayce, S., Lorenz, D., Michl, P., Quinn, F., and Lützkendorf, T., 2013, *RICS members survey on the uptake of VIP 13*, work in progress

Source: D. Lorenz



Integrating sustainability into a standardised DCF framework

Recommendations for a standardised DCF framework to integrate sustainability related information

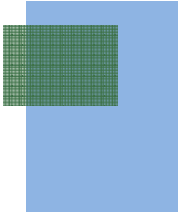


Sustainability criteria integration into DCF calculations

“Although property and facility managers will need up-to-date information on a range of performance characteristics, asset and portfolio managers will need a tool to translate sustainability-related performance into financial language. At investment board level, the universally understood language is that of risk premiums and the results of discounted cashflow (DCF) calculations.”

“DCF calculations particularly can explicitly account for the full spectrum of sustainability-related revenues, opportunities and risks within an investment analysis. ”

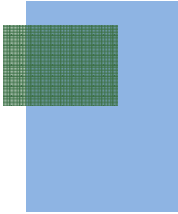
(UNEP FI, 2014, *Sustainability Metrics Report* p84)



Existing initiatives on sustainability integration into valuation and decision making process

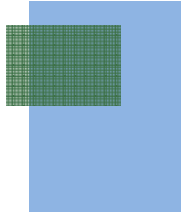
Examples of initiatives aiming to better integrate sustainability issues into valuation and decision making process.

Project name	Outline
Sustainable Property Appraisal project (UK)	Proposition of methodology. A questionnaire on property future-proofness is used for investors to assess the risks associated to poor sustainability performance. The results are used as inputs to adjust discount factor in a DCF calculation.
Environmental value added (Japan)	Recommendations for the analysis of the added value from sustainability, investigating both the net income and the risk assessment.
Value Beyond Cost Saving (USA)	Suggestions to adapt existing appraisal tools such as DCF to integrate sustainability issues transparently. It advocates valuers to get a deeper understanding of sustainability issues and market uptakes of the
ESI Property Valuation (SWTZ)	Proposition of methodology. A global factor (ESI) is used to adjust the final result of a traditional DCF valuation. The indicator is calculated using a property rating against against five key sustainability criteria. Weight for each criteria are provided thanks to experts' diagnosis on their relative potential impacts on value for different scenarios of future changes in the context.
ImmoValue Project (EU)	Suggestions on how new developments such as EPC and LCC can be used to integrate sustainability issues into property valuation.
Integrating Sustainability and Green Building into the Appraisal Process (USA)	Proposition of a three-step valuation process for real estate valuers. First step consists in assessing the market uptake of sustainability (importance of sustainability topics for the different stakeholders in the market). Second step consists in analyzing the subject property sustainability performance within its market using a sustainability risk matrix. Last step consists in monitoring the evolution of demand and supply of sustainable properties over time.



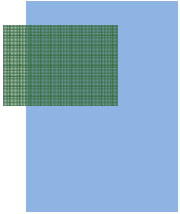
Existing initiatives on sustainability integration into valuation and decision making process

Project name	Outline
IPD Eco Pas	Benchmarking service aiming to identify environmental risks for a given property. Data are collected according to a Valuer Sustainability Checklist developed in partnership with the RICS. This checklist is used to complete the risk analysis and compare it with peer thanks to a database with environmental data and capital values for different properties type.
Sustainability and Income- Producing Property Valuation (USA)	Systematic practical procedure for evaluating sustainable property. The underlying principles is that appraisers should systematically collect building information on sustainability as well as market context information on sustainability so as to adjust traditional input parameters. The uncertainty associated with the procedure is thus assessed through a sensitivity analysis using Monte Carlo simulations.
How to calculate and present deep retrofit value (USA)	Guide providing practical guidance for owner-occupiers as to how value deep retrofits beyond the mere costs savings. They define "Deep retrofit value is the net present value of all of the benefits of a deep energy or sustainability investment." Methodologies incorporate risks analysis and considerations to properly avoid double counting.
Renovalue (EU)	Training material for valuation professionals on sustainability features and their impacts on value drivers. (rent, discount rate, capital expenditures, maintenance costs...)



Accounting for uncertainty

Recommendations for key sensitivity analysis
on sustainability-related parameters

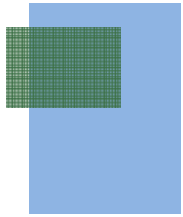


Accounting for uncertainty

“When incorporating sustainability-related risks and opportunities into a DCF model, it is very important to use a set of ranges for potential adjustments to DCF input variables. This will help to avoid the impression of unrealistic levels of precision.” (UNEP FI, 2014, *Sustainability Metrics Report* p85)

Sustainability-related information represents a new source of uncertainty:

Market uncertainties	- market sentiment on sustainable properties (Evolution in the rental gap and reletting period between sustainable and non sustainable properties) - Energy price volatility - evolution of users' expectations
Technical uncertainties	- Installations remaining lifespan - Evolution in the replacement costs of component - Uncertainties on sustainability metrics
Legal uncertainties	- Evolution in the regulatory context

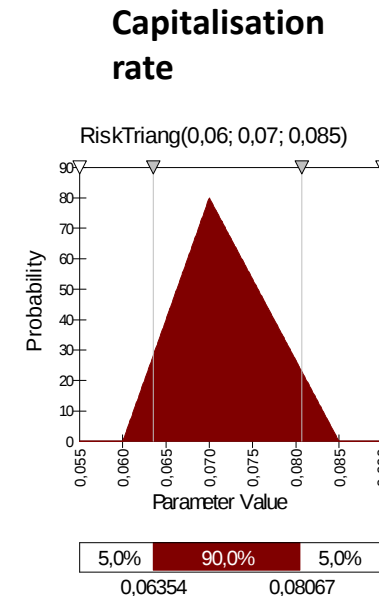
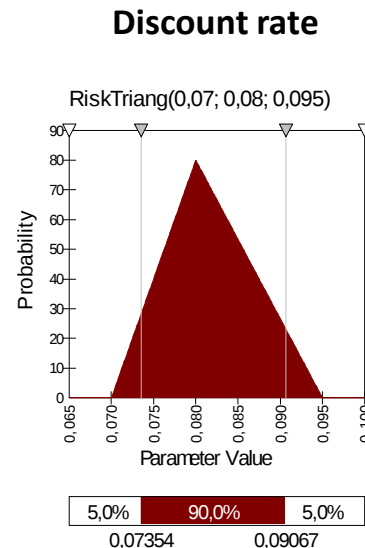
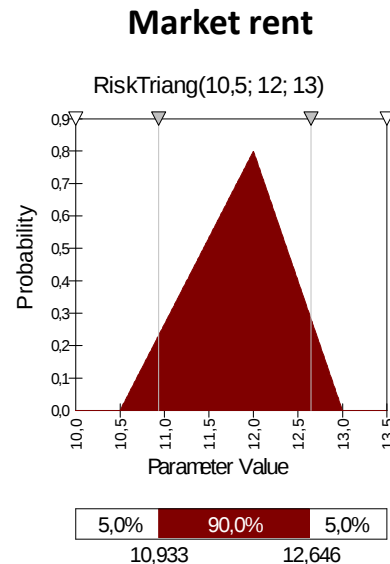


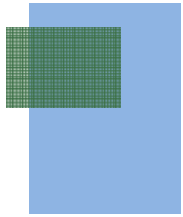
Monte Carlo simulations

Monte Carlo simulations correspond to an iterative process to compute results from probabilised situations. For each simulation, inputs are randomly selected among a predefined laws of probability to generate an output figure that is recorded. The process is repeated a very large number of times to generate a distribution for the output.

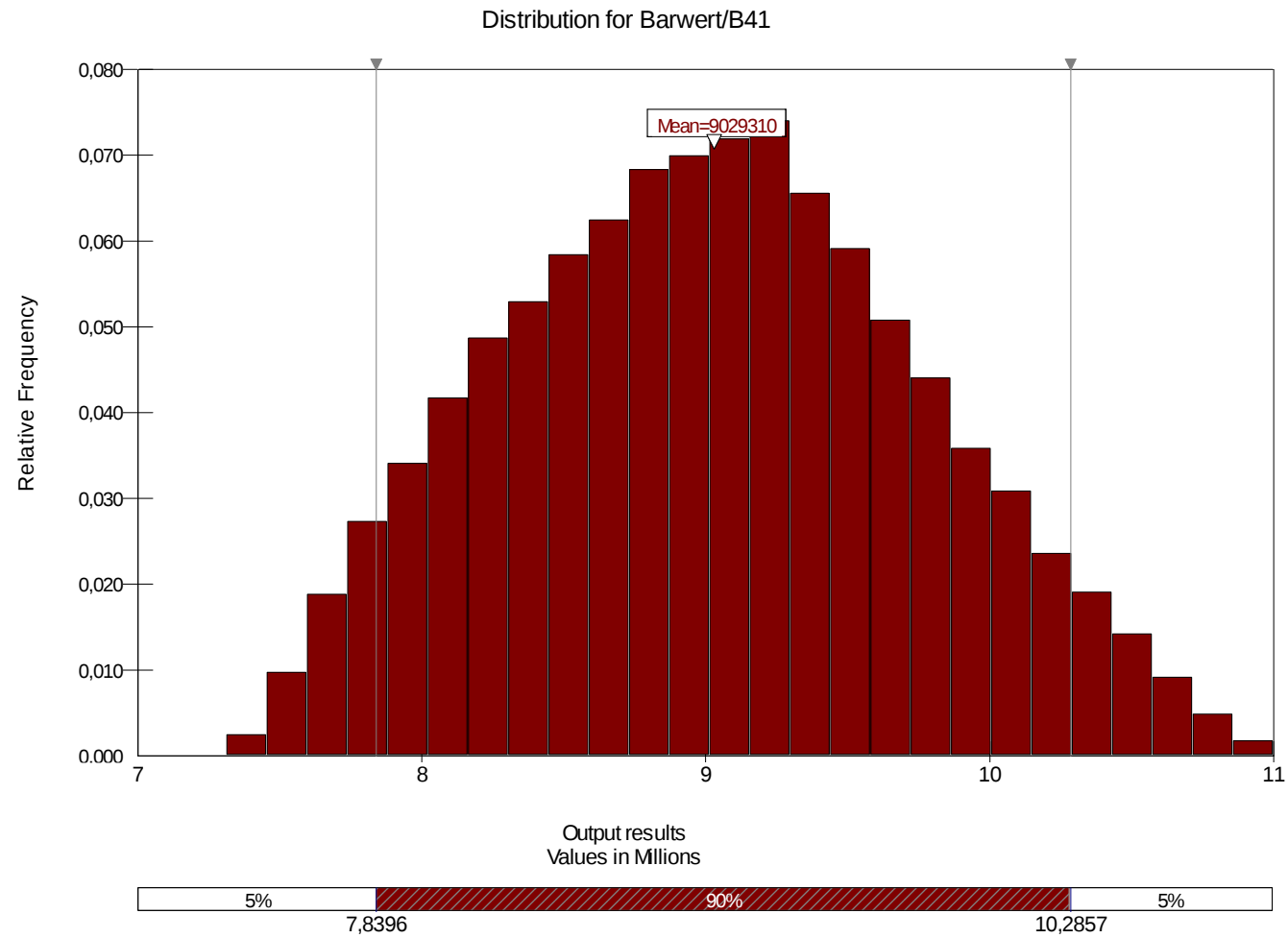
Example: (source: D. Lorenz)

Distribution assumptions

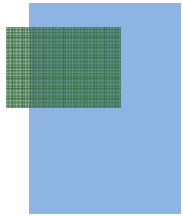




Monte Carlo simulations

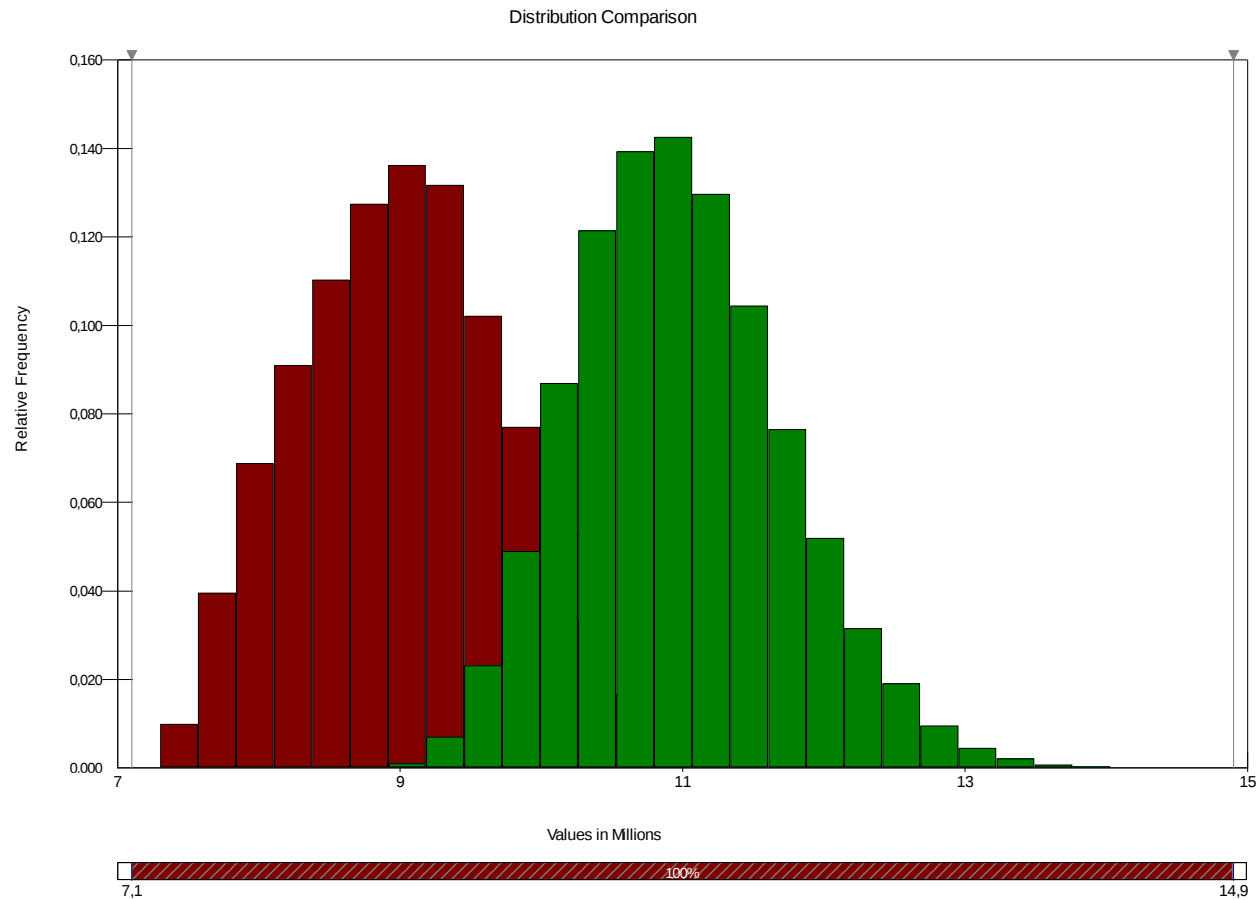


(source: D. Lorenz)



Monte Carlo simulations

Monte Carlo scenarios can also be used to compare the risk profile of different refurbishment scenarios



(source: D. Lorenz)

« Greco » project

Ratios for decision-making

The conclusion is that the financial needs are not set by efficiency goals
but by the **speed of refurbishment**
according to the remaining lifespan and occupancy

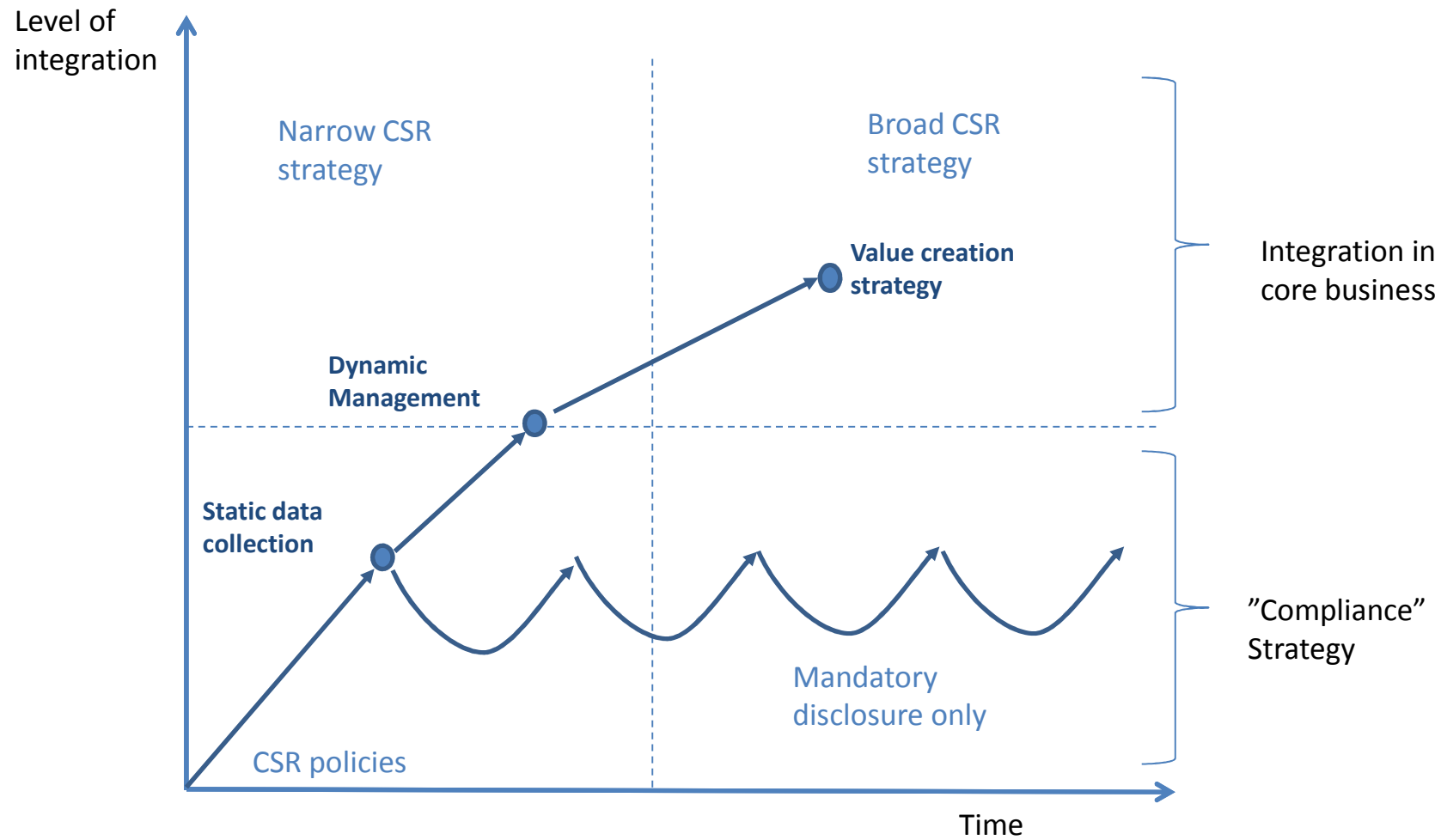
Portfolio	Time frame	Refurbishment costs (€/m ²)	Cost efficiency (€/kWh _f)	Refurbishment cost to asset value (%)	Primary energy reduction target (%)
Commercial	2020	173	1.34	4.0%	39%
Residential 1	2020	100	1.07	2.1%	36%
Residential 2	2030	288	3.06	4.1%	32%

Sustainable retrofit : Paris building

The main benefit from green refurbishment lies in its impact on long term value. Whether on a pessimistic (depreciation of poor performing building) or on an optimistic scenario (premiums for the environmental-friendly building), green retrofit should not be only analysed through conventional paybacks period but considerations on their impact on the possible evolutions of assets value

	BAU	RT	HQE
Investment (€)	0	13 000 000	18 300 000
Annual rental revenue (full occupancy) (€)	4 288 611	5 685 730	6 054 200
Annual Rental growth rate (%)	1.50%	1.60%	1.70%
Discount rate (%)	7.75%	6.80%	6.70%
Vacancy period between leases (months)	12	10	9
Maintenance and operation costs (including vacancy) (€)	124 257	91 855	76 310
DCF t=0 calculation (accounting for investment costs) (€)	52 748 917	82 191 774	88 243 576
Asset value t=1(€)	52 748 917	89 926 650	100 377 224

From data collection to valuable information



Market Value - drivers

IFRS – fair value debate

Globalisation – consistent measurement = investor confidence

International Definition: “The estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm’s-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion.”

Financial Regulation – macro-prudential supervision

Public expectation – demands professionals it can trust

Enhance Value - drivers

IFRS – fair value debate:
uncertainty management

Data – transparency & standards =
investor confidence

New Definition: “The estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an **comprehensive impacts** of transaction after **proper data sharing based on transparency** wherein the parties had each acted knowledgeably, prudently and with **integration of futureproofness.**”

Financial Regulation Bale III
– macro-prudential supervision
Risk management

Public expectation –
demands professionals it can trust

Source R.Peto RICS past president

Risk assesment : standard information process?

Forward to a Basel III compliance ?

- Dynamic level of environnemental real performance (yearly?) A to G
- Quantity of information A to C
- Level of details of information A to C
- Level of liability (Technical standards compliance through certified sub parties) A to C
- Level of confidence (third part audit) A to C
- Sensitivity : futureproofness (climate change resiience....) A to C