



# From sustainable to financial performance

Frank HOVORKA

Mrics

Rehva : vice president

UNEP FI : property working group co-chair

Sustainable Building Alliance : president



# Actual questions and development

- Urban development and energy flows
- Sustainable portfolio management
- Stakeholders initiative
  - Long term investment club
  - UNEP FI , SBA, REHVA, RICS...
- Financing challenge of energy efficiency



# Energy linked to a building: 4 main blocks

## Building energy

Actual new building:  
130 to 250 kWh<sub>ep</sub>/m<sup>2</sup>/an

NZEB :  
40 to 65 kWh<sub>ep</sub>/m<sup>2</sup>/an

## Specific electricity

Housing :  
10 à 50 kWh<sub>ep</sub>/m<sup>2</sup>/an

Office:  
30 to 300 kWh<sub>ep</sub>/m<sup>2</sup>/an

## Embodied energy

New building :  
≈ 1200 kWh<sub>ep</sub>/m<sup>2</sup>

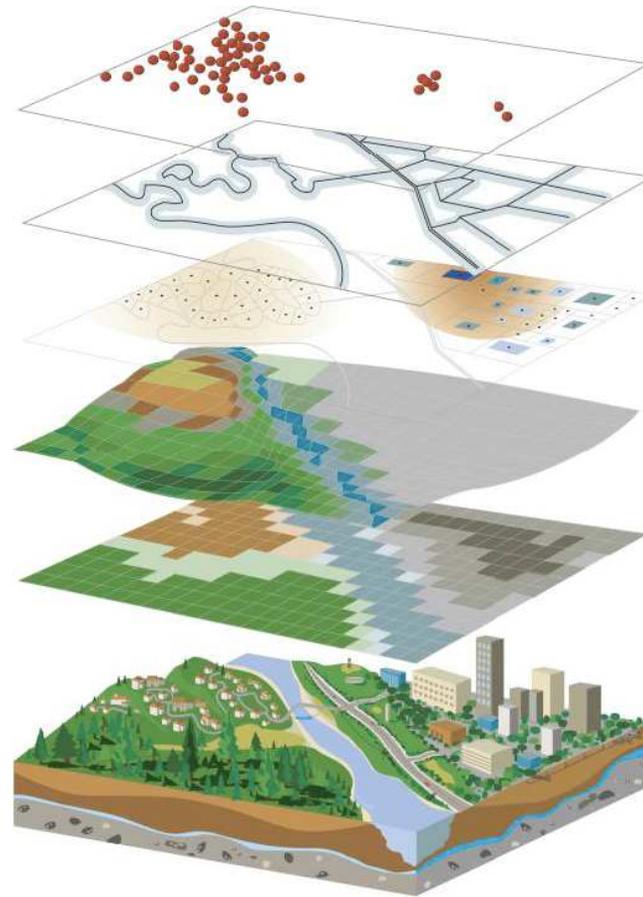
« As usual » NZEB:  
≈ 1600 kWh<sub>ep</sub>/m<sup>2</sup>

## Transport

French average daily distance:  
16km

20 km :  
by car : 6450 kWh<sub>ep</sub>/an  
bus: 630 kWh<sub>ep</sub>/an

# Urban morphology and flows



People

Infrastructure, connectivity  
mobility

Land use

Flows : people and  
goods

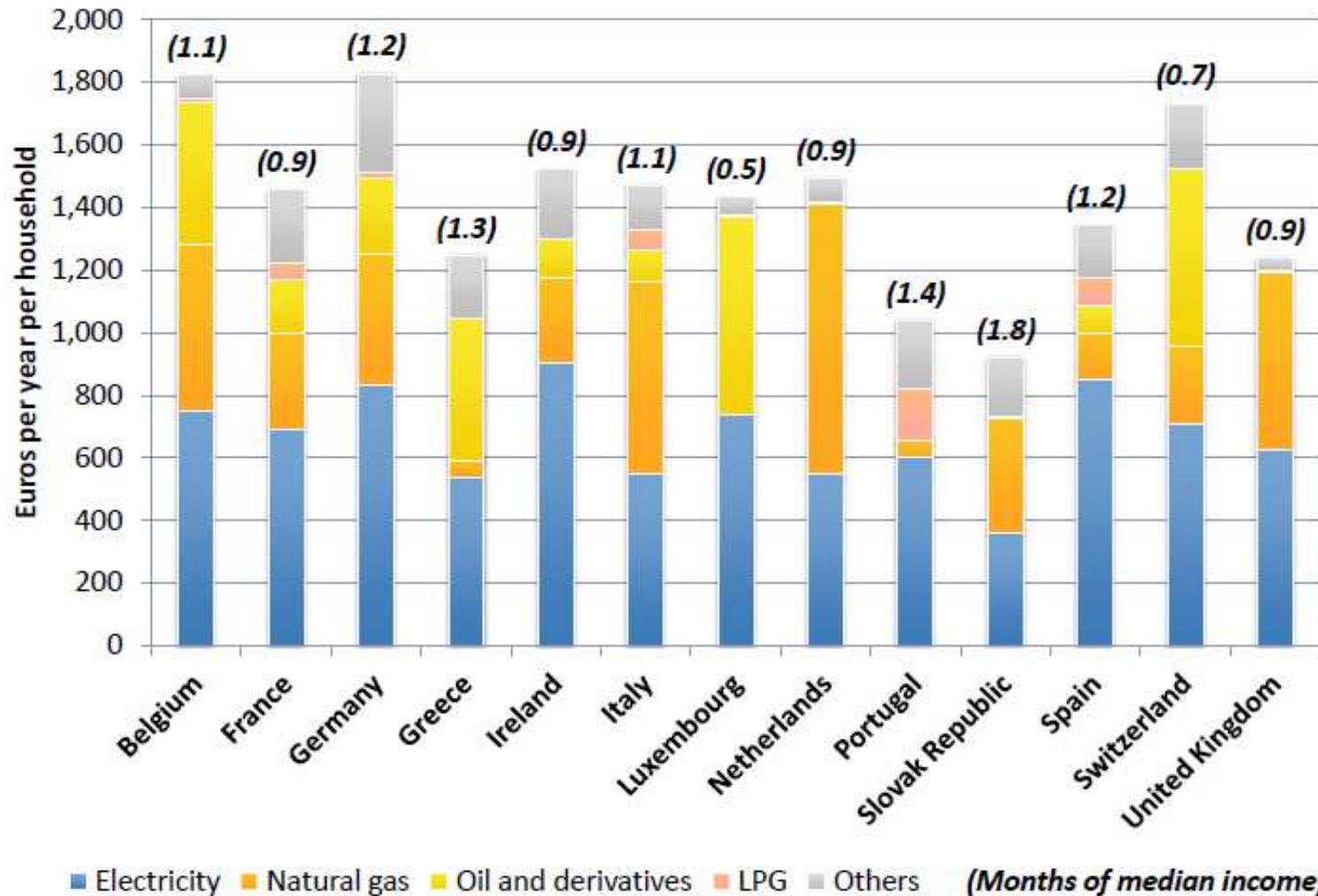
Land property and  
regulations impact

Build shape, energy impact  
and waste management

# Public transportation



## Annual expenditure on residential energy consumption places a heavy burden on European households



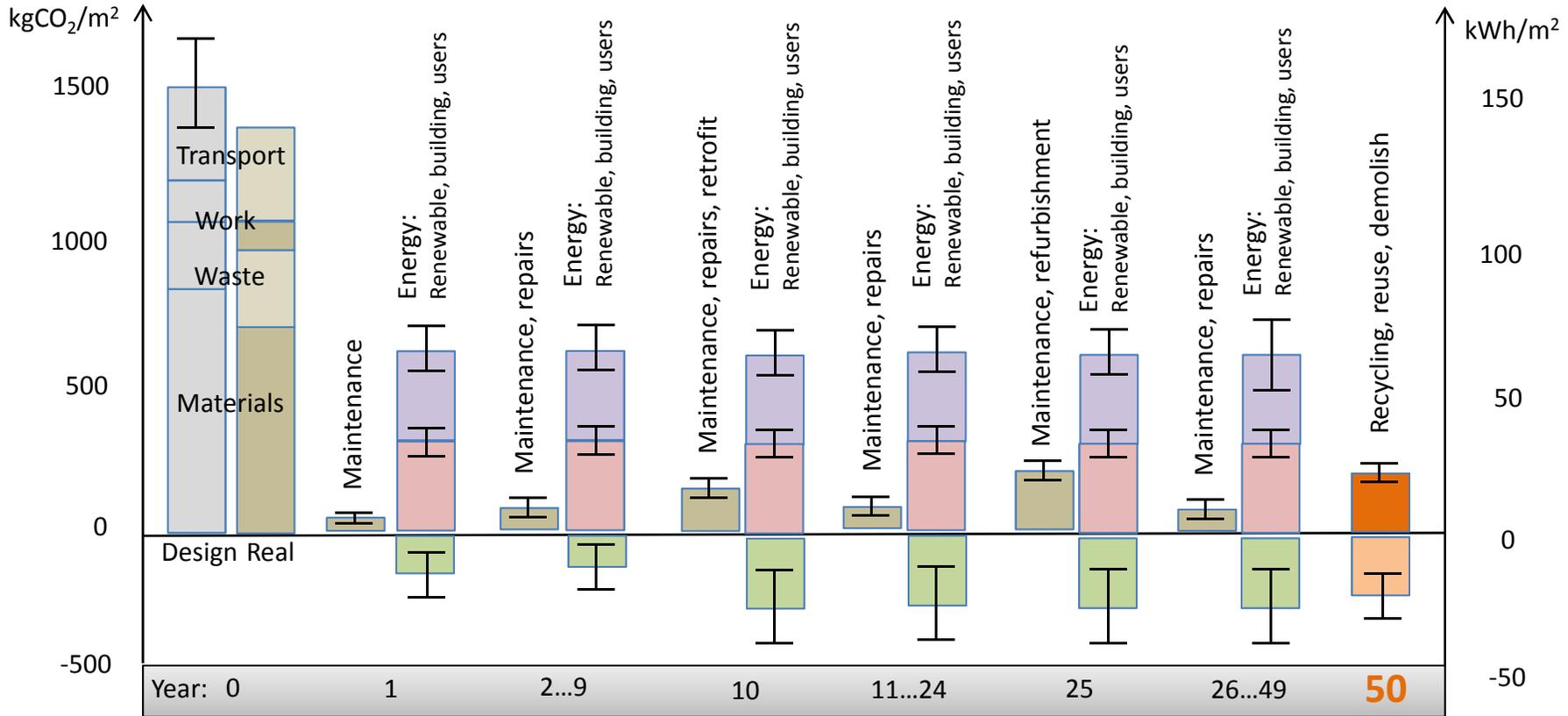
**(Months of median income)**

Source: IEA Statistics and Eurostat

# Building Passport

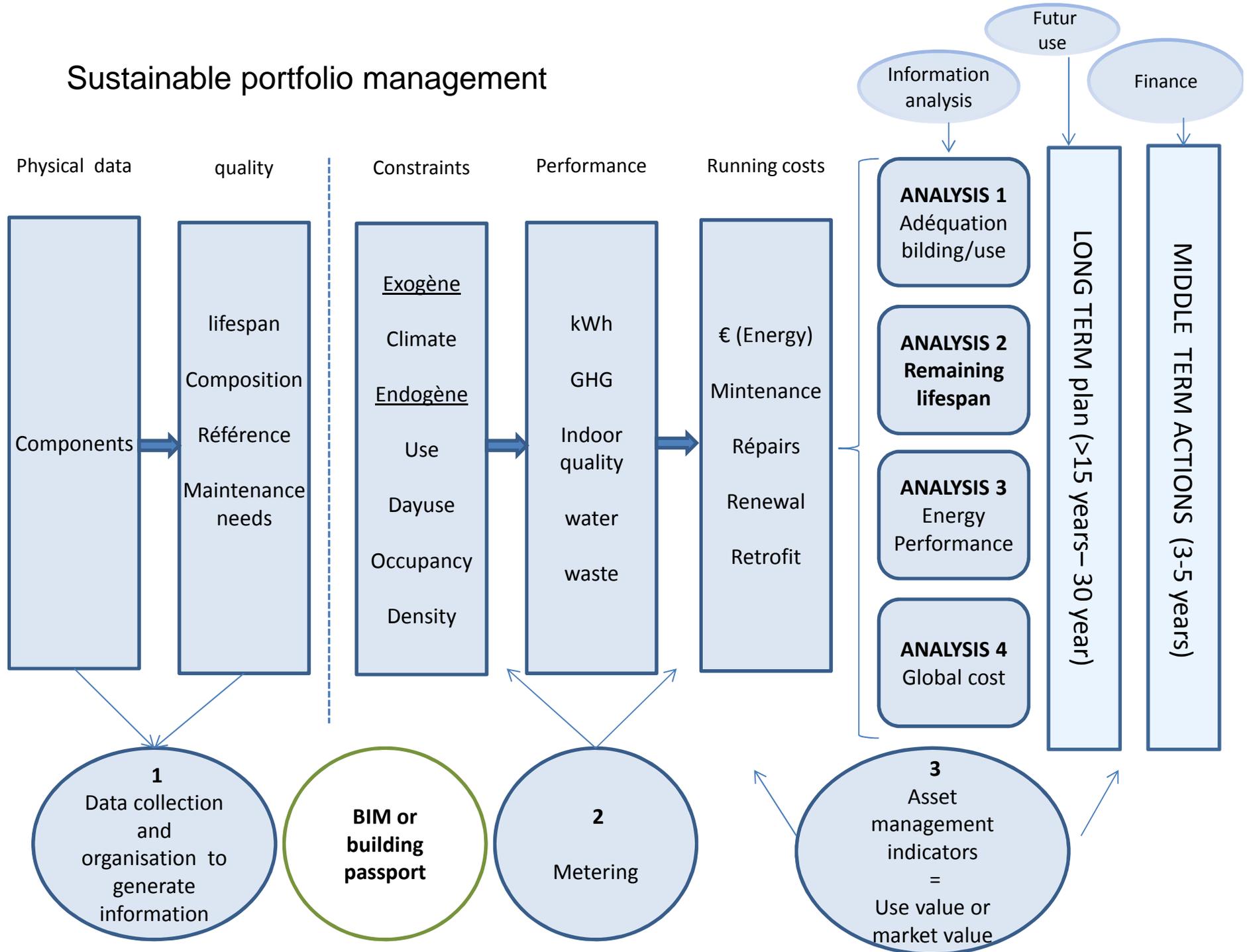
Name:  
 Address:  
 Year of completion:  
 Heated floor area:  
 Number of occupants:

Designed indoor climate class: A/B/C	Measured user satisfaction: %
Indoor Environment Quality	



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

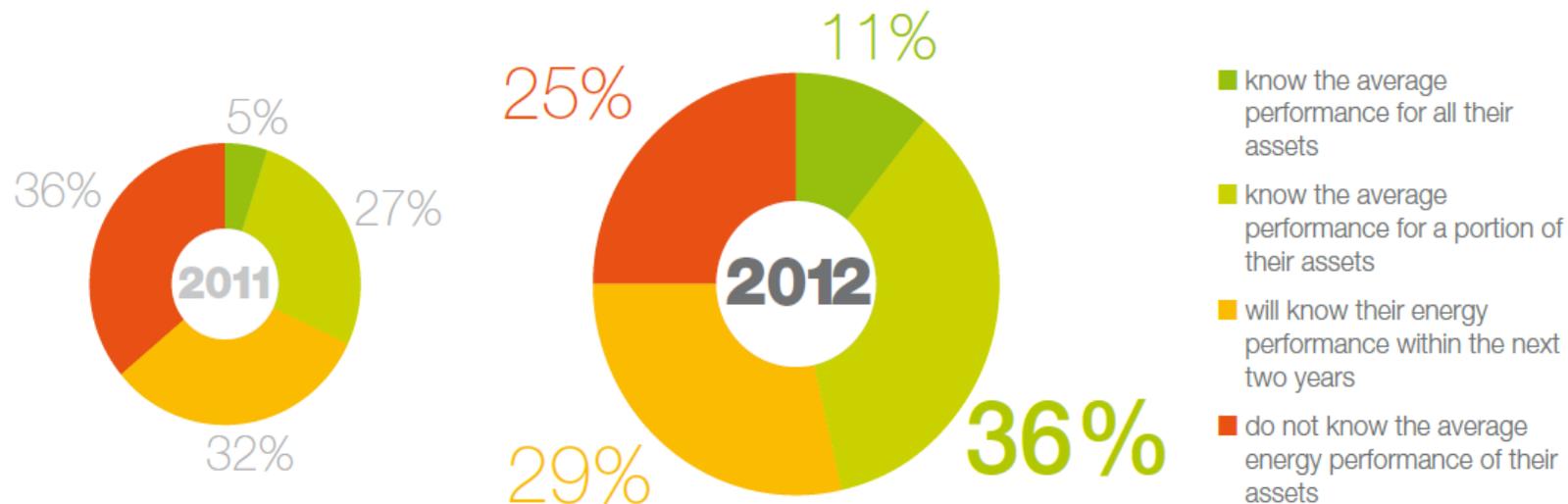
# Sustainable portfolio management



# How does the market respond?

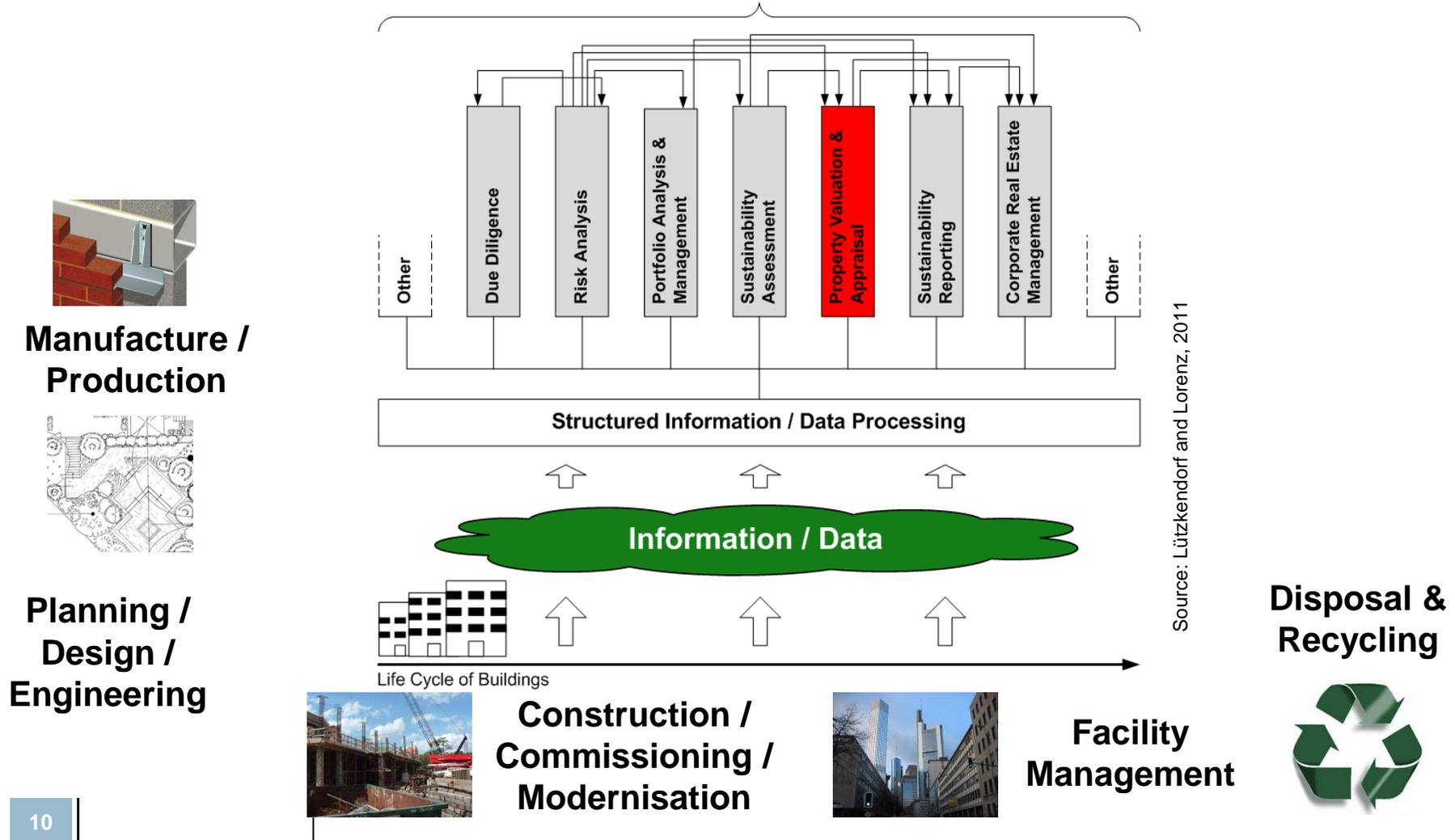
- Evidence based on the 2012 unlisted funds survey (Novethic):  
Respondents represent more than 80% of the French unlisted market (gross assets under management)
- Assessment of the energy performance of portfolios  
More than a third of the panel has undertaken a mapping of the energy performance of their portfolio. For 25% of them, it is based on actual consumption from remote meters and invoices.

## Knowledge of energy performance for assets under management



# What about data collection and information ?

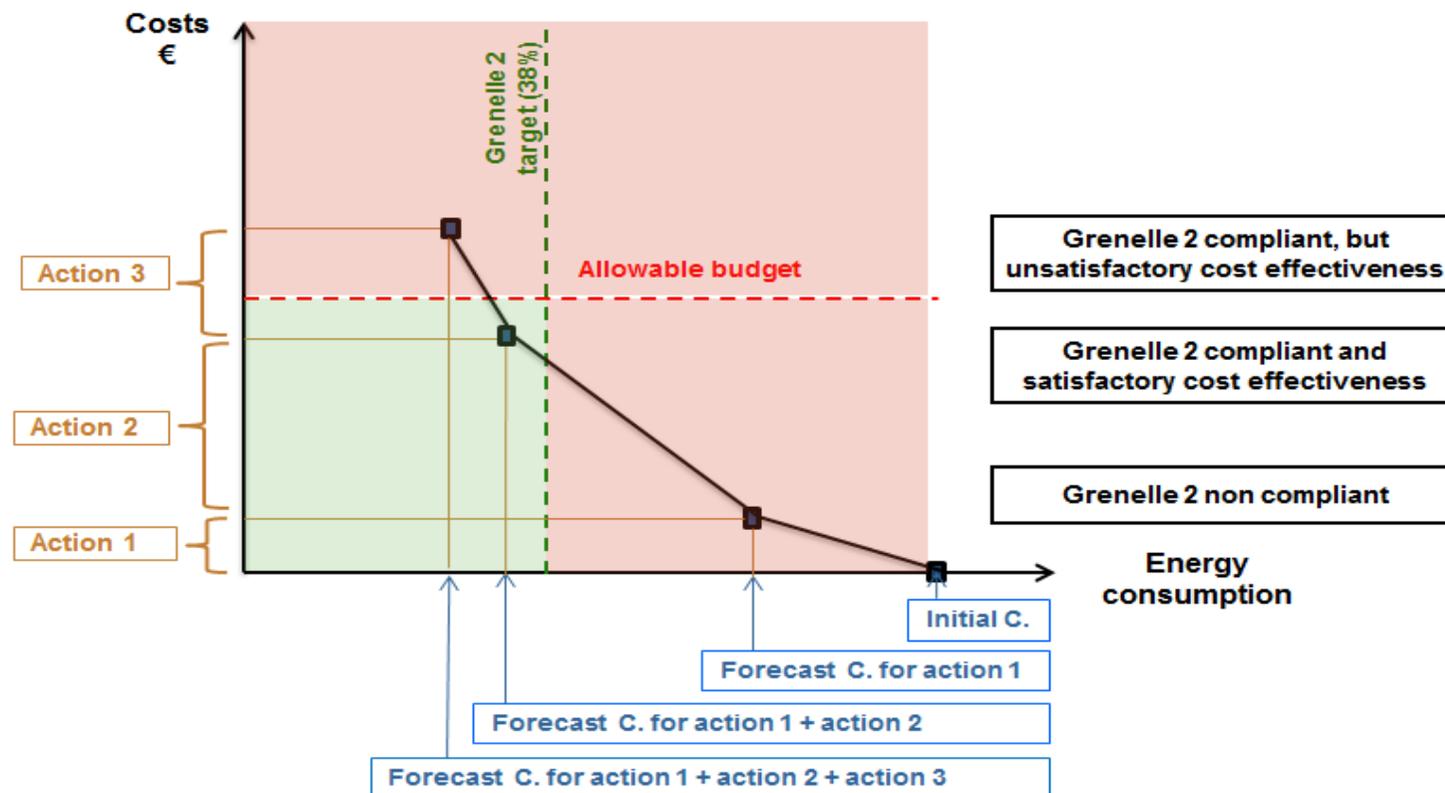
Impact on Decisions & Actions along the life cycle of buildings



# A case study: CDC

## Planning an energy efficiency strategy at portfolio scale

1. Analysing energy performance by consumption unit
2. Planning energy retrofits accounting for tenants occupancy and refurbishment cycl
3. Monitor the implementation of the actions plan

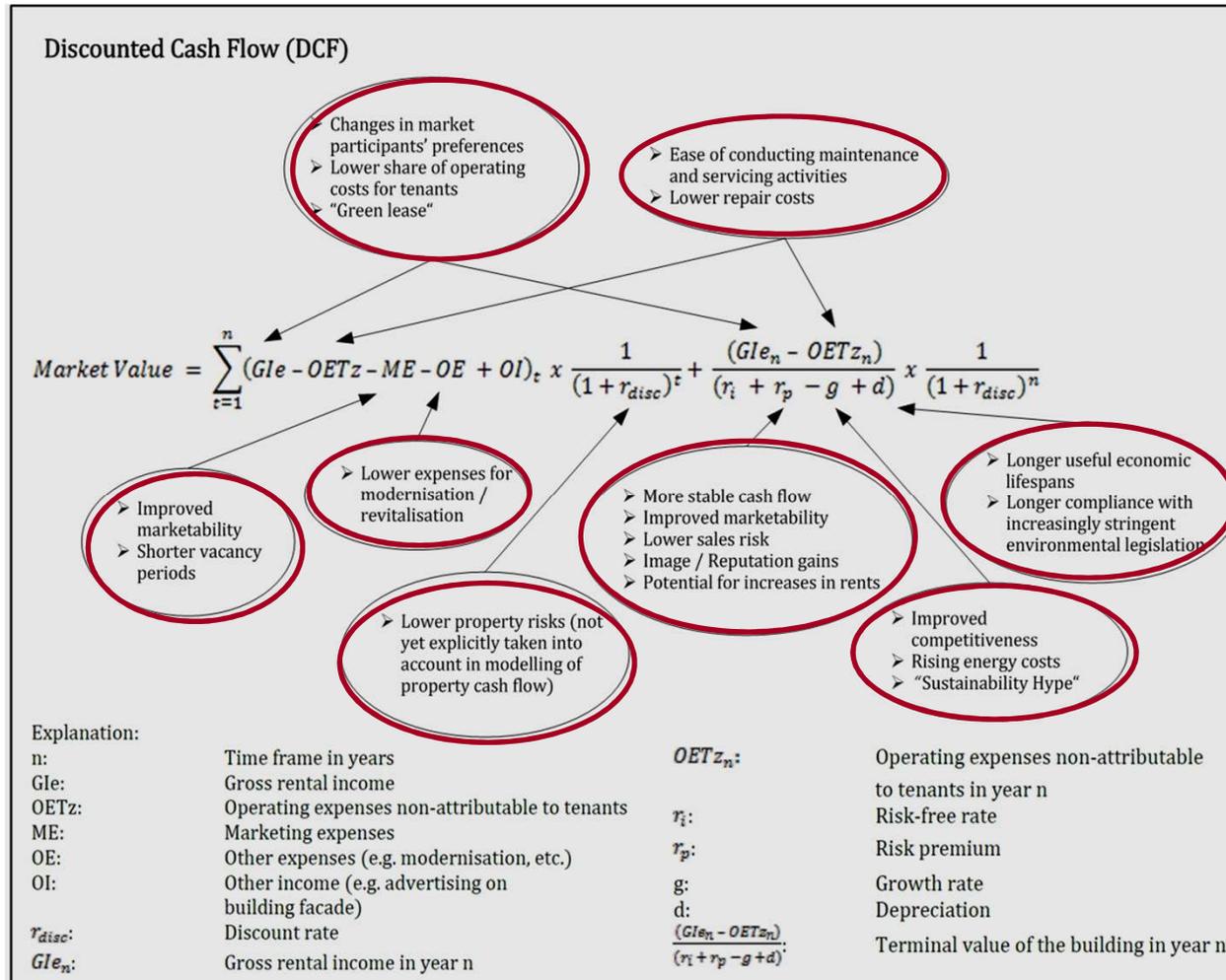


# A case study : CDC

- The total refurbishment cost appeared as mostly covered by the traditional budgets for major repairs and maintenance.
- 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 <sup>2</sup> )	Cost efficiency (€/kWh <sub>f</sub> )	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%

# Integrating sustainability features into valuation methods: Example DCF-Method



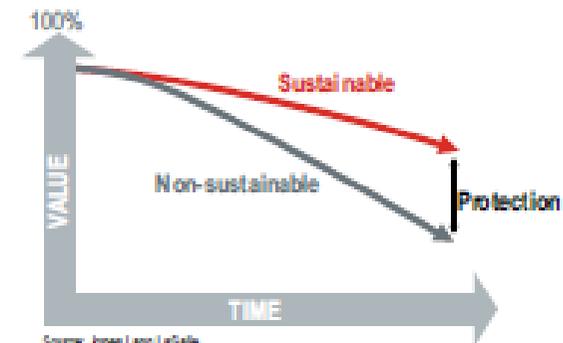
# A case study : CDC

## Impact on value – a case study

- Sustainable refurbishment in Paris CBD. HQE/BBC certification.
- Three scenarios were compared:
  - (BAU) No refurbishment
  - (RT) Conventional refurbishment
  - (HQE) Green refurbishment ( actual feedbacks).

## “Green Value” : theoretical evidence

References	Certifications	Market value	Rental value	Occupation rate
Fuerst and McAllister (2008)	LEED, Energy Star (USA)	31-35%	6%	
Wiley et al. (2008)	LEED (USA)		15-17%	16%-18%
	Energy Star (USA)		7%-9%	10%-11%
Miller et al. (2008)	LEED (USA)	10%		
	Energy Star (USA)	6%		
Kok (2008)	LEED, Energy Star (USA)	16%	6%	
Pivo and Fisher (2009)	Energy Star (USA) zones under redevelopment	6.7%-10.6%	4.8%-5.2%	0.2-1.3%
Fuerst and McAllister (2010)	LEED (USA)			8%
	Energy Star (USA)			3%
Eichholtz al. (2010)	LEED (USA)	11%	6%	
	Energy Star (USA)	13%	7%	
Chegut et al.(2011)	BREEAM (Londres, GB)	26%	21%	
Kok, Newell and MacFarlane (2011)	NABERS 5 stars (Australia)	9%	3%	
	Green Star (Australia)	12%	5%	
Fuerst and McAllister (2011)	Energy Star, LEED (USA)	25%-26%	4%-5%	



# A case study : CDC

## Main results

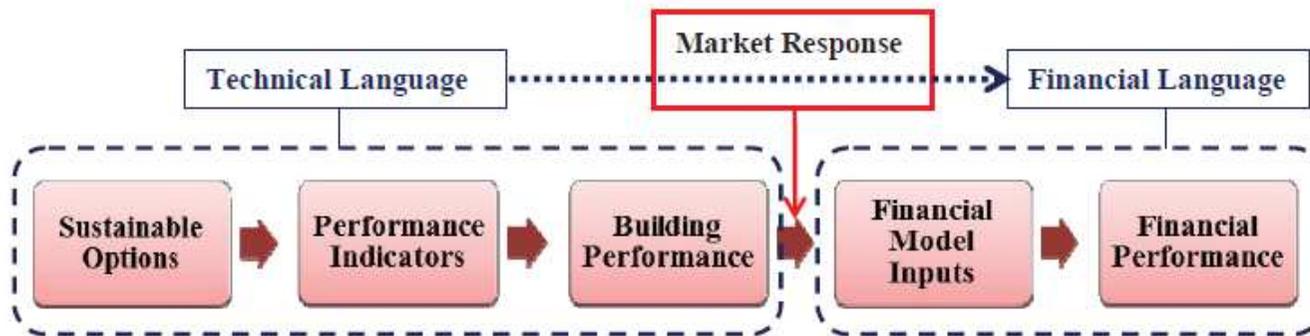
The main benefit from green refurbishment lies in its **impact on long term value.**

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.**

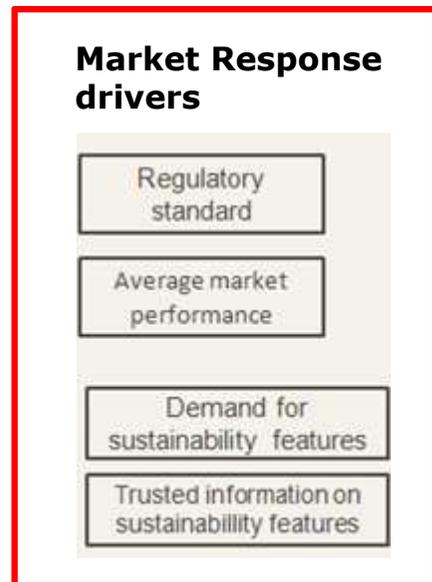
	BAU	RT	HQE
Investment (€)	0	13 000 000	18 300 000
Annual rental revenue (full occupancy) (€)	4 288 611	5 685 730	6 054 200
Annual Rental growth rate (%)	1.50%	1.60%	1.70%
Discount rate (%)	7.75%	6.80%	6.70%
Vacancy period between leases (months)	12	10	9
Maintenance and operation costs (including vacancy) (€)	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

# The challenge

■ Translating sustainable characteristics into financial performance and value



sources: Bozorgi (2012),  
SBA project « sustainable building performance thresholds  
generating value » (2013)



■ What about assets which refurbishments are deemed non profitable (direct payback and value) ?

| |

- In an attempt to remedy this problem, it is possible to make four general recommendations, which could be acted upon in various ways:
- recommendation no. 1: to reassert the necessity for a financial institution to assess the risks of assets taking into account the nature and the duration of the liabilities;
- recommendation no. 2: to design a model of assessment of financial risks that recognises the positive effect of long-term liabilities;
- recommendation no. 3: to include in the definition of long-term liabilities, which are essential to long-term investment, liabilities that are statistically stable in the long term;
- recommendation no. 4: to promote the creation of long-term savings by creating suitable investment instruments.

# The challenge

Several working groups are currently working on this “translation” issue:

## ■ UNEP FI Property working group

### ■ Sustainability Metrics: Translation and Impact on Property Management

- Investors should not wait for regulations to happen before making investment decisions!
- The report targets private investors and aims to support them in the investment decision making process where there is still uncertainty of payback.

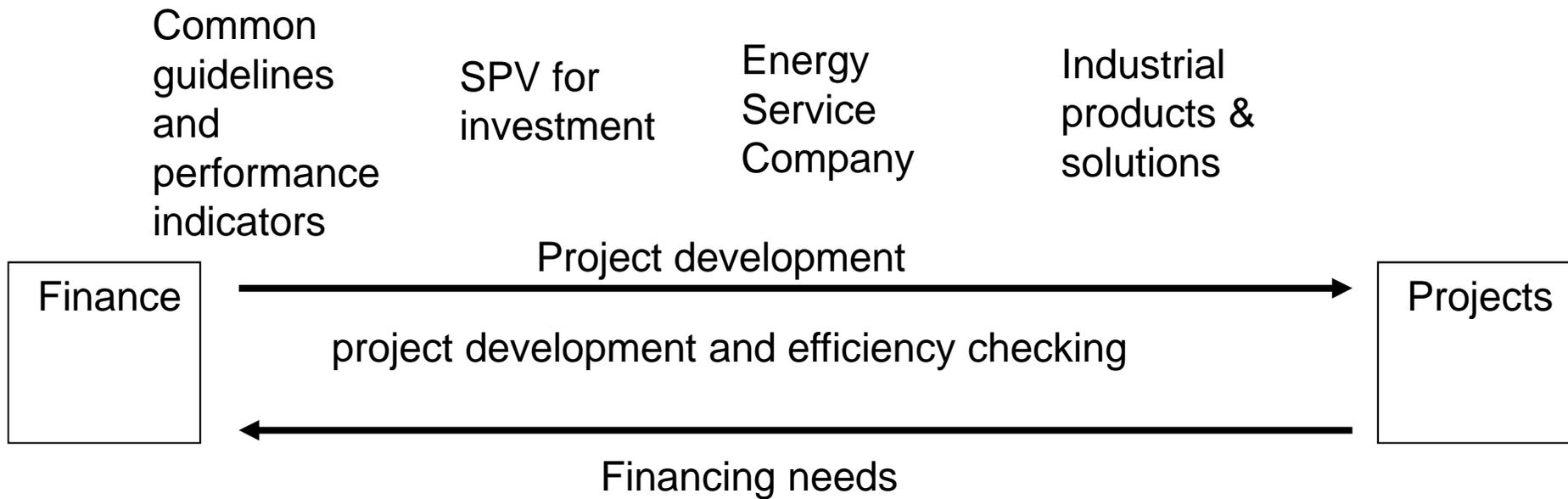
### ■ Financing Energy Efficiency Retrofits in Commercial Buildings

- How may sustainability and environmental metrics be translated into valuable information?
- How can we improve the organization of data sources and the collection of metrics?
- What do investors and fund managers need to collect sustainability metrics for, and why?

## ■ SBA Project: “Sustainable Building Performance thresholds generating Value”



# The Flow to develop



“EU funds are very difficult to be accessible due to lack of awareness and very complicated procedures that cut off a lot of final user from the possibility to access them, first the little municipalities and all the private owners. More most of current financial instruments focus on big investments for big projects.” source: energy efficiency consultation responses EU DG energy



# How to improve : practice & guidelines

Risk  
Assesment

ESCO  
Common  
guidelines

Common guidelines for  
co investment in  
Industrial products &  
solutions

Projects  
valuation and  
performance  
guarantee

Project development

Finance:

Create an information chain of trust back & forward for  
project development and efficiency checking ( financial and  
tecnical risk assesment)

Projects

Financing needs

Risk  
guarantee

Passeport to access the  
financing through a third part  
assesment

Green value,  
obsolescence

