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*Protecting your investments in buildings*
*Focus on the whole building performance*
**2012 October 4 and 5**
**Warsaw and Wroclaw. Poland**

# SUSTAINABLE REAL ESTATE, OBSOLESCENCE AND PROFITABILITY

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2/ Market failure and first evidences of green value

3/ The European Energy Performance Buildings Directive creates obsolescence

4/ Risks, obsolescence and profitability

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6/ The three ways to increase environmental performance and real estate value

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- Construction and Property sector represents:
  - in the European Union **36 % of Green House Gas emissions and 40 % of energy,**
  - in the USA **40 % of Green House Gas emissions and 40 % of energy**

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- Construction and Property sector is **the first issue** for two planet challenges:
  - **Climate change**
  - **Energy supply security**.

- **Before industry and transportation**

  Example, final energy in France, total = 100 % (2011)*:

  - Buildings: 44%
  - Transportation: 32%
  - Industry: 21%
  - Agriculture: 3%

**Ministry of Ecology and Sustainable Development. 2012.*

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- **"Climate Change is the greatest and widest-ranging market failure ever seen".**

  *Sir Nicholas Stern, former World Bank Chief Economist,*

  *"The Economics of Climate Change" Review, London, 2006*

  - Market tends to be blind because no many price signals are still available.
  - In Europe, Cape and Trade system is available only for Manufacturing Industry, not for Construction and Property Industry
  - Carbon Tax exists only in Sweden.

- **Green value:** a price signal linked to an environmental quality signal
- Definition:
  - **A premium for green certified buildings** compared to non certified buildings with same characteristics (location, size, comfort…)
  - Or **a lower value for non green buildings** compared to green buildings with same characteristics
- **First price signals** in North American, British and Dutch office markets

•*Eichholtz Piet, Kok Nils, Quigley John M., Doing Well by Doing Good? An Analysis of the Financial Performance of the Green Office Buildings in the USA. March 2009 (Maastricht and California Universities)*

- The Energy Star and LEED certified buildings have on average a **3% higher rent**, a **6% higher rental revenue** (rent multiplied by the occupation rent) and a **16% higher resale price**.

- *Eichholtz Piet, Kok Nils, Quigley John M., "The Economics of Green Building". September 2010*

- During the **real estate crisis**: September 2007 - October 2009.
- Rents decreased in two years on average by 5.4%.
- Energy Star and LEED certified buildings resist more and maintain an advantage but the difference is reduced: it is of **1.2% for rents** and **2.4% for rental revenues.**
- For **resale prices**, the difference is on average **13%** in favor of certified buildings.

•*Fuerst Franz, McAllister Patrick, New Evidence on the Green Building Rent and Price Premium. April 2009 Henley Business School (Reading University).*

- Beginning of 2009
- They find a higher difference in **rent**, equal to **6%**
- Their figures are more surprising for **resale values**: over **31%** for Energy Star buildings, over **35%** for LEED buildings.

- *Miller Norm, Spivey Jay, Florance Andy, Does Green Pay Off? 2008 (San Diego University, CoStar Data Basis)*

- 2005-early 2008 period
- **Resale price** difference over **6%** for Energy Star, plus **10%** for LEED.

- *Pyvo Gary, Fisher Jeffrey D. "Investment returns from Responsible Property Investments: Energy Efficient, Transit-oriented and Urban Regeneration Office Properties in the US from 1998-2008". March 2009. (Research on Energy Star® label only)*

- The **net revenue per square foot** is on average greater by **5.9%** for Energy Star buildings. This difference is explained by a **4.8% higher rent**, a 0**.9% higher occupation rate** and a **9.8% lower fluid expense.**
- The **market value** is greater by **13.5%.**
- The **capitalization rate** is **0.5% less**.
- The **change over time of the market value** of Energy Star buildings is not greater
- The overall efficiency (**revenues** and **sale price capital gain**) is **comparable** for Energy Star buildings and non certified buildings.

- *Chegut A, Eichholtz P, Kok N. The Value of Green Buildings New Evidence from the United Kingdom. Université de Maastricht. July 2011.*
- A bit astonishing: **rent premium of 21%** and **resale price premium of 26%** for British BREEAM certified offices compared to non certified similar offices.

- *Kok N., Maarten J.. The value of Energy Labels in the European Office Market. Maastricht University, RSM Erasmus. May 2011.*
- 1100 transactions 2005-2010
- Rents of Dutch offices with **D to G Energy Certificate** are **6,5% lower** than rents of similar offices (location, size, comfort…) with **A to C Energy Certificate**
- Other interesting sustainable indicator: a 13 % decrease of the rent per each kilometer further away from public transport station.

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**The main driver for sustainable real estate is political.**

December 2009 European energy action plan defined three ambitious objectives for **2020:**

- decrease of **20% of Green House Gas** emissions between 1990 and 2020
- decrease of **20% of energy consumption** between 2005 and 2020;
- a share of **20% of renewable energy** in 2020.

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**2002 European Energy Performance for Buildings Directive**
(EPBD n° 2002/91/CE, December 16) imposed:

- Thermal **calculation method**
- Improved **regulations for new and existing** buildings every 5 years
- **Energy certificates** for new and existing buildings
- Public information about energy consumption in **public buildings**
- **Energy feasibility studies** for projects of more than 1000 m²
- Substantial thermal improvement for **refurbished projects** of more than 1000 m²
- **Boilers and air conditioning** equipment inspections.

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Eight years after, **2010 Energy Performance of Building Directive** (EPBD n° 2010/31/UE, May 19) imposed:

- **Nearly Zero Carbon and Energy new buildings in 2020 (2018 for new public buildings)**
- Strengthening the role and the quality of **Energy Performance Certificates,** which will be **compulsory in advertisements** for sale or rent
- Display of **Energy Performance Certificates in public buildings** (compulsory in 500 m² buildings, 250 m² in five years)

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**2010 Energy Performance of Building Directive (EPBD)** continued:

- Minimum energy performance requirements for **new buildings and major renovations,** with lowering of the 1000 m² threshold for existing buildings when they undergo a major renovation
- Lowering of the threshold for **Energy feasibility studies** in new buildings
- Strengthening the role and the quality of **Heating Ventilation Air Conditioning inspections**
- Benchmarking to achieve **cost-optimal levels**

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The European Directive in short:

- **Several actions to raise awaireness among real estate owners:** Energy Performance Certificates in advertisements for sale or rent, energy performance requirements for renovation, Heating Ventilation Air Conditioning inspections
- **One action to make the existing stock obsolete :** all new buildings will be nearly Zero Carbon and Energy in 2020

- **Question:**
  - As investor, if I buy today a building that I plan to sell in 8 years, which buildings will be its competitors when I will sell it?
- **Answer:**
  - The 2020 nearly Zero Carbon and Energy buildings
- **Problem to be solved:**
  - How much does it cost to renovate the building that I am buying to compete with nearly Zero Carbon and Energy buildings?
- **True value of the building:**
  - The price proposed by the seller, minus the cost of upgrading to the nearly Zero Carbon and Energy level

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**If my building is not green, what are the risks concerning its market value?**

- Market value =
  - Net operating income (market rent - owner's operating costs)
  - Out of capitalisation rate (risk free rate + risk premium + growth of owner's earnings + depreciation)

- **Risks for the market value of a non green building:**
  - Market rent: no premium, if there is one, more important rent reductions, lower productivity of staff and less healthy employees,
  - Higher owner's operating costs to maintain the building at market level
  - Higher risk premium: longer vacancy periods, lower marketability, less cash flow
  - Lower owner's earnings growth: lower competitiveness, higher energy costs
  - Higher depreciation: shorter compliance with increasingly stringent legislation, shorter life span

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## Potential for positive differentiation in favor of green buildings

| Components of market value (impact on value) | Impacted (+) Upward (-) Downward | Impacted by: | Impact level | | | |
|---|---|---|---|---|---|---|
| | | | Rental Housing | | Rental Office | |
| | | | Short term | Medium term | Short term | Medium term |
| Market rent (+) | + | Sustainability expectations of demand | → | ↗ | ↗ | ↑ |
| | + | Lower rental charges | ↗ | ↑ | → | ↗ |
| | + | Less works for new tenants | → | → | → | → |
| | + | Health of occupants | → | ↗ | ↗ | ↑ |
| | + | Productivity of workers (offices only) | / | / | → | ↑ |
| Owner expenditures (+) | - | Major maintenance & repair | ↗ | ↗ | → | → |
| | - | Costs for upgrading and refurbishment | ↗ | ↑ | ↗ | ↑ |
| | - | Maintenance of performance | → | ↗ | → | ↗ |
| | - | Deductibles and rent discounts | / | / | ↗ | ↑ |
| Risk premium (-) | - | More cash flow | → | ↗ | ↗ | ↑ |
| | - | Faster commercialisation time | ↗ | ↑ | ↑ | ↑ |
| | - | Anticipated compliance with regulations | ↗ | ↑ | ↗ | ↑ |
| Growth of owner income (+) | + | Competitiveness, attractiveness | → | ↗ | → | ↗ |
| | + | Energy costs | ↗ | ↑ | → | ↗ |
| | + | "Sustainable" image | → | ↗ | → | ↗ |
| Depreciation (-) | - | Longer lifespan | ↗ | ↑ | ↗ | ↑ |
| | - | Longer compliance with regulations | ↗ | ↑ | ↗ | ↑ |

| | |
|---|---|
| → | Little or no influence on the difference of property value |
| ↗ | Significant influence on the difference of property value |
| ↑ | Important influence on the difference of property value |
| / | Not relevant |

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Source: Bullier et alii. Assessing Green Value, a Key to Investment in Sustainable Buildings (2011)

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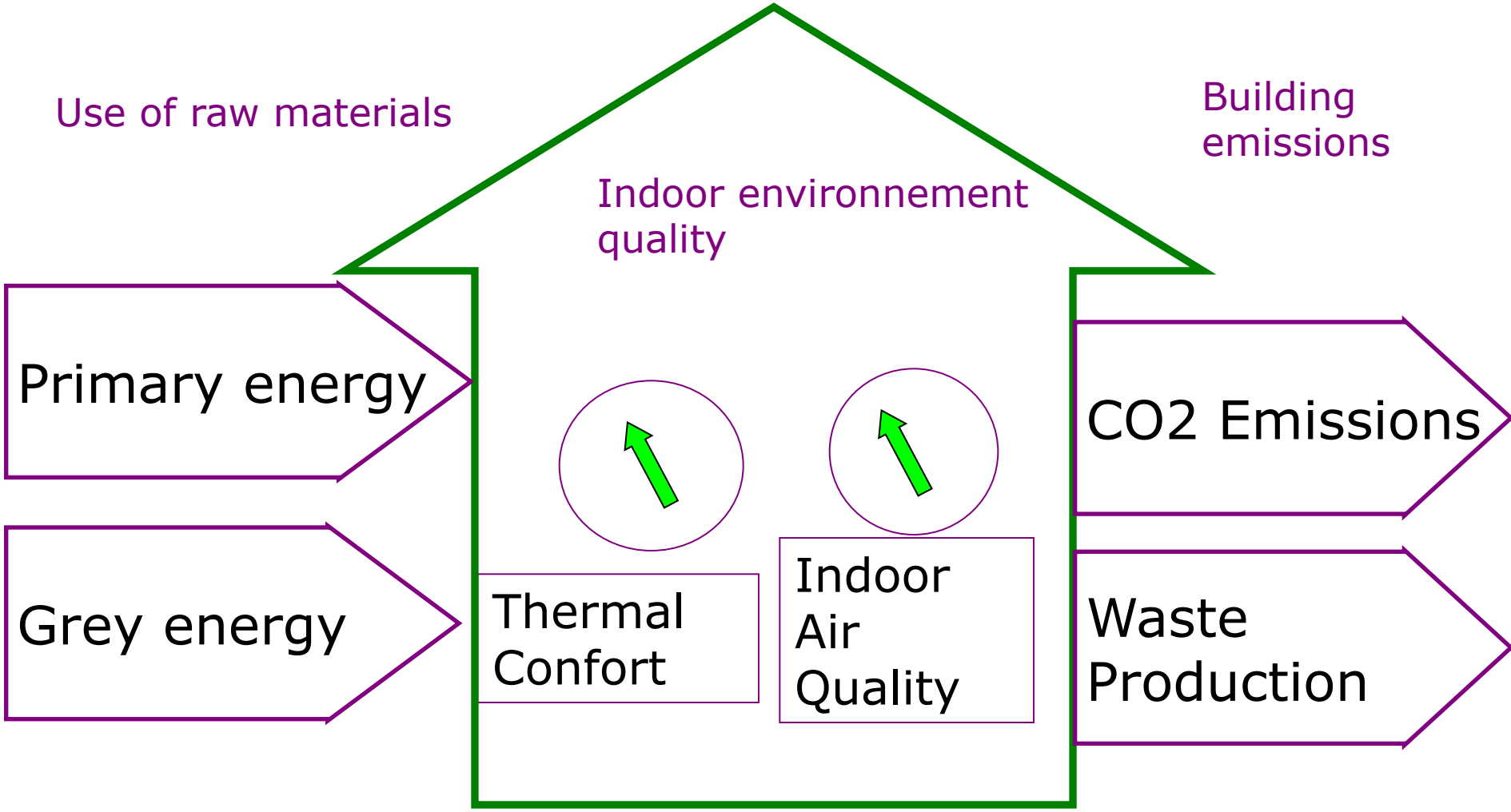




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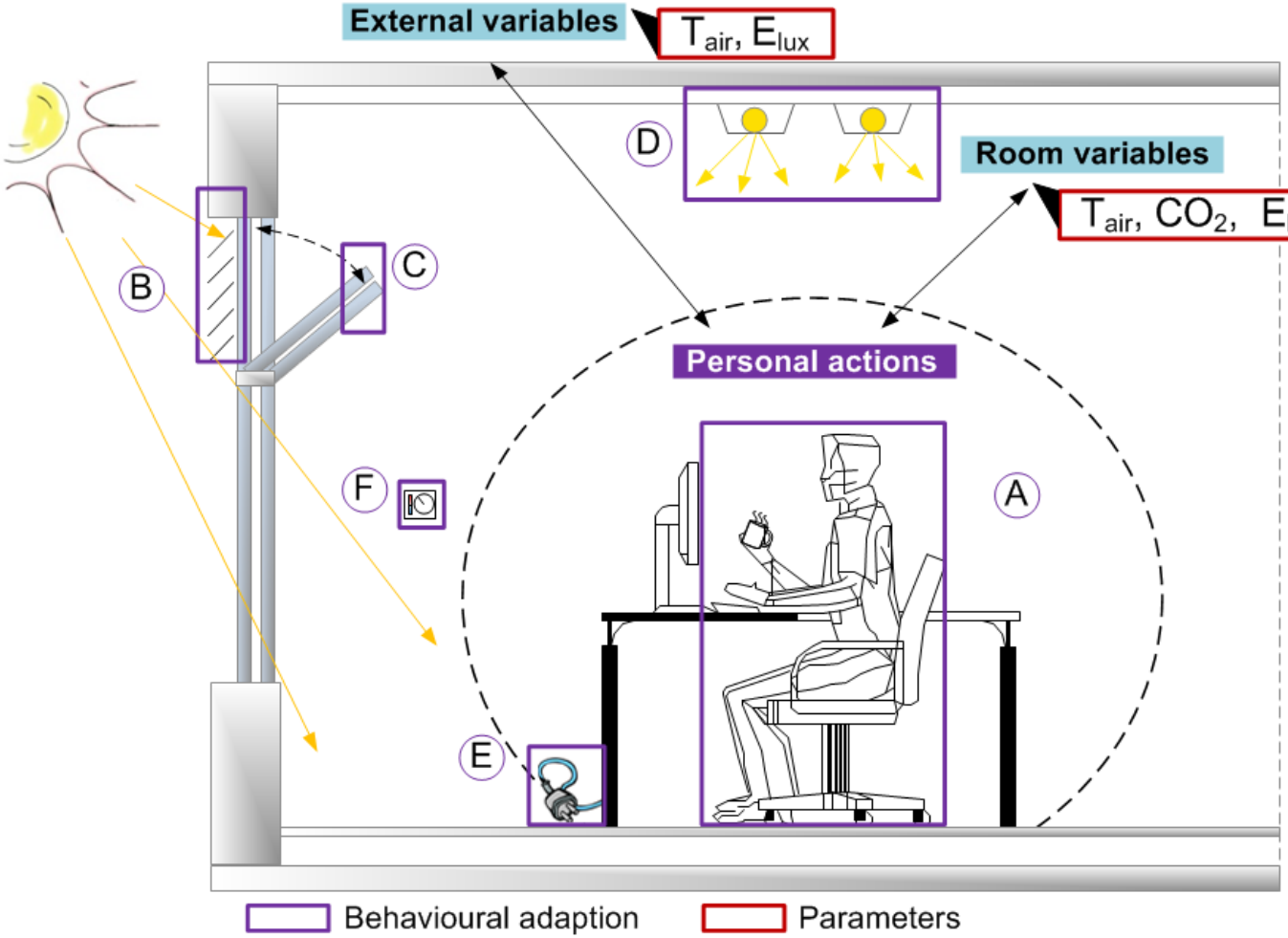


| Char. | Description |
|---|---|
| $T_{air}$ | Air temperature |
| $E_{lux}$ | Luminous emittance |
| $CO_2$ | $CO_2$ value |
| RH | Relative humidity |
| A. | Occupancy / presence |
| B. | Deployment of blinds |
| C. | Window opening |
| D. | Artificial lighting |
| E. | Electrical appliances |
| F. | Thermostat control |

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Light reflexion

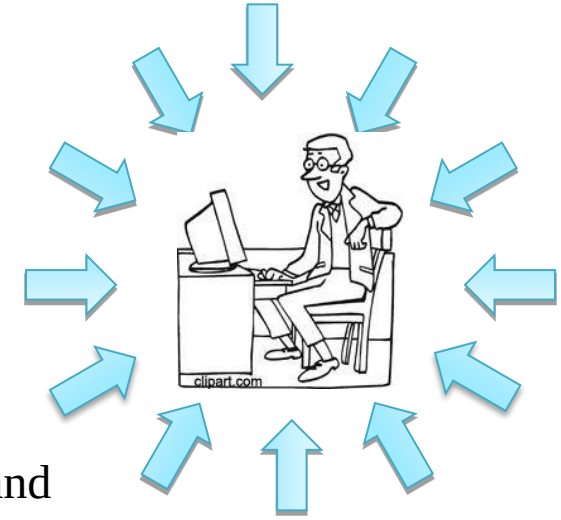
Light spots

Luminosity

Fibers

Background noise

Particulate matter




Chats of other people

Mold spores

Velocity of the air

Temperatures of the air and of the surfaces of the room

Humidity

Emissions dues to traffic

Emissions dues to materials

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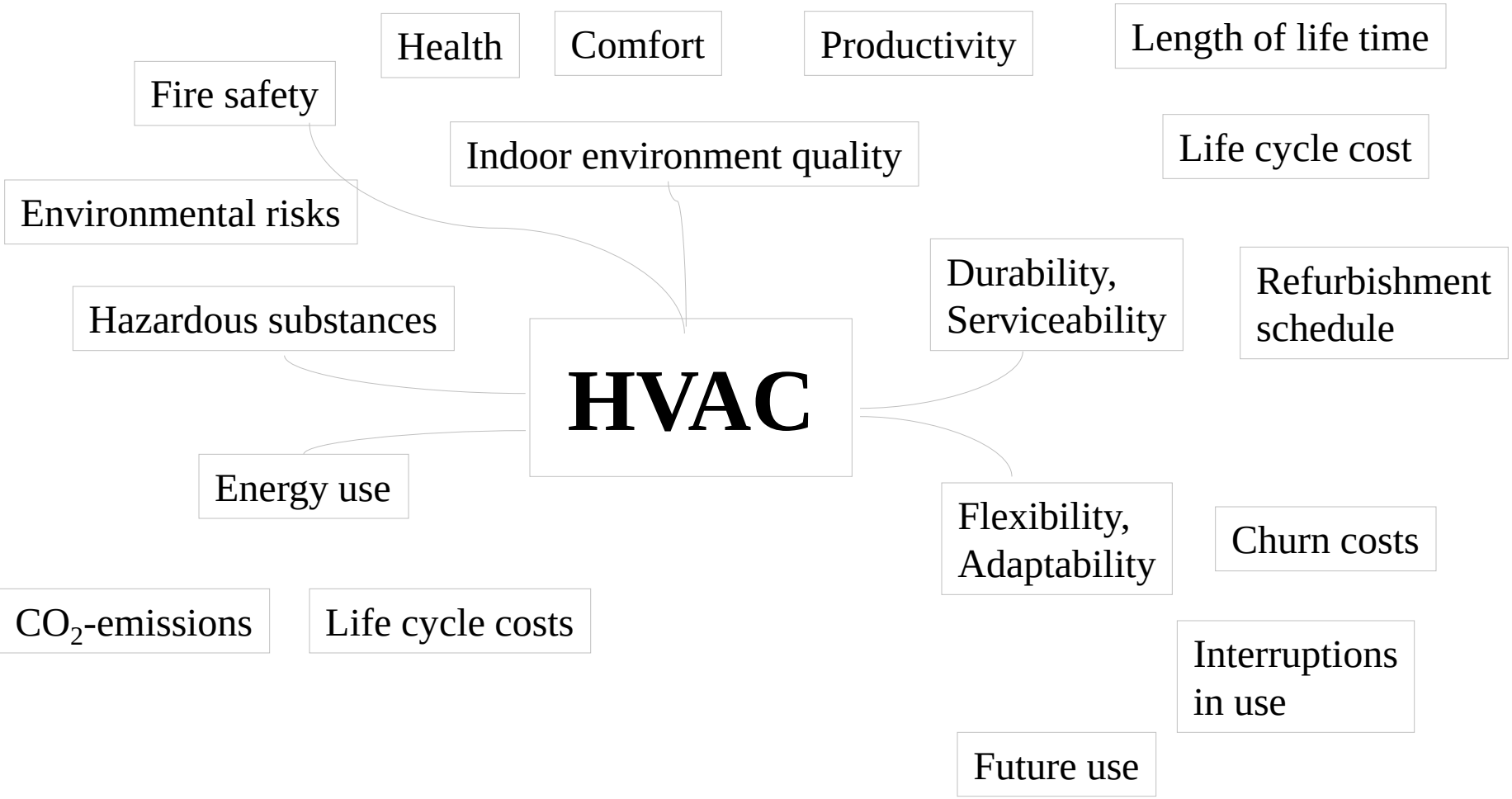


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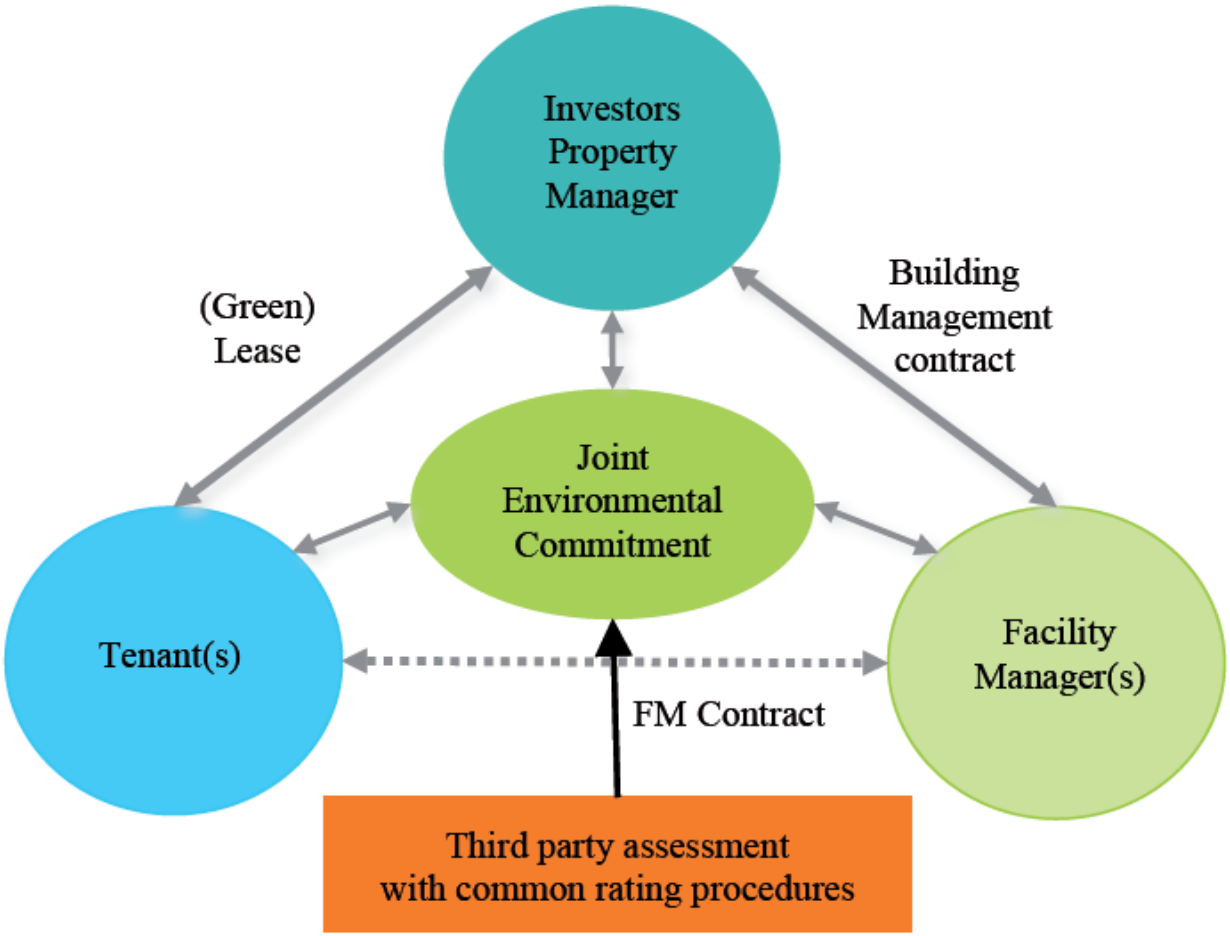
- First way to increase energy and environmental performance: **to improve operation management**
  - Energy and CO2 gain: from 10 to 15 %
  - Cost: low (counters, maintenance)
  - Implementation time: quick (one year)
  - Tools: new monitoring and good maintenance

- Second way to increase energy and environmental efficiency: **to change users behavior**
  - Energy and CO2 gain: from 10 to 15 % ( more in some cases)
  - Cost: low
  - Implementation time: rather long (several years)
  - Tool: green lease

How to implement the first two ways to increase energy and environmental efficiency

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- The third way to increase energy and environmental efficiency: **renovation works**
  - Energy and CO2 gain: from 20 % to more
  - Cost: high
  - Implementation time: two to three years
  - Tools:  quality diagnosis, design and works

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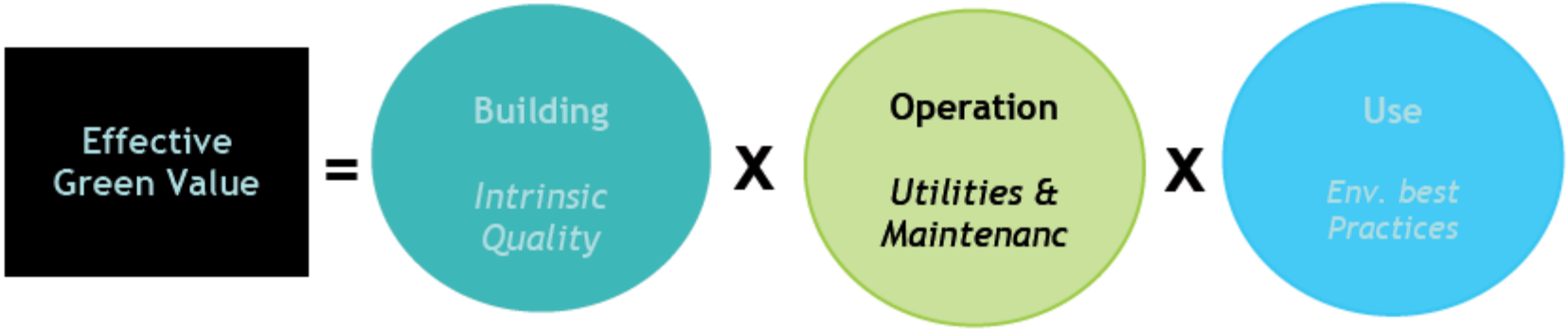
- If you plan to increase energy and environmental performance of 40 % (the French objective for the whole stock between 2009 and 2020):
  - To meet the aim only through renovation works is expensive, with bad payback
  - **The less costly and the most secure way (but not the simplest one)** is to mix:
    - Operation improvement
    - Users behavior change
    - And renovation works

Performance and value over time



Thank you for your attention

**All quoted articles are on bilingual Sustainable Real Estate Blog:**

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Any question?

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