# Real estate sustainability

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Head of real estate sustainable policy

- CDC group
- Urban morphology
- Energy information
- Keyrole of the « greenvalue »

# Caisse des Dépôts Group overview

- Manages from public regulated savings accounts and invests these on a secure basis in projects in the public interest, particularly social housing,
- Acts as public banker to the judicial and social security systems,
- Manages public and semi-public pension schemes,
- Invests in regional and local development alongside local authorities,
- Acts as a long-term investor in the French economy,
- Participates in national economic development via its subsidiaries.

# Caisse des Dépôts Group
# Key figures

- Consolidated assets: €255.6 billion
- Equity: €19.2 billion
- Funds managed by Caisse des Dépôts: €224 billion
- Unique Status enshrined in the founding law dating from 1816
- Chairman and Chief Executive Officer of Caisse des Dépôts is appointed by a decree of the President of the French Republic and takes the following oath of office before the Supervisory Committee:

  *"I swear… with all of my powers to uphold the inviolability of Caisse des Dépôts."*

# Creation of the Long Term Investors Club

At the prompting of *Caisse des Dépôts Group, Cassa Depositi e Prestiti, KfW* and the *EIB.* The total assets of our institutions represent today around 3000 billion dollars.

- **launch 2 major long term investment funds** in the field of infrastructure: ***Marguerite,*** the *2020 European Fund for Energy, Climate Change and Infrastructure, and* ***InfraMed,*** first financing facility of the Union for the Mediterranean.

- Make important progress to launch **a new carbon credit fund for the Mediterranean region.**This initiative would support the development of projects in the framework of the Mediterranean Solar Plan, bringing additional knowhow and financing to the countries of the Southern and Eastern side of the Mediterranean

- Develop a partnership **on knowledge transfer and Intellectual Property Finance.**We want to share this experience with our partners and tighten our cooperation in this field in order to provide the European innovation policy with concrete proposals.

# The UNEP FI Investment Commission
## Thought leadership and global action on responsible investment

**UNEP FI included the creation of three industry commissions:**

- **The Banking Commission**
- **The Insurance Commission**
- **The Investment Commission.**

**The key reasons for the industry commission structure are as follows:**

- **Maximise the reach of UNEP FI's research outputs and activities to financial institutions and stakeholders globally**
- **Enhance geographic representation**
- **Ensure sustainable value creation and increase synergies within UNEP FI.**
- **One house for investment**

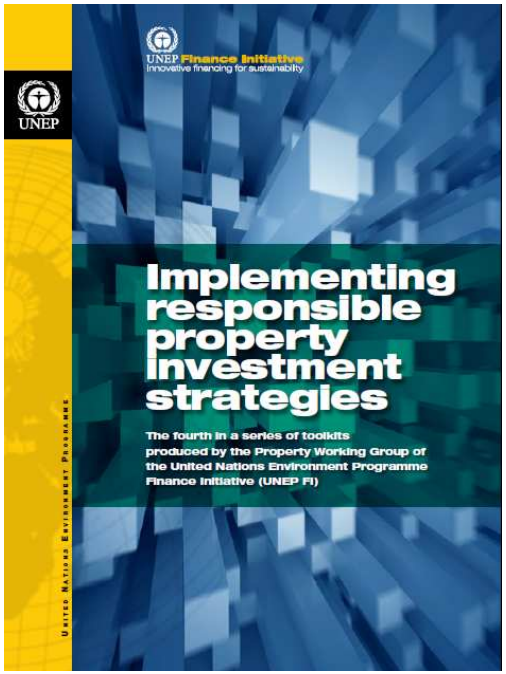
**In addition to all UNEP FI investment signatories, the Investment Commission will house two UNEP FI investment working groups**

- **the Asset Management Working Group (since 2003) and**
- **the Property Working Group (since 2007).**

# The UNEP FI Property Working Group (PWG)

**The PWG has become a global centre of excellence on responsible property investment (RPI), covering the following aspects:**

- RPI best practice case studies
- Implementation of the PRI with respect to property portfolios
- Differences between responsible investment in equities and property
- Advancing the integration of ESG issues into property as part of fiduciary responsibility
- Sustainable building indicators benchmarks
- RPI and international climate change policy



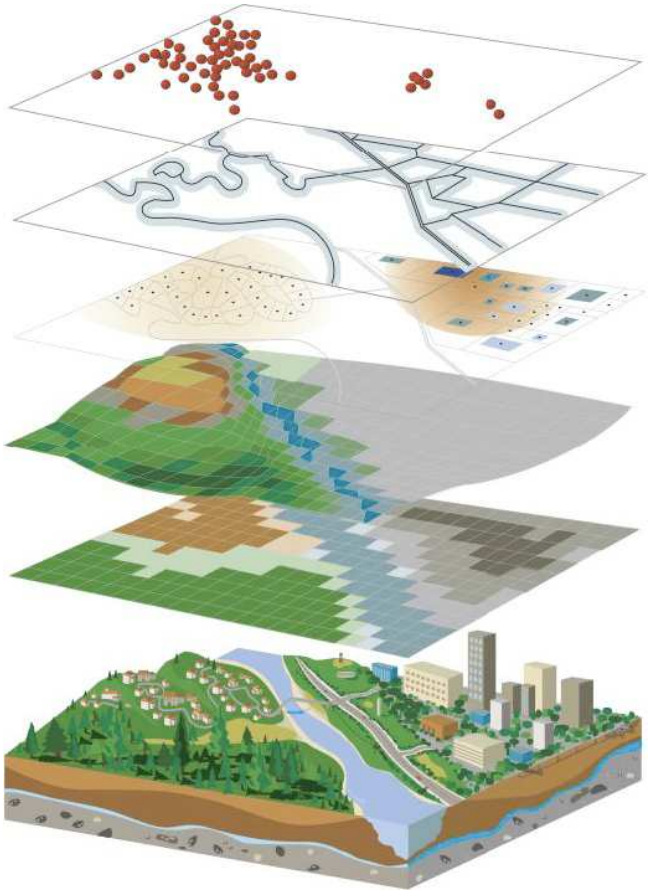
# The UNEP FI Property Working Group (PWG), PRI

- A toolkit series spanning RPI strategy implementation, owner-tenant engagement and green instruments, and RPI strategy and performance disclosure methods and transparency
- Environmental metrics for property to enable property investors and the public sector to measure the environmental performance of buildings and monitor progress
- Alignment of the design of environmental metrics with property investment performance metrics
- Financing mechanisms for energy efficiency solutions for the built environment


**To learn more about the PWG:**

**http://www.unepfi.org/work_streams/property/index.html**

# Urban morphology and flows



People

Infrastructure, connectivity mobility

Land use

Flows : people and goods

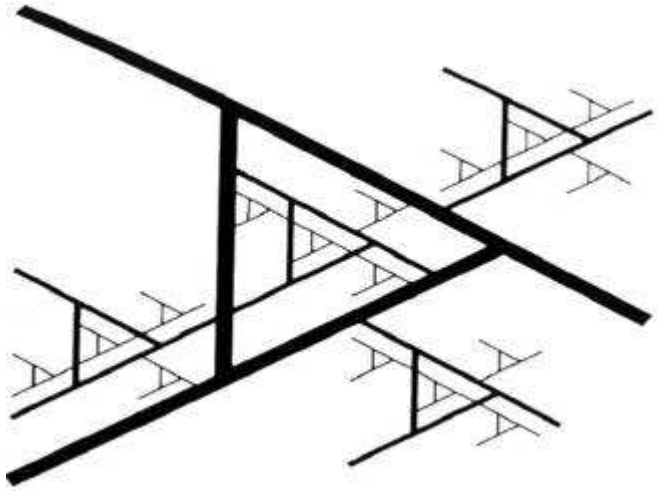
Land property and regulations impact

Build shape, energy impact and waste management

Source: S. Salat urban morphology lab

# Structuring and Sizing synergy  Grids

## « Scale Free Complexity » concept



Each level of the grid has to display the same level of complexity, no matter the scale considered

Source: S. Salat urban morphology lab

# Structuring and Sizing Grids

Most of the natural networks display scale free complexity, to optimise energy efficiency

Neuronal networks

Trees

Blood systems

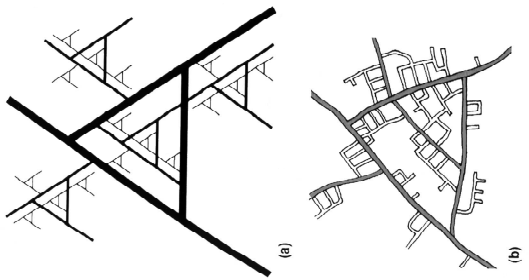
# Structuring and Sizing Grids

Insights from hard-core thermodynamics:

Power laws
Scale free complexity

⟺

Energy Efficiency



Hausmannian Paris

# Structuring and Sizing Grids

Flows have to be recycled and reused on every scale: ***low exergy approach***.

Water, energy, heat, waste, grey water are recycled on the **building scale**

Adapted from Dobbelsteen et al, 2011

# THE AMSTERDAM GUIDE TO ENERGETIC URBAN PLANNING

## ANDY VAN DEN DOBBELSTEEN

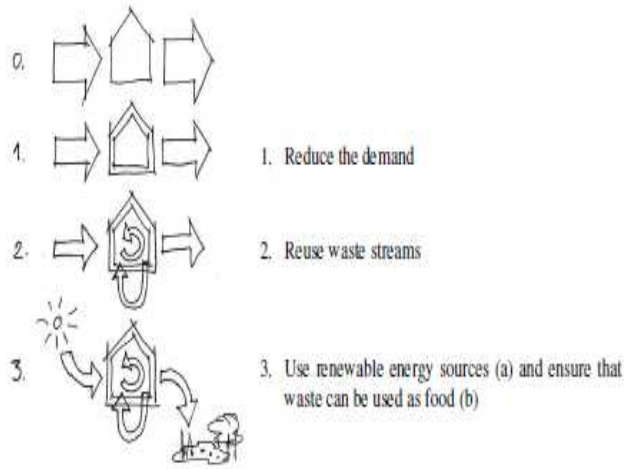



*Figure 4: Principle of the New Stepped Strategy [Dobbelsteen, 2008]*

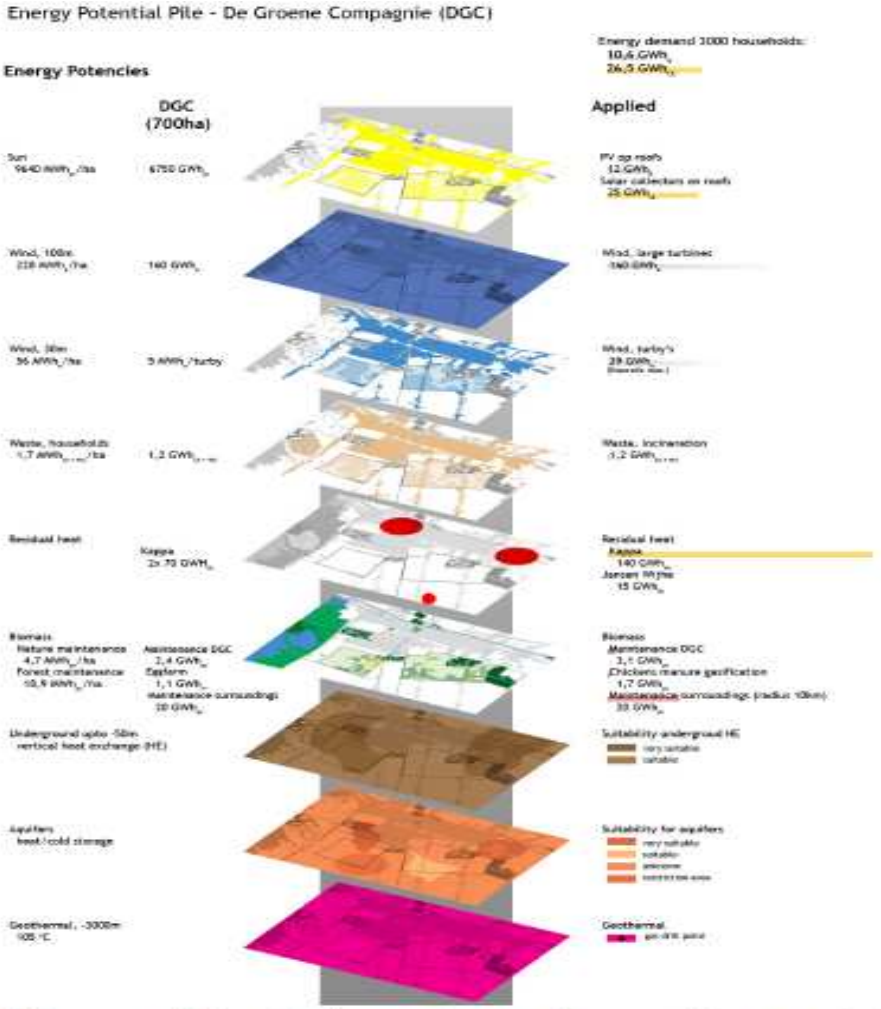
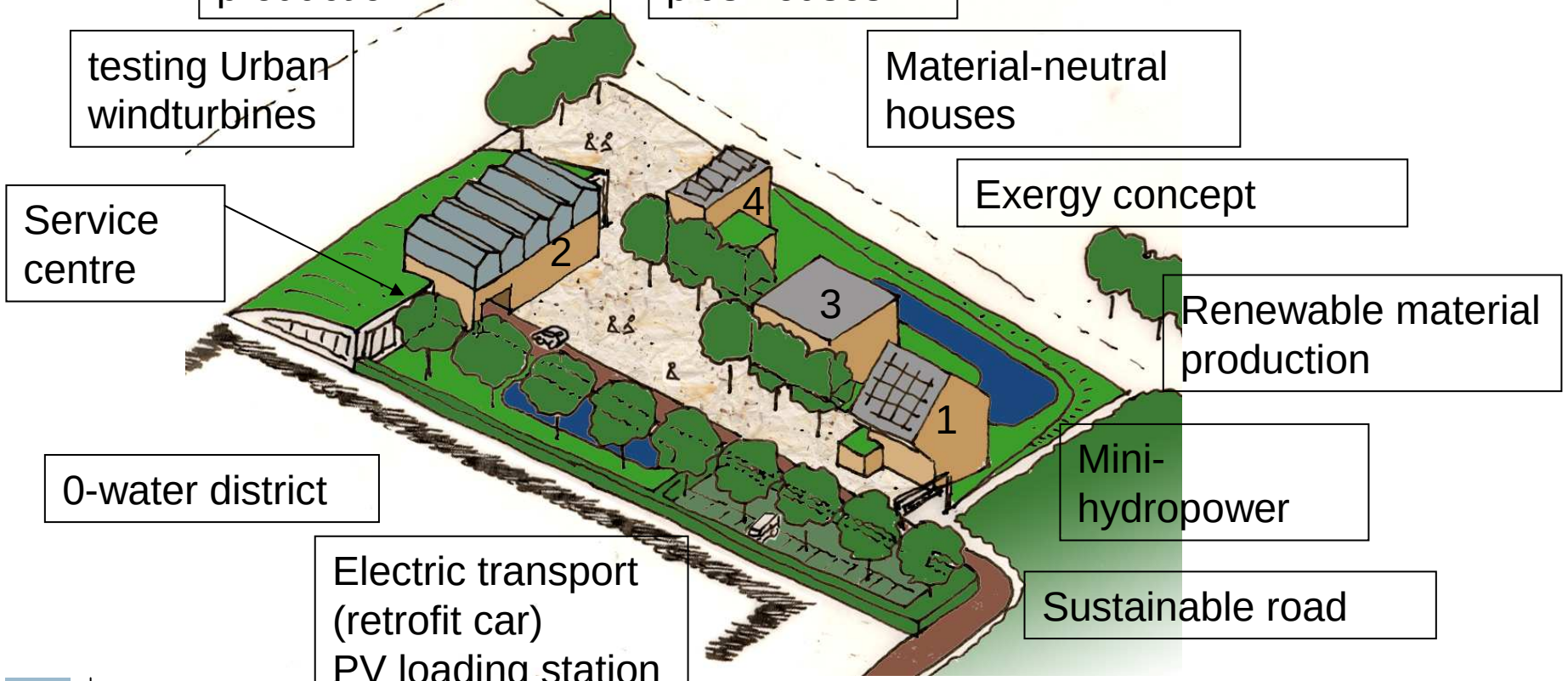



*Figure 3: Energy potential map for the expansion plan of Hoogezand-Sappemeer, depicting energy potentials at various heights and depths, enabling calculations of the total energy yield possible [Broersma et al., 2010]*

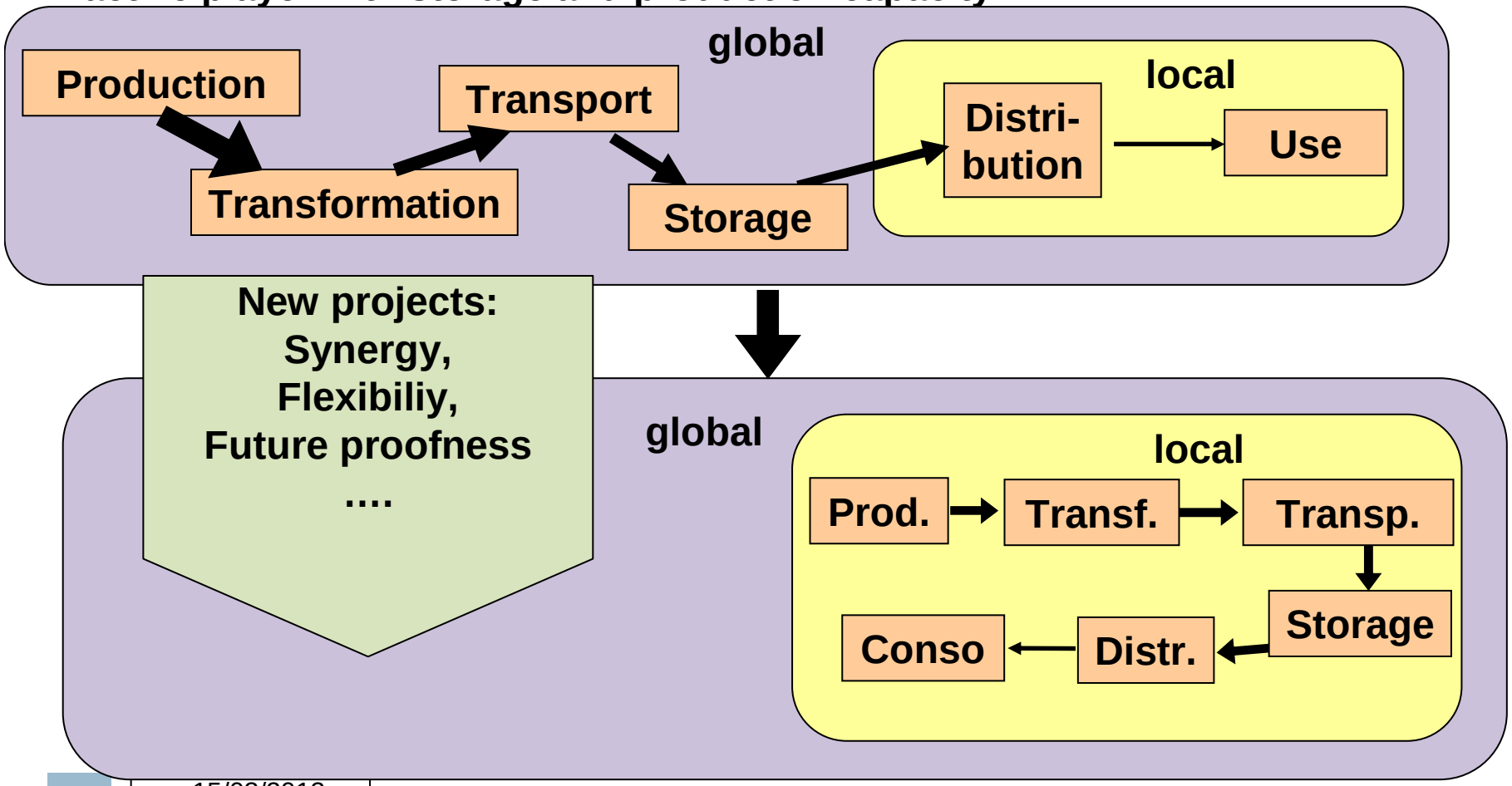
# The tomorrow's district

Besides houses, many other elements are developed, designed, constructed and researched



# Non centralised energy supply

**Relocation of the energy supply chain.The user becoming an active player with storage and production capacity**



# Why do asset managers need metrics for?

1. To pilot and maintain assets value through uncertainty management
2. To gain insight about sustainability performance
3. To ascertain compliance with government regulatory requirements or specific client requirements
4. To monitor portfolios and their “future-proofness”
5. To provide guidance for better management
6. To benchmark properties

# Enlightened Decision Making

the real estate players need to go beyond a simple approach based on technologies choices forward to a global analysis based on the global impact on energy supply choices and the life span of components

- Reach the sustainability goals  and have a better appreciation of an asset value through is potential lifetime and flexibility in lifespan.
- Transparency and organisation of datas in order to create a link between the real estate's communities in order to extract the rights financial figures for valuation and trust into the market.

# Where to find the data ?

1. **Collect existing data**

   A wide range of data is already available albeit scattered in different hands…

   - **Location:** to be developed
   - **Building profile:**

     Data already available
   - **Physical indicators :**
     - **For certified or rating buildings**

     Different presentations  for the same underlying content
     - **For non certified or rated buildings**

     Information stored in different places (energy and water consumption, indoor environmental quality … )

2. **Order complementary study if required**

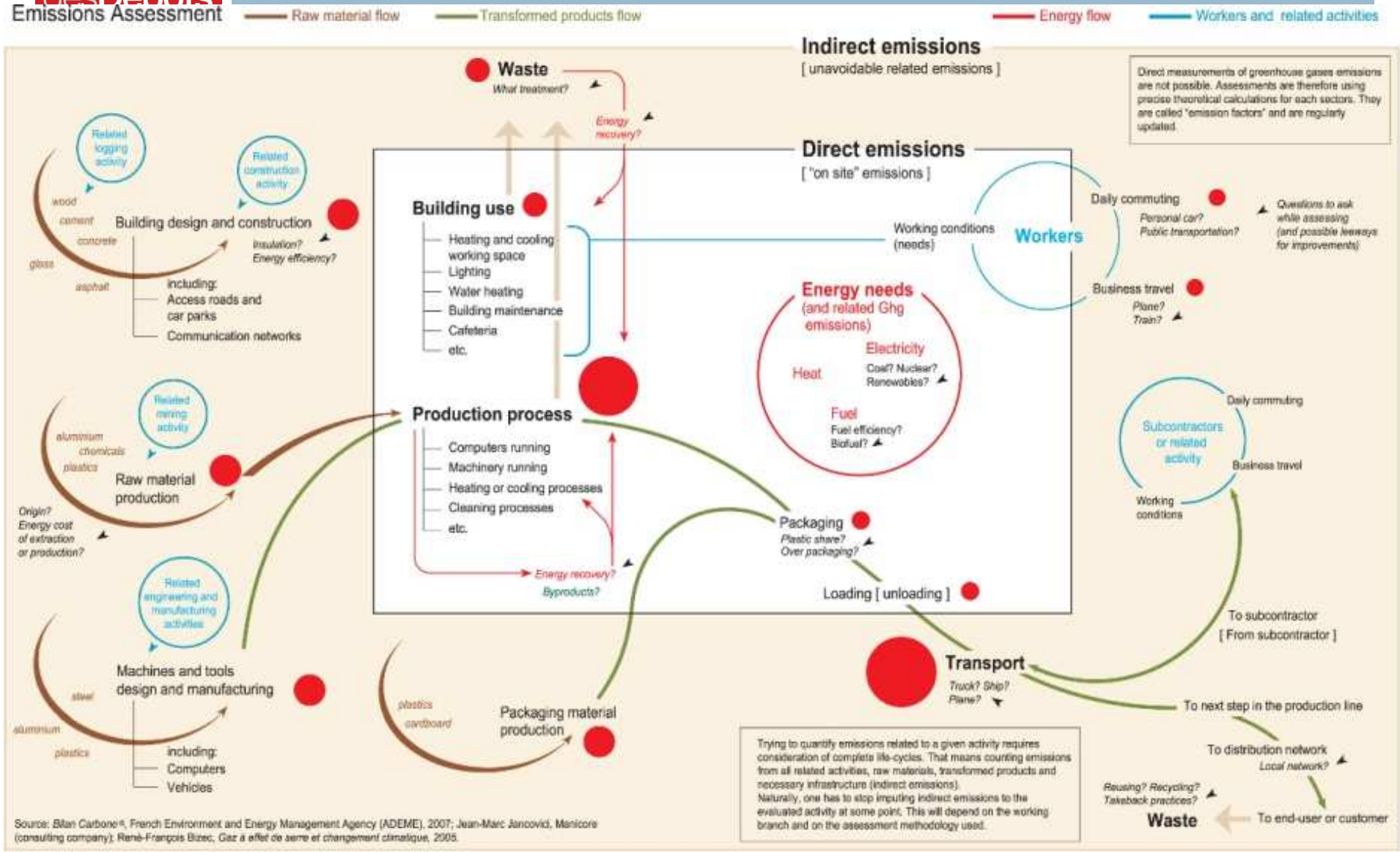
# Where to find the data ?

**Data are already mostly provided through the proliferation of ratings and certifications!**

⇒ The main issue consists in organizing data-gathering and processing the “raw material” obtained.

⇒ Make complexity comprehensive through the life cycle (stop multiple “one shot” audits )

# GHG emission chartflow



# Building Specific Consumption of Primary Energy [NEU2005]

For commercial buildings another interesting energy efficiency indicator is the total primary energy consumption (or the total electricity consumption) per square meter. Although again there are no official statistics, some data have recently been collected by some experts especially for Germany. From a monitoring exercise carried out in Germany the following data has been compiled [The2004] [Her2006]. A number of office and educational buildings have total primary energy below 100 KWh/m2 per year, with lighting at about 10 kWh/m2 and ventilation at 10 kWh/m2. [NEU2005] To reach this low energy consumption values such a building use natural or passive cooling technologies (including ground loop heat pumps).

| Type of building | Primary Energy Consumption [kWh per $m^2$ gross usable floor space and year] |
|---|---|
| Average old office building constructed before 1990 | 591 |
| Average office building | 502 |
| Average office building constructed after 1990 | 421 |
| Average new office | 400 |
| Best practice | 150-50 |

# Energy linked to a building: 4 main blocks

## Building energy

**Actual new building:**
**130 to 250 $kWh_{ep}/m^2/year$**

**NZEB :**
**40 to 65 $kWh_{ep}/m^2/year$**

## Specific electricity

**Housing :**
**10 à 50 $kWh_{ep}/m^2/year$**

**Office:**
**30 to 300 $kWh_{ep}/m^2/year$**

## Embodied energy

**New building :**
**≈ 1200 $kWh_{ep}/m^2$**

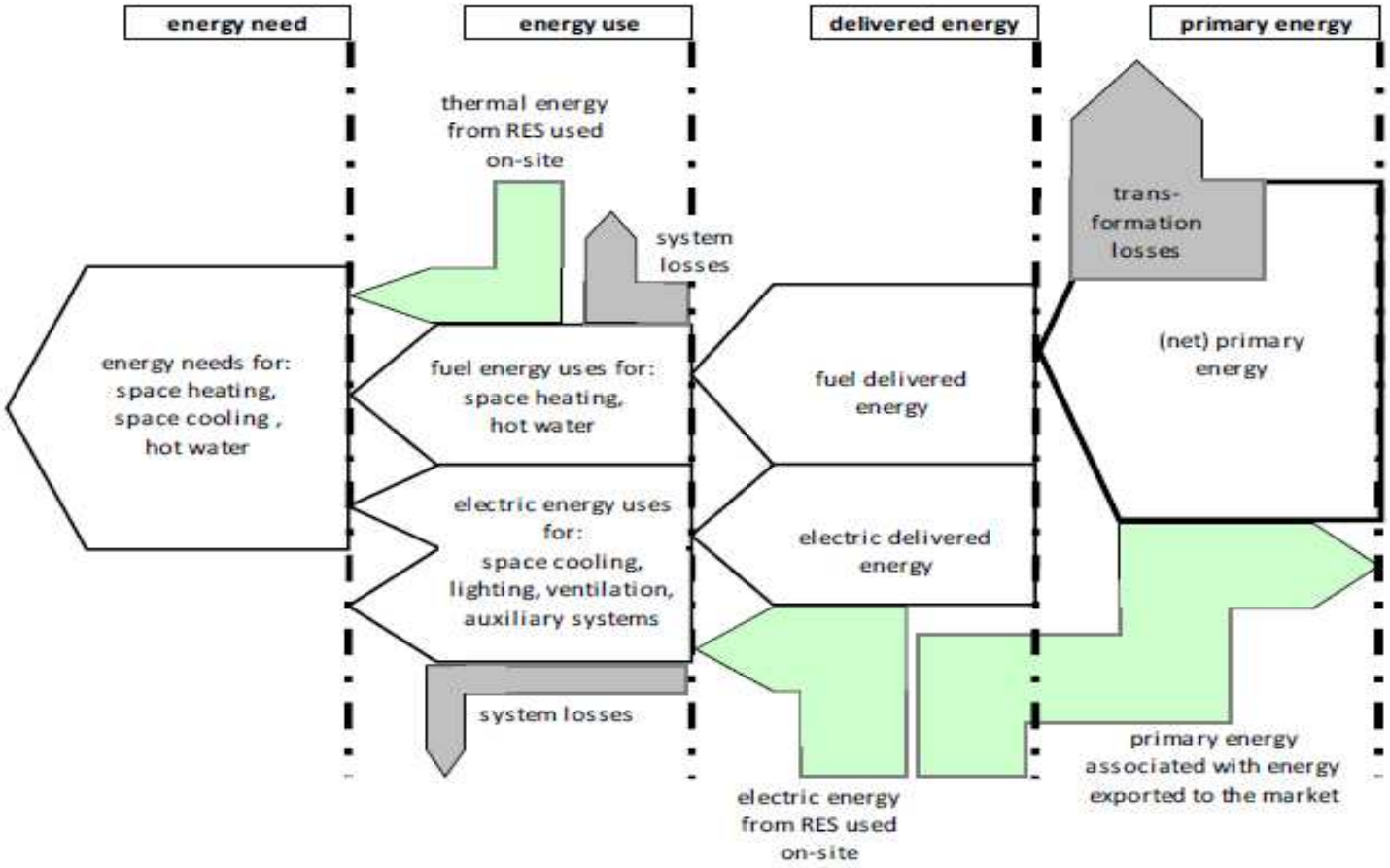
**« As usual »NZEB:**
**≈ 1600 $kWh_{ep}/m^2$**

## Transport

**French average daily distance:**
**16km**

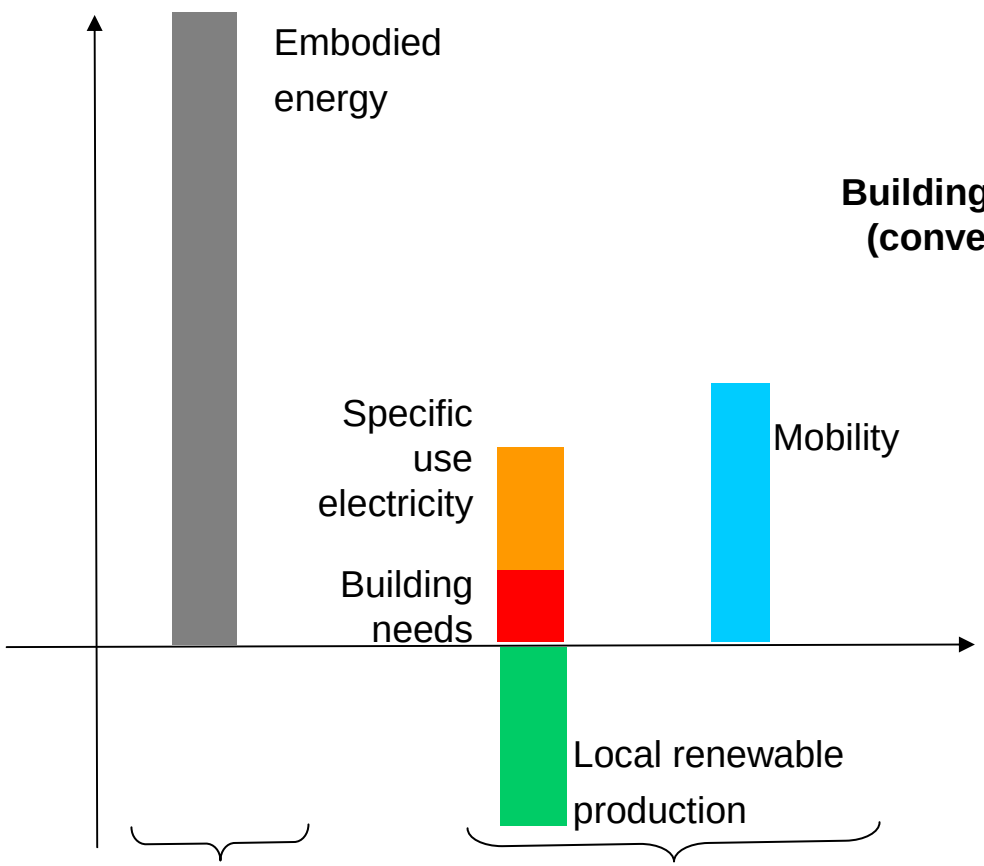
**20 km :**
**by car : 6450 $kWh_{ep}$/year**
**bus: 630 $kWh_{ep}$/year**

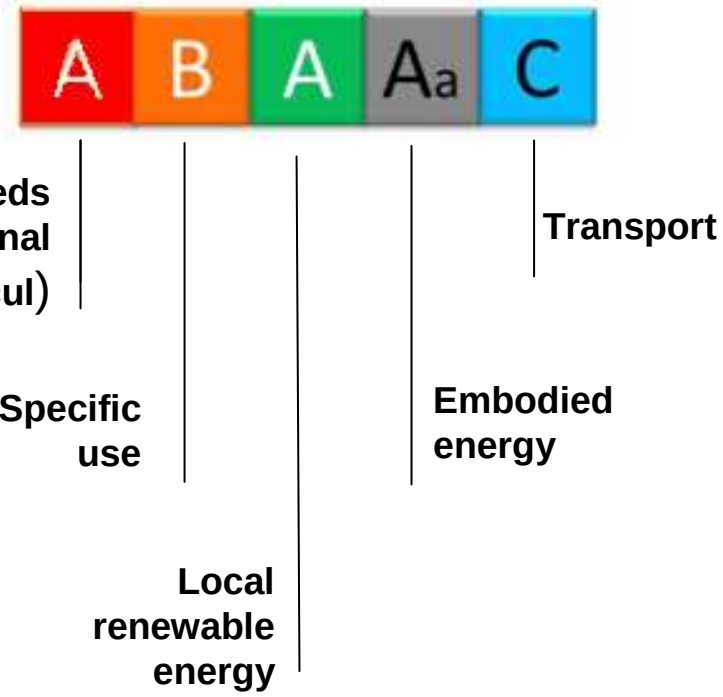
# On the road to NZEB




Source EN 15603 2008

# Example of energy : NZEB during the life cycle?

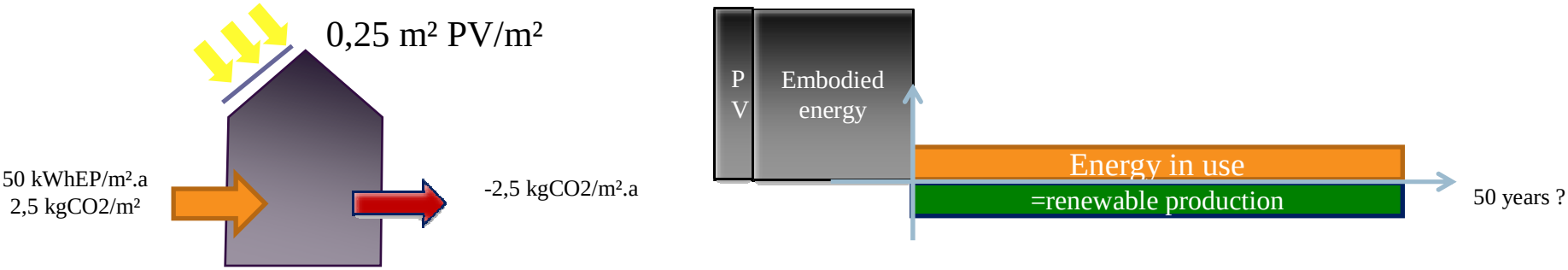


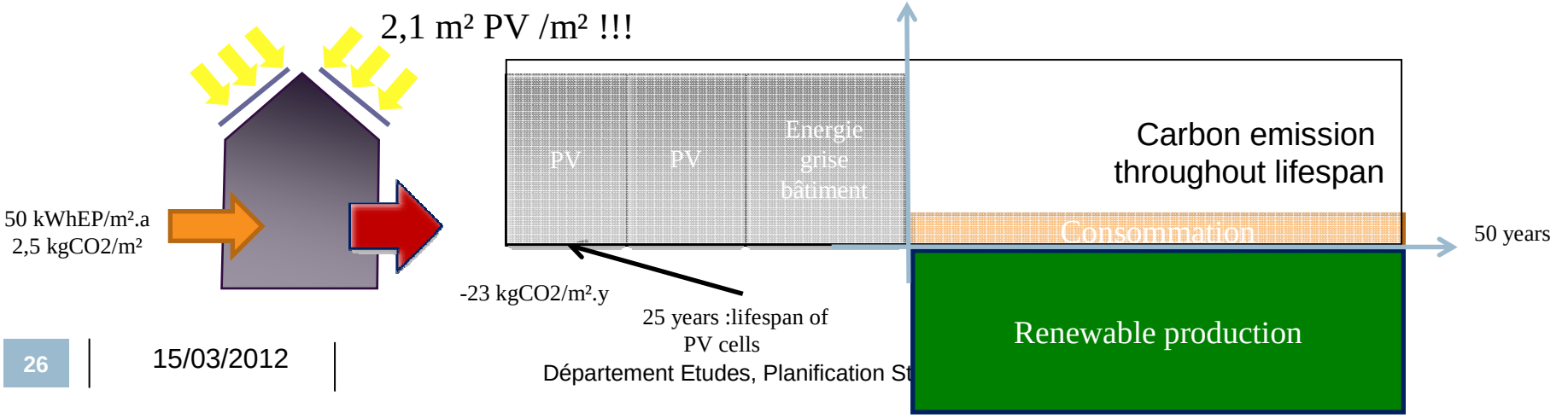

Source: Franck Richard ADP

# Energy and Carbon

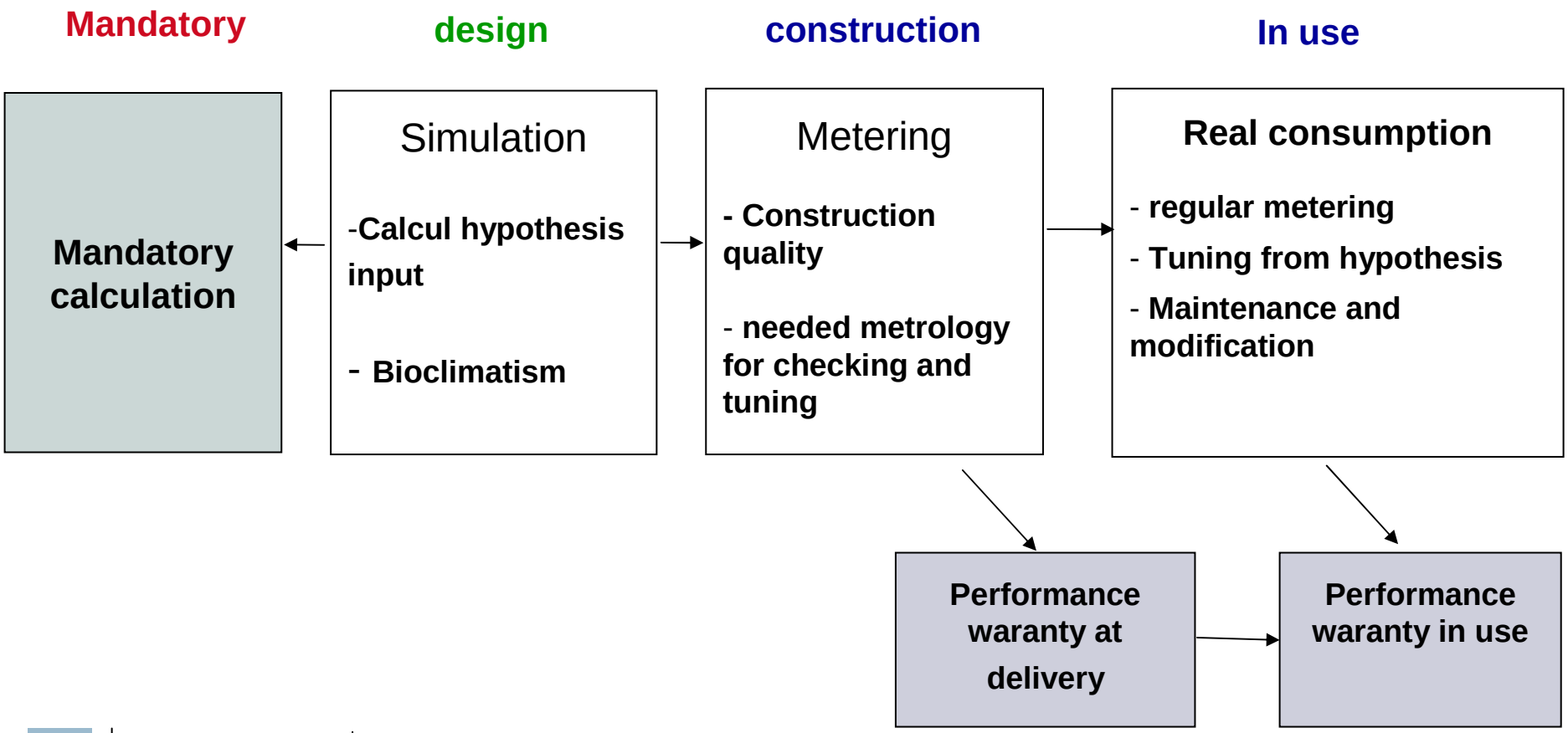
- NZEB : Production ≥ use



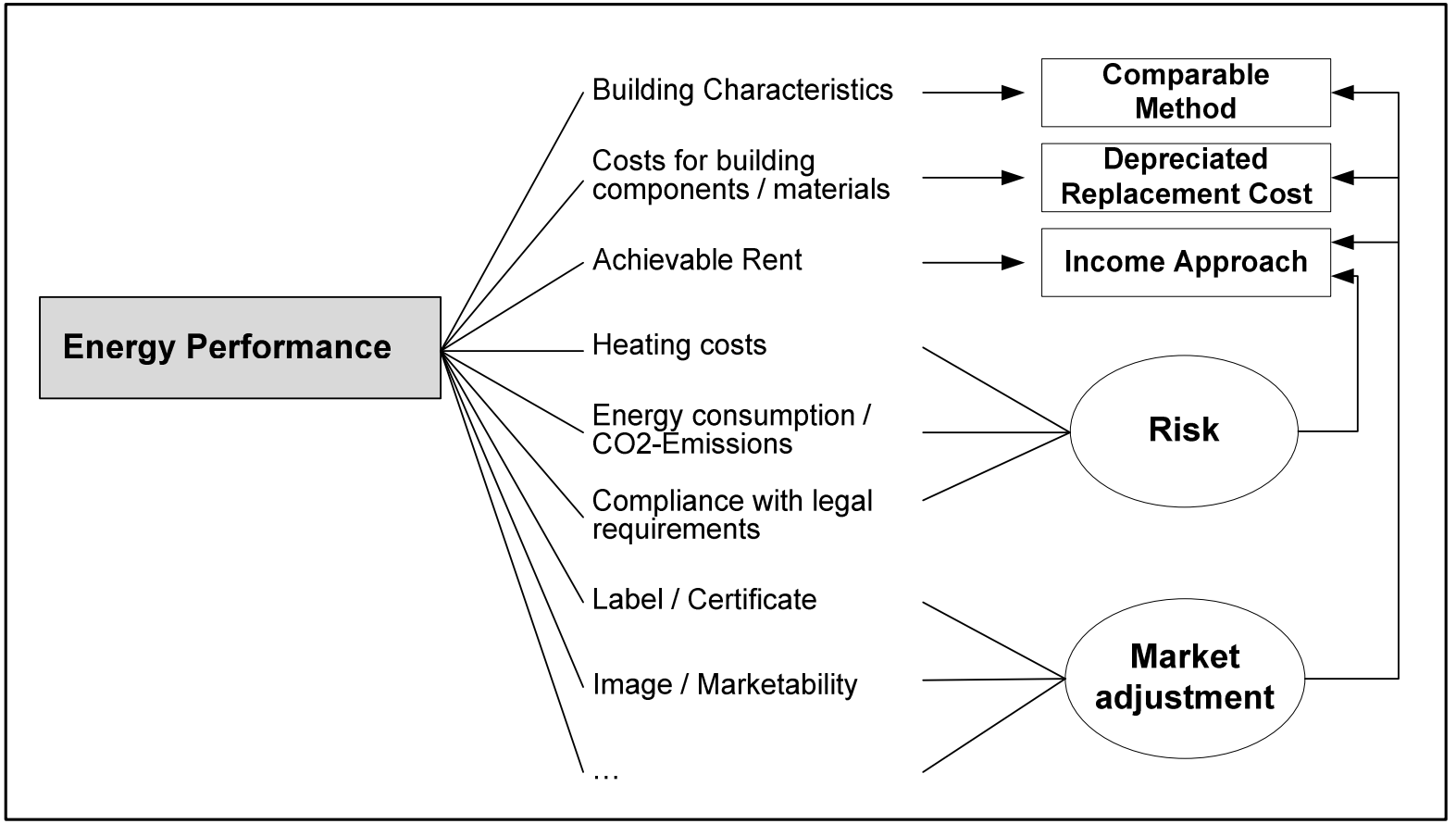

- Zéro Carbon



# Transparency and energy follow up



# Informations behind a KPI and appraisal




Source: Lutzkendorf/ Lorenz

# How sustainability impacts market value of real estate

- Changes in tenants expectations (+)
- Lower share of operating costs (+)
- Lower costs of fittings (+)

- Lower costs for maintenance and servicing activities (-)
- Lower investments to sustain building at market level (-)
- Lower rent waivers (-)

**Market value** = net operating income (market rent – owner's operating costs) / Cap rate (risk free rate + risk premium – growth + depreciation)

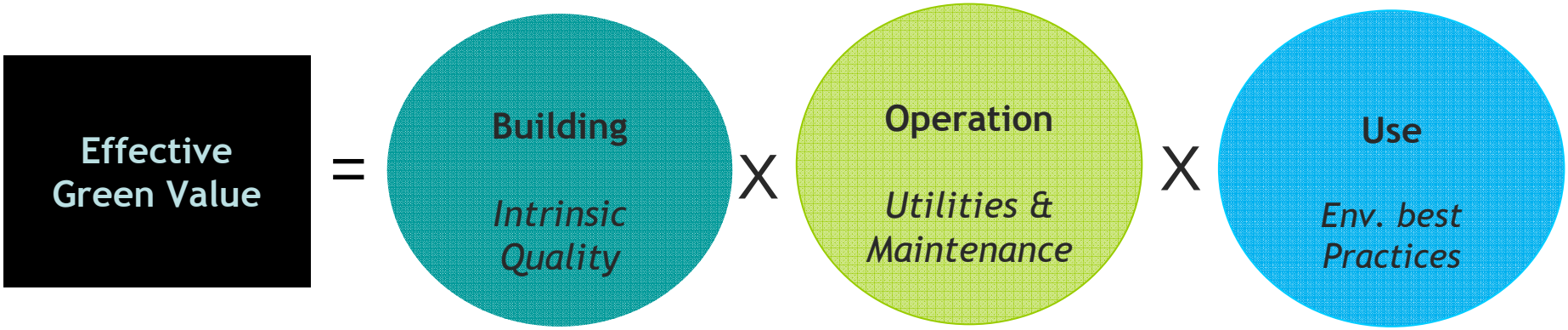
- More cash flow (-)
- Improved marketability (-)
- Shorter vacancy periods (-)

- Competitiveness (+)
- Rising energy costs (+)
- Sustainability hype (+)

- Longer life span (-)
- Longer compliance with increasingly stringent legislation (-)

From Dr. David Lorenz, MRICS

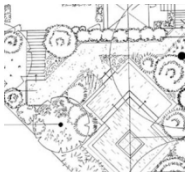
# « Green Value » also depends on operation & use




**Life span and flexibility**

# COOPERATION – Data is valuable

**Manufacture / Production**

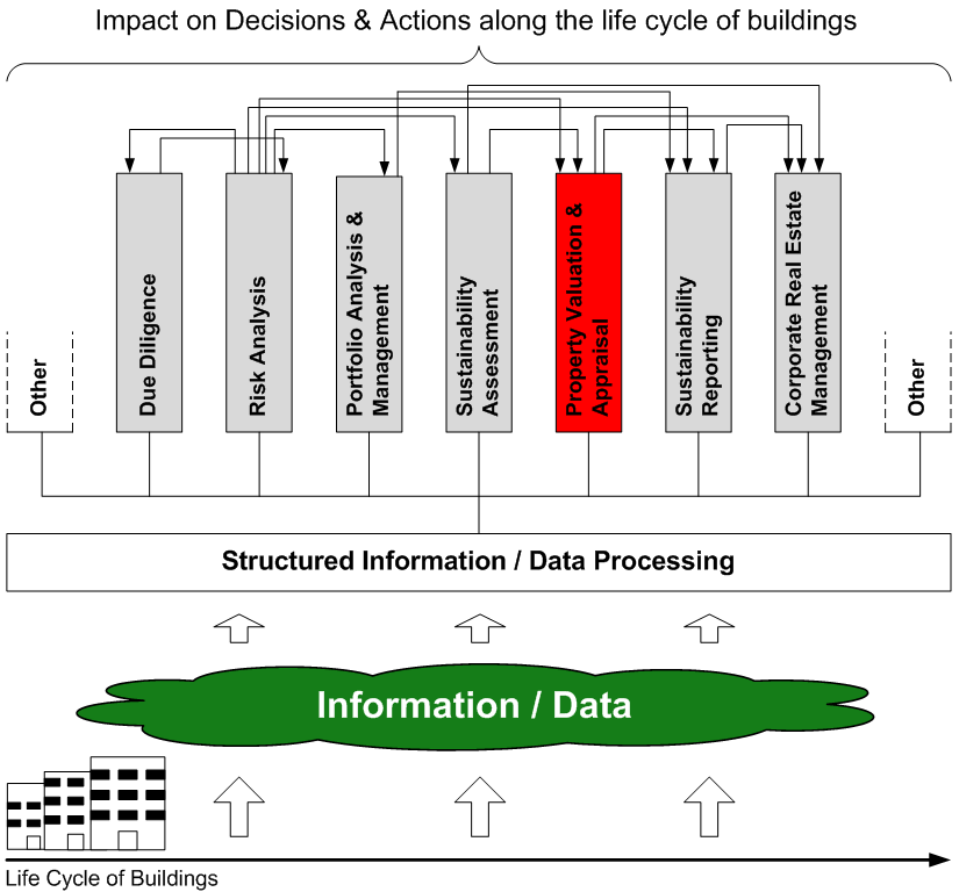


**Planning / Design / Engineering**

**Construction / Commissioning / Modernisation**

**Facility Management**

**Disposal & Recycling**




Source: Lützkendorf and Lorenz, 2011

# Value : market & futureproofness

- Location
  - Connectivity infrastructure
  - Local services and shops (density)
  - Security
  - Attractivity ( image…)

- Quality
  - Indoor environemental quality
  - Energy performance
  - Lifespan
  - flexibility