

Sustainable and Nearly Zero Energy- Building Strategy in Brussels

USA, March 2013

Joke « *Yoka* » DOCKX

Sub-Division « Promotion of sustainable buildings »

Brussels Environment



BRUXELLES ENVIRONNEMENT

IBGE - INSTITUT BRUXELLOIS POUR LA GESTION DE L'ENVIRONNEMENT

Content

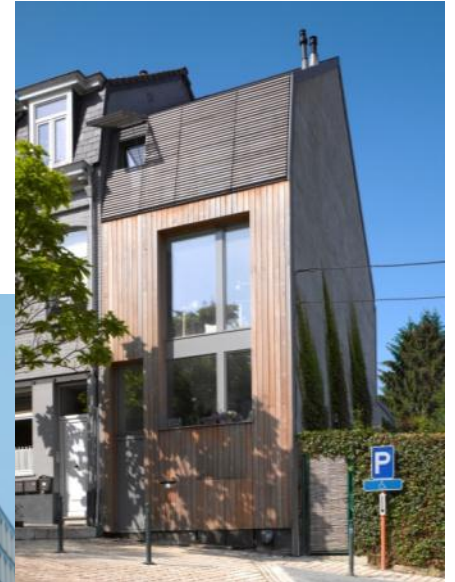
*Situation of the Brussels Region

*Build foundations

A match between demand and supply
Exemplary Buildings
Commitment of Public Authorities

*And next ...

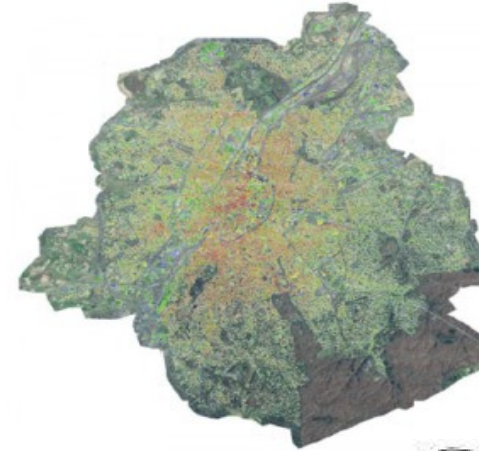
*Conclusion



Situation of the Brussels Region



- 162 km² - 62,5 square miles
- 1,1 millions People (+13% 2001-2010 and expected + 25% by 2060)
- 630.000 workers (+8% 2001-2010)
- 75% of energy consumption by buildings
- Old building stock
- Very low renewable energy potential (3%)
- Large regional competences: environment, energy, mobility, urbanism, housing, ...
- **Ambitious policy: Reduce 30% of Greenhouse gas emissions by 2025**



Policies to which the Brussels Region is subjected

European goals :

- Energy Independence and protection of air quality, health and climate
- Vision for 2020 - 2050

Means : european Directives(Commission, 27 Member States, Parliament)

- Energy efficiency: products, construction, refurbishment, technical installations
- renewables
- CO₂ : emission trading systems & flexibility mechanisms
- Obligation of results

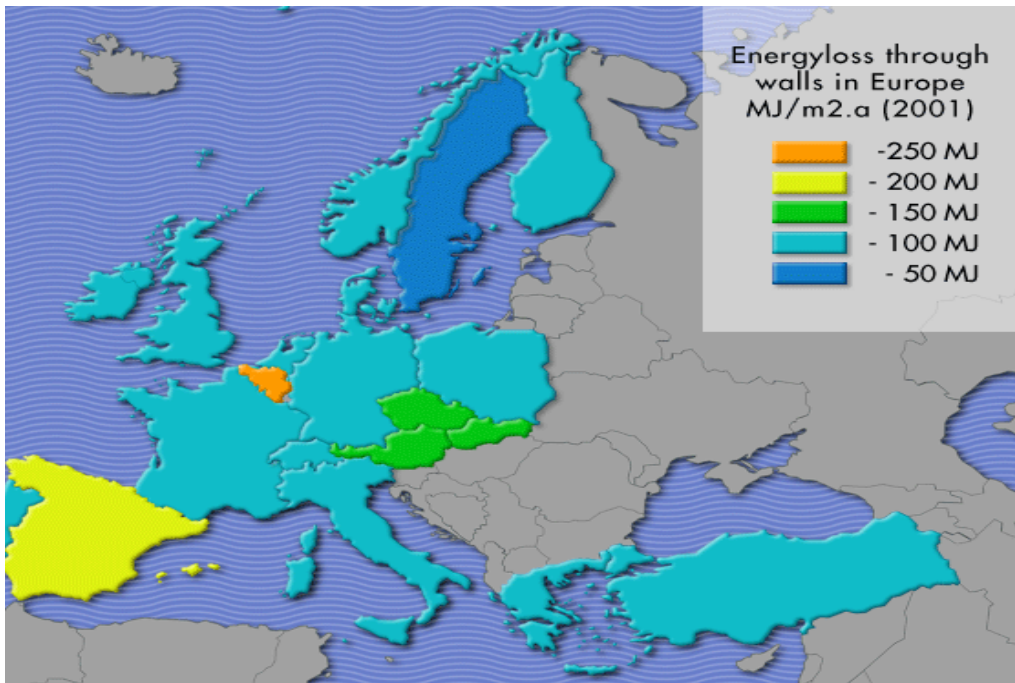
Brussels' objectif : resilience

- Sign up in a long term perspective:
 - undertake realistic actions today that will still be valid in a «sustainable tomorrow »

building, population, transport, economy

russels' situation some years ago

2001 : worst student of Europe

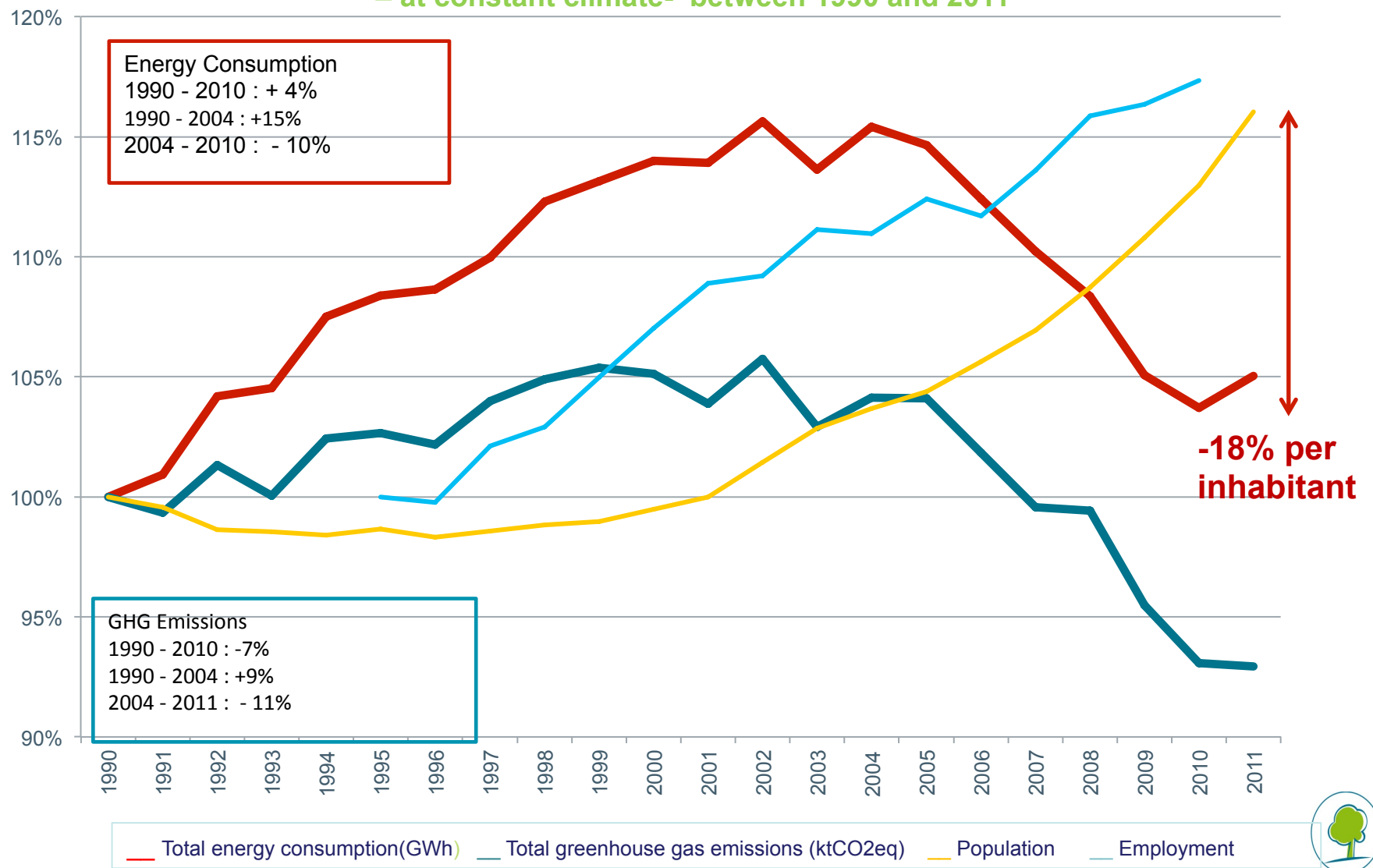


2008 : first Energy Performance of buildings-regulation

2015 : first passive regulation in Europe

Near Zero Energy Building strategy: a succes story started from scratch in 2004

Evolution of energy consumption and greenhouse gas emissions in Brussels – at constant climate- between 1990 and 2011



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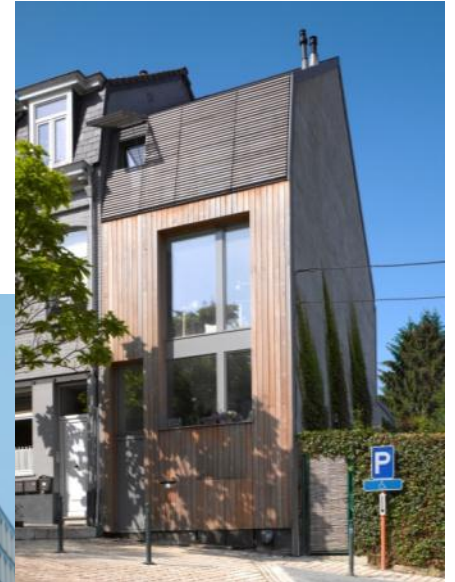
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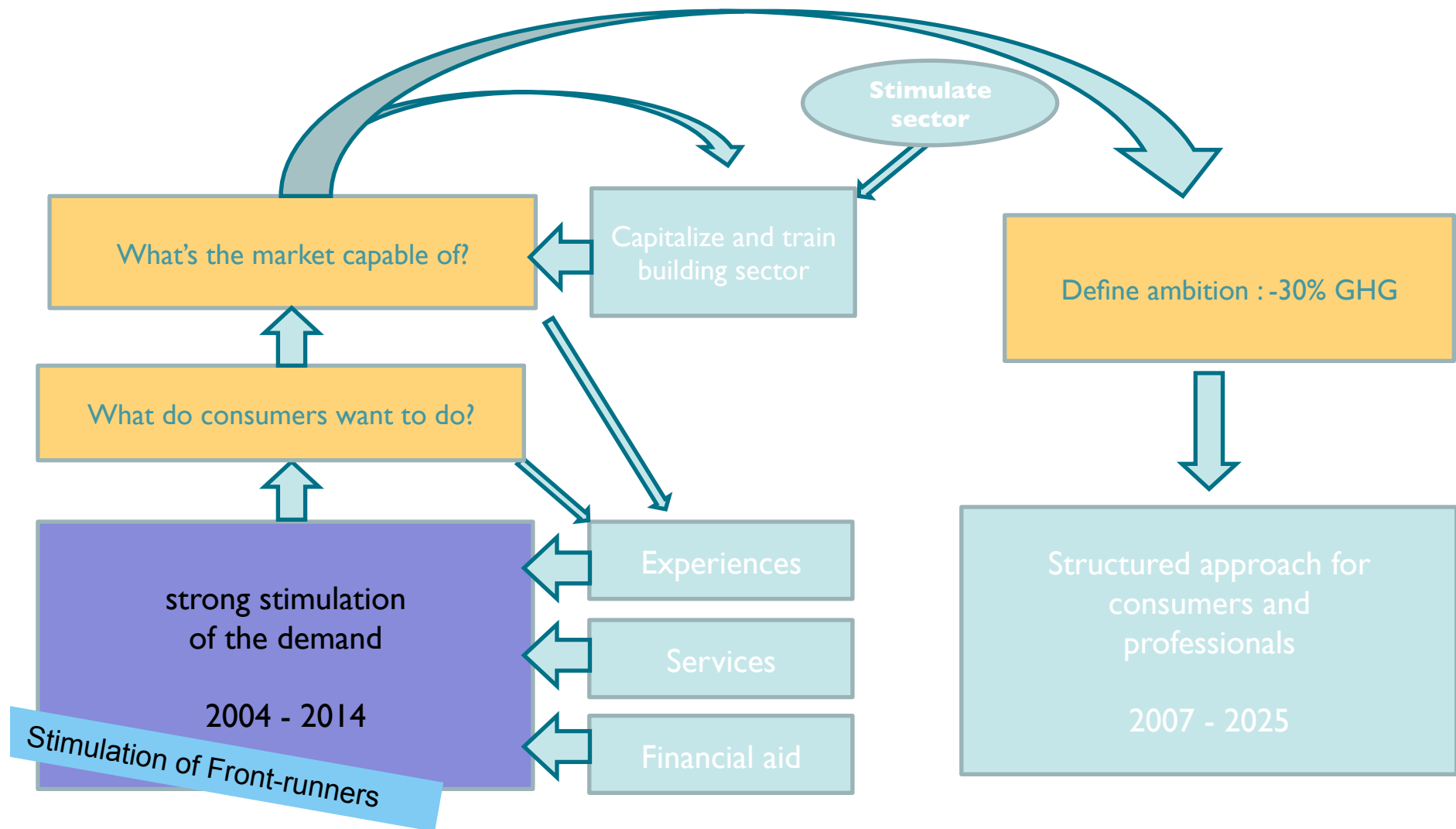
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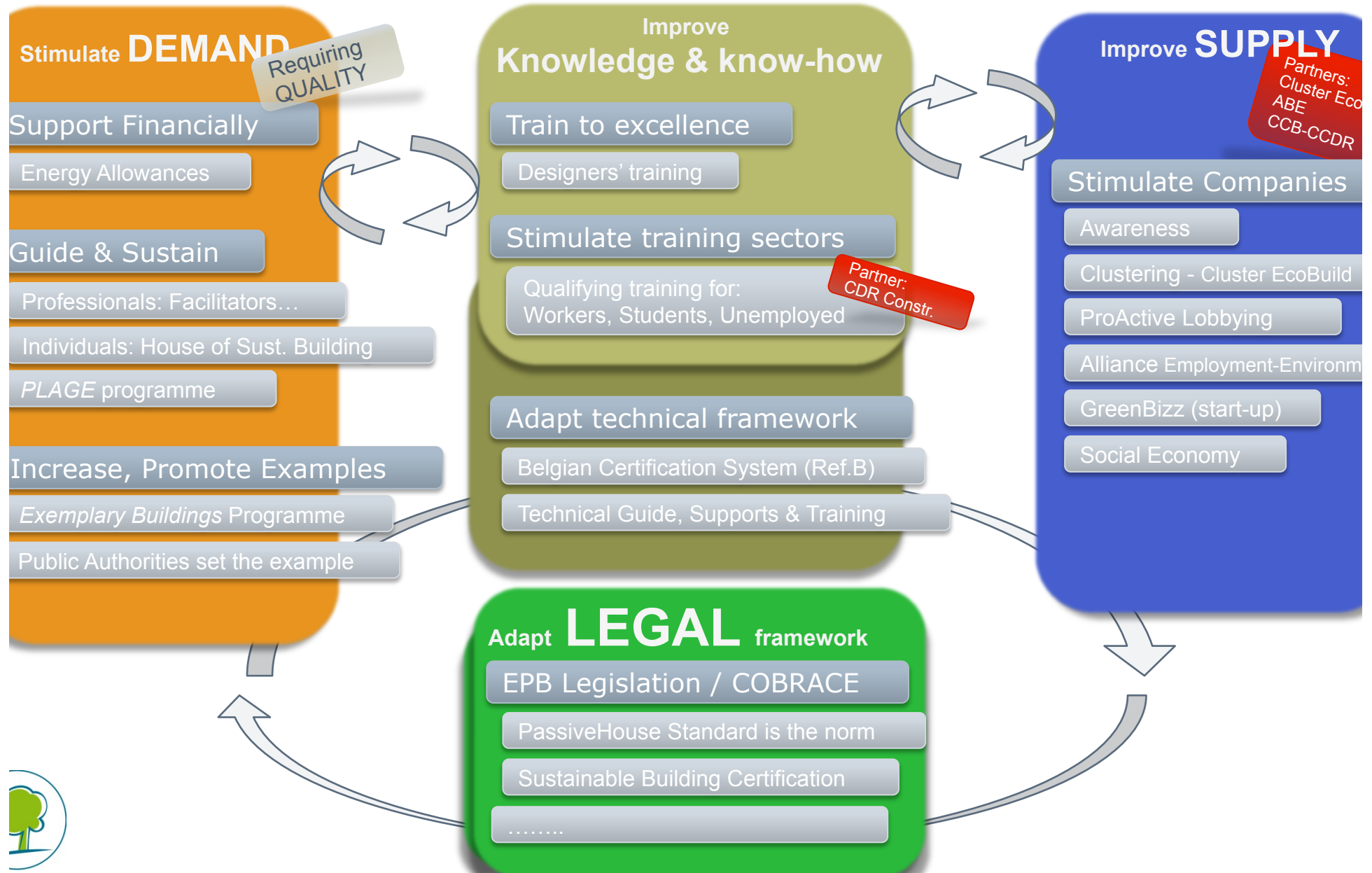


Brussels' Strategie : Progress step by step



Sustainable building and life cycle of buildings :

Brussels Environment's projects → a match between demand & supply



Energy & sustainable buildings

2004

Ambitious energy policy:

- stimulation of demand
- control of good conception
- experiences on life-size scale

2005

2006

2007

Energy is the driver but also approach of sustainability

1st Call for projects "Exemplary Buildings"

From building to neighbourhood

Passif invites itself as a realistic standard in Exemplary Buildings

2008

2009

Government declaration

Announcing passive standard for 2015

2010

Commitment of public authorities : obligation Passif 2010

Alliance Employment – Environment – Sustainable Construction

2011

From exemplarity to common use

Decree of 5 May 2011

2012

Negotiation and agreement with the sector

2013

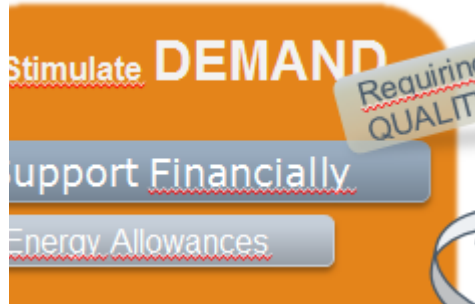
2014

Belgian assessment method for sustainable buildings : voluntary approach

2015

1st January– every new building passive, heavy refurbishment low energy

Financial support



• Energy grants

Insulation: roof, windows, walls, floor & ventilation
Heating: boiler replacement & regulation
Renewable energy: Solar T & PV, biomass, Wind,
HeatPumps & geothermal
Audits and feasibility studies

Budget 2013: 19 million € – 24,7 Mio \$

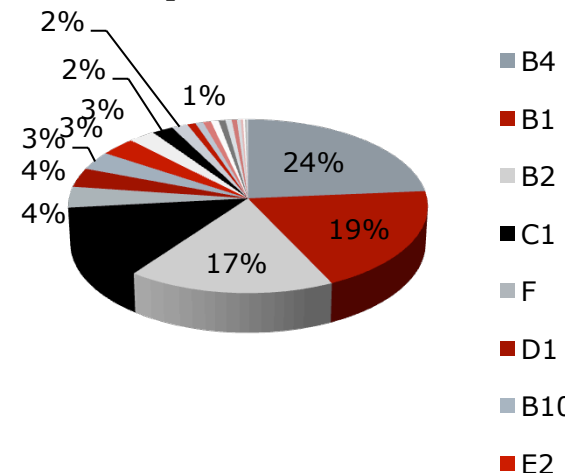
Budget 2012: 18,500 grants - 17,5 mio € – 22, 75 Mio \$

98% requests from households

Top 5 (in €) – 77% of budget:

Super-Insulating glazing
Roof Insulation
Wall Insulation
Heating boiler replacement
Solar thermal boiler

Top 5 - amount



Financial support

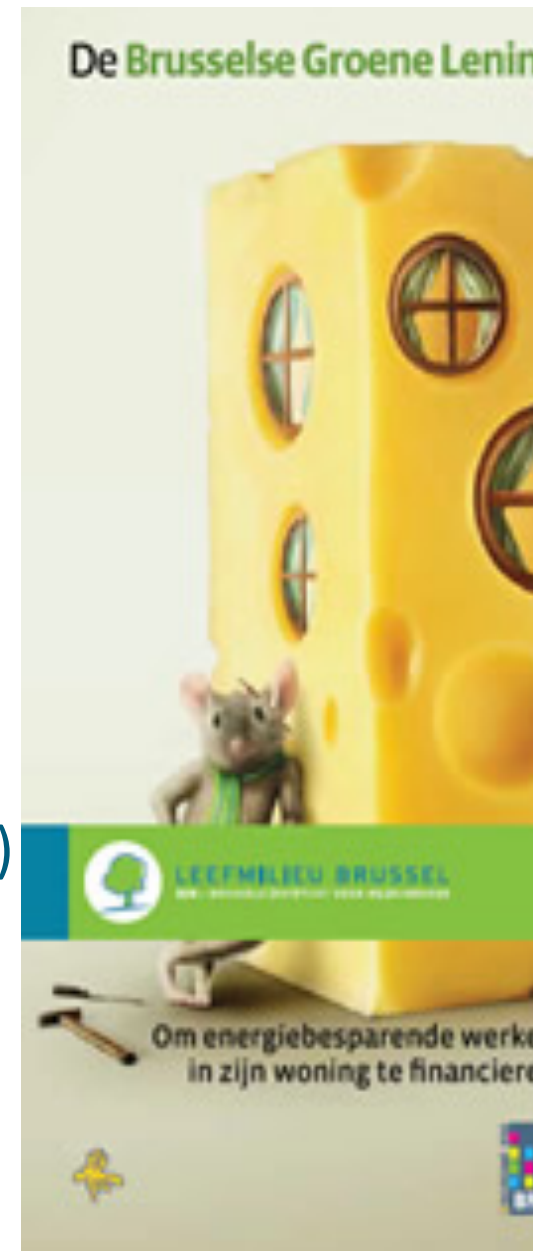
- Exemplary Buildings subsidies
- Brussels Green Loan

We're working on:

Cost/benefit sharing between owners and tenants

→ Look at total occupation cost (rent + energy bill)

Third party financing– ESCOs



Guide & Sustain

Professionals: Facilitators...

Individuals: House of Sust. Building

PLAGE programme



Energy houses
for citizens

OPENING



SOON...



**VOUS VOULEZ RÉDUIRE VOTRE
FACTURE ÉNERGÉTIQUE ?**

Information counter

**PHASE TEST
OPENING SOON**



**Visit at home
(quick scan)**



**Free small measures
(radiator reflector, pipe
insulation, ...)**



**Advisor for refurbishment
and financial aspects**

**Differentiated
Target groups
(tenant, owner, co-owner)**



Local Action Plan for Energy Management

**Energy Management of large building stocks
reduce consumption and infuse the energy
reflex**

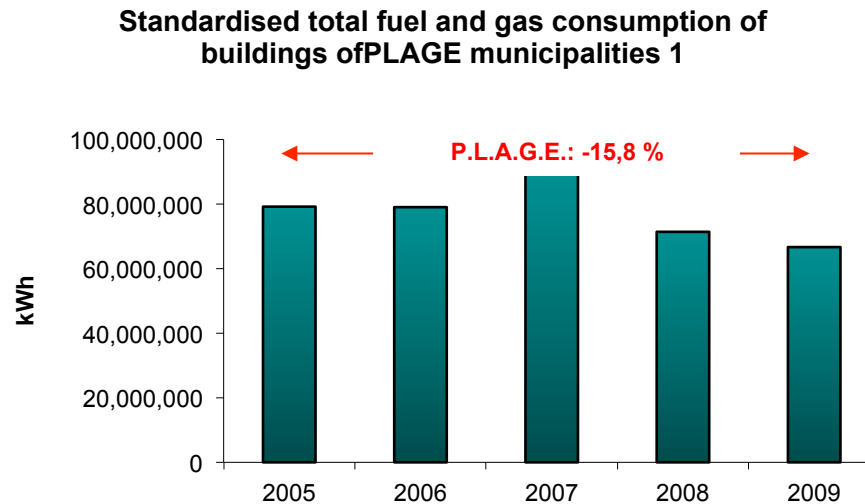
**Up to 25% energy savings without important
investments**

Budget :

6 millions € / 7,8 Mio \$ - support to partners (2006 – 2014)

2 millions € / 2,6 Mio \$ - High level Energy Advisor (2006 – 2014)

80.000 €/year – 104,000\$/year – Annual Energy Manager Training



more than 1.380 buildings (4,5 millions m² - 48 Mio ft²) of which **2 millions m² / 21 Mio ft²** were put in PLAGE Action Plan

annual final energy consumption of 429 GWh fuel and 100,5 GWh electricity.

For the 4 PLAGE action Plan calls ended, the annual global mean results are :

- 14% (-10 to -18%) for fuel consumption and CO₂;
- stabilisation (-4% to +1%) for electricity consumption;
- 4,25 millions € / 5,5 Mio \$ saved;
- 35 Energy Managers engaged.
- Best result of -30% of fuel consumption

P.L.A.G.E. in five steps ...

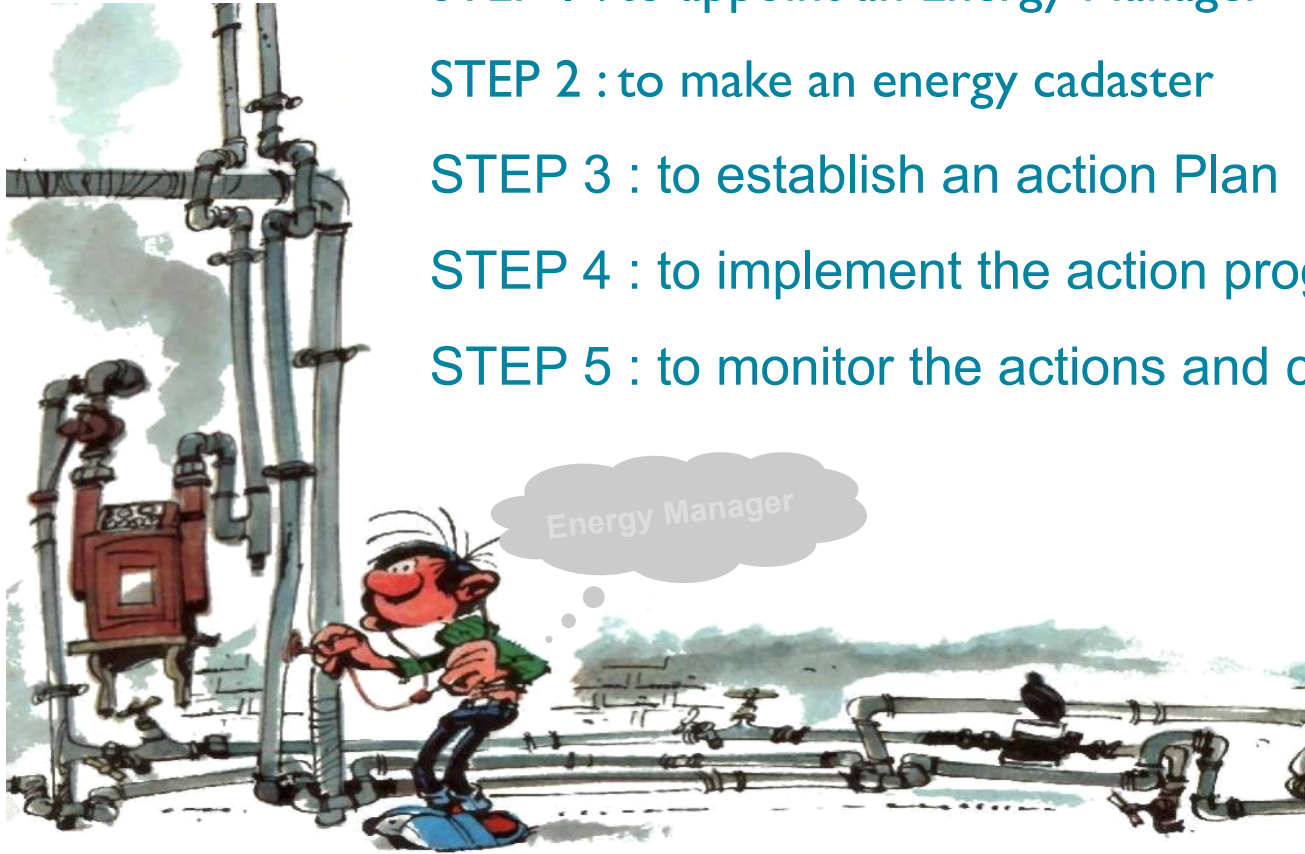
STEP 1 : to appoint an Energy Manager

STEP 2 : to make an energy cadaster

STEP 3 : to establish an action Plan

STEP 4 : to implement the action program

STEP 5 : to monitor the actions and communicate the results





Call for projects: EXEMPLARY BUILDINGS

Stimulate **DEMAND**

Support Financially

Stimulate **DEMAND**

Requiring
QUALITY

Increase, Promote Examples

Exemplary Buildings Programme



Proof of feasibility of ambitious targets with the exemplary buildings

Call for projects to stimulate construction, refurbishment and extension of “sustainable” buildings in Brussels

4 criteria : Energy, Environment, profitability +reproducibility, architecture and urban integration

5 editions : 2007, 2008, 2009, 2011, 2012, **2013 launched**, (2014)

193 buildings– 522.000 m² / 5.6 million ft² - all building types

- > **change in way of conception and construction**
- > 285.000 m²/ 3,1 million ft² Passif (new)

Monitoring on building site by expert

Monitoring of consumptions during 5 years

Promotion of winning projects



Brussels goes Passive in 2015 !



Exemplary buildings – Evaluation criteria

*ENERGY

High performances
= minimum energy demand
Near Zero Energy Buildings

*ECO CONSTRUCTION

Minimum environmental negative impact

*PROFITABILITY & REPRODUCIBILITY

Reasonable solutions

*ARCHITECTURAL QUALITY

Patrimonial respect
Visibility



Exemplary buildings- Regional Grants and support

*FINANCIAL

100€/m² or +- 12\$/ft²

→ 28,5 Mio € / 37Mio \$ over 5 years

Investment budget :

677 Mio € / 880 Mio \$

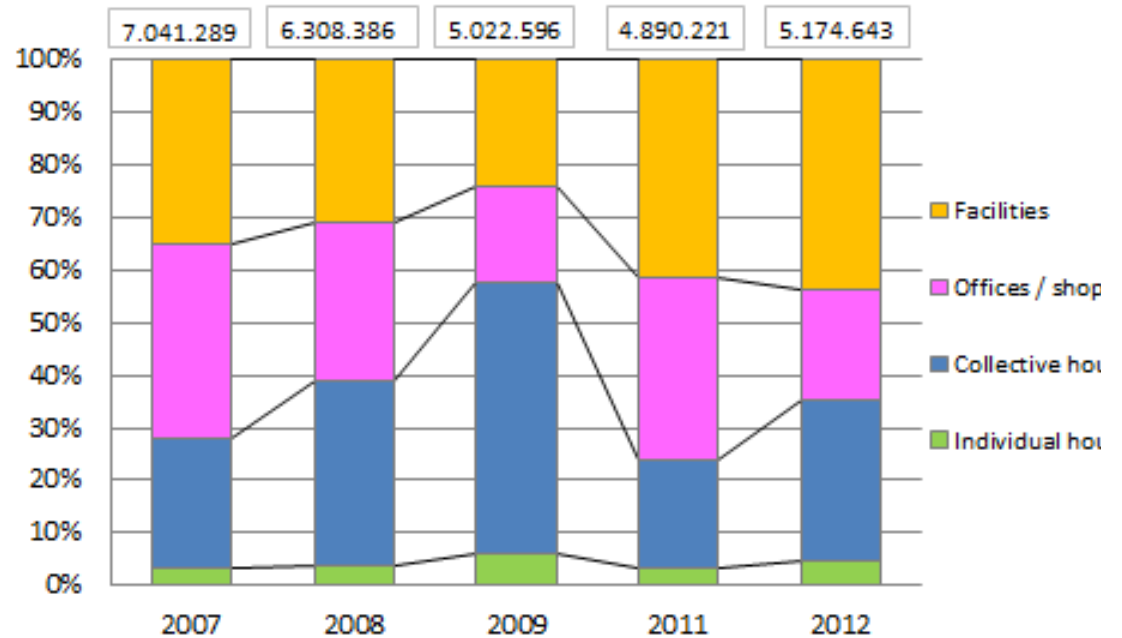
*TECHNICAL SUPPORT

quality control

*PROMOTIONAL

publications, website, ...

Proportion of subsidies (€) granted per year by sector



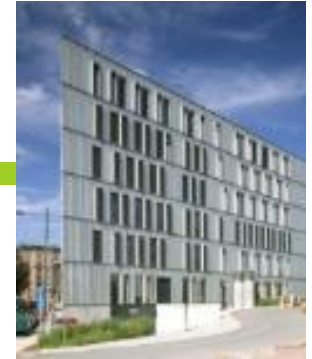
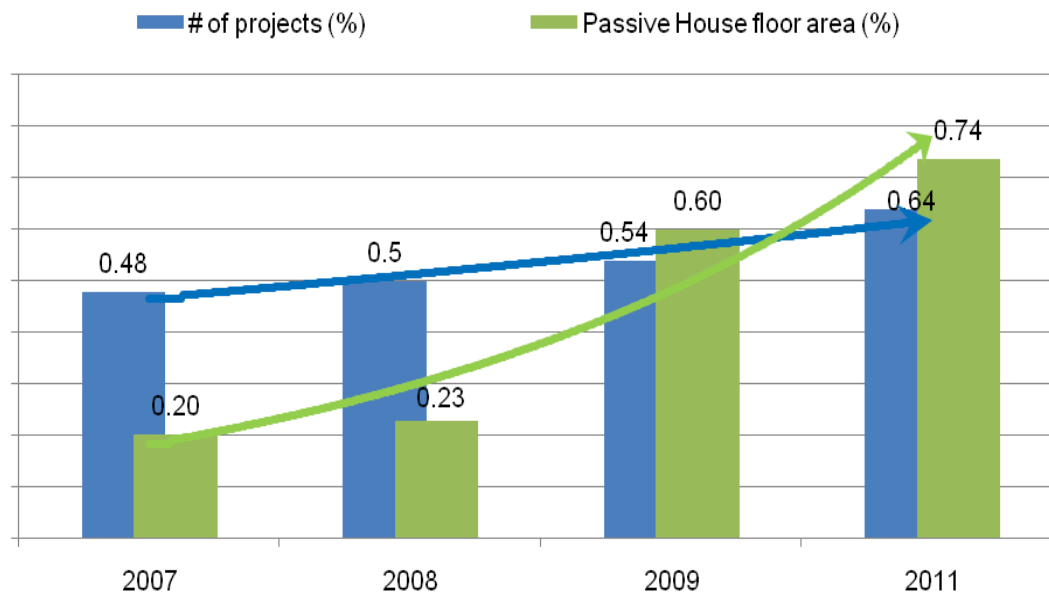
Exemplary buildings – Results

193 projects selected in 5 calls for projects

Floor areas of constructed or refurbished buildings=5.6 million ft²
39% in refurbishment

41% of Exemplary Buildings come from public authorities

53% are Passive House buildings



Current status:

Finished: 62 projects – 1,3 Mio ft²
under construction: 45 – 1,2 Mio ft²
in design process: 73
Cancelled: 13



Exemplary buildings – **Results** - Selected projects



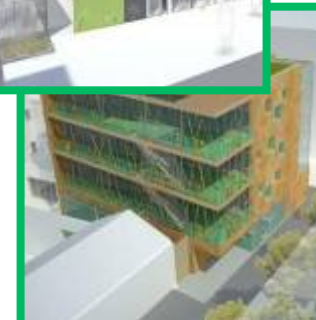
Apartments

Listed building



Pool

Mosque





A2M



A2M



Blondel



AA



B architecten



O2 architects



R2D2



A2M