Sustainable and Nearly Zero Energy-Building Strategy in Brussels

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*Build foundations
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*And next …

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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 Independance and protection of air qualité, 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


2015: first passive regulation in Europe
Near Zero Energy Building strategy: a success story started from scratch in 2004

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

- Energy Consumption
  - 1990 - 2010: +4%
  - 1990 - 2004: +15%
  - 2004 - 2010: -10%

- GHG Emissions
  - 1990 - 2010: -7%
  - 1990 - 2004: +9%
  - 2004 - 2011: -11%

-18% per inhabitant
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Brussels’ Strategie : Progress step by step

What’s the market capable of?

Capitalize and train building sector

Define ambition : -30% GHG

What do consumers want to do?

Experiences

Structured approach for consumers and professionals

2004 - 2014

strong stimulation of the demand

2007 - 2025

Financial aid

Stimulation of Front-runners
Sustainable building and life cycle of buildings:
Brussels Environment’s projects → a match between demand & supply

Stimulate DEMAND
Support Financially
- Energy Allowances
Guide & Sustain
- Professionals: Facilitators…
- Individuals: House of Sust. Building
- PLAGE programme
Increase, Promote Examples
- Exemplary Buildings Programme
- Public Authorities set the example

Improve Knowledge & know-how
Train to excellence
Designers’ training
Stimulate training sectors
Qualifying training for:
- Workers, Students, Unemployed
Adapt technical framework
- Belgian Certification System (Ref.B)
- Technical Guide, Supports & Training

Improve SUPPLY
Stimulate Companies
- Awareness
- Clustering - Cluster EcoBuild
- ProActive Lobbying
- Alliance Employment-Environment
- GreenBizz (start-up)
- Social Economy

Adapt LEGAL framework
- EPB Legislation / COBRACE
- PassiveHouse Standard is the norm
- Sustainable Building Certification

……..
Energy & sustainable buildings

Ambitious energy policy:
- stimulation of demand
- control of good conception
- experiences on life-size scale

Energy is the driver but also approach of sustainability

1st Call for projects “Exemplary Buildings”
From building to neighbourhood

Government declaration

Commitment of public authorities: obligation Passif 2010
Alliance Employment – Environment – Sustainable Construction

From exemplarity to common use

Belgian assessment method for sustainable buildings: voluntary approach

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
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
OPENING SOON…

Energy houses for citizens
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)
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
4.1. Connaissance du terrain

Le « plagiste » doit savoir ce qu'il y a derrière les tableaux de chiffres. Les « visites rapides » sont un moyen efficace de comprendre le terrain : les lieux, les installations techniques et, surtout, les utilisateurs.

Chaque visite fait l'objet d'un rapport court qui est une photo instantanée de la réalité et se termine par un plan d'action.

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

Increase, Promote Examples

Exemplary Buildings Programme

Requiring QUALITY
roof 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


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 & REPRODUCTIBILITY
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, …
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