Impact of the Energy-efficient Buildings PPP

Some success stories of the BEEM-UP Project

12-13 March 2013
Brussels

SEVENTH FRAMEWORK PROGRAMME

BEEM-UP

What is success?

THE PROJECT CONCEPT

THE 3 DEMOS

THE PLAN

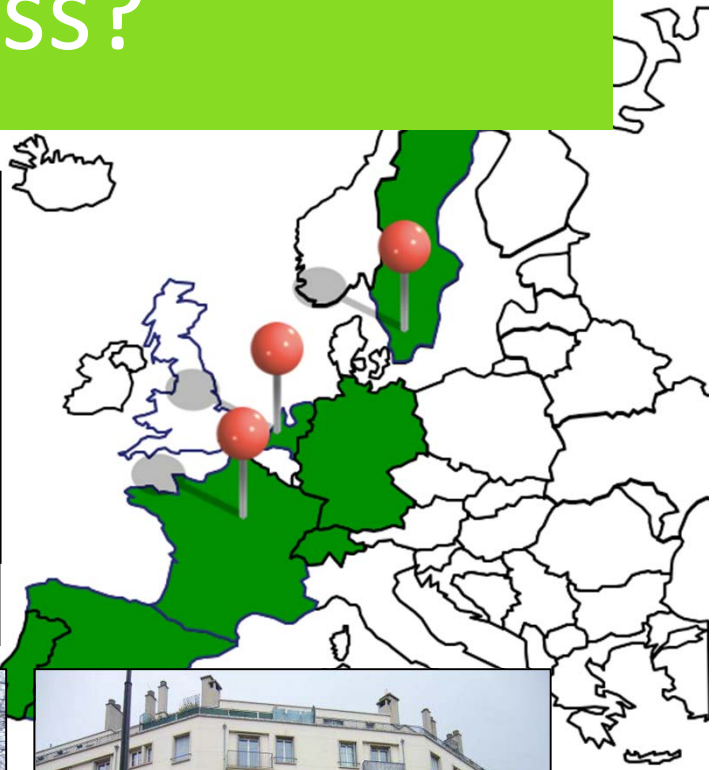
THE TEAM

- Collaborate between stakeholders in holstic design to reach higher performance
- Implement an innovative approach to go beyond a **75% reduction in space heat energy demand**
- Identify new concepts that can be replicated in further retrofit projects
- Develop an exploitation plan based on green value, actively disseminate across Europe,

What is success?

- THE PROJECT CONCEPT
- **THE 3 DEMOS**
- THE PLAN
- THE TEAM

Alingsas, Sweden



Delft, the Netherlands

Paris, France

BEEM-UP

What is success?

THE PROJECT CONCEPT

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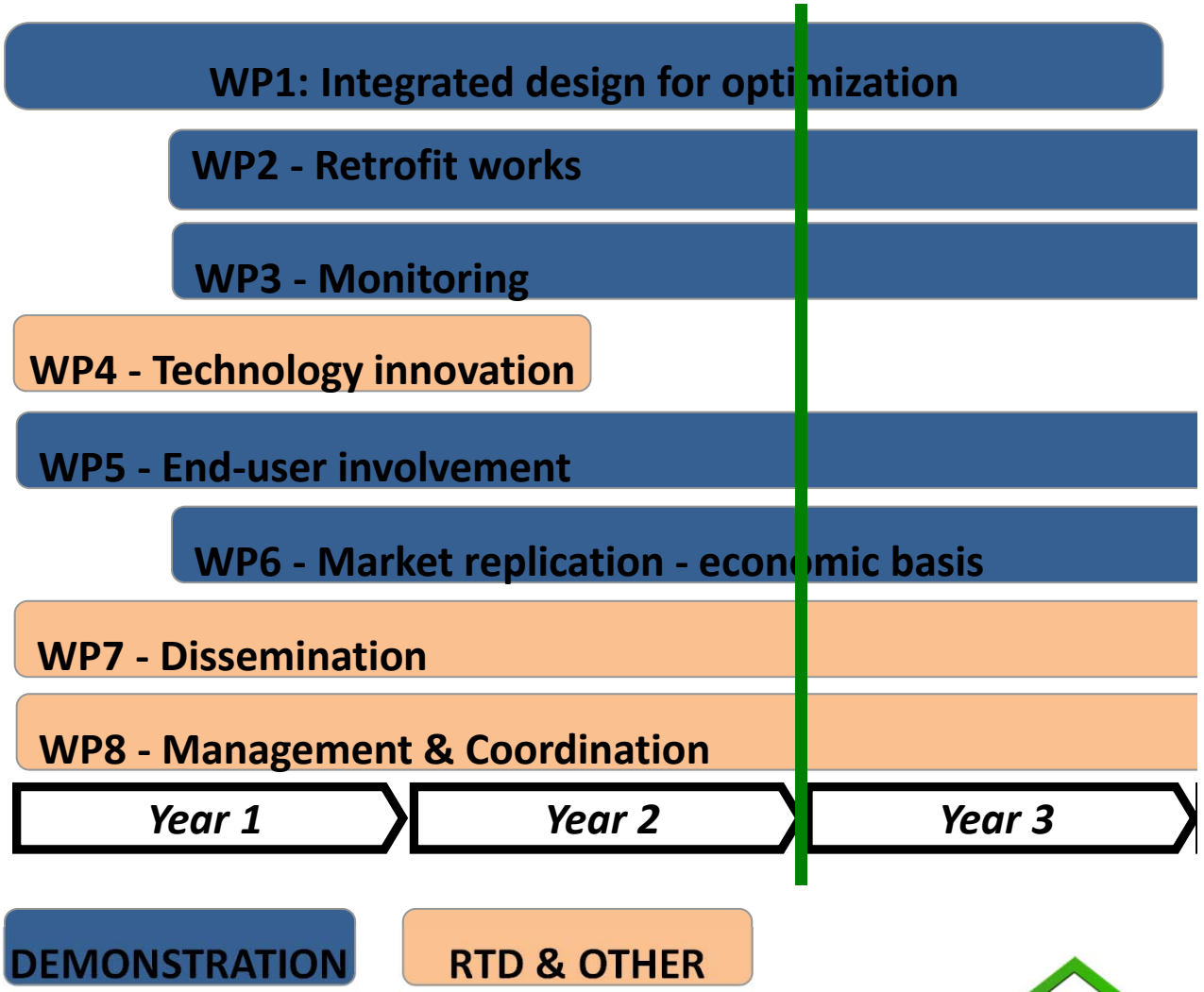


BEEM-UP

What is success?

- THE PROJECT CONCEPT
- THE 3 DEMOS
- THE PLAN
- **THE TEAM**

BEEM-UP

Let´s focus on the Demo sites

Cotentin Falguière
Paris, France

- Built in the 1950s
- 87 apartments
- Owner: ICF Novedis

Brogården
Alingsås, Sweden

- Built in the 1970s
- 300 apartments
- Owner: Alingsåshem

Van der Lelijstraat
Delft, Netherlands

- Built in the 1950s
- Total 108 apartments
- Owner: Woonbron

BEEM-UP

Common methodoloy

Focus BEEM-UP

Analysis Phase | **Implementation phase** | **Operation phase**

Building stock

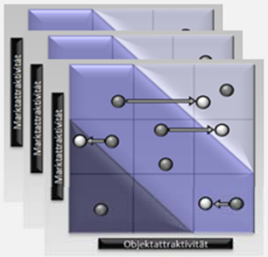
Strategy / **Portfolio-management** → **Project development** → **Planning** → **Implementation** → **Documentation Monitoring**

Involved Stakeholder:

- Housing companies
- Architects / Engineers
- Consultants
- Construction companies
- Product suppliers

Strategy / Portfolio-management

- Market and building stock analysis
  - Energy benchmarking
  - Non monetary goals
- Concepts for renewable energy
- Urban planning concepts



Project development

Based on portfolio management:

Feasibility analysis:
1. Site analysis
2. Demand analysis

- Project finance / Financing

Planning

- Based on action plan:
  - Preliminary + detailed planning
  - Implementation planning
  - Tendering
- Updating assessment

Implementation

- Based on planning / tendering:
  - → Construction work
  - HVAC
  - Envelope
  - Interiors
  - → Coordination
  - → Field inspection

Documentation Monitoring

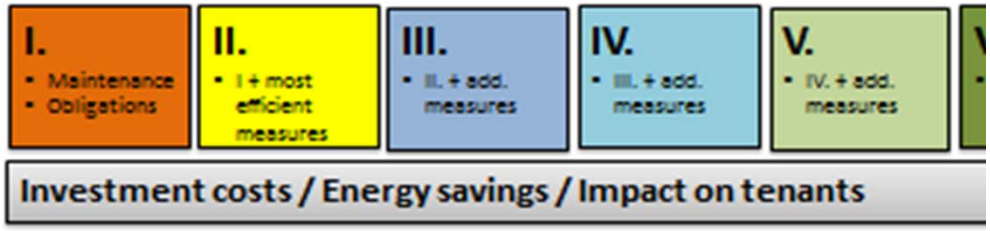
- Based on results:
  - → Certification
  - Energy efficiency
  - Sustainability
- Based on operation
  - Monitoring
  - Maintenance + permanent optimisation
  - → Data for new projects

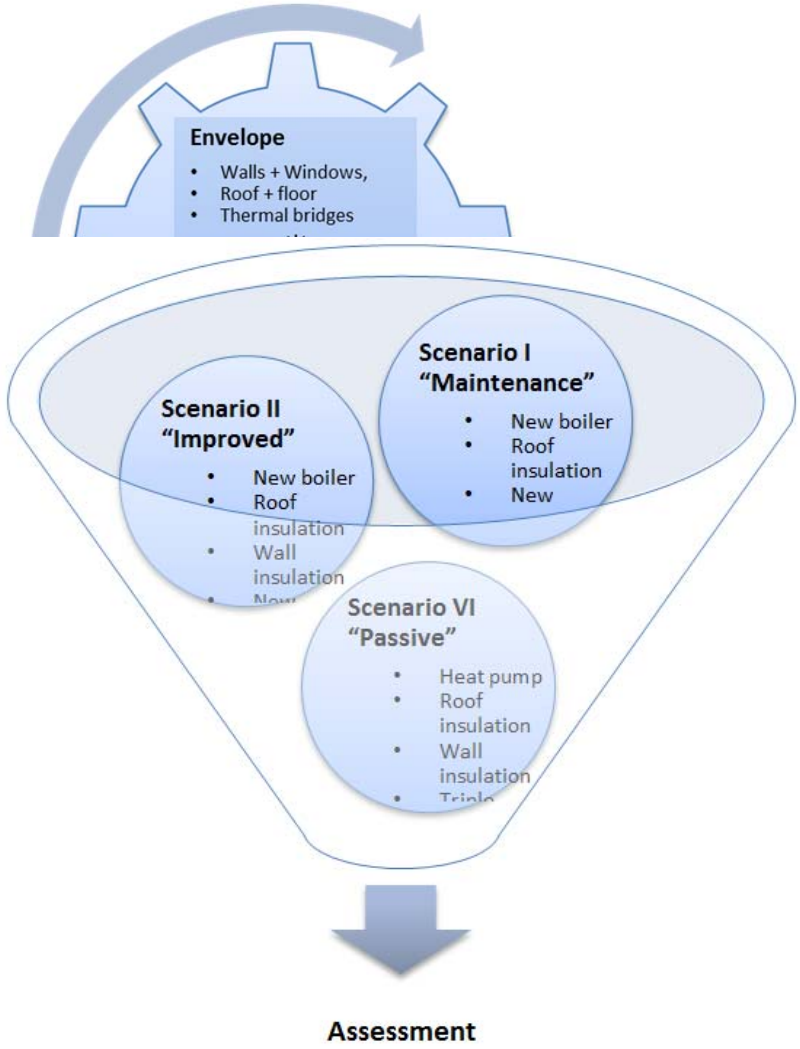
BEEM-UP

Common methodoloy

PROCEDURE:

1. Analysis of Status Quo.
   - Passive and active systems.
2. Input from Building owner.
   - Restrictions, KPIs, objectives…
3. Development of reasonable measures.
   - Energy savings vs invetment costs.
4. Setting up scenarios/combination of measures.





5. Evaluation of the Scenarios
6. Optimization and planning.

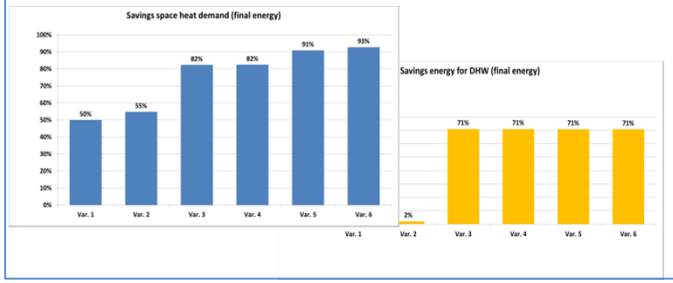
Evaluation of Scenarios

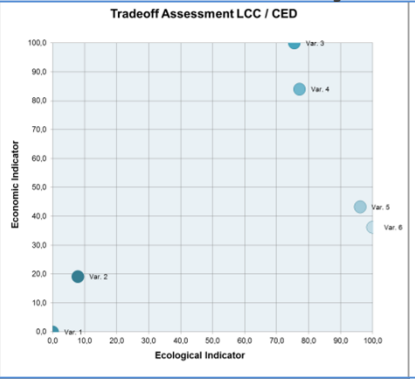
Energy savings

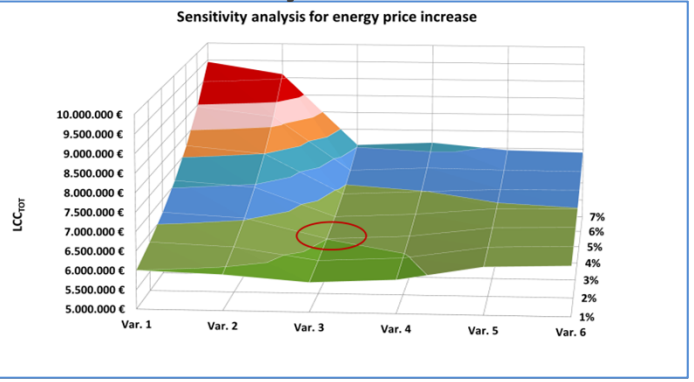
Eco efficiency

Life cycle costs

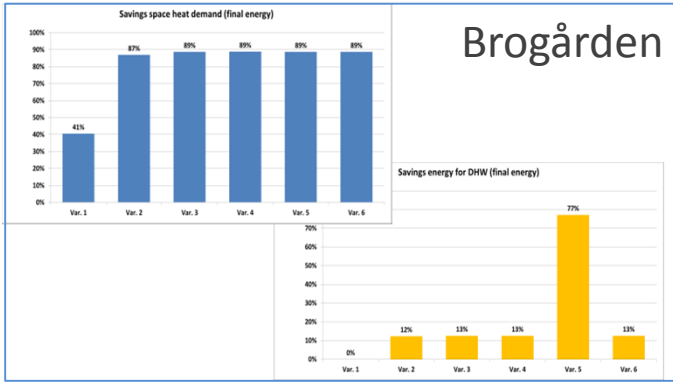
Paris

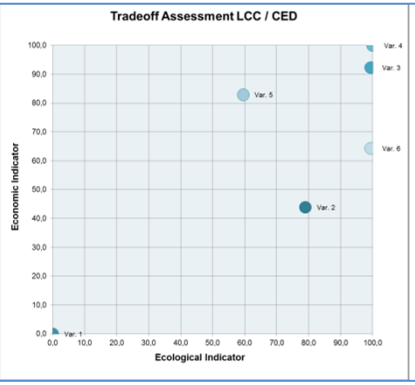


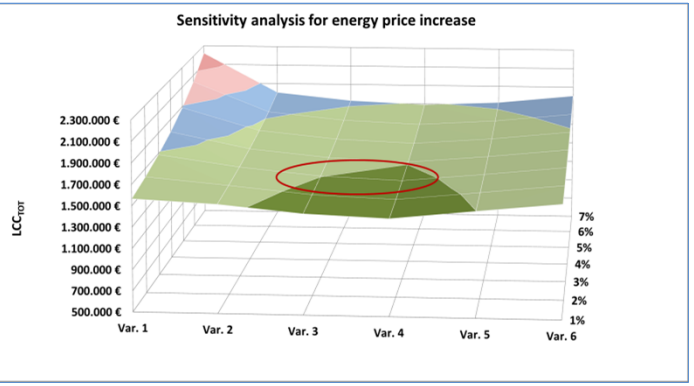




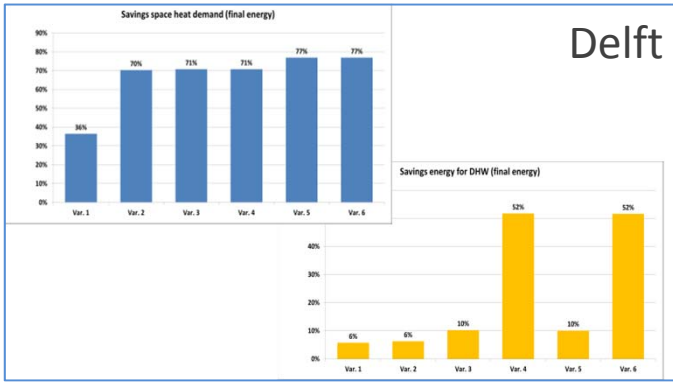
Brogården

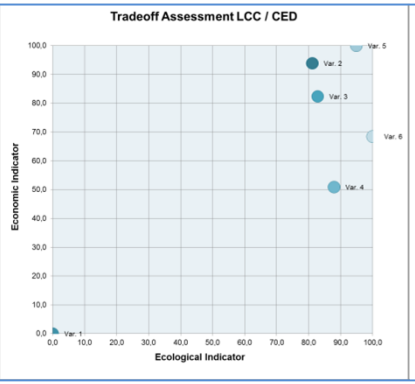


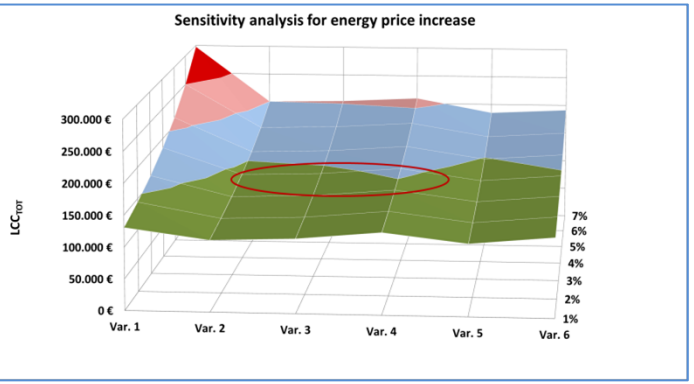




Delft

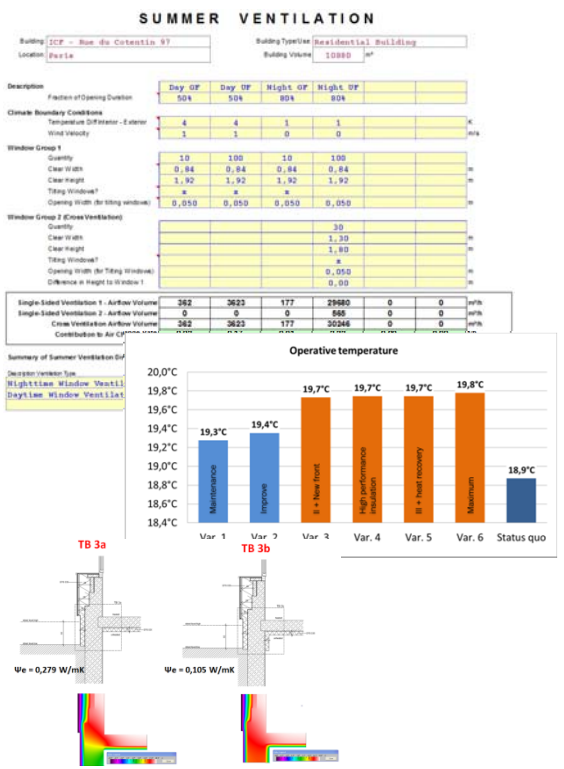






Optimization and planning

Paris



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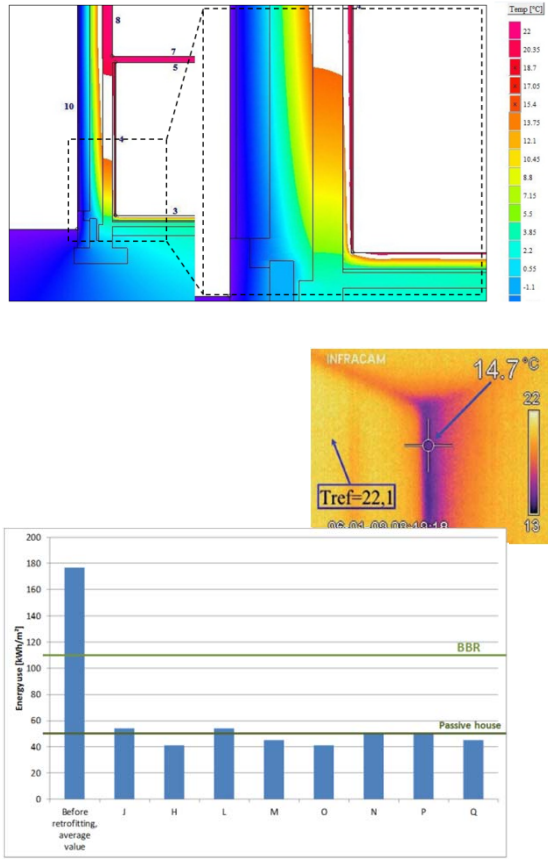

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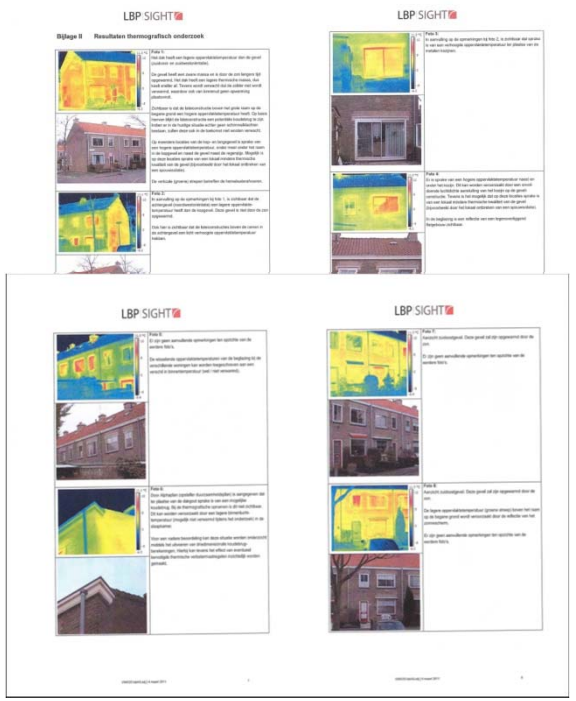


- Analysis of thermal bridges
- Detailed development
- comfort evaluation
- economic study
- Infrared photograph
- airtightness
- Accessibility
- Simulation

Remember...

France

Key figures

- ✓ Number of dwellings: 87 before, 82 after retrofitting
- ✓ Estimated duration of work: 14 months (start 04/13)
- ✓ Total cost of work: about € 4 millions
- ✓ Cost of work per dwelling: € 47 000
- ✓ No rent increase after the works

Las steps...

- ✓ Beginning of the tender : 08/08/2012
- ✓ Contract signed: 05/12/2012: works finished by 06/14
- ✓ Expected savings; 83% energy demand reduction.

Building		**Rue du Cotentin 97**
TFA per building		4.831 m^2
Number of buildings in the project		87 units
Sum TFA building type		4.831 m^2
TFA / total TFA		
SAVINGS SPACE HEAT DEMAND IN PRIMARY ENERGY[1]		
Scenario 1	Maintenance	**53%**
Scenario 2	Maint. & improve	**63%**
Scenario 3	II + New front	**83%**
Scenario 4	High perf. insulation	**83%**
Scenario 5	III + Heat recovery	**91%**
Scenario 6	Maximum	**93%**

Tenants involvement

71 out of 86 tenants were interviewed individually;
- occupation of the dwellings
- assessment of housing
- use of common spaces of the building
- interest in the environment

The main objectives:
- know targets and expectations of tenants on housing and the entire residence.
- involve tenants from the start of the project
- identify tenants likely to participate in BEEM-UP.

In total: 71 homes were consulted about 86

Remember...

Holland

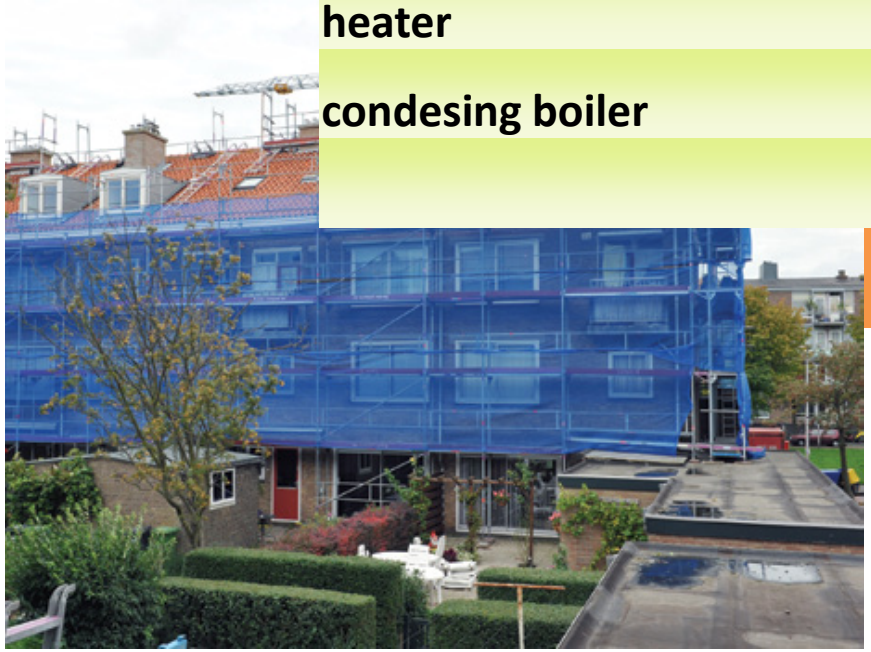
Key facts 1

- Refurbishment of the enveloppe, individual offer floor insulation
  - ✓ 108 dwellings: new roofs, new HR++ glazing, new doors, cleaning and waterproofing of facade
  - ✓ finished 31-12-2011
  - ✓ 13 interested parties (from € 5,- a month)
  - ✓ checks about floorlayers
  - ✓ planned 2013

Key facts 2

- Individual offer installation with solar boiler

	#	€ /month	participants	percentage
sole burner	40	€ 55	12	30%
central burner	20	€ 26	7	35%
improved central heater	34	€ 10	15	44%
condesing boiler	14	€ 5	12	86%
	108		46	43%



Key facts 3

- Free energy display offer
- Main data related to after-works:
  - ✓ 6 apartment types.
  - ✓ Self decission options
  - ✓ Average 76% demand reduction.

Tenants involvement

- Sinterklaas (Dutch Santa Clause) and Christmas party are being organised
- Group has created a name
- Group has build own website

Benefits for Building owner

- Better communications
- Better, friendlier neigbourhood
- Active tenants that take care of the area

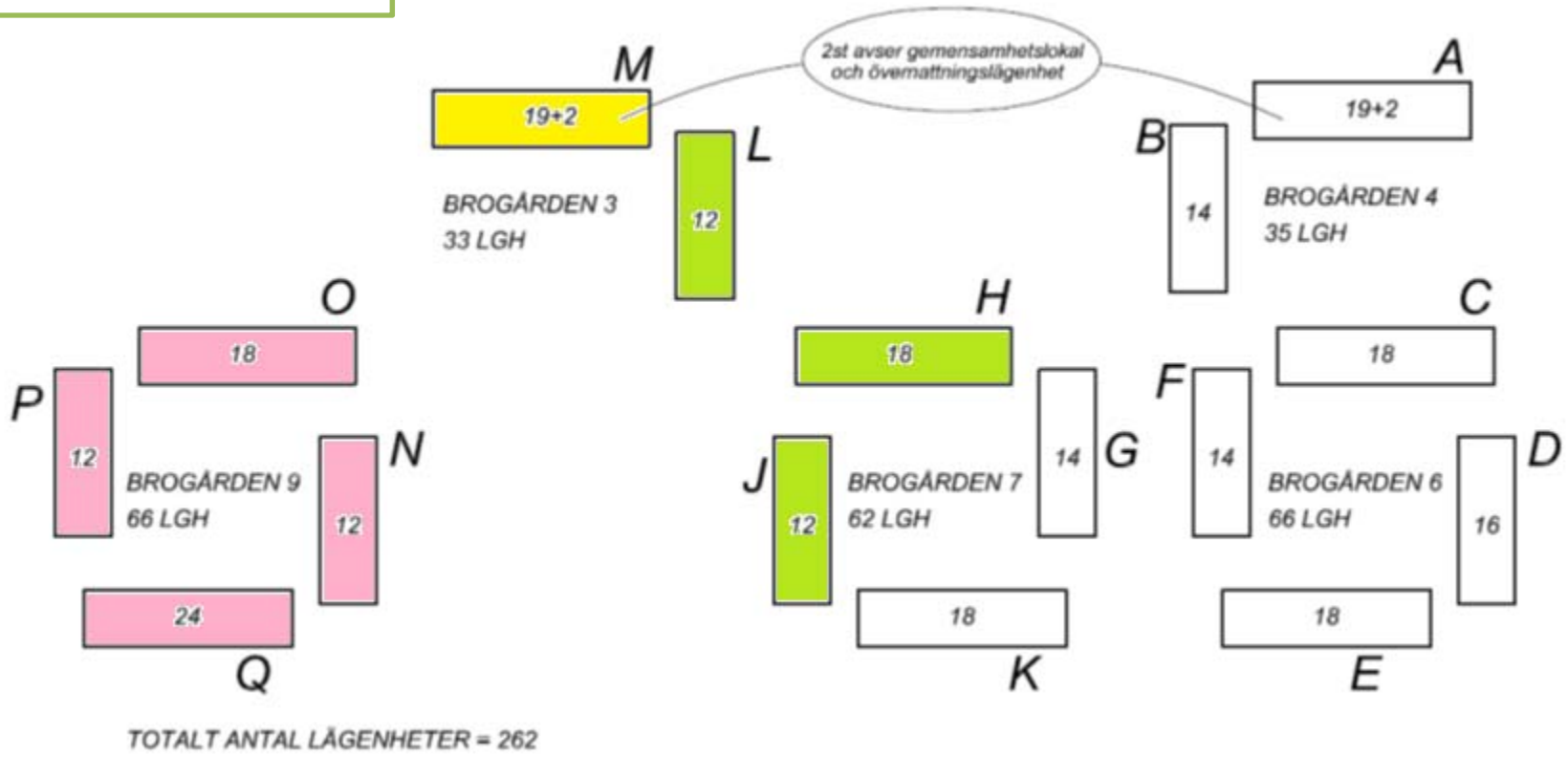
Remember...

Sweden

Project Progress

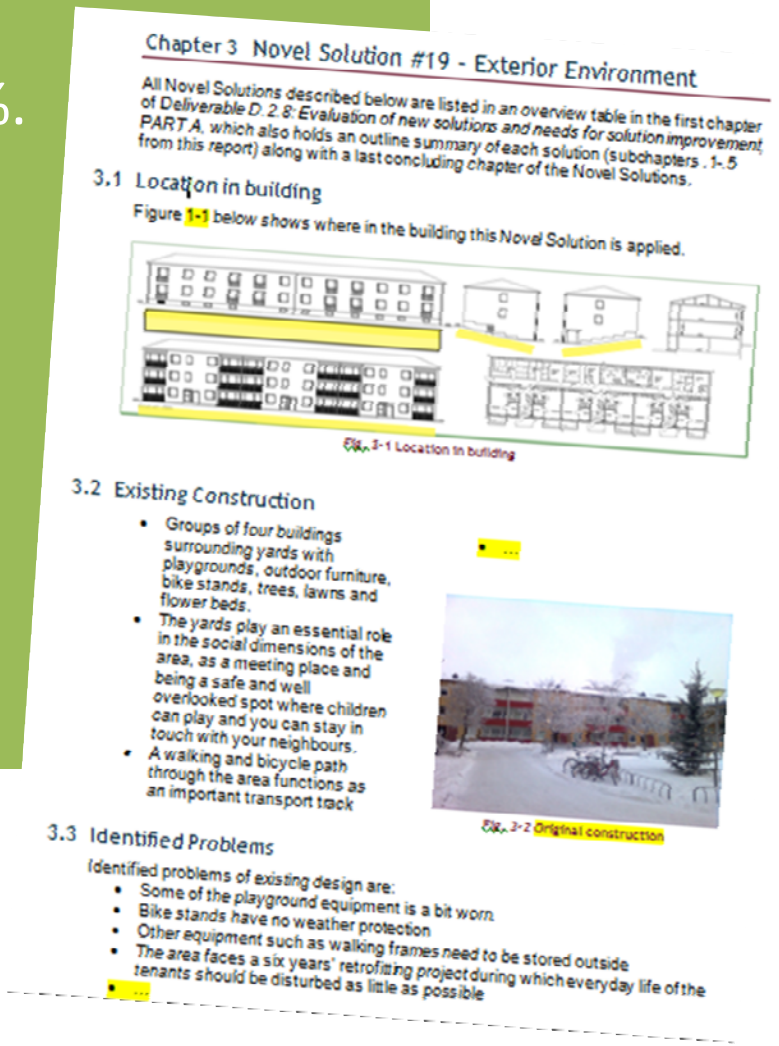
42 flats ready
21 under construction
66 to go
TOTAL 129

Passive House Standards followed
Stage 5 is ongoing. Stage 6 starts Jan 7th 2013.



Documentation of progress

- Saving numbers;
  - ✓ 8 apartment types.
  - ✓ Average demand reduction; 89%.
- Monthly updates on retrofit processes
- Illustrations, reports updated quarterly
- Novel solutions, reports updated quarterly



Chapter 3 Novel Solution #19 - Exterior Environment

All Novel Solutions described below are listed in an overview table in the first chapter of Deliverable D. 2.8: Evaluation of new solutions and needs for solution improvement PART A, which also holds an outline summary of each solution (subchapters .1-.5 from this report) along with a last concluding chapter of the Novel Solutions.

3.1 Location in building

Figure 1-1 below shows where in the building this Novel Solution is applied.

Fig. 3-1 Location in building

3.2 Existing Construction

- Groups of four buildings surrounding yards with playgrounds, outdoor furniture, bike stands, trees, lawns and flower beds.
- The yards play an essential role in the social dimensions of the area, as a meeting place and being a safe and well overlooked spot where children can play and you can stay in touch with your neighbours.
- A walking and bicycle path through the area functions as an important transport track
- ...

Fig. 3-2 Original construction

3.3 Identified Problems

Identified problems of existing design are:

- Some of the playground equipment is a bit worn
- Bike stands have no weather protection
- Other equipment such as walking frames need to be stored outside
- The area faces a six years' retrofitting project during which everyday life of the tenants should be disturbed as little as possible
- ...

Tenants involvement

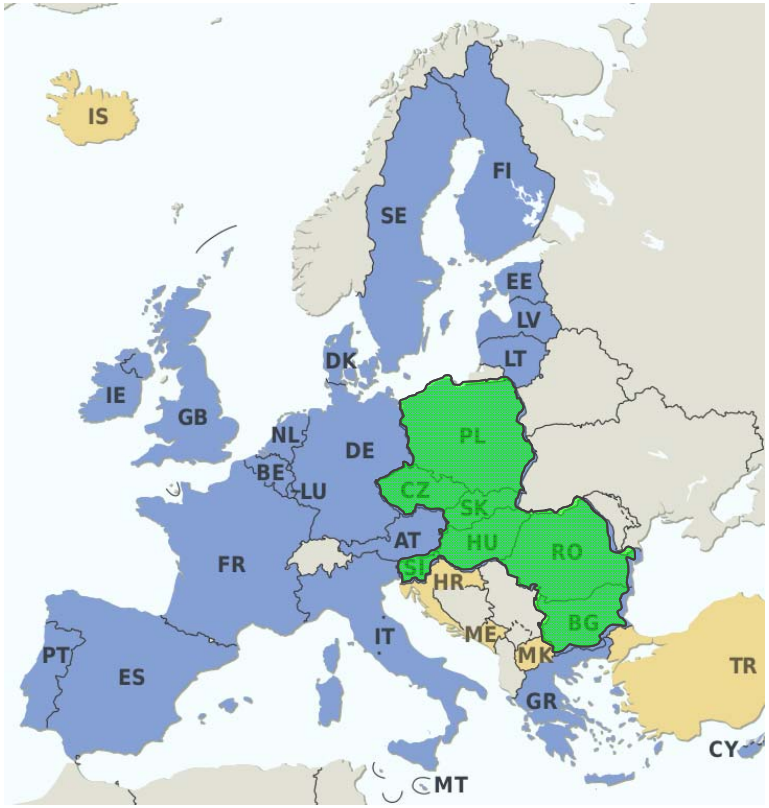
- Open houses in the show apartment (Regular)
- Individual discussions (Regular)
- Newsletter (Regular)
- Website (Regular)
- the Union of Tenants (Regular)
- Complementing activities (Autumn 2011)
- Revised questionnaire (Spring 2012)
- Questionnaire municipality (Spring 2012)

Future (expected) success...

1. Updating website content and design
2. Four cross visits held; still 2 more missing
3. Monitoring already started: data analysis to be deployed: 75% demand reduction expected.
4. Tenants involvement; To find out what level of tenant involvement is practical and affordable in renovation projects.

Future (expected) success…

5. Final shape of the exploitation and dissemination plan.



- EU 27
- EU 27 “Eastern Europe”
- Candidate countries

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Thank you!

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