



ENERGY IN URBAN PLANNING AND IN RESTRUCTURING AREAS

# Energy and Urban Planning – Introduction to the ENPIRE Project

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# Overview

1. Background for our project
2. Short overview of ENPIRE project
3. Introduction of case studies;
4. Process of energy planning;
5. Lessons from case studies;
6. Conclusion



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# 1. Background

# Background for ENPIRE project

- Global warming is a real effect which will affect both rich and poor countries;



# Direct observations of recent climate change



Global average temperature



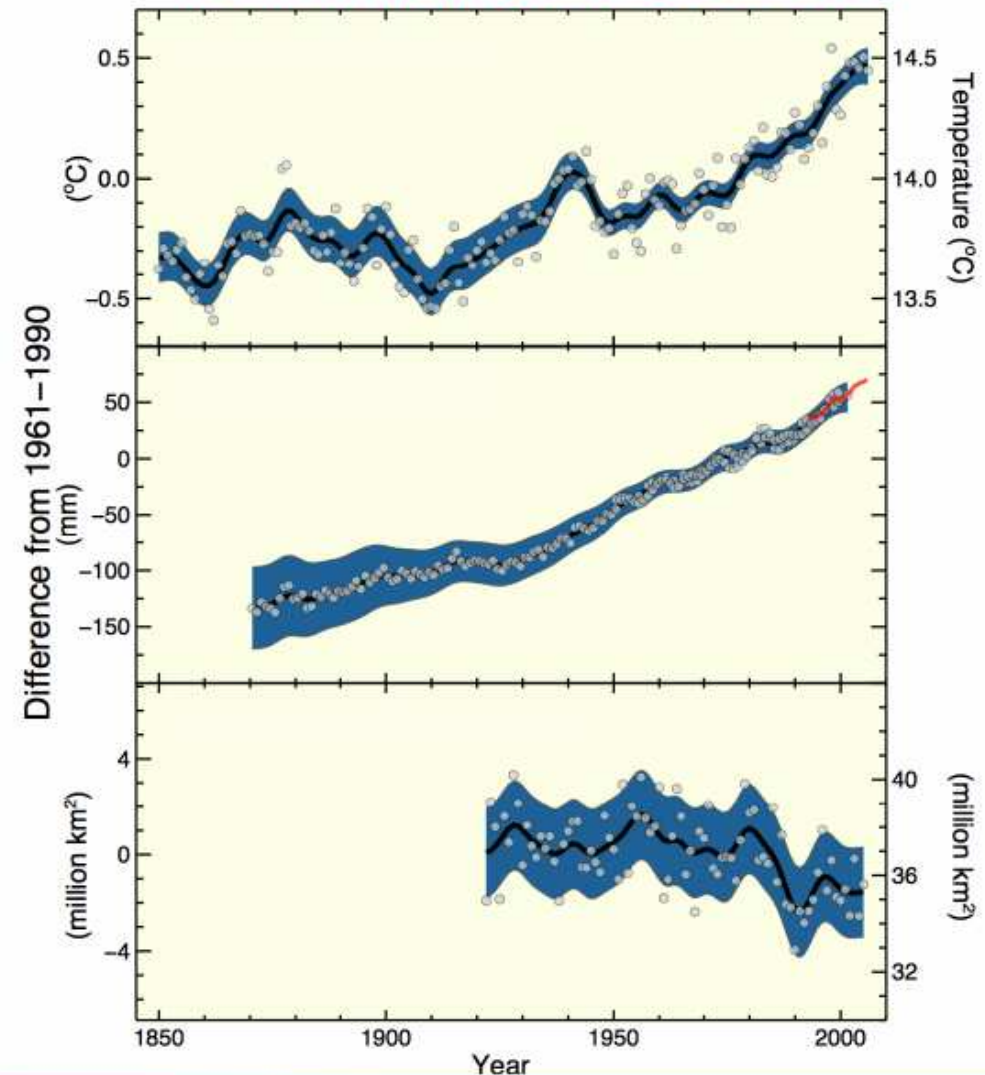
Global average sea level



Northern hemisphere snow cover

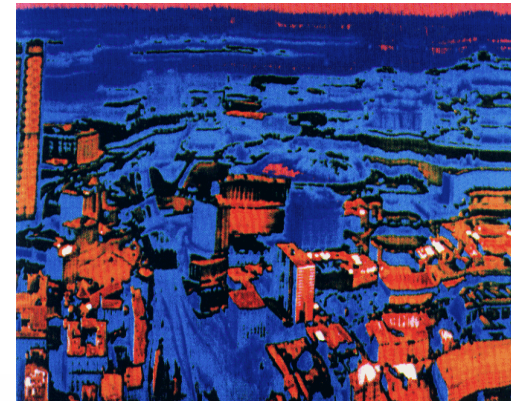


## Changes in temperature, sea level and northern hemisphere snow cover



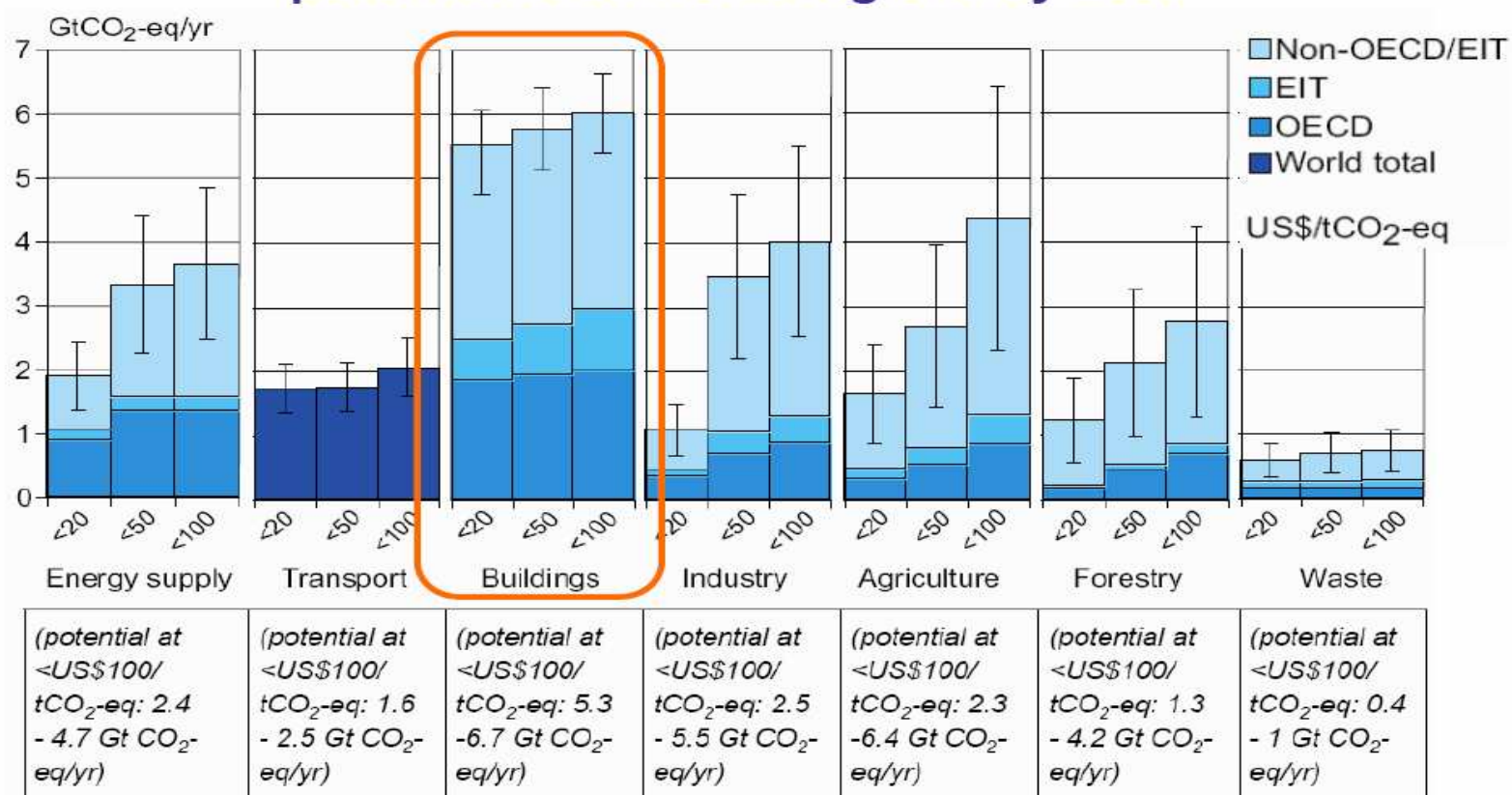
# Background for ENPIRE project

- Global warming is a real effect which will affect both rich and poor countries;
- EU policy targets 2020:
  - at least **20% CO2 reduction** (this target may become mandatory);
  - **20%** contribution from **renewable** energy;
- EU target for 2050: **80 tot 95% CO2 reduction**;
- **40% of the total energy demand is consumed in buildings;**



# Potential in buildings sector

The buildings sector offers the largest low-cost potential in all world regions by 2030

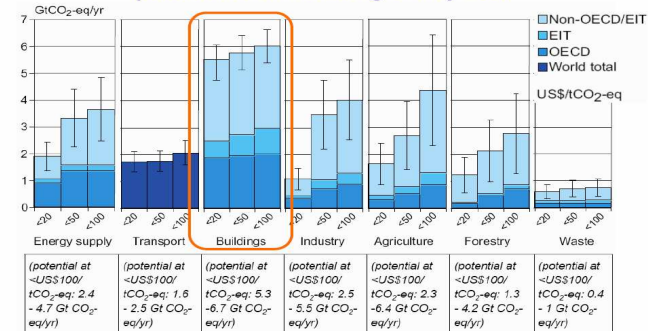


Source: IPCC, 2007

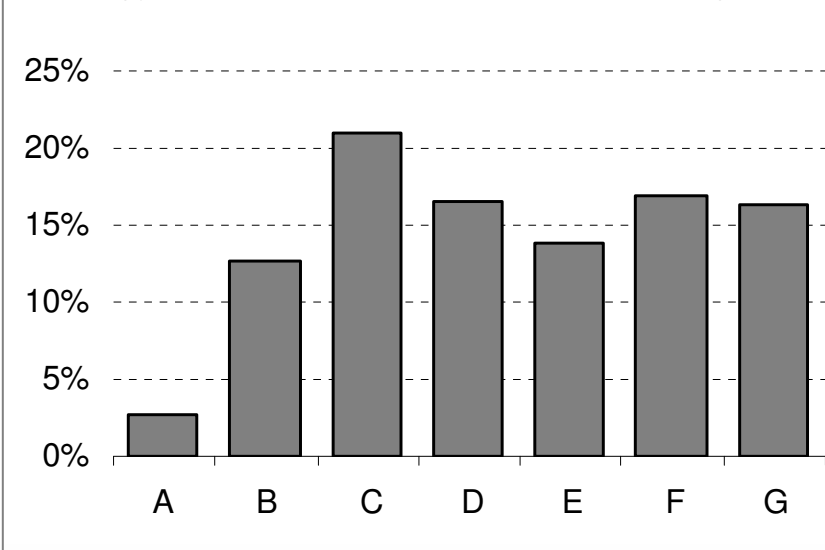
# Energy saving in buildings

- Buildings sector has **highest reduction potential at the lowest cost**;
- Large reduction potential in **restructuring projects** of existing urban areas;

The buildings sector offers the largest low-cost potential in all world regions by 2030

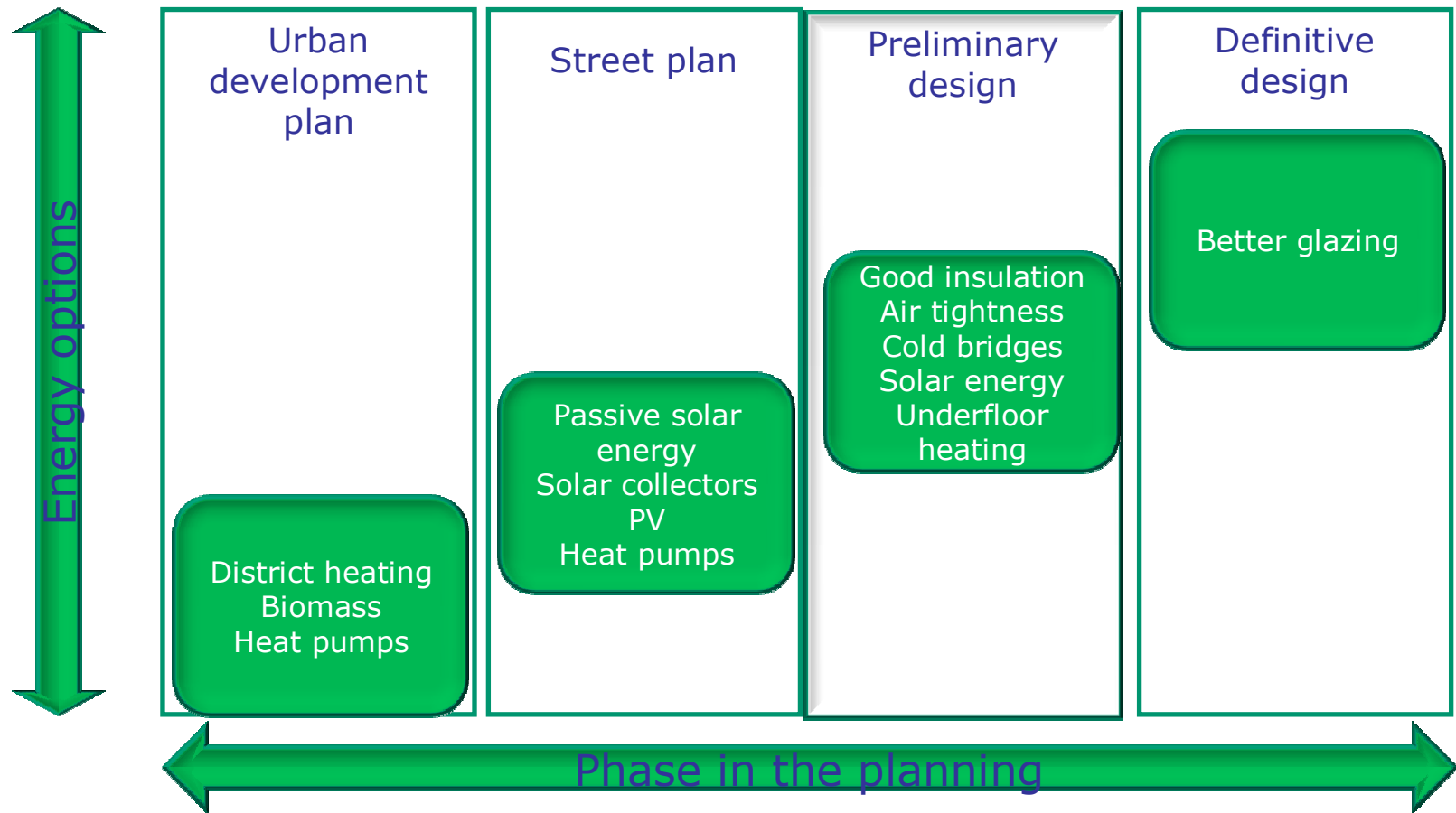


Energy labels of Dutch residential buildings





# Energy and urban planning





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## 2. Overview of ENPIRE project



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# ENPIRE project - Objectives

The objectives of the ENPIRE project are:

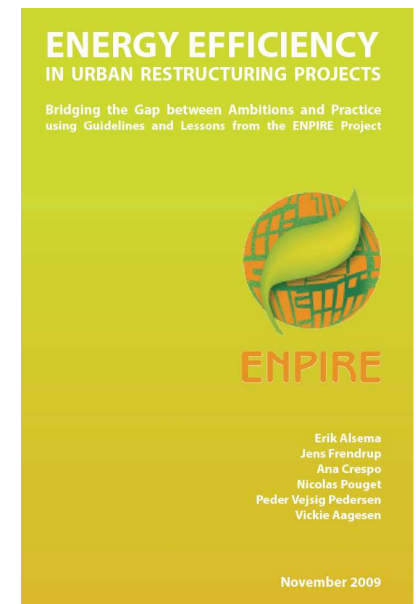
- To gain insights of local energy and urban planning throughout Europe, especially Eastern Europe.
- To set guidelines for ambitions on CO<sub>2</sub> reduction, local agreements and local policy process.
- To learn from each other and identify the best practices from different countries.



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# ENPIRE project - Results

- **Overview** of existing policies, tools and procedures;
- **Case studies** in 6 European cities;
- A set of general **guidelines** for energy planning as part of the urban planning process;
- **Products:**
  - ⇒ Brochure (printed version in folder)
  - ⇒ Energy studies for 6 local projects;
  - ⇒ Evaluation of local projects; methods, problems, lessons learned
  - ⇒ Website [www.enpire.eu](http://www.enpire.eu)



# Local Projects

**Albertslund (DK)**

**Ávila (ES)**

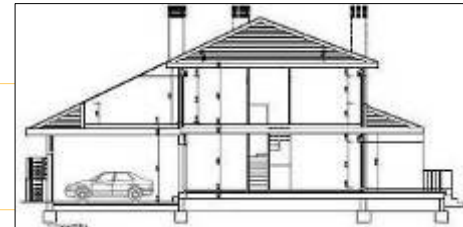
**Breda (NL)**

**Casale (IT)**

**Dublin (IE)**

**Havířov (CZ)**

*Le Grand Chalons (FR)*





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# Local projects: Plans

**Prefab row houses '65/'70 | Renovation**

**Apartments | Demolition/New**

**1950's masonry blocks | Renovation**

**Agricultural buildings | Demolition/New**

**Cement industry | Demolition/New**

**Green fields | New**



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# 3. Process of Energy Planning



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# Process of energy planning

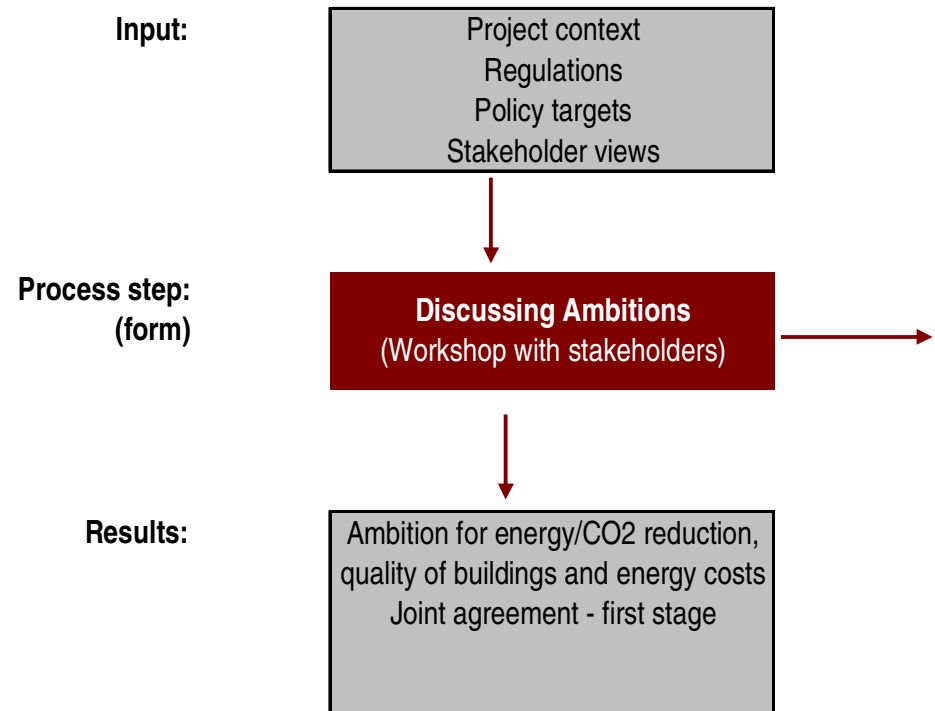


## Energy planning requires:

- **Involvement of stakeholders:**
- **Setting Ambitions and preparing Embedding Agreements**  
(upcoming presentation)
- **Analysing technical options;**
- **Keeping plans intact in the implementation phase**

# Discussing ambitions

- First agreement between stakeholders:
  - **Local authorities / Municipality**
  - Social housing association
  - Project developers
  - Professional associations
  - Tenants / inhabitants
  - Energy supply companies
- Relate to national and local policy targets;
- Improve dwelling quality
- Create added market value



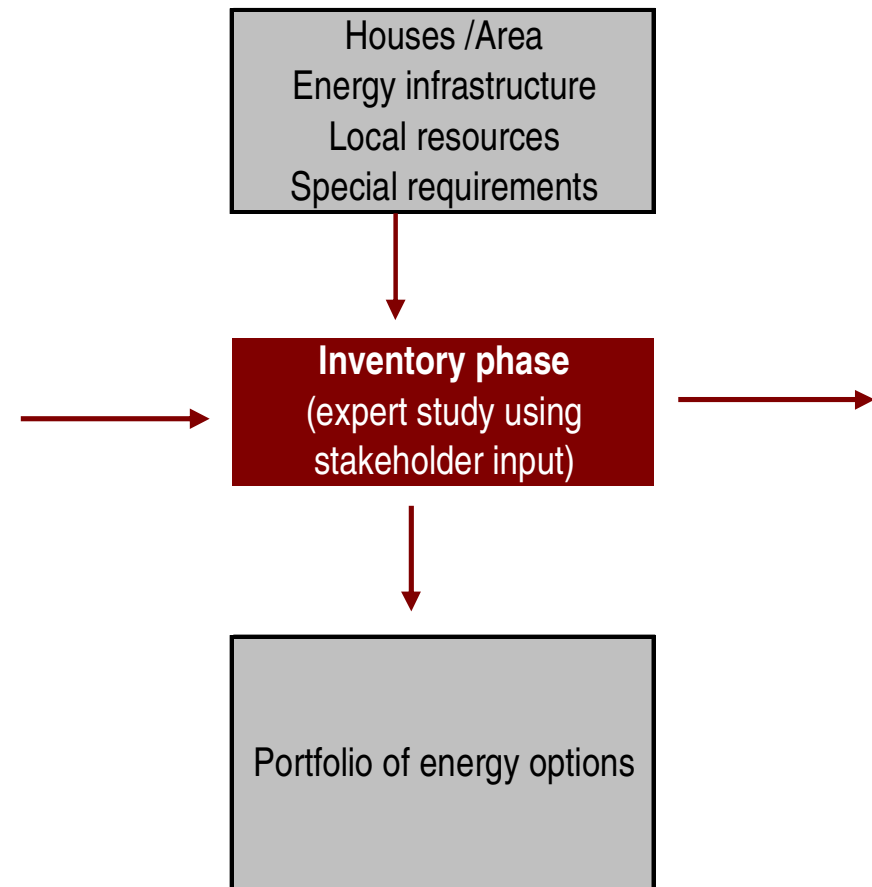
# Inventory phase

Identification of:

- Possible energy saving measures;
- Local renewable energy resources (e.g. biomass, geothermal, wind, waste heat, ground water cooling);
- Possible heat supply options;
- Possible electricity supply options;

⇒ **Portfolio of all energy options**

⇒ First screening of most interesting options



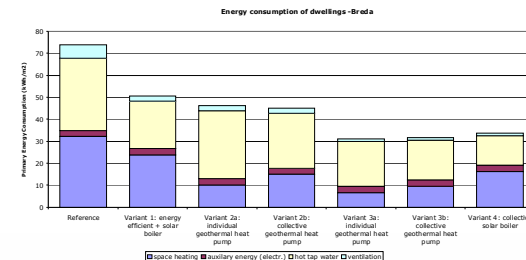
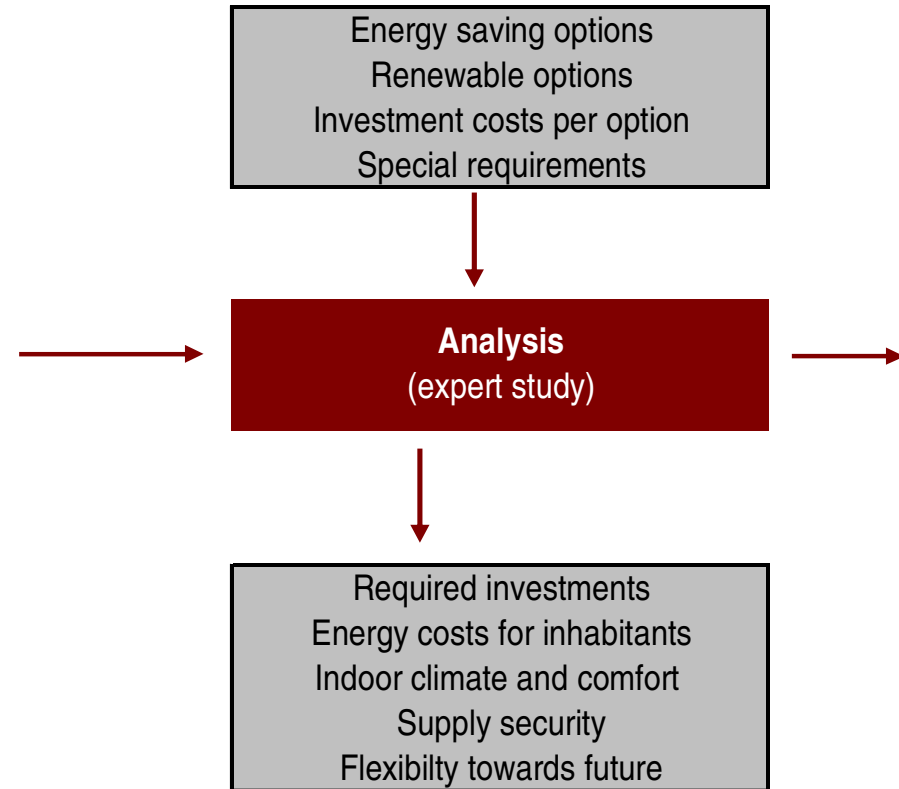
# Analysis

## Priority order:

- Energy savings
- Renewables
- Efficient use of fossil energy

## Approach:

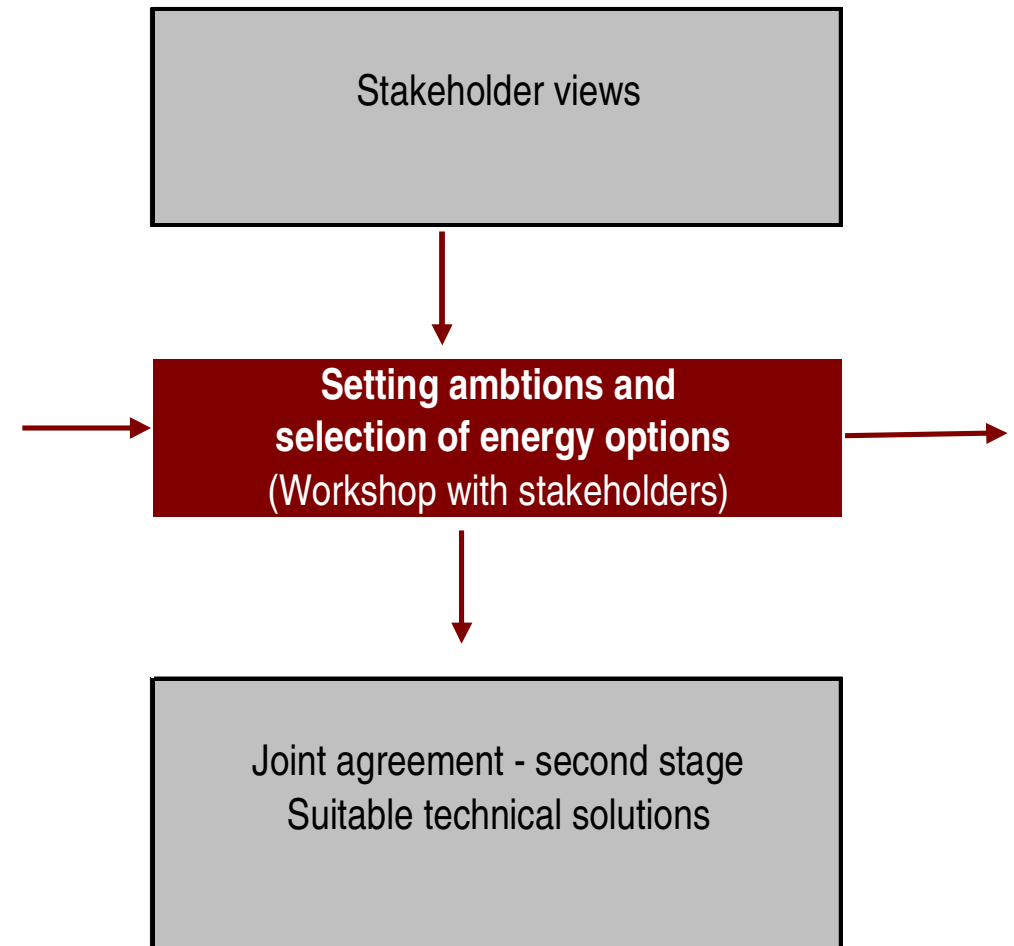
- Compile packages of measures;
- Include options on district level;
- Consider also non-energy issues (indoor climate, value)



# Setting ambitions and selecting energy options

Second stakeholder workshop to:

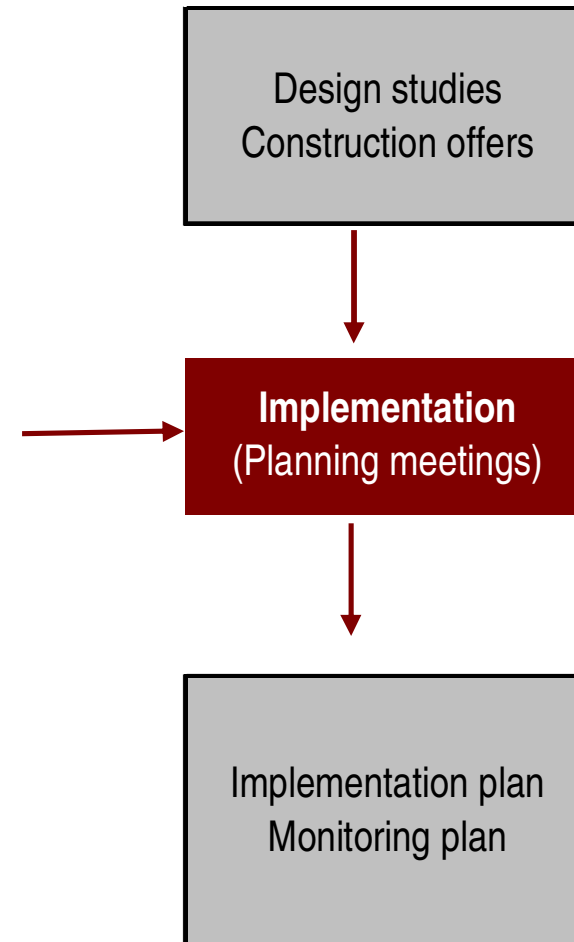
- Use results of energy study to reconfirm or adjust ambitions;
- Prepare final embedding agreement;
- Select most suitable energy option (*or leave this for architect/construction company*);
- Consider potential bottlenecks and fall-back options.



# Implementation

Necessary actions during implementation phase:

- Communication;
- Agenda setting;
- Facilitation;
- Perseverance.





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## 4. Lessons from local projects



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# Lessons: Low energy buildings

**Higher insulation level than legally required**

**Better (low cost) ventilation systems**

**More energy efficient heaters**

**Heat pumps**

**Local solar systems (solar boiler, PV)**

**Locally produced biomass for boilers**

**Low temperature heating**

**Passive solar energy**

**Energy efficient lighting and behaviour**

# Lessons: Energy infrastructure

**Seldom considered energy saving measure**

**Good examples | tools available (e.g. EPL)**

**Albertslund**

existing collective system: no part of project

**Breda**

in existing neighbourhood: heat | cold storage

**Havířov**

existing collective system: owner unwilling

**Other local projects**

collective sustainable systems not considered



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# Lessons: Communication

**Good communication essential**

**About the ambition itself**

**About consequences of ambitions**

**About possibilities to realise ambitions**

**About actions en responsibilities**

**E.g. coordinating body (Albertslund)**



# Decisive factors for success

**Legislation demanding low energy buildings;**

**Sufficient financing, reasonable costs for all;**

**A clear plan | process | future proof ambition**

**Involvement of stakeholders**

[mutual interests, good cooperation];

**Energy saving is not the only subject**

[quality, comfort, health, value, local issues, ..]

**Possibilities for marketing;**

**Experience with energy saving | financing;**

**Adapt plans to local circumstances;**

**Good leadership;**



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# CONCLUSIONS

**Preparing and realizing an energy ambition requires:**

- **Proper planning;**
- **Stakeholder involvement;**
- **Setting ambitions above legislative minimum;**
- **Creating market value by improving quality;**
- **Leadership, cooperation and perseverance.**