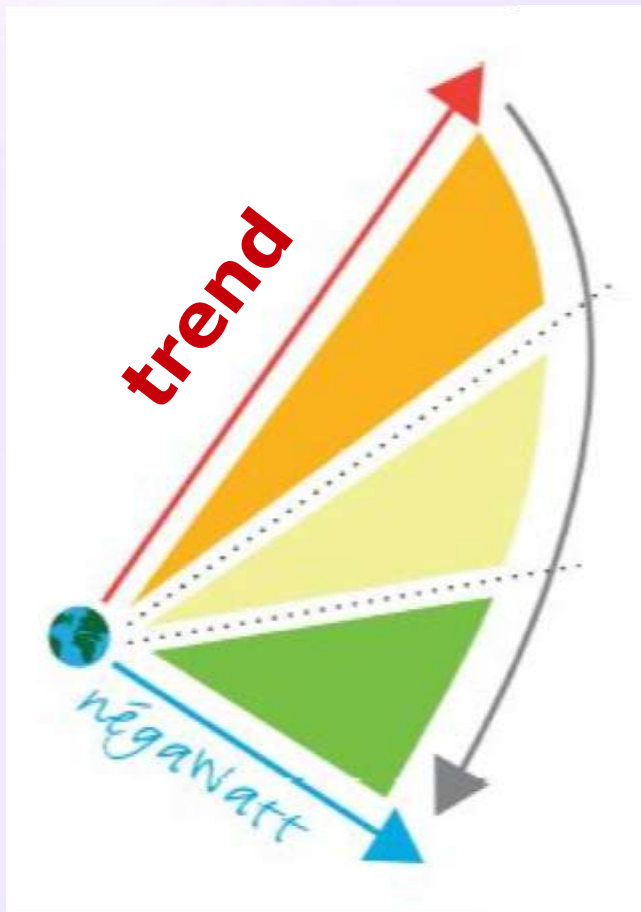




**URBAN PLANING AND  
SUSTAINABLE REFURBISHMENT**  
*RENAISSANCE Final Conference – 4-5<sup>th</sup> June 2012 – Zaragoza*

# CONCERTO – RENAISSANCE Project Overview

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## Sufficiency

To reduce needs before formulating energy demand

## Efficiency

To match this demand with as few energy as possible

## Renewable energy

To find in the nearby environment unexhaustible and clean resources

## + **Why ?**

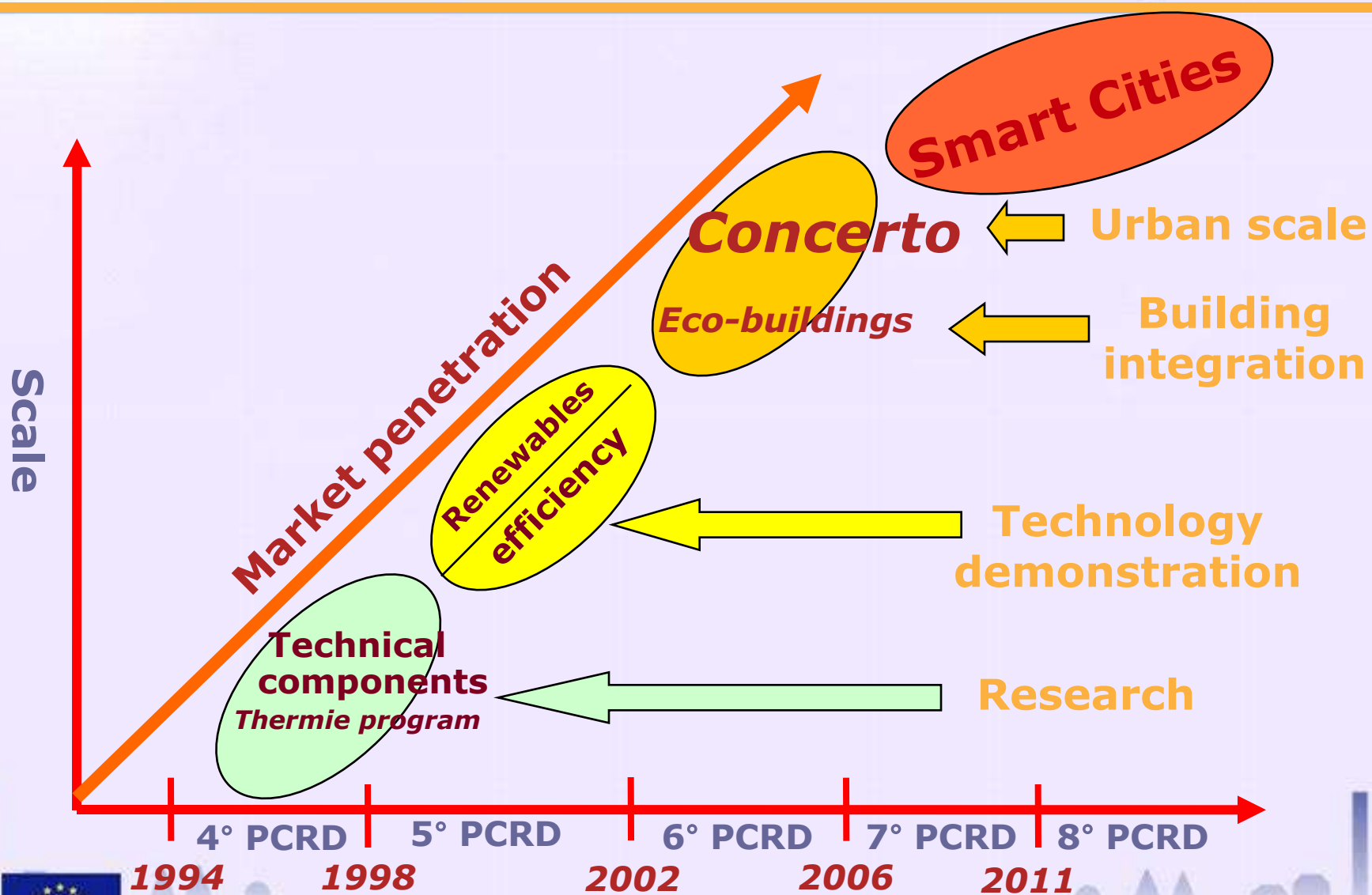
- **Building** = 40 % of energy consumption in EU  
(equal to transport)

## + **How ?**

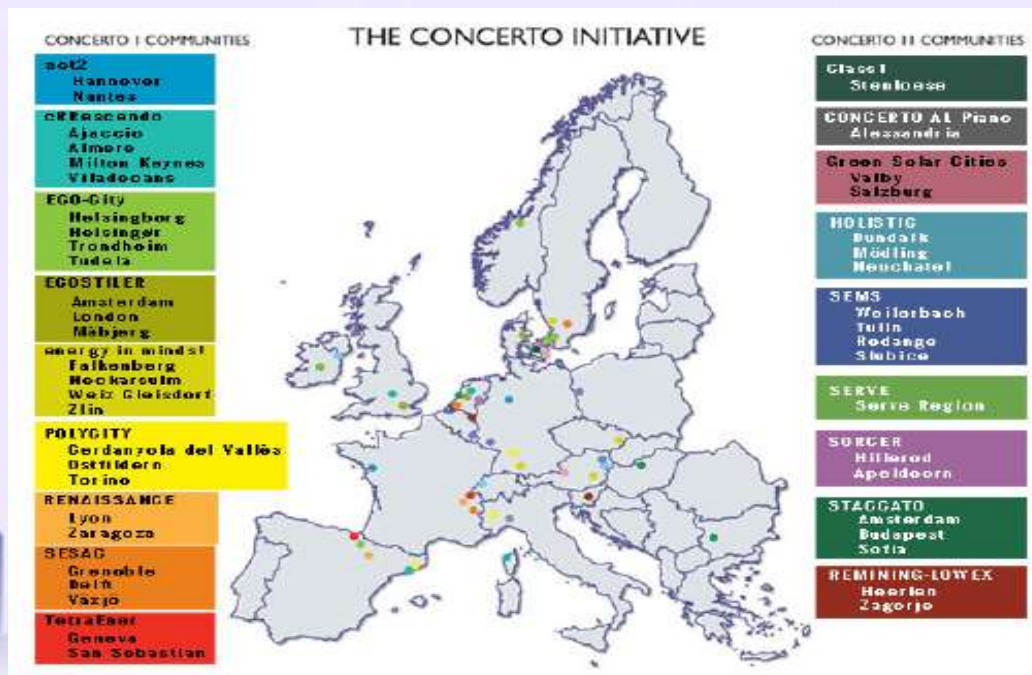
- **Sufficiency** => Urban planning rules & practices
- **Efficiency** => building codes and standards
- **Renewable energy** => local context

- **When ?** => At the earliest stage as possible

# Sustainable Energy in E.U. R&D framework programmes



► **Concerto** « supports **concrete initiatives** of local communities working towards a completely **integrated energy policy**, harmonizing a substantial **use of renewable energy sources** with innovative technologies and systems to **minimize energy consumption** and to improve the quality of citizens' lives. »



## Main facts

- 22 projects
- in 18 countries
- 58 communities
- ~ 3 M€ per community

- ✚ **Urban Scale** : construction/refurbishment programs
- ✚ **Local Authorities commitment**
- ✚ **Integrated energy policy** :
  - **Consumptions reduction** (related to Building Directive) ~ **50 kWh/m<sup>2</sup>/an**
  - **High proportion of renewable sources** (related to RES Directives) > **50%**
- ✚ **Reasonnable costs**:
  - **max + 7% over ordinary building**
  - **market prices for RES**
- ✚ **Monitoring (2 years)**
  - ✚ **Technical** (objective performance)
  - ✚ **Socio-economics** (costs, financing, awareness raising, training,...)
- **Replicability ≠ technological feat !**
- **Time frame** (5 years with extension up to 7 years)
- **Experience sharing amongst « CONCERTO cities »**

# What is RENAISSANCE ?



Biomass fuel supply (Lombardia)



CiUS, Valdepartera (Zaragoza)



Confluence (Lyon)



Confluence (Lyon)



Valdepartera (Zaragoza)

**RENEWABLE ENERGY ACTING  
IN SUSTAINABLE AND NOVEL COMMUNITY ENTERPRISES**

**RENAISSANCE** has demonstrated that ambitious urban regeneration programmes in two large communities of contrasting character, Grand Lyon (France) and Zaragoza (Spain), **can benefit from an integrated energy approach.**

The ambitious energy efficiency goals applied to the project, coupled with a high contribution of renewable energy, demonstrated that **drastic reductions in conventional energy consumption (up to 70 %) are achievable** at reasonable costs and acceptable financial risks on energy saving investments.

## RENAISSANCE AT A GLANCE

**7,700 m<sup>2</sup>**  
of refurbishment  
(residential & school)

**143,300 m<sup>2</sup>**  
of new buildings  
(residential, offices,  
exhibition centre)

**350 kWp** of  
photovoltaic systems

**2,200 kW** of  
biomass wood boilers

**1,220 m<sup>2</sup>**  
of solar thermal  
panels

**225 kW**  
of gas and geothermal  
heat pump

In total the project  
achieved  
**a reduction  
of 67%**  
of conventional final  
energy consumption<sup>1</sup>.

<sup>1</sup>Not taking into account energy saving introduced by heat pump.

## + 2 demonstration communities

### Grand Lyon (France)

✓ 21 news buildings (660 dwellings and 15,000 m<sup>2</sup> of offices) shared among 3 blocks A, B and C.



### Zaragoza (Spain)

✓ New and refurbished social housing (resp. 616 & 196 dwellings)  
✓ Refurbishment of the Public school  
✓ New exhibition centre



## + One observator community

➔ Region de Lombardia (Italia)





**RTD activities addressed all phases of the construction process** from planning, building design, construction, O&M to building usage:

- **Local and regional energy policies**
- **Innovative eco-building solutions**, built on with thermal simulations
- **Renewable energy sources** (mainly wood fuel and photovoltaics)
- **Commercial and fiscal solutions** such as ESCo
- **Socio-economic activities** mainly focusing on inhabitants behaviour
- **Comprehensive monitoring** to assess actual energy performance of buildings and to improve knowledge regarding energy efficiency
- **Trainings** to strengthen the capacity of the professional

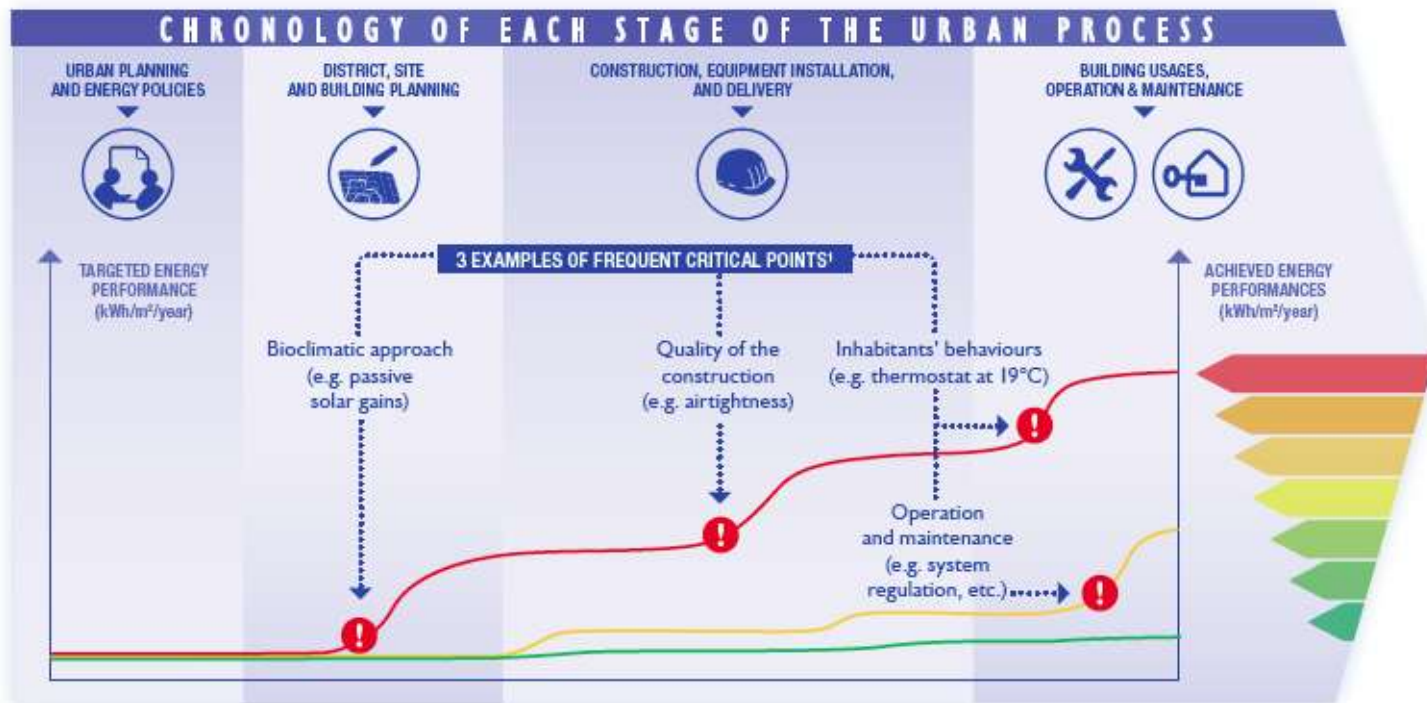
## ➤ Avoiding disappropriation by building process stakeholders

### 3 EXAMPLES

— A building that is properly designed with ambitious low-energy objectives (i.e. through dynamic thermal simulation software) can perform poorly if successive stakeholders do not take into sufficient consideration the risk of critical points.

— Even if a project anticipates all disappropriation risks during design and construction phases, problems may appear during operation and maintenance and jeopardise targeted energy performances.

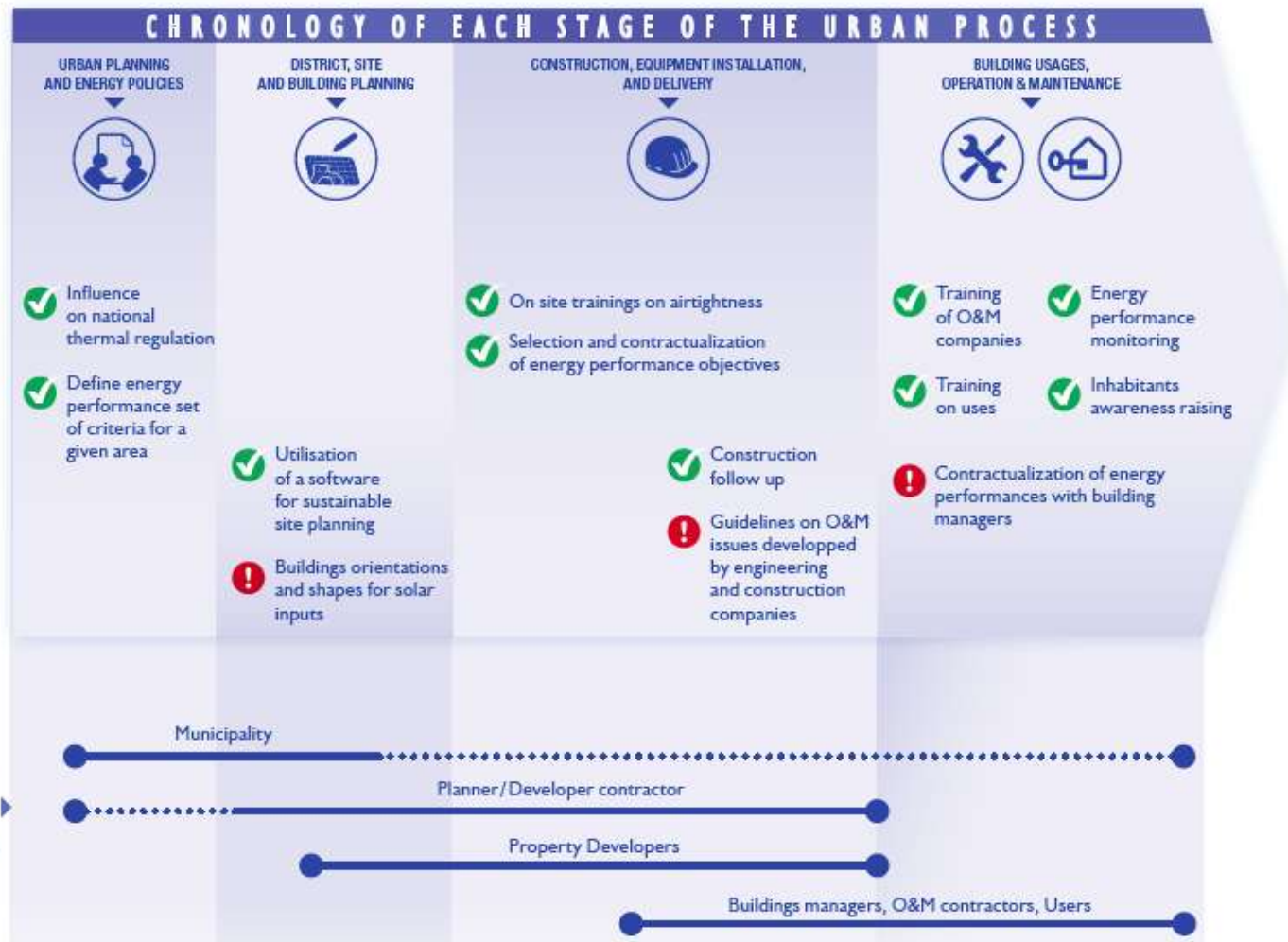
— Good energy performances are achievable by paying special attention to energy issues all along the design, construction and operation processes.



<sup>1</sup> Please note that the actual impacts of breaking points on the overall energy performance are not necessarily proportional to the one represented on the graph.

✓ Some of the RENAISSANCE activities undertaken to avoid breaking points in the appropriation process are listed in the following scheme.

! Some of important points that had not been sufficiently anticipated by the project partners, affecting the overall energy performance of the building.



## ➤ Critical issues

⇒ To deal with energy at earliest stage of planning process

- urban composition and building shape
- criteria for selecting architects and developers

⇒ To combat breaking points all along appropriation process  
(design, construction, operation)

## ➤ Risks

⇒ Poor quality of design and of implementation

⇒ Bad understanding of operation constraints

⇒ Deviation caused by unadapted behaviour of users

## ➤ Difficulties

⇒ Wrong picture of costs/benefits ratios

⇒ Lack of expertise about available technical solutions

⇒ Absence of cooperative culture and behaviour

## ➤ **New way of working**

- ⇒ **Quantitative & contractual objectives (specifications)**
- ⇒ **Energy experts needed (planning + construction)**

## ➤ **Change in relationships among stakeholders**

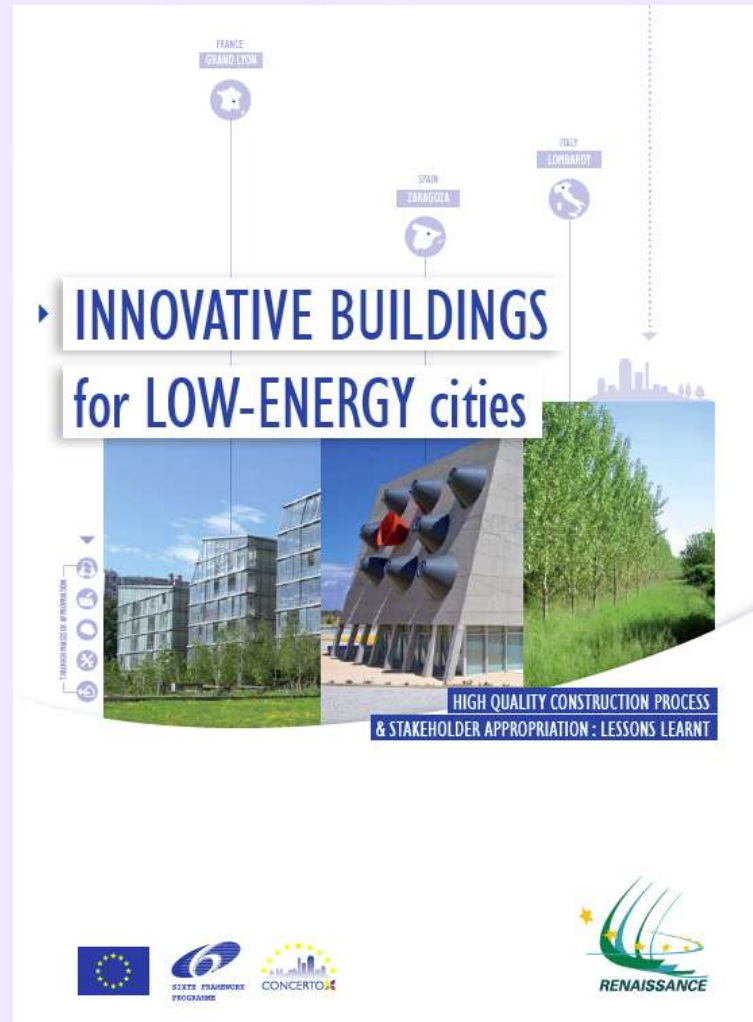
- ⇒ **Relation between planners/architects & energy experts/engineering**
- ⇒ **Cooperation & partnership rather than competition**

## ➤ **Need for accompanying measures**

- ⇒ **Technical expertise & design tools (thermal simulation)**
- ⇒ **Training on new methodologies & practices**

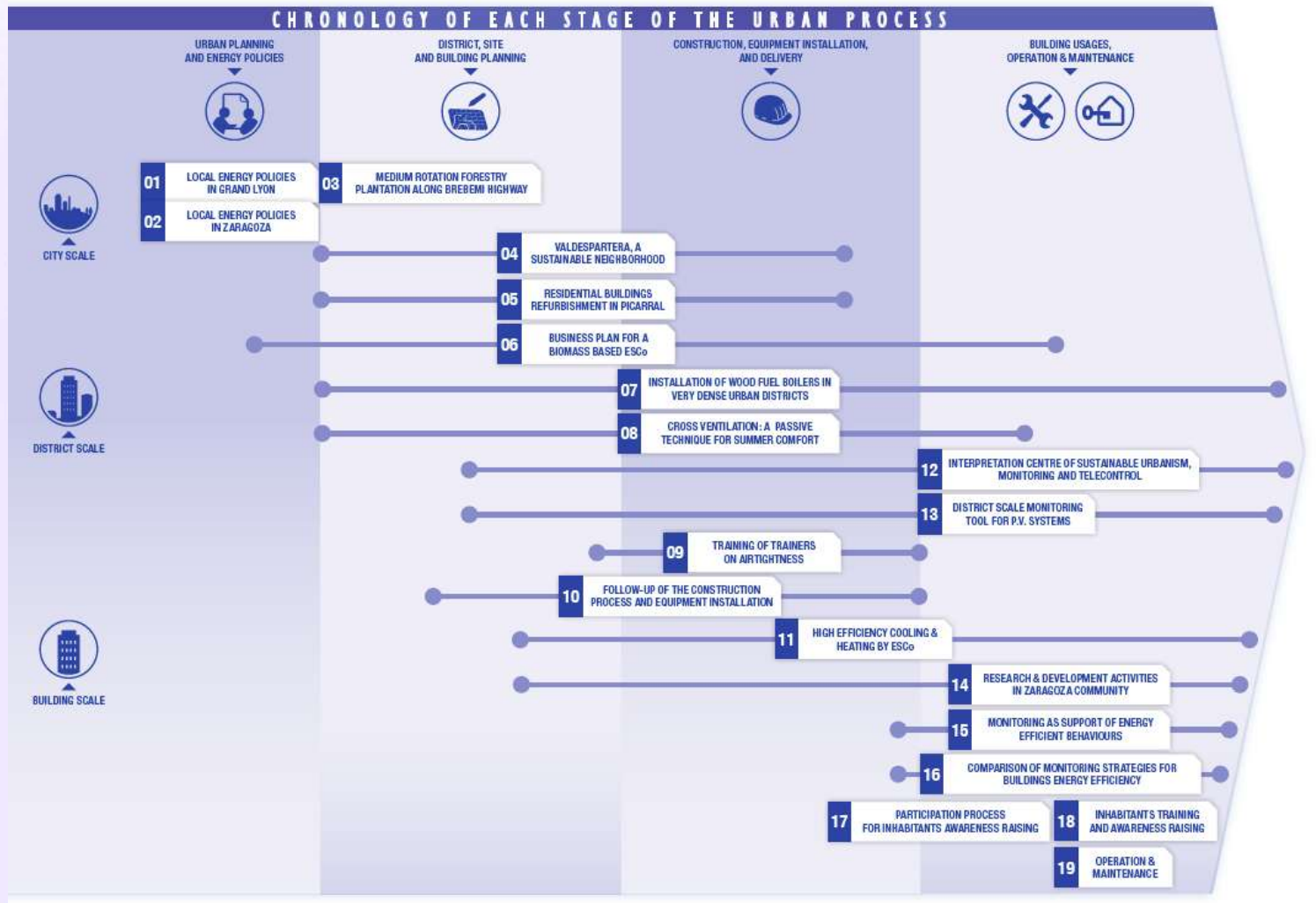
## ➤ **Quantified targets as structuring method for:**

- ⇒ **Local authorities (Urban planning Departments)**
- ⇒ **Developers (urban & real estate)**



# RENAISSANCE Results

## 19 Cases Studies





Thank you for your attention !

French Partner	Spanish Partners	Italian partners
        	      	 

## Contact

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