


**LISBOA:  
A STRATEGY FOR  
SUSTAINABILITY**

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**Sustainability (XXI Century)**



**sustainability**

The ability of meeting the needs of the present without compromising the possibility of future generations to meet their own needs.

(Brundtland Report)

## Sustainability (XXI Century)



## Sustainable Development (PSR model)

state of the environment

pressure factors on the environment\*

strategies, actions, actors

\* Válido para todas as actividades/factores, aplique-se aqui à energia

## Challenges

### WHAT

- **Priorities**
  - Selection of vectors
  - Methodology of approach
  - Observatory

### WHO

- **Government**
- **Municipalities**
- **Stakeholders**
- **Citizens**

### HOW

- **21 Agenda**

### WHEN

- **Very critical!**



## What

### Top-down approach:

Knowledge, Planning, Regulation

- **Environment**

- Territory
- Energy
- Materials
- Water
- Wastes

top-down



- **Social-Economical**

## What

### Bottom-up approach

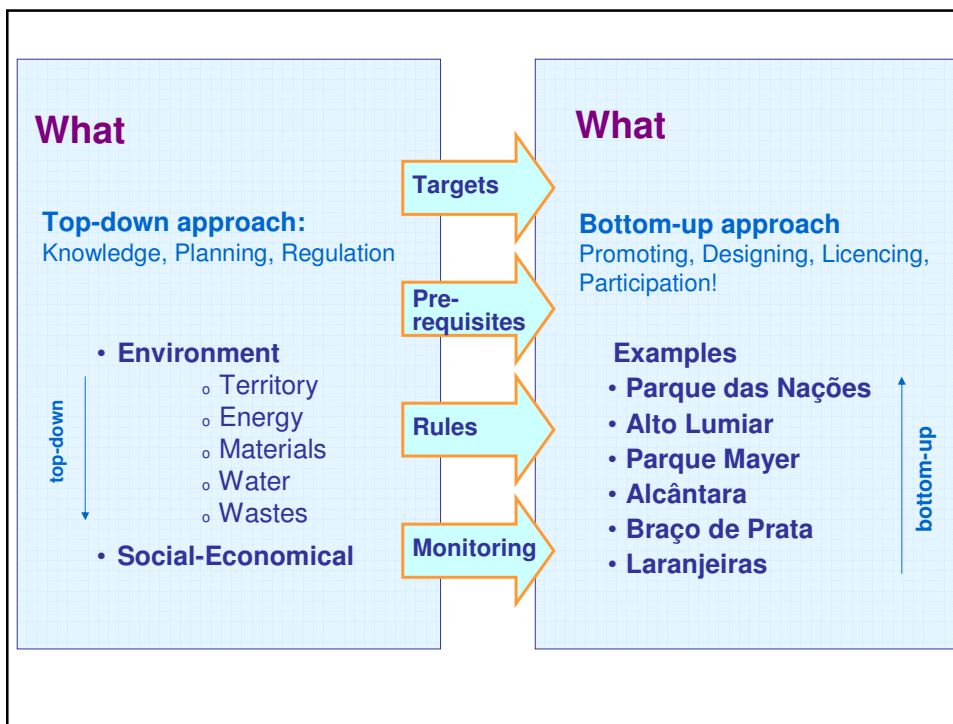
Promoting, Designing, Licencing, Participation!

#### Examples:

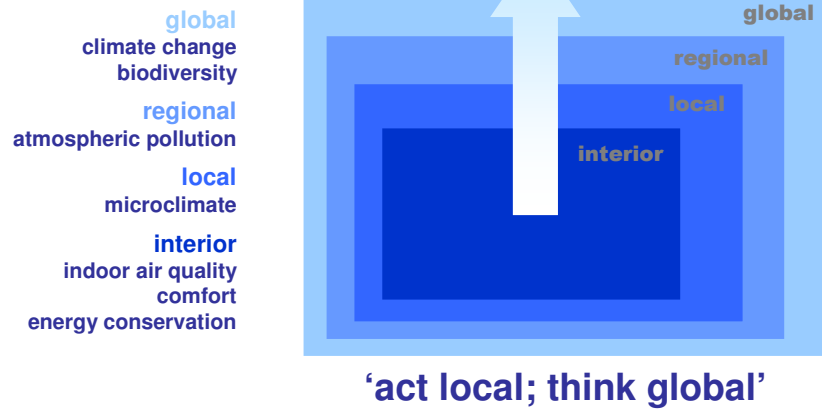
- **Parque das Nações** ✓
- **Alto Lumiar**
- **Parque Mayer**
- **Alcântara**
- **Braço de Prata**
- **Laranjeiras**

Bottom-up

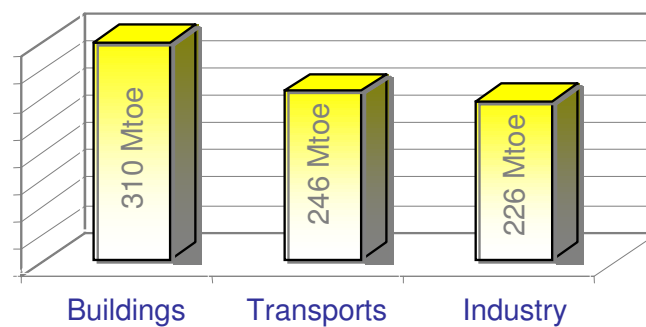


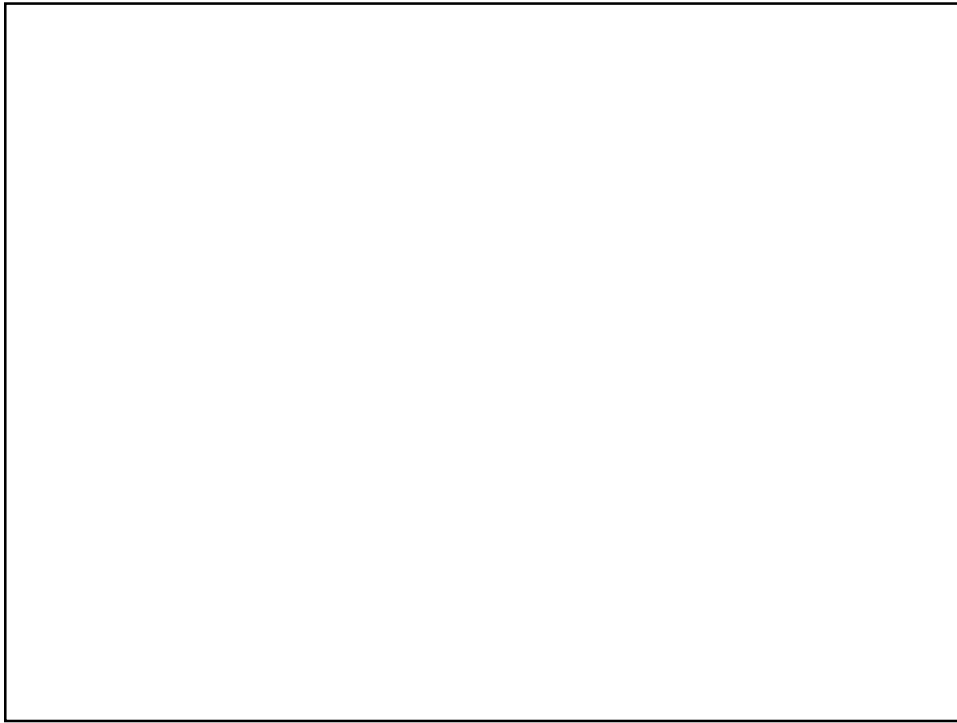


## Climate Change starts at home!



## Energy use distribution by sector in the EU (1992)







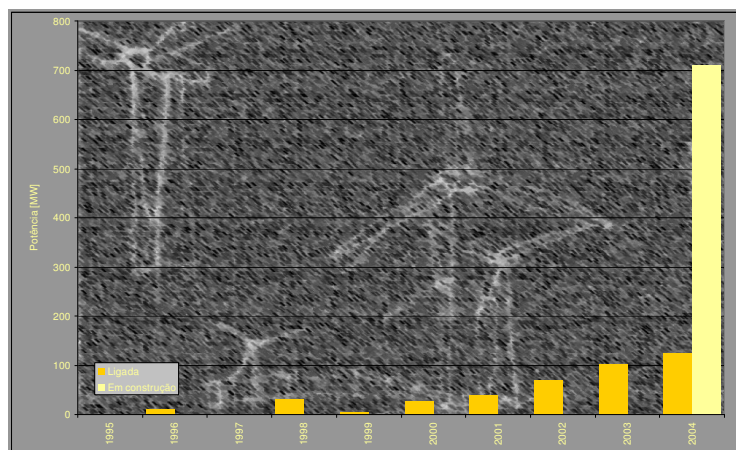
## Who

**Top-down** - some actions are better planned at Government level

### Bottom-up approach

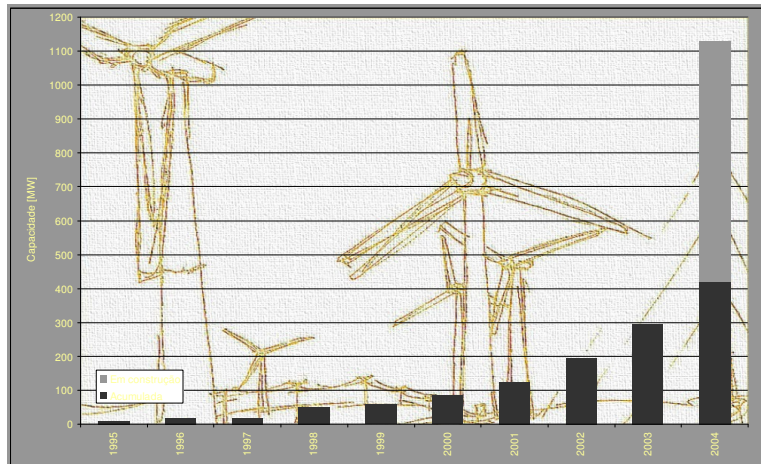
- citizens
- stakeholders
- the role of cities

## E4: Wind energy impact I (electricity)





## E4: Wind energy impact II (electricity)

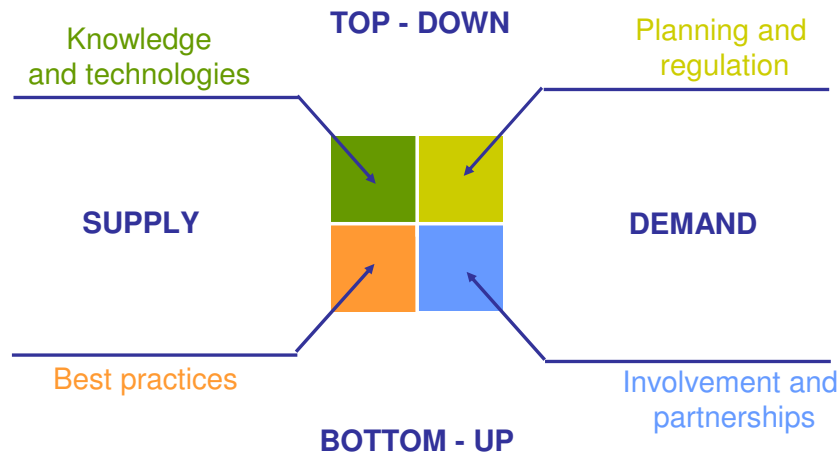


## How?

### Local Agenda 21

- not as a report but as pathway or as a process
- not as something done but as a permanent teaser interpellating every actor at any time.

## Local agenda 21 – Urban strategies



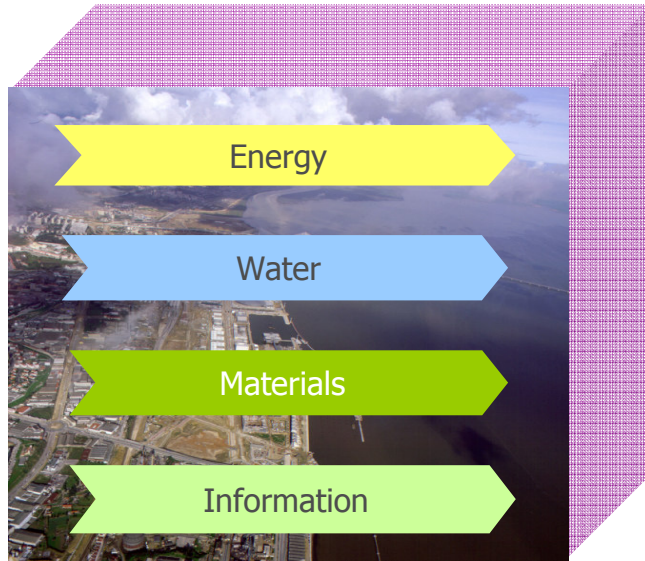
Project Re-Start THERMIE

## Specific Actors

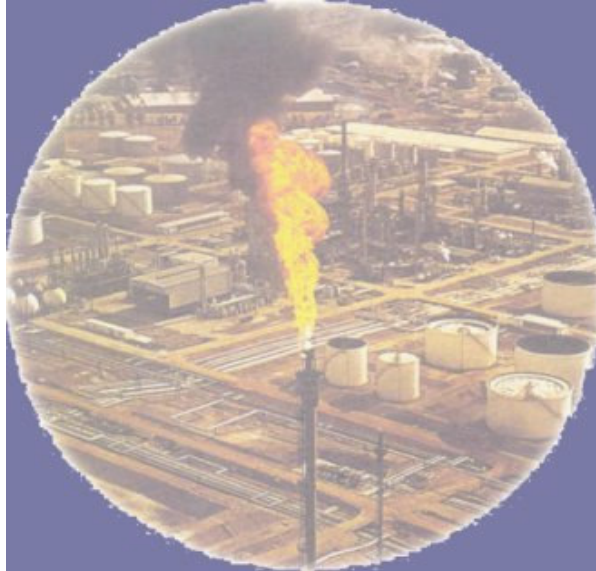
### Energy Agency

- It is doubtful that an energy agency can be justifiable on a municipal basis for the generality of existing “municipios”
- That is not the case of Lisboa
- The Agency must be seen not as a Department but as a Forum with the stakeholders
- A crossroad where vision and integration and sustainable approaches are due.

## Why cities?



## Combustion paradigm: oil culture

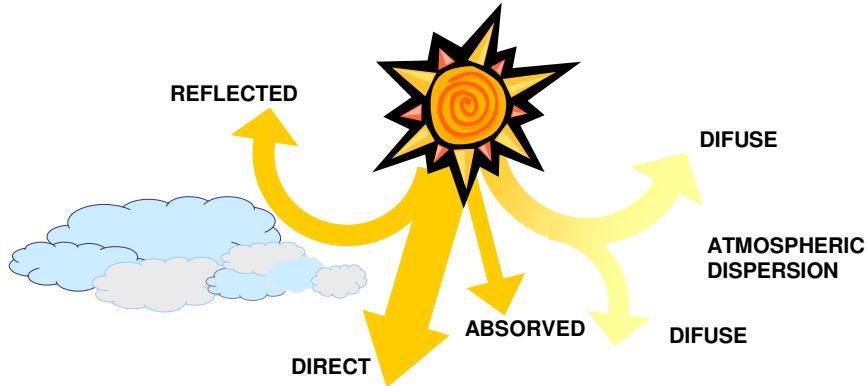


## Energy Service: from final energy to useful energy



\* primary or final

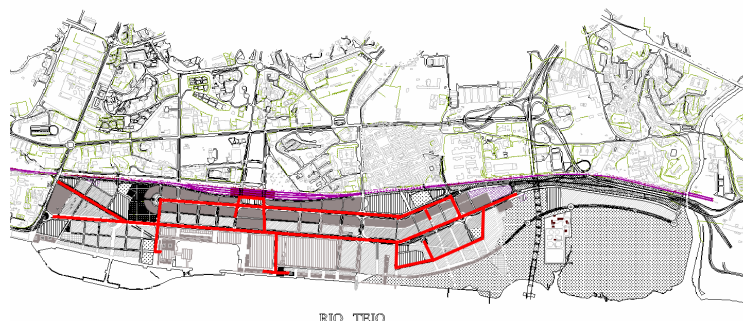
If all primary energy was renewable...



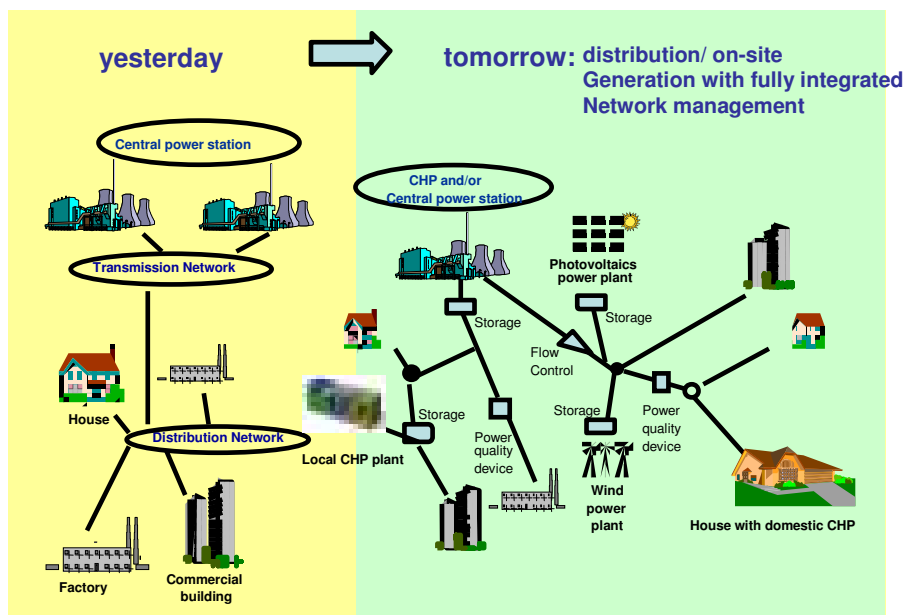
...only a small share would be "deviated" from the natural flow ...

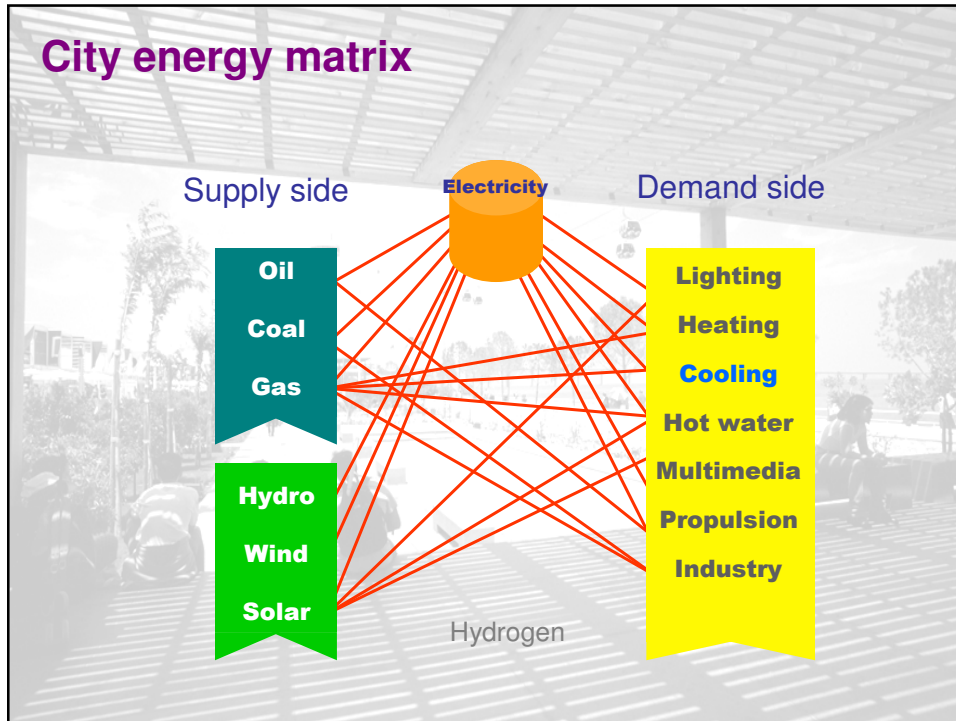
## Urban Energy Infrastructures

**Climaespaço network at expo '98 Lisboa**  
 electricity – heating - cooling



## New paradigm – Distributed electrical generation





### CTO- Casa laboratório INETI/FEUP (1984-...)

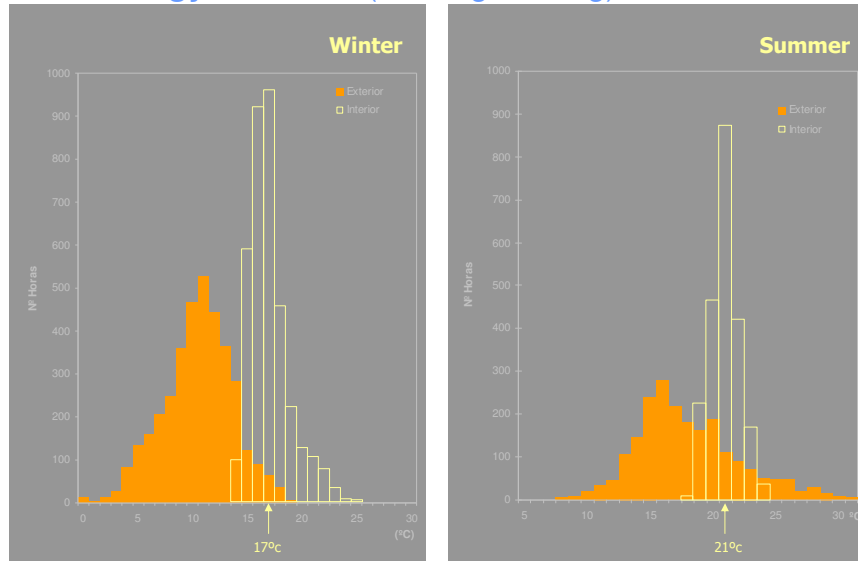
Solar house (!)





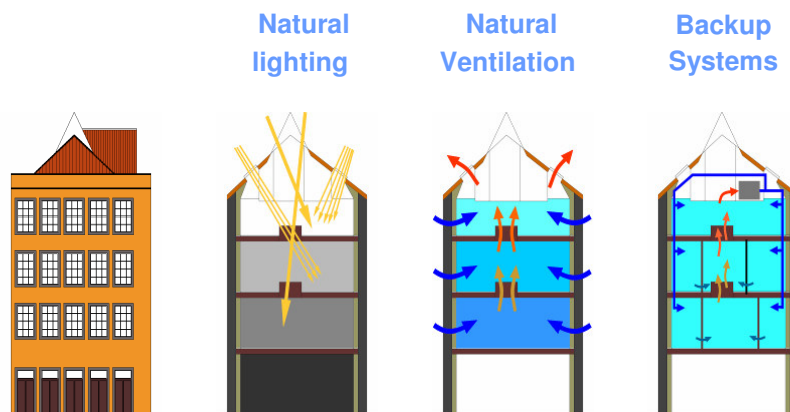
## CTO- Casa laboratório INETI/FEUP (1984-...)

Solar energy : Comfort (Heating/Cooling)

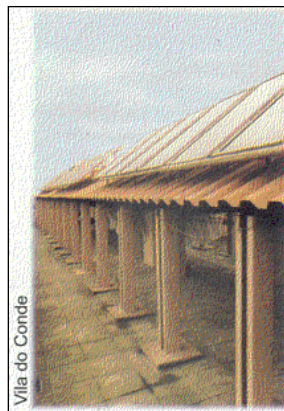


## CRUARB (Ribeira – Porto) - Refurbishment

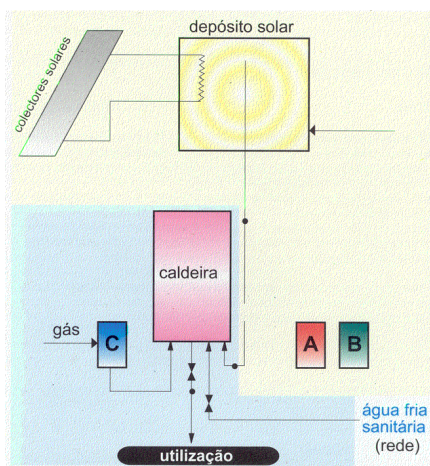
Solar energy (Natural lighting/ Natural ventilation)



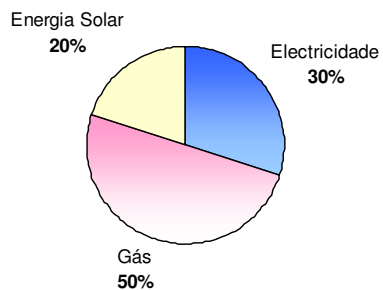
## PLEA'88 Building in Vila do Conde (social housing)



## PLEA'88 Building in Vila do Conde Fracção AQS Solar 20%



### Final energy



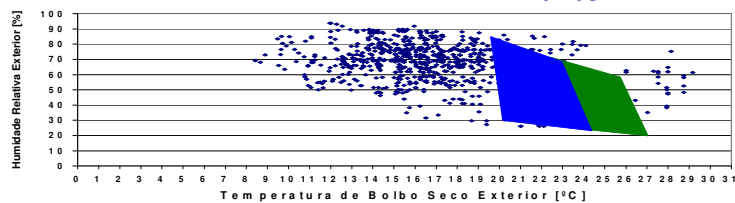
## Edifício Torre Verde at EXPO

Fracção AQS Solar é 20% do total

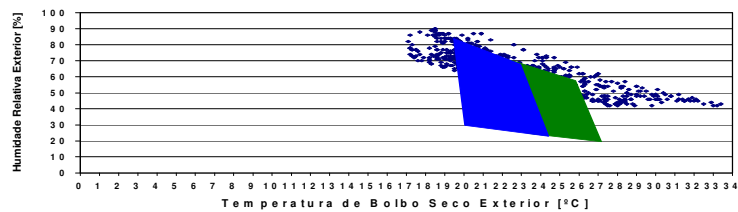


## The Challenge: Bldgs “better” than the climate

Exterior climate conditions and comfort polygon



October 2000

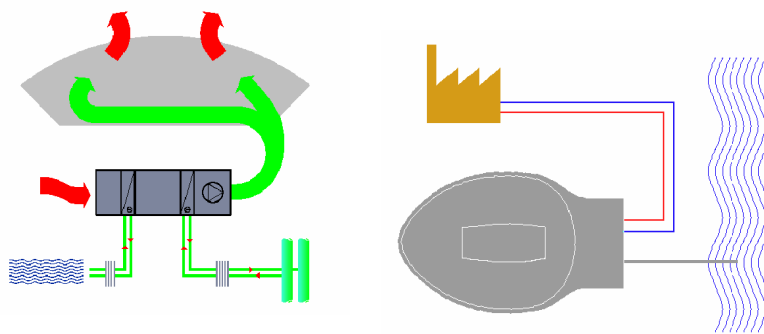


August 2001

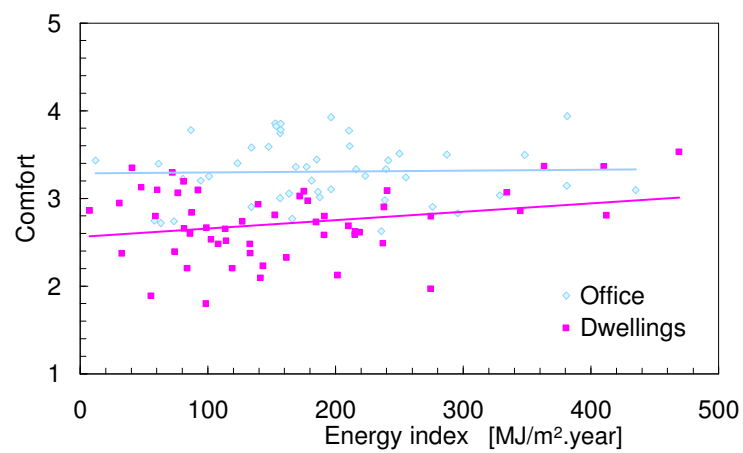
## Cooling sinks

Atlantic Pavillion (10.000 p) at expo '98 Lisboa

Energy from the river water: 1600 MW cooling power



## Comfort and Energy



Source: EC project Hope

## **Conclusions: Sustainable strategies**

- **Concepts, methods & tools**
- **Domains, sectors and vectors**
- **Context, status and targets**
- **Knowledge, commitment & consistency**
- **Public procurement and top-down due actions first**
- **Stakeholders and citizens involvement**
- **Observatory, reporting and diffusion**

**THANK YOU.**