LOCAL REGULATIONS ON ALTERNATIVE WATER SOURCES:
GREYWATER AND RAINWATER IN METROPOLITAN BARCELONA

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STRUCTURE OF THE PRESENTATION

- INTRODUCTION
- OBJECTIVES AND METHODOLOGY
- ALTERNATIVE WATER RESOURCES
- SCALING-UP ALTERNATIVE WATER RESOURCES
- CONCLUSIONS AND FUTURE PROSPECTS
Introduction, objectives and methodology

NATIONAL WATER PLAN (2001) → NUEVA CULTURA DEL AGUA

Decree of DROUGHT (17/5/– 1/12/2005)

Decree of DROUGHT (3/4/2007 – 9/1/2009);
October 2007: HOUSING CRISIS in US and subsequent GLOBAL ECONOMIC CRISIS

CLIMATE CHANGE

2000

October 2002

Desember 2005

February 2006

March 2006

January 2011

Future

Apear the Water Framework Directive 2000/60/CE

Sant Cugat del Vallès approves the FIRST WATER SAVING ORDINANCE

The Diputació de Barcelona approves a FRAMWORK ORDINANCE after 14 municipalities had local regulations concerning water

Catalan government approves the DEGREE OF ECO-EFFICIENCY


50 CATALAN MUNICIPALITIES had approved a water saving ordinance

LEGAL FRAMEWORK
50 Catalan municipalities
> 1,2 million people (16 % of the population)
OBJECTIVES & METHODOLOGY

TO EXAMINE:

• The main **impediments and barriers** to the effective adoption of the water saving ordinance
• The **social and technical learning** generated since the approval of the first ordinance
• The **prospects for up-scaling** the use of alternative water resources in the Barcelona region

IN TOTAL:

• 24/50 municipalities with ordinance and 3 without ordinance
• 134 users of greywater and rainwater systems from Sant Cugat del Vallès involved in the design, installation and maintenance of these systems
Alternative water resources: overview and main challenges
## RAINWATER HARVESTING vs GREYWATER REUSE

<table>
<thead>
<tr>
<th></th>
<th>RAINWATER HARVESTING</th>
<th>GREYWATER REUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WATER QUALITY</strong></td>
<td>Good</td>
<td>Low-polluted</td>
</tr>
<tr>
<td><strong>Nº OF ORDINANCES AND SCOPE</strong></td>
<td>48; new buildings with a minimum surface of garden</td>
<td>32; new buildings with a minimum of 8 apartments</td>
</tr>
<tr>
<td><strong>SYSTEM</strong></td>
<td>Catchment area, continuous guttering, filter and storage tank</td>
<td>Physico-chemical, biological or membranes treatment + disinfection</td>
</tr>
<tr>
<td><strong>MAINTENANCE</strong></td>
<td>Filter cleaning once a year</td>
<td>Weekly - monthly</td>
</tr>
<tr>
<td><strong>CAPITAL COSTS</strong></td>
<td>High; long pay-back periods</td>
<td>516€/flat (&lt; 0,2% of the total cost); long pay-back periods</td>
</tr>
<tr>
<td><strong>USES</strong></td>
<td>Irrigation (= 36% of daily water demand)</td>
<td>Toilet flushing (= 21% of the daily water demand)</td>
</tr>
<tr>
<td><strong>ESTIMATED WATER SAVING</strong></td>
<td>60% of the irrigation and 100% of the toilet flushing and laundry</td>
<td>100% of the toilet flushing</td>
</tr>
<tr>
<td><strong>PUBLIC ACCEPTANCE</strong></td>
<td>Good</td>
<td>Less good</td>
</tr>
<tr>
<td><strong>USER SATISFACTION</strong></td>
<td>High</td>
<td>Initial satisfaction turns into dissatisfaction</td>
</tr>
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</table>
Scaling-up alternative water resources in Metropolitan Barcelona
THE TRANSITION PROCESS

TECHNICAL
- Use of membranes in GW systems
- Energy costs

SOCIAL
- Awareness and participation
- Economic crisis and application of the ordinance

INSTITUTIONAL
- Leading role of municipalities
- Change in the regional government in 2010
Conclusions and future prospects
CONCLUSIONS AND FUTURE PROSPECTS

✓ Change in the scale of governance ➔ Local actors have a greater role to play in water management

✓ Importance of communication and public dialogue ➔ Increase social acceptance, specially for greywater reuse

✓ Change in the water cycle: small scale and decentralized water systems vs centralized end-of-pipe model

✓ Combination of water sources with different qualities based on the principle of fit-for-purpose

"INSTEAD OF SPENDING BILIONS ON DAMS, GIVE EVERY HOUSE A TANK!"
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Thank you for your attention!!