

Experiences from UP-RES pilot courses

Christoph Peters, Sabaté associats
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The UP-RES Project Consortium

IEE - September 2010 – February 2013 / Overall budget: 985 k€

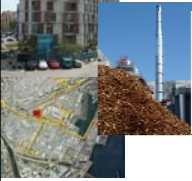
- AI** Finland: Aalto University School of science and technology
- SaAS** Spain: SaAS Sabaté associats Arquitectura i Sostenibilitat
- bre** UK: BRE Building Research Establishment Ltd.
- AGFW** Germany:
 - AGWF Arbeitsgemeinschaft Fernwärme
 - UA Universität Augsburg
 - TUM - Technische Universität München
- TUM** Hungary: UD University of Debrecen

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General objectives and measures to its achievement

Urban level: High quality multifunctional urban spaces

Building level: High thermal comfort with minimum ecological footprint, security in supply, easy maintenance at competitive prices



- Demand reduction: Energy efficient building design
- Low carbon resources: RE and waste energy
- Optimum supply in most cases: DHC

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Demand reduction: Energy efficient building design



Demand reduction


95 Social housing apartment block
First EPBD "A" Classification
in Barcelona: 3.8 kgCO₂/m²-a

- Low U-values
- Ventilated façade
- Movable wooden blinds
- Natural cross ventilation

Connected to DHC 22@
Invoicing by building administrator

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Demand reduction: Energy efficient building design



Demand reduction

95 Social housing apartment block

Heating demand: 9.8 kWh/m²-a
Cooling demand: 4.7 kWh/m²-a

Winner ENDESA Award 2012 for the most sustainable development

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Demand reduction: Energy efficient building design

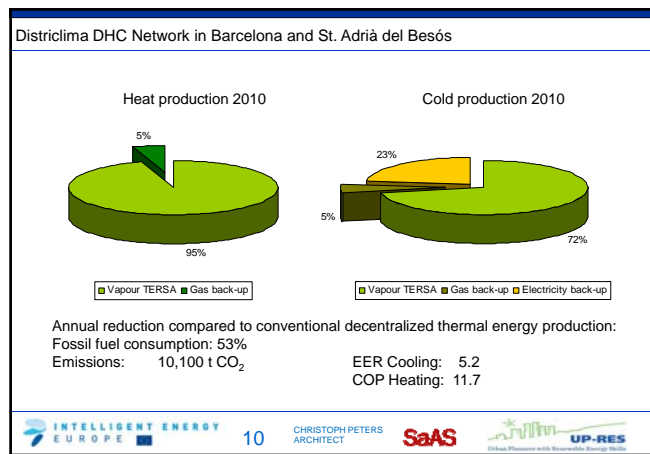
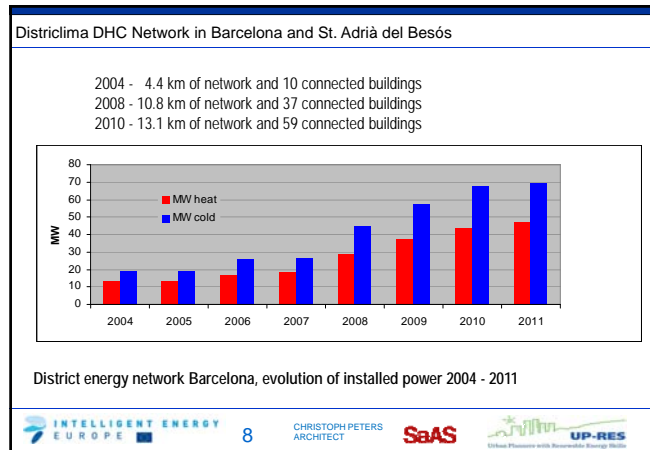
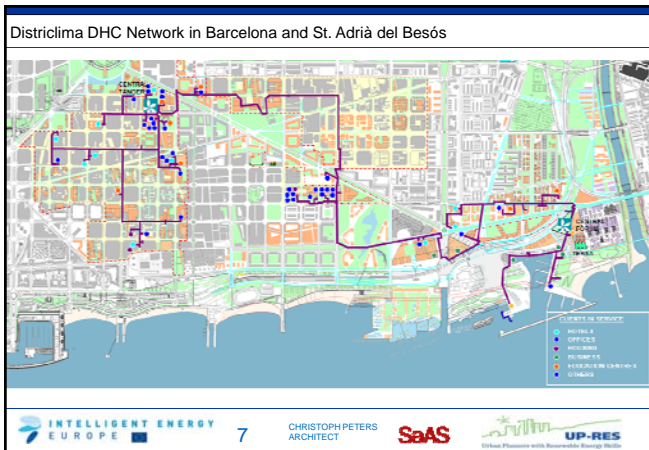


95 Social housing apartment block

Inaugurated in Spring 2012

Connection to the DHC network in the building's basement

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Specific objectives: Energy efficient urban development

Status quo: Energy is often no issue in urban planning

The UP-RES Project addresses the need to introduce energy issues into town planning through implementing pilot training of urban planners in energy efficiency and RES integration.

Need for promotion and implementation of local energy concepts

- Interaction of various stakeholders, and with urban planners in particular
- Integration of available local resources management (geothermal, solar, bio fuels, various waste sources (heat and cold) into regional and urban development plans
- Integration of cadastral and energy performance data
- Application of energy demand mapping tools in urban planning

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Task: Training Needs Analysis

Questionnaire design
 EvaSys on-line survey

313 questionnaires returned

Spain 1250 contacts

- 180 AUS Architecture and sustainability association
- 360 AAUC Catalan Group of urban planners
- 60 Municipal planners/Services
- 600 AETU Spanish Association of technical urban planners
- 50 Various (energy associations, developers, etc.)

Dec 2010 - Feb 2011

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Task: Training Needs Analysis

Questionnaire design

PART I : General Information

- Field of degree
- Scale + frequency of planning
- Tasks + responsibilities
- Environmental issues in practice / needs

PART II : Energy and urban planning information

- Energy issues in degree, training and information sources
- Knowledge of Energy Efficient Supply
- Knowledge of RES and DHC
- Obstacles for the establishment of RES
- Suggestions on training

Dec 2010 - Feb 2011

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Task: Training Needs Analysis

Spanish Results

- 44% architects (including arquitecto-urbanistas)
- 37.3% urban planners
- 8.8% engineering - not only Civil, but technical industrial
- 5.3% Law
- 1.8% environmental planning
- 1.8% social sciences

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Task: Training Needs Analysis

- Planning issues included in planning ± 50% are: Passive aspects, Preservation of soils and ecosystems, Transport
- Need of software (IT tools) < 7%
- Need of training ± 10%
- Need of experts 20 - 30% (except for passive aspects 7.2%)

INCLUDE THIS IN MY PLANNING

Category	Percentage
PASSIVE ASPECTS	7.2%
TRANSPORT	~10%
SOILS AND ECOSYSTEMS	~10%
WATER MANAGEMENT	~10%
ENERGY SOURCES-NETWORKS	~10%
EMBEDDED ENERGY IN MATERIALS	~10%
WASTE MANAGEMENT	~10%

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Task: Training Needs Analysis

II.5 OBSTACLES

Cost and taxes : 35 %
Lack of knowledge : 27% - 41.4% in Spain

II.5 - What do you consider as the major obstacle for the establishment of Renewable Energy Systems in actual Urban Planning?

Obstacle	Spain (%)	All countries (%)
Legislation, rules and regulations	13.0%	17.0%
Energy prices	8.0%	11.5%
Lack of knowledge	41.4%	26.4%
Costs and taxes	29.3%	34.1%
Others	6.0%	10.4%

Other obstacles mentioned in free entries :
Lack of political support
Unreliability and non viability of systems (UK)
Conflicts with heritage, image (German example: problematic exterior insulation integration)

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Capacity building - Different needs in different countries

Market penetration*	Initial	Scarce	Dense	Established
Solar	FI	UK	HU	ES, DE
Wind	FI	UK	HU	ES, DE
Biomass	ES, HU	DE, UK		FI
Waste heat	ES, HU, UK		FI, DE	
District heating	UK	HU, ES	DE	FI
District cooling	HU, UK	DE, ES	FI	

↓ Awareness Knowledge Competence Practice

* classification just exemplarily

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Different training levels

Lots – especially from public bodies (prescribers) – to get general knowledge, some private urban planners to attend public tenders prescribed by public bodies, a few private urban specialists to give support to urban generalists

Implementation

- Public bodies:** lots of students short duration
- Private planners:** more students medium duration
- Private experts:** few students large duration

UK: short courses tour to cities all over the country for professional training

Spain, Finland, Germany: long term professional training

Hungary: accredited postgraduation programme 60 ECTS

↑ knowledge to be provided; equivalent to duration and cost of training
↓ N° of people to be trained

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Spanish implementation – an example

10 Modules with a total of 150 hours face to face – october 2011- june 2012

- M1 An integrated vision. Sustainability in regional and urban planning
- M2 Energy. The existing energy model and market outlook
- M3 Buildings. Energy demand reduction strategies in new buildings and refurbishment
- M4 Mobility. Energy consumption reduction strategies in urban and interurban mobility
- M5 Urban planning. Energy demand reduction strategies in the urban metabolism
- M6 Energy resources. Renewable energy technologies in the urban scale
- M7 Energy distribution: District heating and cooling
- M8 New management concepts in the energy market
- M9 Energy management. New models in contracting and management
- M10 Workshop. the right scale for every energy concept

Spanish implementation – an example

Experiences of the first edition 2011-2012

27 students for the whole programme and an average of 5 additional students by modules

High evaluation scores for nearly all modules

High satisfaction with the on-line tool

Excellent participation of the students

Importance of real cases supported by the students !

	Valoració Docent	Valoració contingut
M1	4.15	3.95
M2	3.58	3.87
M3	4.16	4.01
M4	4.08	3.88
M5	4.08	4.01
M6	3.75	4.04
M7	4.25	4.27
M8	3.86	3.88
M9	4.28	4.17
M10	3.83	3.92
Average	4.02	3.96

We encourage you to use the training material and design your own course!

UP-RES training material

30 slides / module in 10 languages

<http://aaltopro2.aalto.fi/projects/up-res/>



Thank you for your attention !

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