



Urban Planners with Renewable Energy Skills (UP-RES)

Arto Nuorkivi
In-house Consultant of Aalto PRO



WHY SHOULD URBAN PLANNING INVOLVE ENERGY PLANNING?

Challenges to Urban Planning

- Need to reduce heat consumption in buildings;
- Need to reduce fuel consumption in transportation;
- Need to reduce electricity consumption in lighting, cooling, heating;
- Need to turn from fossil to renewable energy;
- Need to reduce overall emissions to atmosphere; and,
- Need to circulate material flows of waste and energy supplies (use of ash, waste to energy,...).

The same challenges apply to Energy Planners as well.

Barriers to Overcome

- At present, urban areas tend to be scattered rather than compact, which means higher energy consumption and emissions!
- Therefore:
 - Urban planners should know the **importance** of spatial plans to energy and emissions;
 - Urban planners should understand the **consequences** of their spatial plans to energy and emissions;
 - Planning **guidelines** should include energy as the major planning parameter;
 - Renewable energy requires a **new way of thinking** in urban and spatial planning that is emerging now.

Urban Planners not aware of DHC

- Energy and emission issues are not taught to urban planners, neither in planning schools nor in continued education programmes in general;
- Only 4 (!) universities were identified in Northern America and the EU that have integrated energy and emissions with their urban planning syllabus!

Energy Efficiency Starts from Urban Planning

Urban planning shall include quantitative energy planning, because:

Without an energy and emission analysis the communal decision makers are not aware of the impact of their planning decisions on environment.

Such decisions have long-term impacts, up to 100 years ahead.

Objectives of UP-RES...

HOW DOES UP-RES PROJECT HELP?

... in general are to identify and review barriers and best practices for sustainable development of RES in urban planning processes in order to:

- Facilitate an expansion of RES systems in order to increase the global energy efficiency,
- Mitigate climate change through reduced carbon dioxide emissions, and
- Increase national security of supply.

Focus of UP-RES

- Renewable Energy Directive: to promote RES in heating, cooling and powering of communities at high energy efficiency.
- EU coverage: Experience from 5 training pilots to be extended to European level through European level associations and meetings.

Contents of UP-RES

- Review planning guidelines in a number of cities in EU;
- Review education programmes of urban planners in universities in EU;
- Record and present positive examples of urban planning as models of good approach;
- Design and implement pilot training courses of RES to urban planners in Germany, Finland, Hungary, Spain and UK;
- Disseminate the training material to other schools in Europe, based on lessons learned of pilot training;
- Draft recommendations for urban planning that take RES and its emission relations into account; and,
- Prepare a plan for EU-certification of energy skilled urban planners.

HOW WAS THE PILOT TRAINING STRUCTURED?

A. Short courses Structure of the training course in UK

- 20 events (charettes)
- 1-3 day duration of each charette during 2011
- 20 charettes have been implemented in various parts of UK
- Each charette collected the local urban planners, energy experts, architects, developers to work together
- Each charette produced an idea/initial plan about how to integrate RES, DHC or CHP in their community.

B. Long course

Structure of long training course in other countries

- 9 months duration: Oct 2011 – June 2012
- Has been piloted in Spain, Hungary and Finland
- Home work has been designed for students in such a way that it integrates energy issues to his/her normal work;
- A Finnish excursion to Germany (voluntary) of 3 days has taken place in June 2012;
- 8-12 training modules (seminars of two days each) have been organised including local excursions.
- The pilot course is about to start in Germany in June 2012

B. Long course

Different approaches of pilot training (1)

RES	Initial	Scarce	Dense	Established
Solar	FI	UK	DE, HU	ES
Wind	FI	UK	ES, HU	DE
Biomass	ES, HU	DE, UK		FI
Waste heat	ES, HU, UK		FI, DE	
District heating	ES, UK	HU	DE	FI
District cooling	HU, UK	DE, ES	FI	
Level:	Awareness	Knowledge	Competence	Professional practice

B. Long course

Different approaches of pilot training (2)

The process of urban planning varies per country:

- In Finland: Co-operation between the city planning offices, 17 regional councils and private consulting companies
- In UK: No national organization for urban planners exist. Therefore, a locally focused approach was chosen.
- In Germany: The urban planner certification is Bundesland specific
- In Hungary: The urban planners are rather non existent as such.
- In Spain: Urban planner does not exist as an educational title and it is very region specific.

B. Long course

Different approaches of pilot training (3)

Finland:

- One-day 'short' courses were delivered in 7 cities in Spring 2011.
- Subsequently a 9 month 'long' course of 8 modules each of two days duration was taught to 26 urban and regional planners from Fall 2011- Spring 2012.
- A voluntary excursion of three days to Germany was arranged.

Hungary:

- 4 short courses delivered by fall 2011
- The long pilot course started during Oct. 2011 and July 2012 at the University of Debrecen and comprised as much as 60 ECTS credits

United Kingdom:

- 13 short courses delivered in UK some 2-3 days each
- No long course according to the project scope

B. Long course

Different approaches of pilot training (4)

Germany:

- 6 short courses delivered by fall 2011
- Long training course with about 15 trainees to start in June 2012

Spain:

- 4 information sessions and one technical workshop delivered in Spain
- The long course was implemented during Oct 2011 and June 2012. The long term course was structured in ten modules with an extension between 12 and 18 hours each.

Modules of long training

M1	SUSTAINABILITY CONCEPTS IN REGIONAL AND URBAN PLANNING: A HOLISTIC VISION
M2	ENERGY. FORMS - TRANSFORMATION - MARKET OUTLOOK
M3	ENERGY DEMAND REDUCTION STRATEGIES: POTENTIAL IN URBAN PLANNING
M4	ENERGY DEMAND REDUCTION STRATEGIES: POTENTIAL IN NEW BUILDINGS AND REFURBISHMENT
M5	ENERGY RESOURCES AND RENEWABLE ENERGY TECHNOLOGIES
M6	ENERGY DISTRIBUTION: DISTRICT HEATING AND COOLING
M7	THE RIGHT SCALE FOR EVERY ENERGY CONCEPT: HEAT AND COOL DENSITY (DEMAND SIDE), POTENTIAL ON SUPPLY SIDE
M8	NEW MANAGEMENT CONCEPTS IN THE ENERGY MARKET
M9	ENERGY PLANNING
M10	NEW TRANSPORT MODELS AND URBAN AND INTERURBAN MOBILITY

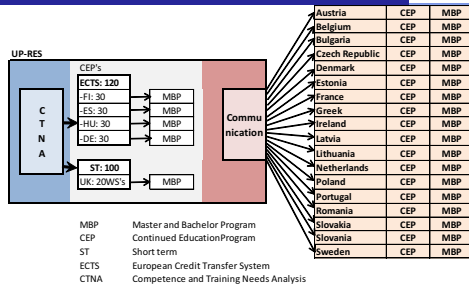
Main Deliverable of UP-RES

Compact training material consisting of introduction texts for 10 modules and of 300 slides;

Designed to 200 planning schools in Europe according to the lessons learned;

Translation to 10 EU languages underway;

Dissemination starts in AESOP conference in July 2012.



Freely downloadable in July 2012:

<http://aalto2012.aalto.fi/projects/up-res/>

UP-RES Consortium – EU countries



SaAS

bre

AGFW



- **Finland** : Aalto University School of science and technology
www.aalto.fi/en/school/technology/
- **Spain** : Sabatè associats Arquitectura i Sostenibilitat
www.saas.cat
- **United Kingdom**: BRE Building Research Establishment Ltd.
www.bre.co.uk
- **Germany** :
AGWF - German Association for Heating, Cooling, CHP
www.agfw.de
- **Universität Augsburg** www.uni-augsburg.de/en
Technische Universität München <http://portal.mytum.de>
- **Hungary** : University Debrecen
www.unideb.hu/portal/en

UP-RES Consortium – Finnish Support

Sponsors

- SITRA – Finnish Innovation Fund
- Helsingin Energia
- Finnish Energy Industries - association
- Uusimaa Regional Council (Helsinki capital region)

Other Co-operators

- Association of Finnish Municipalities (Kuntaliitto)
- Motiva Ltd