

SEMANCO

SEMANTIC TOOLS FOR CARBON REDUCTION IN URBAN PLANNING

SEMANCO - What is it?

SEMANCO is a three year research project co-funded by the FP7 “ICT systems for Energy Efficiency” programme of the European Union. It began in September 2011. The name SEMANCO refers to semantic data modelling - defining data from a conceptual point of view. **The research is developing IT tools and methods to help planners and developers to reduce CO₂ emissions in our neighbourhoods, cities and regions.**

Who's involved?

Nine partner organisations, from six EU countries, are focusing their efforts in SEMANCO. These include universities, community groups, an IT development company and an environmental consultant.

Should you be interested?

CO₂ emissions reduction is a systemic problem. It must be addressed at multiple geographic, social and economic levels by several different types of people. SEMANCO will help architects, engineers, building managers, local administrators, citizens and policy makers to exploit existing energy related data. This will enable better quality decisions to be made about how to reduce CO₂ emissions from urban environments.

Why should you be interested?

SEMANCO will show how ICTs can be used to assess different alternatives for reducing CO₂ emissions. To give an example: is it better, in a given situation, to install solar PV or a district heating system? SEMANCO software and data modelling methods will allow you to identify which alternatives are most effective in terms of cost, carbon emissions reduction and fuel poverty alleviation.

SEMANCO: what's its USP?

Many of the current key decisions are made using inadequate data or even an experts ‘best guess.’ Relevant data is held in numerous scattered databases in multiple inconsistent formats. The SEMANCO Energy Information Framework (SEIF) will enable you to use pre-existing information from your own and/or others sources as the inputs for calculating the potential carbon reduction from building renovations and urban development and redevelopments plans.

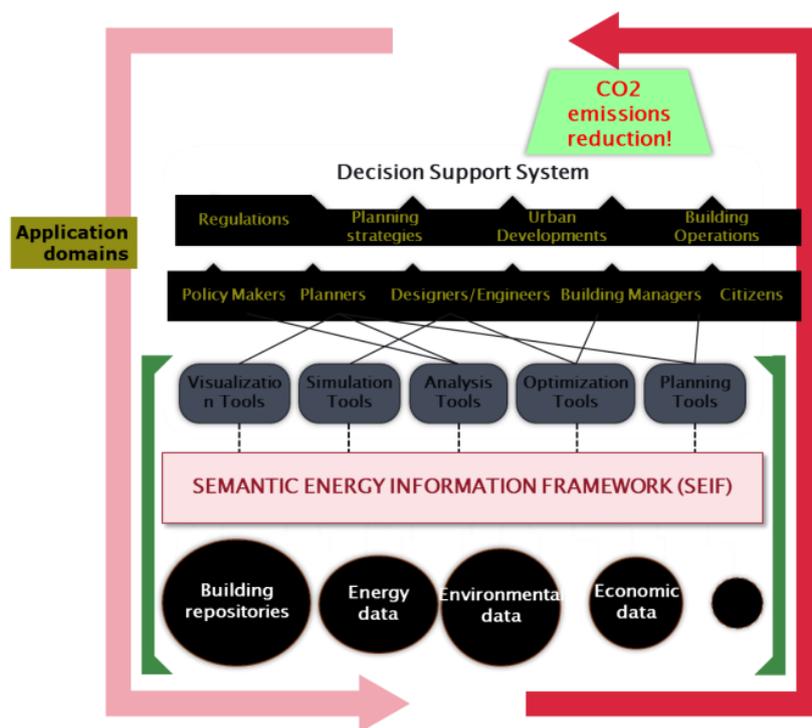
Testing the tools and modelling methods

The SEIF will demonstrate quantifiable and significant reductions in energy consumption and CO₂ emissions using the ICT solutions developed in three case studies:

- Manresa (Barcelona), Spain
- North Harbour (Copenhagen), Denmark
- Riverside Dene (Newcastle), United Kingdom

Central to the concept of SEMANCO are:

- Energy related open **data**;
- **Methods** used to calculate the energy performance of buildings and places;
- **IT tools** for calculating the energy performance of building and places;
- The **users** who perform energy calculations;
- The **actors** involved in the development and implementation of policies and interventions.



Data

In this context, data is open if anyone is free to use, reuse, and redistribute it. Energy related data includes: location of buildings, building specifications, weather data, energy load and electricity and gas consumption. It may also include data about pollution and socio-economic metrics such as income to help stakeholders place energy and CO₂ reduction planning within particular problem domains.

Methods

The methods used to calculate the energy performance of buildings and places involve different approaches to estimate/simulate the impact of different interventions to reduce CO₂ emissions from the built environment.

Tools

SEMANCO is integrating existing IT tools to calculate the energy performance of building and places into the SEIF as well as developing new tools.

Users

Users calculate/simulate the energy performance of buildings and places with the tools. These include analysts working in municipal planning departments, consultancy companies or social housing providers.

Actors

Actors are stakeholders in the urban planning process such as local and national policy makers, building developers, housing providers and property companies. Actors will not necessarily use the SEMANCO tools to calculate/simulate the energy performance of buildings and places developed within the project. Rather, they will make decisions based on the output of the tools.

The deployment of the tools and methods etc. is currently being applied to three case studies in Spain, UK and Denmark, covering different geographical scales - neighbourhood, municipal and regional - and both existing and new urban areas. In the UK, the semantic framework is being applied to a major regeneration site in Newcastle upon Tyne.



Although Riverside Dene (pictured above), on the banks of the river Tyne in Newcastle, has recently undergone significant transformation, major challenges lie ahead for further regeneration. Going forward, SEMANCO will seek to model and inform decisions in relation to energy generation and use down at the site.

SEMANCO: The Output?

The **Semantic Energy Information Framework (SEIF)** is being developed to model the energy-related knowledge needed by planners and decision makers. The tools interoperating with the framework will support systems-innovation and include best available technologies, enhancements to existing

open source platforms, and new technological solutions. The tools and methods to be developed in SEMANCO will enable:

- Structuring energy related data held in distributed sources and diverse formats
- Classifying buildings for energy analysis
- Visualising urban energy consumption and levels of fuel poverty
- Assessing different methods of reducing CO₂ emissions
- Predicting future energy demand
- Providing appropriate energy indicators for local authorities.

Please ensure you visit the NEA stand B12 at Greenbuild Expo to see the SEMANCO tools being demonstrated.

For further information about the project please contact David Lynch, Senior Research & Policy Officer, NEA at david.lynch@nea.org.uk (Tel: 0191 269 2911).

www.semanco-project.eu

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