SEMANCO Semantic Tools for Carbon Reduction in Urban Planning

The SEMANCO project is co-funded by the FP7 "ICT Systems for Energy Efficiency program, 2011-2014 (www.semanco-project.eu) **The goal of the SEMANCO project is to help architects, city planners, engineers, policy makers and citizens to reduce energy consumption and carbon emissions in towns and cities.** Almost 40 percent of carbon emissions in Europe come from buildings. So the potential for carbon reduction from buildings is great. To realise this potential it is essential to find cost effective ways to move towards low carbon urban development.

People making decisions about how to develop the places we live often do not have access to the information they need to make the best decisions. This leaves them guessing at the social economic and environmental effect of the choices they make. This can lead to their decisions having the opposite effect to that intended: such as spiralling costs and carbon emissions and parts of towns and cities not being fit for purpose so no one chooses to live and work there.

More and more information is available which might help politicians develop low carbon urban polices and help local government and developers to implement those policies. This information could also support city planners to guide low carbon urban development and redevelopment and architects to develop energy efficient buildings. However**,** it is frequently difficult, time consuming and expensive to access and process existing information about urban energy use. **Sometimes decision makers do not even know that the information they need exists, where it is stored or how to use it.**

The SEMANCO integrated platform provides access to widely dispersed energy related data about cities stored by many different organisations.

In this way the project platform supports improved energy analysis based on the assessment of existing data rather than estimates. It does this using semantic data modelling that enables information stored in different formats and different places to be used to create a multi-level energy model of an urban area. That can be used to analyse the energy performance of buildings, neighbourhoods, districts and regions.

The SEMANCO platform **includes a set of tools to visualise and analyse a city's energy data.** The visualisation tools combine interactive 3d models, tables and diagrams to display energy related data. The analysis tools use data mining techniques to enable consultants, policy makers and

planners to calculate energy performance indicators. These tools can be used to support informed public dialogues and decision making, based on a detailed analysis of many different possible options.

The open structure of the SEMANCO platform enables a city's energy model to be enhanced when new tools and/or data. This data may be generated by the platform tools or come from external data sources. For a given energy model, users can define their own key performance indicators. This combined with **the open structure of the platform, offers the potential to adapt the services that provides to the needs of many clients**, such as municipalities and city authorities, public and private development companies, financing institutions, public and private real estate companies, national and regional energy authorities, energy consultants and even national and European policy makers.

The SEMANCO platform could inform future EU and national policy development. If energy models are developed for a large number of cities in different EU countries and the data analysed using the tools in the SEMANCO platform, it will be possible to make comparisons across countries. This will help policy makers to see how different regulatory regimes impact on the potential for implementing CO_2 friendly measures whereas providing clear evidence for understanding how EU and national policy development can strengthen the transition towards low carbon towns and cities.