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Promoting solar thermal ordinances in Europe

Renewable energy obligations for new and existing buildings by 2015

The requirements of the new EU Renewables Directive

In December 2008, the European Parliament and Council agreed on a Renewable Energy Directive. This new piece of legislation, sets the legislative framework for the promotion of energy from renewable sources. The overall goal of the Directive is to achieve the binding European target of 20% of renewable energy by 2020. It sets mandatory national targets and Member States governments will have to develop so called Renewable Energy Action Plans to specify sub-targets for the three sectors, electricity, transport and heating/cooling, and to outline the policy measures to achieve them.

This alone is already a huge step forward, as so far European legislation covered only renewables in the first two sectors, but the heating and cooling sector, which is responsible for almost 50% of Europe's final energy demand, was not covered.

Most of the heating and cooling demand occurs in buildings (the built environment makes up 40% of the total energy demand). Therefore, the Directive devotes several paragraphs to buildings only. Most important is Article 13.4, which specifies:

"In these building regulations and codes or any way with equivalent effect, Member States shall by 2015 at the latest, where appropriate, require the use, of minimum levels of energy from renewable sources in new buildings and in existing buildings that are subject to major renovation."

This provision was proposed by the European Commission, who saw the great success of renewables obligations for buildings, which was spreading throughout Europe in recent years. In Europe, the success began with the City of Barcelona and their first Solar Ordinance, followed by more and more Spanish cities, and then the new Spanish technical building code which made solar water heating an obligation for new buildings nationwide. A similar law was enacted shortly afterwards in Portugal. Many counties and municipalities in the UK and in Ireland nowadays require minimum levels of renewables in new buildings, too. And in January 2009, Germany became the latest EU country to make this a national requirement.

The ball will soon be with the Member States' governments, who have to transpose the Renewables Directive into national legislation. National interest groups should promote an early and strict implementation of renewables in buildings. Changes in the building sector occur slowly and it is important to start now to transform it towards a sustainable energy supply.

Picture curtesy of Batec

Obligations for small shares of renewables typically spark additional developments in other non-obliged segments (e.g. solar thermal systems that produce more energy than just the minimum required). One of the key benefits is their very low costs for the public administrations. As part of the building permission process, the check on the renewables requirement is minimal and thus this support measure is not much dependent on typically small public budgets.

The ProSTO project, which started in 2008, came just at the right time. It will provide a lot of the answers local, regional and national governments need, when designing successful and efficient renewables obligations.

Stuttgart's Baseline Assessment for a Solar Ordinance

Before promoting a solar ordinance in your community a thorough assessment of the specific boundary conditions is highly recommended. An identification of opportunities, barriers and potential multiplicators at an early stage of the initiative is often the key to success.

The German ProSTO partners, the City of Stuttgart, represented by its Office for Environmental Protection, and its consultant partner, the Steinbeis Research Institute for Solar and Sustainable Thermal Energy Systems – Solites, analysed the City's possibilities rather in detail. Jürgen Görres, head of the department of energy management, says 'First and foremost we need cogent figures for convincing our politicians, the involved authorities and the concerned stakeholders. It is important that the additional financial burden for our citizens and enterprises of the housing sector remains economically reasonable. But at the same time I am convinced that solar thermal is among the first technologies to be economically feasible for fulfilling Stuttgart's strict energy saving standards for buildings.'

Complementing the already strict energy performance requirements

Indeed, Stuttgart's house builders need to cope already with multiple ordinances: The City of Stuttgart, having a 30 year tradition of introducing innovative energy management for the public building stock, already for a few months requires an updated energy standard for Stuttgart's own buildings. For newly built non-residential buildings this means 'EnEV – 40 %' (at least 40 % better than what is required under the national German Energy Savings Law) and for new residential buildings the substantial KfW60-standard (i.e. max. 60 kWh of primary energy consumption per square meter of living area per year). Private buildings are covered by these requirements in those cases in which the City can influence the energy standard through private contracts e.g. when selling development land or through urban planning contracts. Additionally, the Federal State of Baden-Württemberg, through its new Renewable-Heat-Law, requires a share of 10 to 20 % of the heat consumption of residential buildings to be covered by renewable energies. And in January 2009 a similar law at national level came into force, requiring the use of renewable energies in all new buildings. But these Renewable-Heat-Laws can be fulfilled also by significantly increased energy-efficiencies.

In particular metropolitan cities like Stuttgart should definitely have a very high interest in developing solar thermal to its full potential: 'Thinking beyond fossil, we have to understand that only few resources will be left for covering the enormous heat demand of buildings. The use of biomass and geothermal energy are critical in urban centres regarding emissions, logistics and land-use. Solar thermal can reduce the primary energy consumption of buildings between 10 to 30 %, in larger block heating system also more than 50 %. But the crucial advantages for cities are, that solar thermal delivers emission- and pollution-free heat, it can be well integrated into buildings and its use is not subject to limited resources.' explains Thomas Pauschinger, board member of Solites.

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The baseline assessment provides a solid basis for the promotion of a solar ordinance

The baseline assessment carried out by the German ProSTO partners was also useful for understanding the remaining market barriers and the necessary market measures for flanking the ordinance. Active cooperation with the professionals is a key element for boosting the market. The share of solar-active installers, architects and planners is today still only around 5 %. On the other hand ardent solar advocates like Stuttgart's housing association SWSG and Siedlungswerk, frontrunners in the use of solar thermal for many years, are reliable partners for spreading the word.

The Stuttgart experience shows that a thorough initial assessment builds a solid base for promoting a solar ordinance. The international ProSTO partners prepared a baseline assessment check list, covering the relevant aspects starting from the local market stakeholder analysis to the point of the municipality's capacity for enacting an ordinance. Visit the STO toolbox on www.solarordinances.eu and download the check and other interesting instruments for municipalities that would like to replicate the solar experience of the ProSTO partners.

City of Stuttgart, Jürgen Görres and Nina Weiss
Solites, Thomas Pauschinger

New solar thermal ordinance in Murcia City (Southeastern Spain)

Murcia is the capital of the Region of Murcia, a self-governing region located in the southeast of Spain, and bathed by the Mediterranean Sea. With more than 400.000 inhabitants, it is the seventh most populated city in Spain, with a population density of around 450 inhabitants per square kilometre. Less than half the local population lives in the urban area, and the rest are unevenly spread through the 54 municipal districts, into which the municipal area is divided.

Thanks to the Mediterranean climate, the temperature in Murcia reaches an annual average of 18º degrees, with hot summers and mild winters, and with scant and irregular rain. The solar radiation in Murcia is more than 3 kWh/m^2 per day. This allows for high savings of conventional energy and short payback periods, using solar thermal energy.

New Spanish Legal Framework

Some recent changes have occurred in Spanish Legal Framework for renewable energies, and especially in the subsector of solar thermal. A new national buildings regulation (Código Técnico de la Edificación) came into force in 2006. The previous buildings regulation had been approved 30 years before.

Renewable energies and efficiency are two of the key points of the new national regulation in Spain for buildings design and spatial planning. Minimum requirements have been introduced for insulation and for transparent facades, and taking advantage of solar energy for space heating. This new regulation requires 60%-70% of the energy used to produce hot water to be covered by solar thermal systems.

What does the new Solar Thermal Local Ordinance in Murcia add to National Regulation?

Since 2002 new housing developments in Murcia, were required to include solar thermal systems for hot water production. This requirement was set by the local administration - not by a local ordinance, but in the process of negotiation of criteria on new housing developments plans with private bodies. The Land Use Law in Spain allows private bodies to design the planning of an area of the city, as long as it is compatible with regional and local laws and obligations and administrations.

As a Municipality in Spain, Murcia has its own local administration, with legal competence on construction, and licenses of activities. Issues of urban development and the environment are dealt with by the relative local administration.

The local administration needs to analyze and take into account all the aspects of a particular project. It has to bring in line national regulation with the local environment and possibilities. Within the context of the local solar ordinance, it has to specify reasonable exceptions, e.g. in cases of special artistic interest, or where reflections of solar irradiation could negatively affect surrounding buildings. The ordinance regulates also some aesthetic aspects, such as the alignment of the solar thermal collectors, the piping and the layout of elements on the façade.

The local obligation to install solar systems includes also the businesses located on the ground floor (they are not covered by the national regulation). Normally, these businesses have the services (water, electricity, gas, telephone) separated from the system installed for the rest of flats in the building.

Regarding the technical specifications and requirements, the performance criteria refer to the criteria established in National Regulation which are ambitious and very close to the current technical possibilities.

Furthermore, the local ordinance establishes a buildings register, which shall help to better assess some data regarding solar thermal systems in the city, i.e.: how many systems are installed, the areas where they are installed or what their performance.

Finally, the ordinance specifies maintenance criteria as well as penalties for cases of non-compliance with the regulations. This will help to monitor the sector and to set a more detailed local incentive policy.

To conclude, the Murcia Local Administration aims to reach two goals with the local ordinance: Firstly, to set the fix the local requirements in accordance with the national legal framework. And secondly, to monitor the working of the sector, their possibilities, and in the end to have a rational point of view to boost renewable energy and energy efficiency in the Municipality of Murcia.

Murcia City Council
Francisco Carpe Ristol, Head of the Environment Department
Mercedes Hernandez Martínez, Head of the European Programs Department
Fernando Sánchez Lara, Engineer of the European Programs Department

Preparing your local Solar Ordinance – the ProSTO toolbox

ProSTO addresses first of all Local Authorities such as Municipalities, Provinces and Regions, which are interested in introducing Solar Thermal Ordinances (STOs) at local level. Through such legal provisions, higher efficiency of the building stock can be reached.

Useful tools are currently being produced and tested within the project. The aim is to disseminate these tools towards European Local Administrations, in order to support them in the process of designing, introducing and managing a Solar Thermal Ordinance once the tools are available on the project's website.

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What are ProSTO tools?

Tools produced by the ProSTO project are mainly documents covering the whole range of a STO:

- Context: clear and simple explanation of the scope of a STO and of the process for introducing such laws.
- Base line assessment: how to analyze the local situation and evaluate the potential of a STO.
- Ordinance components: each part of a STO is described with a critical approach, examples from existing cases are provided. Issues such as calculation procedures, architectural integration and quality requirements are addressed.
- Flanking measures: good STOs must include support measures to help all involved actors (demand side, supply side, other stakeholders, the Local Administration itself) in learning how to deal with the new requirements introduced by the STO.
- Monitoring: STOs must be monitored and evaluated, in order to check their fulfilment and to improve them if necessary.

Why should I use the ProSTO tools?

Tools produced in the framework of the ProSTO project result from a deep analysis of existing STO cases and direct interviews with actors involved in these processes. Once the tools are available, they are tested by the Local Administrations taking part in the project, in order to optimize them.

Download the ProSTO tools from www.solarordinances .eu

ProSTO tools are free and easy to be found. Connect to project's website – www.solarordinances.eu – and open the "STO Toolbox" in the navigation menu. Contents are divided in the categories mentioned above. For each tool, a short summary describing its contents is available. The tool itself is available in PDF format.

We are looking forward to your feedback!

The tools produced in the framework of ProSTO are meant to be disseminated throughout Europe, being adopted by new Local Authorities. For most efficient results, we look forward to feedbacks and hints for improving the tools. Please contact prosto@ambienteitalia.it.

ProSTO Partners:

- **Ambiente Italia**
- **ASTER Consulting**
- **City of Stuttgart**
- **Ecofys ema SL**
- **ESTIF**
- **Giurgiu City Hall**
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