Urban Development and Technical Infrastructure

New Challenges to Professional Training of Urban Planners and Developers

To reach the targets on climate protection, several challenges have to be resolved. The main players are municipalities which create and implement energy and climate concepts. This requires cooperation between representatives of the municipalities, utilities, associations and the building industry. But often, urban planners and developers do not have the necessary knowledge in the field of energy. Therefore, the aim of the EU project URBAN Planners with Renewable Energy Skills is to increasingly integrate energy issues into the training and education of urban planners.

Germany has set ambitious goals regarding climate protection. By the year 2050, all greenhouse gas emissions are to be reduced by 80% to 95%, with reference to the previous year. Germany would then accomplish its contribution to the defined "2-degree target", i.e. to keep the average global warming from increasing more than 2 °C, compared to its level before industrialisation. Politicians have defined a lot of scenarios on many levels and introduced various measures to achieve this goal. Beside energy saving, most of them focus on increased energy performance. But how and by whom can these objectives mainly be realised? Who are the key players and do they have the required knowledge?

The main focus should lie on the space heating market (incl. hot-water generation), which is responsible for about 35% of the final energy consumption in Germany [1]. Around 80% of the total heat consumption in Germany is used in metropolitan regions or towns of smaller size [2].

To realise this ambitious goals on a local and regional level, an approach that connects with municipalities, their administrations and enterprises is needed. General standard solutions are not optimal, and they are difficult to realise in the pluralistic structure of Germany, with its differences in regional development and its different energetic infrastructural systems. Individual adaptation is the key to success. In addition, it has become clearer and clearer that, for an overall energetic optimisation of a town, district to district has to be considered from the outset, in order to get the right approach to increase overall performance [3]. But which focuses are required, and what will be the new challenges for city planning?

As the example of the strategy for country development in Saxony 2020 shows, innovative energy concepts play an important role in the plans for country development. To ensure quality of life in the future, in spite of the consequences of demographic changes, it includes definitions of the decisive fields of activity, and objectives. Using Saxony as an example, they can be summarised as follows:

- brownfield development takes precedence over greenfield development - strengthening city centres,
- living in the city centre for young and old,
- support for economy and retail target groups in inner-city areas,
- monument protection to strengthen identity and image,
- principle of central locations,
- innovative energy concepts have priority [4].

Municipalities also emphasize on objectives to reach the "2-degree target". They develop the required basis through concepts of environment protection, energy and climate protection, and prepare the implementation for different sectors. They are an integral component of a complex concept of urban development.

Nevertheless, energetic urban planners and developers are facing new challenges, like those in energy management. Integrated urban development concepts (so-called Insekts) build a network considering all important areas. This is a characteristic of the new, future-oriented and innovative town planning. Already today they represent the information basis in a lot of municipalities. Although the planning of urban development is a planning level that is not yet formalised, every municipality has to develop a concept with long-term planning goals before they set up a surface use plan - and also before changing or continuing such a plan. Another design level that is not to be underestimated is represented by the energetic plausibility check. The experience from the project Urban Redevelopment «East» («Stadtbahnbau Ost») clearly shows the advantages of this method - in those cases where it was applied.

In contrast to traditional urban development concepts, integrated urban development concepts include a large part of the areas that are relevant for urban development since 2008. In a number of cities, like Herten and Leipzig, experience has been collected over a long time period (table 2).

Urban planners, urban developers and environment offices play a key role regarding preparation and realisation. As experience in the first decade shows, the private sector develops only a limited dynamic activity in the enhancement of the efficiency of buildings. Among others, this is due to the (social) demographic development. Representatives of the city administration are important players for realisation, as well as energy suppliers, political parties, associations and the housing industry. It is important to consider that the different interests of all players have to be coordinated. Therefore it is important for the municipalities to participate in an early stage and thus allow a balance of interests.

Table 1. CO₂-equivalent of selected German cities

<table>
<thead>
<tr>
<th>CO₂-equivalent (t/Inhabitant)</th>
<th>Defined objectives (t CO₂-equivalent/Inhabitant)</th>
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<tbody>
<tr>
<td>Leipzig 5.75 (2008)</td>
<td>10% every 5 years, long-term reduction of 25 t/Inhabitant CO₂-equivalent by 2030</td>
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<tr>
<td>Chemnitz 7.5 (2011)</td>
<td>5.4 t/Inhabitant CO₂-equivalent by 2030</td>
</tr>
<tr>
<td>Herten 8.6 (2009)</td>
<td>-9,000 t by 2020 (basis 2006)</td>
</tr>
<tr>
<td>Dresden 9.8 (2010)</td>
<td>10% every 5 years (basis 2010)</td>
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<td>Frankfurt (Main) 12.8 (2005)</td>
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<tr>
<td>Average 10.0 (2007)</td>
<td>40% by 2020 (basis 1990)</td>
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</table>

Figure 1. Integrated urban development concepts

For the development of such an integrated concept, it is indispensable to match the different areas and to integrate other relevant players.

Municipal concepts of energy and climate protection

When creating municipal concepts of energy and climate protection, the analysis of the actual condition in the areas of heat, power and traffic is a definition basis for objectives and the development of scenarios. These are required to prepare an overall concept based on single area strategies (figure 2).

The actual situation is mainly indicated by the CO₂-equivalent per inhabitant and year in tonnes (table 1). In approx. 900 municipalities alone, (part) concepts have been supported with the BMU municipal guidelines.

Results of the project UP-RES

- Information from about 200 best-practice examples from different EU countries, selection of 30 case studies,
- short seminars on matters of renewable energies with 760 participants,
- 270 regional and municipal planners and architects will participate in the long courses; a minimum of 120 participants will be certified;
- planning instruments will be developed for those seminar participants,
- the prepared seminar documents will be provided to 200 planning schools and institutes in the EC in ten languages.

Source: ACFW based on EU/ACFW. BMVBS [1]
However, the straight coordination of urban planning with local or regional energy suppliers is not or hardly conducted in most cases. The reason for this frequent lack of communication is the sporadic treatment of the 'energy' subject in the past training of urban planners. Therefore, it is very important that both sides use the same language and know the key parameters of their partners, e.g., the time schedule of the planning method.

However, this also increases experiences for the player's skills. Today, urban planners/developers have to be experts in a lot of areas. Besides having knowledge in the areas of demographics, segregation and integration, accessibility for handicapped, retail business, urban re-development, development of inner-city areas, urban quarters, and traffic, it has become more and more necessary to consider also energetic topics and planning, in particular focusing on renewable energies. They also play the role of the mediator and moderator in the dialogue, and not to forget the guiding role for external consultants.

EC project UP-RES

In the energetic part, the EC project «Urban Planners with Renewable Energy Skills (UP-RES)» from September 2010 to February 2013 followed this approach. This project targets on strengthening the consciousness of energy and the usage of renewables in space planning. This focuses on an increased integration of energy topics in the training of urban planners. Here, it is very important to support the cooperation with municipal offices, free planners and municipal utilities. The UP-RES project concentrates on overcoming and eliminating non-technical barriers that prevent renewables from penetrating the market. Urban and space planning represent a special focus, as energy has got the lowest consideration there so far. For some countries, there are already planning guidelines to increase energy performance and apply renewable energies, but planners in local municipalities often do not have sufficient time and knowledge put these into practice. Within the context of this project, structures and training requirements are analysed, and methods are developed. Further, short and long courses in the domains of urban and regional planning are developed and implemented, in the five partner countries Finland, Germany, UK, Hungary and Spain.

Table 2. Integrated urban development concepts

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The short courses serve as an introduction element and a knowledge database for the long courses. These contain tools and application support, workshops, seminars and field trips, as well as a final certification. Due to the big differences between countries, the training concept has to be adapted to all participating countries. In addition to this training concept, 30 best practice examples will be selected and used in the training. The best-practice examples, training concepts and the developed tools are published and communicated in ten languages, to promote the application of renewable energies in urban and regional planning. In this way, urban and regional planning can create better conditions for an increased use of renewable energies in Europe.

Results of the EU-RES project

In Germany, a total of six short courses were held (in Dresden, Frankfurt, Munich, Hamburg, Chemnitz and Berlin) and long courses started successfully in June 2012. Co-operation partners for the short courses were the Saxon Ministry of Interior, the Technical University of Munich (TUM), the Association of Municipal Companies (VJK), the Technical University of Hamburg-Harburg (THU/RIHE), the Hanen-City University of Hamburg and the German Institute of Urban Affairs (Difu). With more than 200 urban planners, it was possible to convey the emphasis of the training and the present approaches to enhance professional development and cooperation.

The discussions during the short courses and the survey results from more than 200 urban planners and supply enterprises, lead to the result that processes between municipalities and supply enterprises require more coordination in general. Nevertheless, there seems to be a strong discrepancy in the assessment of the ultimate authority for decisions in energetic topics, between municipalities and utilities. Further, it became clear that municipalities and also utilities assign a big significance to renewables regarding the future.

Modular structure of the advanced vocational training

Module 1: Basic information and introduction into the system of a town – technical infrastructure
Module 2: Basic conditions and data – energy, and energy efficiency
Module 3: Physical/technical background/forms of energy/energy sources/buildings
Module 4: Definitions of RES and possibilities/limits in practice
Module 5: Basic economic principles
Module 6: Concept preparation
Module 7: Legislative framework of the realisation of energy/climate goals in politics and urban planning
Module 8: Implementation measures – Best and worst practice with examples

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In addition, it was determined that in former trainings of urban planners, the energy topic played a merely minimal role, and that it is therefore very important to improve this. In collaboration with the Hafen City University, the first connectivities are implemented in the training of urban planners since 2008.

The experience from previous seminars and the survey results were incorporated into the advanced vocational training, which AGFW offers since June 2012 in collaboration with the German Institute of Urban Affairs (DIfU). The high demand and great interest in such training is also confirmed by the recognition through the North-Rhine Westphalia chamber of architects, the Hessian chamber of architects and urban planners, the Schleswig-Holstein chamber of architects and engineers, and the Saxon chamber of architects.

Goals of the training

The goal of this training is to convey knowledge on the interfaces between urban planning/development and energy efficient infrastructures, to explain the interconnections and enable participants to design and implement their own concept of energy and climate protection. The training is targeted on specialised staff in the domains of urban planning/development and environment, and construction offices. Further, the offer addresses off-site planners, architects and responsible persons in utilities. Participants from utilities will get the opportunity to better understand the interconnection with municipal urban planning. They will be able to participate more efficiently in those planning.

This training allows for the thought of connectivity between municipal planning and the suppliers. A basis of discussion is created through the knowledge conveyed to each side, on the work of each other’s domain: Now a common language can be spoken. This also enables urban planners and utilities to collaborate in an optimal way, with matched processes, as part of energetic urban development. Only through this enhanced communication and collaboration, future challenges to urban planning and energy supply may be mastered in an innovative way.

References


