SOLAR HEATING & COOLING PROGRAMME
INTERNATIONAL ENERGY AGENCY

2016 HIGHLIGHTS

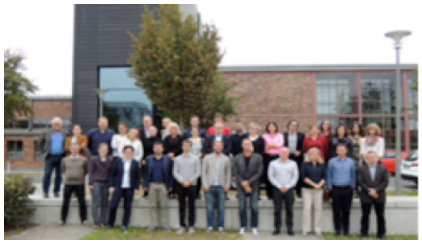
Task 51 – Solar Energy in Urban Planning

THE ISSUE

A large portion of the potential for energy efficiency in existing buildings and the potential to utilize solar energy still remains untapped. The built environment accounts for over 40% of the world's total primary energy use and 24% of greenhouse gas emissions. The combination of making buildings (refurbishing and new developments) more energy efficient and using a larger fraction of renewable energy is therefore a key issue. Political statements and directives are already moving towards zero-energy buildings, communities and whole cities. An increased use of solar energy is one important part of the development ahead, where the urban fabric needs to utilize passive solar gains and daylight to reduce the energy use in buildings and for lighting outdoor environments, as well as to improve the inhabitants' comfort indoors and in urban outdoor areas. And, active solar energy systems integrated in the urban context to enable a supply of renewable energy primarily as heat and electricity, but also of solar cooling, helping cities reach sustainable solutions.

OUR WORK

The main objective of SHC Task 51 is to provide support to urban planners, authorities and architects to achieve urban areas, and eventually whole cities, with architecturally integrated solar energy solutions (active and passive) that contribute a large fraction of the renewable energy supply in cities. Results will include processes, methods and tools to assist cities with developing a long-term urban energy strategy. Heritage and aesthetic issues and solar fields in sensitive landscapes will also be studied. Additionally, a goal is to prepare for and strengthen solar energy in urban planning education at universities. The material developed will also be useful for post-graduate courses and continuing professional development (CPD).



Task experts in Adlershof, Berlin

Participating Countries

Australia
Austria
Canada
China
Germany
Denmark
France
Italy
Luxembourg (observer)
Norway
Sweden
Switzerland

Task Period 2013 - 2017
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KEY RESULTS IN 2016

State-Of-The-Art In Education

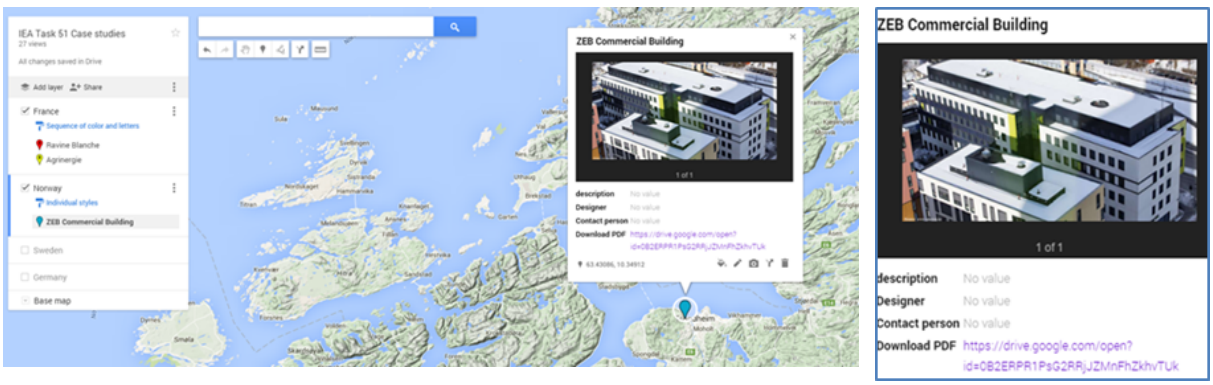
A report on the state-of-the-art in education regarding urban planning with solar energy will be published in early 2017. The main conclusion from this work is that there are many courses dealing with solar energy, but most of these courses are in engineering and architecture programs and focus on the technical aspects of solar energy, such as materials, system components and the construction of solar systems. In urban design and urban planning programs there are only few courses dealing with this topic. Thus, a huge gap is detected in urban planning education. A complementary report is drafted that covers the state-of-the-art on solar tools in education. The review of existing urban planning legislation and voluntary initiatives and of existing urban planning processes in participating countries is now compiled and will be prepared for the SHC review process.

Case Studies

The extensive work on case studies and action research have resulted in 32 reported cases, which are presented in the report “Illustrative Prospective of Solar Energy in Urban Planning: Collection of International Case Studies”. These cases represent new urban areas, existing urban areas and landscapes. They include solar thermal, photovoltaics and passive solar strategies. The report is undergoing final editing and will soon be published. This work provides examples of real applications from across the world and is intended to inspire actors involved in urban planning. The goal is also to make the reader aware of issues like solar rights and heritage concerns. The case studies include testing of approaches, methods and tools and illustrate examples of legal frameworks, barriers and opportunities. Two cases include educational aspects. In principle, all experts have been involved in this work on case studies – linking all subtasks.

Summer School

In conjunction with the Task 51 meeting in Berlin, a summer school was arranged on “City in Transformation: Energy and the Urban Environment“. This brought students together with researchers and teachers from various disciplinary backgrounds in combination with the IEA SHC Task on Solar Energy in Urban Planning. Over the course of a week, students from different fields and German universities developed a master plan for solar optimized buildings in an area of Berlin’s Adlershof district and then publically presented project designs. The teachers are also participants in Task 51. This gave the opportunity to test solar methods and tools in teaching, to get feedback for further development. Such summer schools and courses provide valuable input to improve teaching methods and assessment tools for solar energy planning. And the students seemed to appreciate the summer school – which makes this a win-win situation!



Draft of the SHC Task 51 case studies website platform using Google my maps (on the left); and the enlargement of the case study menu with short information and the link to download the related brochure (on the right). Illustration: Gabriele Lobaccaro, NTNU.