



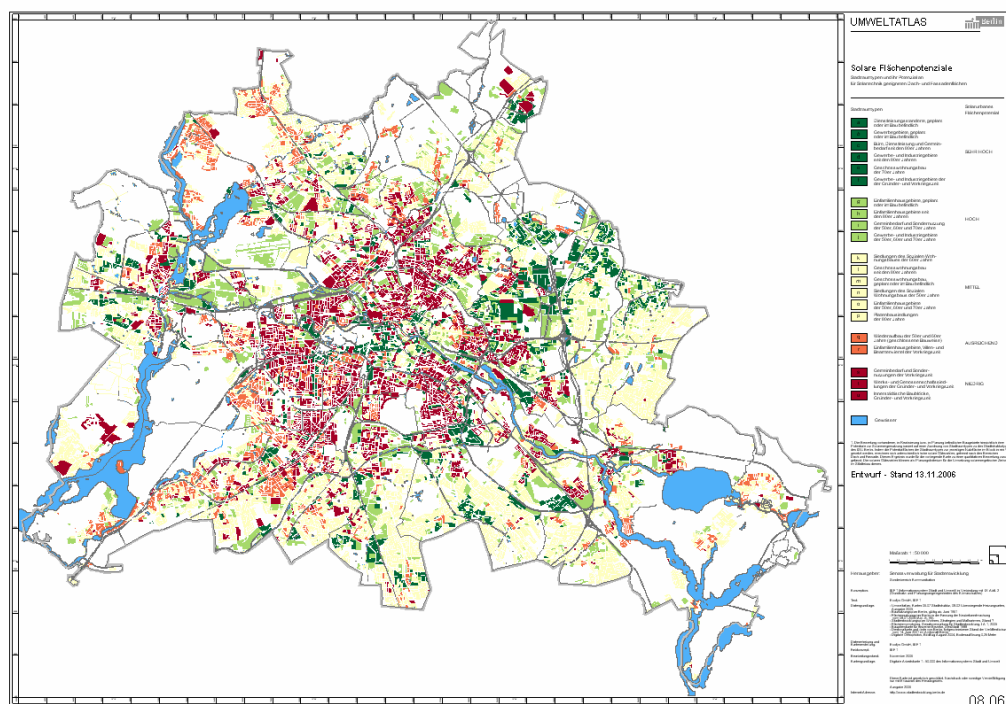
Solar Urban Planning Berlin

Berlin is a City with a unique history of urban development due to the division of the eastern and western parts. Areas situated in the very centre of the City have not been developed because they were close to the borderline. Now those areas have a huge potential for urban renewal. Situated in the middle of a capital and surrounded by a strong infrastructure many areas have been reactivated. But there are still many areas which need new development in order to fit into the local situation. Urban renewal in Berlin represents an opportunity for the implementation of building integrated PV systems. The building stock was assessed and areas with high solar potentials on building surfaces identified to allow the integration of PV in the urban area.

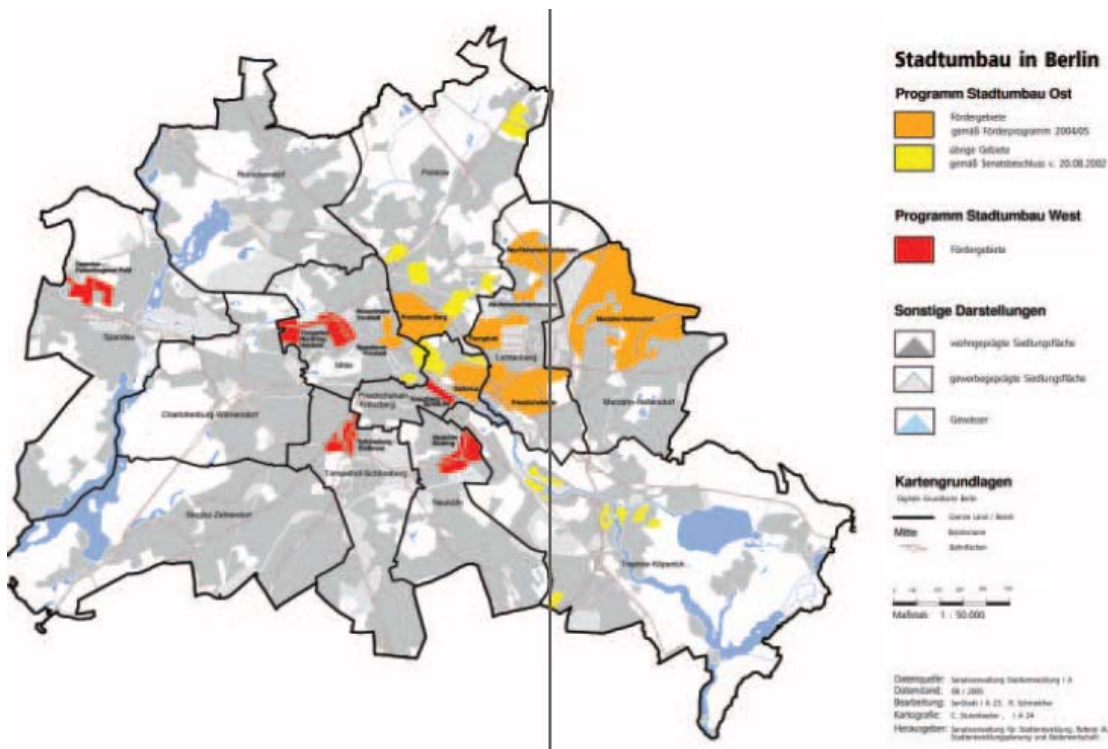
Project Development

A solar urban master plan for the City of Berlin was created by Ecofys in 2004 at the request of the City Council in order to determine the solar potentials of the different city quarters. During the solar planning process 20 types of city quarters were identified each with a solar potential determined by their history, structure and utilisation. The solar grading factor, an instrument which relates the solar potential of the buildings to the net building land of an area, was used to present the solar quality of certain areas in a simplified way. Based on the solar grading factor specific areas were selected as high priority areas for solar development.

This assessment has now been combined with additional information such as the demand for solar heat or the possibilities of new planning or urban renewal. Architectural conditions concerning the building structure like assignation of monument conservation were considered as important as the technical feasibility and the urban situation.



Map of solar urban potential



Map of renewal areas

The “Urban Renewal West” program of the German Ministry of Building and Regional Development targets urban planning. This program aims to formulate strategies for urban areas with declining construction activity as a result of structural change. The areas are affected by rebuilding, waste land and a lack of urban structure. By rearranging the urban situation and investing in infrastructural measures the program aims at initiating private actions.

The solar urban master plan had identified the solar urban potential of the different city quarters of Berlin. A planning workshop was held to combine the urban renewal program with solar targets by identifying specific areas with a high solar and developmental potential.

Planning

The planning workshop was held in Berlin in July 2007 and brought together the planning team for the urban renewal program, (in this case the Berlin urban planning office and representatives of the urban development department commissioned with renewal planning), and people involved in the solar planning process. The key question was how to transform the knowledge and the proposed measures of the solar urban master plan and the activities of the renewal process into actual projects.

It was hoped that ongoing actions within the urban renewal process could be used to hook solar topics and implement solar requirements in the different city areas.

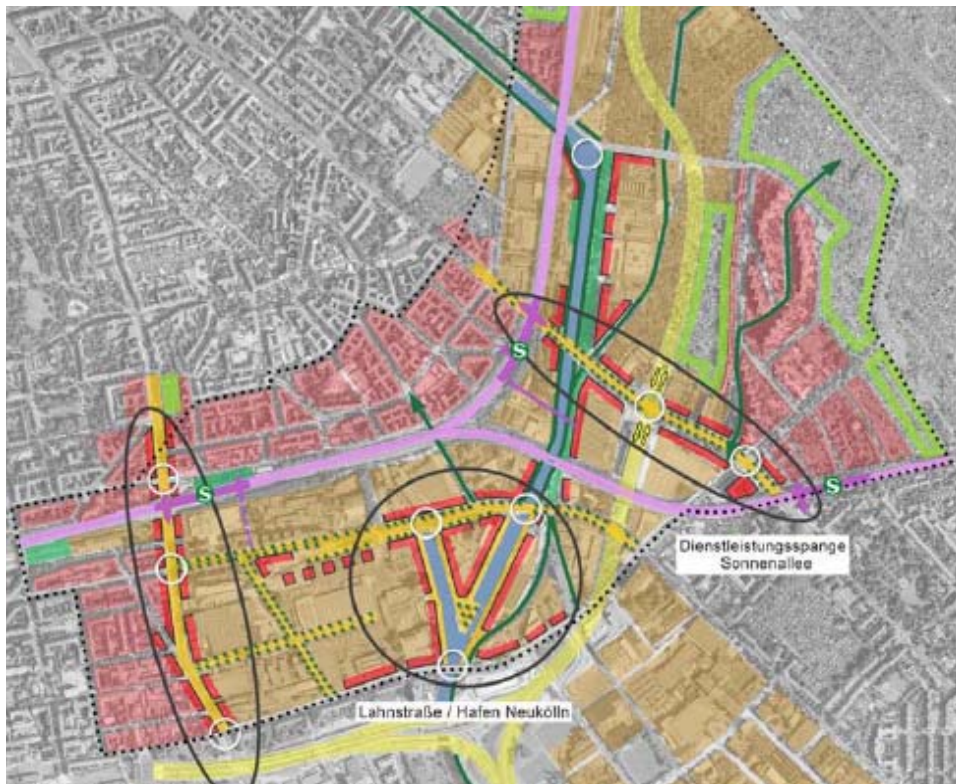
A list of measures was proposed connecting renewal activities with possibilities for the integration of solar systems. The industrial area of “Neukölln-Südring” situated in the inner City and already included in the renewal program was chosen to establish a project as a result of this strategic planning. Within the area of “Neukölln-Südring” trade and industrial areas from 1950-1970 and trade and industrial areas from the 1980s are predominant. Solar grading factors for the areas



were calculated differentiating between roofs and façades. The results are given in the table below.

	m ² surface/m ² net building land	m ² surface/m ² net building land
Industrial areas of 1950-1970	Roof 0.10	Façade 0.03
Industrial areas after 1980	Roof 0.22	Façade 0.12

The large buildings in industrial areas from the post war period have one of the highest solar potentials. However, most of those industrial buildings have no or just little space heating demand and no need for hot water due to their specific use. Therefore, this city area type is predestined for the application of PV systems. The overall potential of the complete quarter regarding solar power generation was calculated as 33500 MWh per year.



Urban plan renewal area

The renewal program for this area included the establishment of a business network with the companies involved in the industrial park Neukölln-Südring. The city council planners of Berlin and the urban planners commissioned for that project created a platform in order to improve communication between the companies and to motivate new investors to decide on this location because of the high potential for new development.



As result of the workshop it was agreed to use this local network as a platform to spread information on the possibilities and potential of solar systems by creating a solar roof campaign.



Buildings and roofs of the industrial area

Implementation

The implementation of the solar roof campaign within the urban renewal program was planned as a pilot project with the objective of combining urban renewal and the mobilisation of solar urban potential. The business network will be used in order to get access to the owners of the roofs and facades of this area and to motivate them to invest in PV and to inform them about the possibilities of financing or contracting.

The PV campaign may consist of:

- Realisation of information events
- Generation of a roof register
- Technical and economic assessment of the roofs

The realisation of the PV campaign is planned for 2008 and will be arranged by the urban planning office. PV-Upscale members will also be involved in the process.

Barriers and Solutions

Regarding the implementation of solar targets within existing building structures the main barrier identified has been the willingness of private companies to invest. The mobilisation of solar potential depends on the willingness of private investors and mostly their interests are very inhomogeneous. To mobilise the potential of a complete city quarter, strong incentives are needed in order to get people involved. Awareness of the possibilities of PV systems within urban space, and particularly in combination with urban renewal, is not very high. Many chances to install PV in public spaces for instance are missed. Town planning should focus on solar potential and consider it in the planning process from the beginning. Another barrier can be located within the structure of municipalities and their internal communication. Gaps inside the interconnection between departments and diverse allocation of responsibilities can lead to delays of the implementation process.



Recommendation

This example shows how the solar potential of the existing building stock can be mobilised in connection with the urban renewal of city quarters. The methodology can be used for regions with a similar structure and similar problems. Another possibility for more residential areas is the creation of shareholding PV systems. These are initiatives in which a co-operative of neighbours or citizens owns a PV system. A solar campaign can detect potential roofs and bring the different stakeholders together.

Sources of further information

The urban development department of Berlin created the “Environmental Atlas” a web-based tool with public access to all relevant data. The map of the solar urban potential of the city quarters of Berlin is released in the scope of this database.

Environmental Atlas Berlin - <http://www.stadtentwicklung.berlin.de/umwelt/umweltatlas/i806.htm>

Urban Development Program –<http://www.stadtentwicklung.berlin.de/wohnen/stadtumbau/de/west.shtml>

Urban Development Department Berlin - <http://www.stadtentwicklung.berlin.de/>

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