B-AD5

SHADING BY STRUCTURES AND GREENERY

Number	B-AD5
Indicator name	Shading by structures and greenery
Area	A
Indicator definition	The indicator expresses in % the share of the surface of the building shaded by the exterior structure, respectively vegetation
Indicator unit	%
Key words	Overheating, shading, greenery
Reason for tracking and usability	Shading, especially of all-glass buildings, can be realized by means of perforated façade systems (reminiscent of external blinds above the entire facade). A solitary tall tree, protecting the building from the wind, could save about 1.3 % of energy costs. According to the generally accepted rule used in the United Kingdom, 3 to 9 % energy savings are proposed with the trees involved. Approximately 80 % of the cooling effect of the tree shade is due to transpiration. However, since coniferous and evergreen trees prevent sunlight in the winter, it is necessary to give preference to deciduous trees, respectively. their combination with conifers. An unshaded façade can also heat up to 40 °C during a hot summer day, while the wall temperature under the green cladding is also 15 °C lower (Perez et al. 2011), which has a positive effect on the interior temperature. Thanks to the façade of climbing plants, only a fraction of solar energy penetrates the building's own façade. Therefore, if the uncovered wall is heated to 42 °C in the sun, for example, the same wall under the green façade is only about 22 °C. Climbing plants significantly reduce the temperature of the wall not only depending on the climate zone, but mainly on the area they cover. The temperature reduction thus ranges from 10 to 30 °C. It has been calculated that reducing the wall temperature by 5.5 °C will save 50 % of the energy spent on air conditioning. Considering that 1/3 of the energy for heating in winter is spent on wind-cooled walls, climbing plants (especially evergreen ones such as ivy) bring energy gains.

Completeness, representativeness, validity	The indicator offers a simplified assessment and cannot replace an accurate measurement in the conditions of a specific location and building. The indicator does not replace exact calculation methods. The determination of the shaded area itself is subjective and the result may vary according to the chosen method.
Description of data processing	The data are obtained as an estimate of the percentage of the area of the building protected from direct sunlight during the summer day by a separate green façade, green wall, shading of the façade with deciduous trees, or mixed (deciduous-coniferous) vegetation, or a separate shading structure.
Data source	Own owner / administrator data
Tracking frequency	2 – 3 years
Urban influence	The city/city district/municipality can directly invest in the installation or reconstruction of shading of the structure of buildings owned by it, or support these measures on the buildings of other owners financially or otherwise.
Presentation method	The results will be presented in a uniform KLIMASKEN framework on a five-point scale according to the set intervals
Responsibility	Owner, building manager