

Practical guidelines to resilient urban planning against heat stress

Background and Purpose

Due to climate change, heat waves are becoming more severe and frequent also in the Nordic countries. The growing urban population leads to densified urban areas, higher fraction of paved surfaces and rising urban air temperatures, enhancing the effect of human exposure to heat. Urban planning measures to reduce health risks from heat waves are economically beneficial and contribute to more sustainable urban development. In the Nordic Countries, outdoor urban temperatures are already today frequently exceeding recommended levels for human health. Heat stress is caused by both outdoor and indoor conditions, factors rarely assessed in an integrated way. The impact of climate change on urban areas and its consequences for humans is thus an urgent research topic. The purpose of the project is to contribute to knowledge and best-practice methods regarding climate adaptation to heat stress focusing on Nordic conditions developing user friendly guidelines for design strategies and measures to increase urban area resilience to high temperatures.

Methods

The project will focus on planning issues in urban development focusing on outdoor as well as indoor measures to mitigate summer heat stress. For outdoor conditions, measures include e.g. different building structures and usage of blue-green infrastructure. Regarding indoor conditions, size and position of windows have a great impact. Both outdoor and indoor conditions contribute to human heat stress but are rarely dealt with in combination. A major focus will therefore be combined evaluations of joint indoor/outdoor measures identifying efficient combinations to mitigating summer heat stress. Furthermore, since economic considerations play a major role in urban planning and building, an economic analysis will be conducted for different combinations of measures to guide the decision process towards desired solutions, also from a cost-benefit perspective.

Organization

The project is organized in work packages addressing different topics including people from both Gothenburg University and from different departments from COWI-Sweden and COWI Denmark. Stakeholders is tied to the project to ensure that knowledge gaps in urban planning regarding heat stress are addressed. Stakeholder workshops will ensure that the outcome will result in relevant guidelines regarding indoor and outdoor measures, cost-benefit considerations in design strategies as well as practical tutorials and real-world examples.