

Towards climate resilient building: strategies to design future-proofed medium-sized offices in Flanders

Authors:

Ir.-Arch **Delphine Ramon**, , PhD student, Dept. of Architecture, Faculty of Engineering Science,
KU Leuven *delphine.ramon@kuleuven.be*

Prof. dr. Ir-Arch **Karen Allacker**, PhD supervisor, assistant professor, Dept. of Architecture,
Faculty of Engineering Science, KU Leuven *karen.allacker@kuleuven.be*

Prof. dr. **Nicole van Lipzig**, PhD co-supervisor, professor, Dept. of Earth and Environmental
sciences, Faculty of Science, KU Leuven *nicole.vanlipzig@kuleuven.be*

Abstract

Climate change is a fact and today the question is rather how strong the effect of this phenomenon will be. Adaptation to climate change is therefore a major challenge as well as building robustness considering the current climate uncertainties. This research aims to define strategies to design climate resilient medium-sized office buildings in urban areas in Flanders. The impact of the expected future climate in Flanders on buildings will be investigated in terms of indoor thermal comfort, and heating and cooling demand. Recently developed climate scenarios for Flanders are used for the analysis. Strategies for an improved comfort and reduced energy demand will be searched for in order to avoid excessive costs and environmental impact over the building's life cycle. In addition, this research aims to investigate and improving the resilience of the building even when changing the function, to residential, over time. Moreover, the effect of a changing surrounding on the climate resilience of the building will be explored in order to guarantee a robust building design. In a final, rather explorative step, there will be investigated how a climate resilient building can also contribute to climate change mitigation. The research will translate the strategies used to build climate resilient into opportunities for the building sector (innovation in technology, innovation in building design, adaptability of construction parts, ...) and likely for software developers. Recommendations for policy makers will be formulated regarding building regulations from a climate resilient point of view.