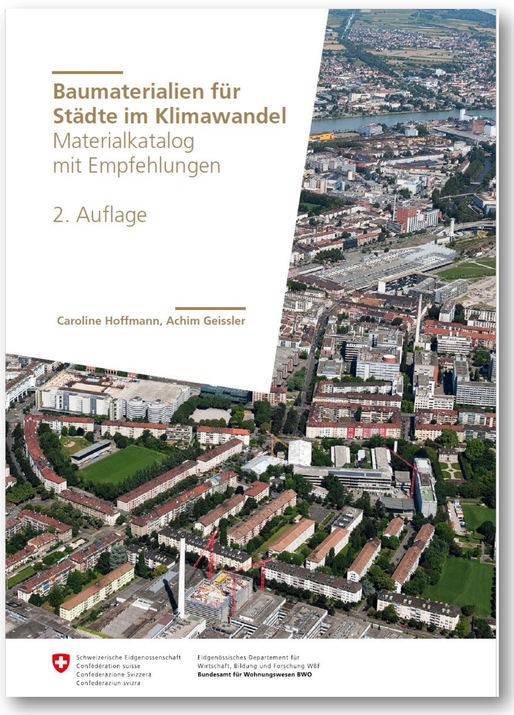
BauMat:Navigator – Interactive Materials Catalogue for Cities Facing Climate Change

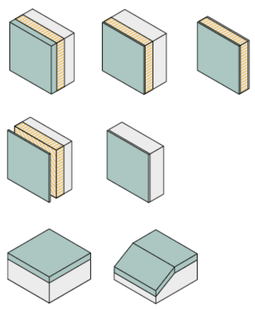
Background

- Climate change and rising temperatures have a direct impact on people's well-being in outdoor spaces.
- High temperatures cause heat stress.
- The material catalogue 'Building Materials for Cities in a Changing Climate', provides information on the extent to which materials contribute to heating up the urban microclimate and the resulting level of heat stress.

Material Catalogue



83 materials



Façades: 38
Ground materials: 27
Roofs: 18

Figure 1: The material catalogue contains 83 materials

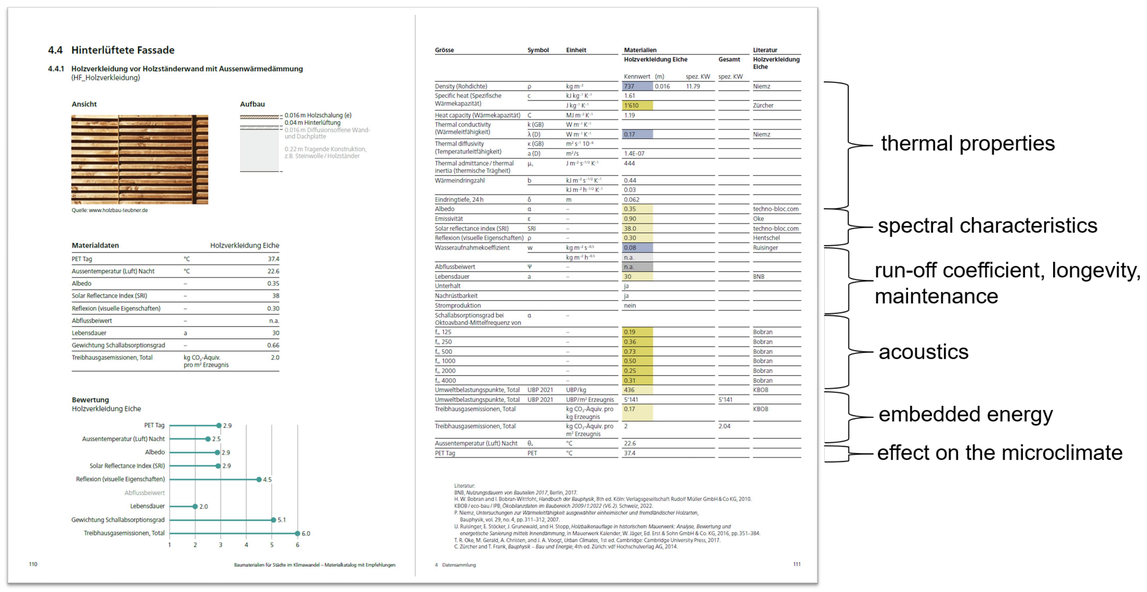


Figure 2: Insight into the catalogue and criteria covered

Effect on the microclimate

Each material is simulated. Information about the validation of the results can be found in the following two publications:

- Hoffmann, C., Geissler, A., & Wicki, A. (2025). Differences in microclimate of paved and green areas. Urban Climate, 64, 102595. doi: 10.1016/j.uclim.2025.102595
- Hoffmann, C., Wicki, A., & Geissler, A. (2025). Auswahl von Oberflächenmaterialien für Dächer und Böden zukunftsfähiger Städte. Bauphysik, 47(4), 247–260. doi: 10.1002/bapi.202500019

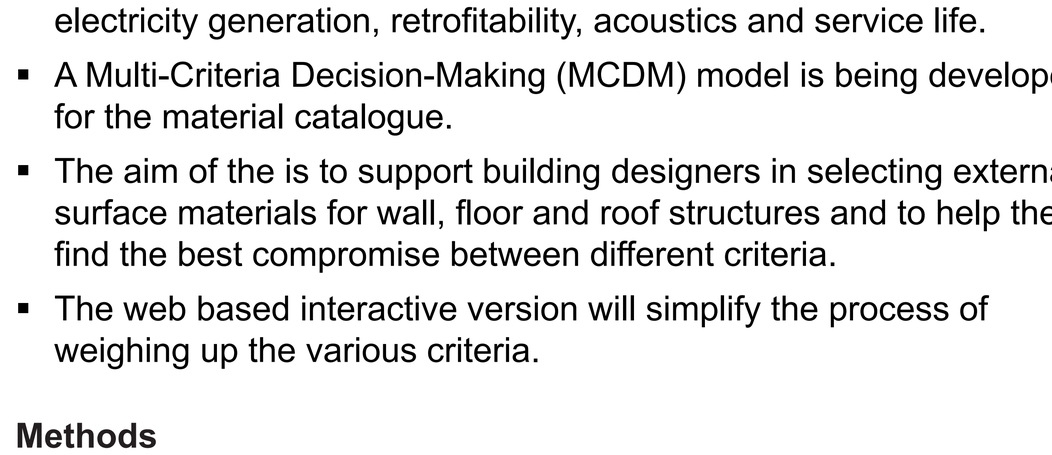


Figure 3: Flow chart for the simulation process

Why the app BauMat:Navigator?

- Selecting a material means finding the best compromise between different criteria, such impact on microclimate, glare, grey energy, electricity generation, retrofitability, acoustics and service life.
- A Multi-Criteria Decision-Making (MCDM) model is being developed for the material catalogue.
- The aim of the is to support building designers in selecting external surface materials for wall, floor and roof structures and to help them find the best compromise between different criteria.
- The web based interactive version will simplify the process of weighing up the various criteria.

Methods

- All data required as input for the MCDM model is available.
- The feasibility of an MCDM model has already been verified. Within the project, the model is being further developed and the extension validated.
- Furthermore, a user-friendly interface is being developed.



Project team material catalogue

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Project team BauMat:Navigator

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