

RETROFIT
innovation
SUMMIT

SESSION 6.1

Aurora Bertini – PhD student – ULiege/UC Louvain

DYNAMIC RENOWAVE

Dynamic Energy Simulation of Building Renovation Strategies



renow



Project background



Final energy use



Energy-related
GHG emissions



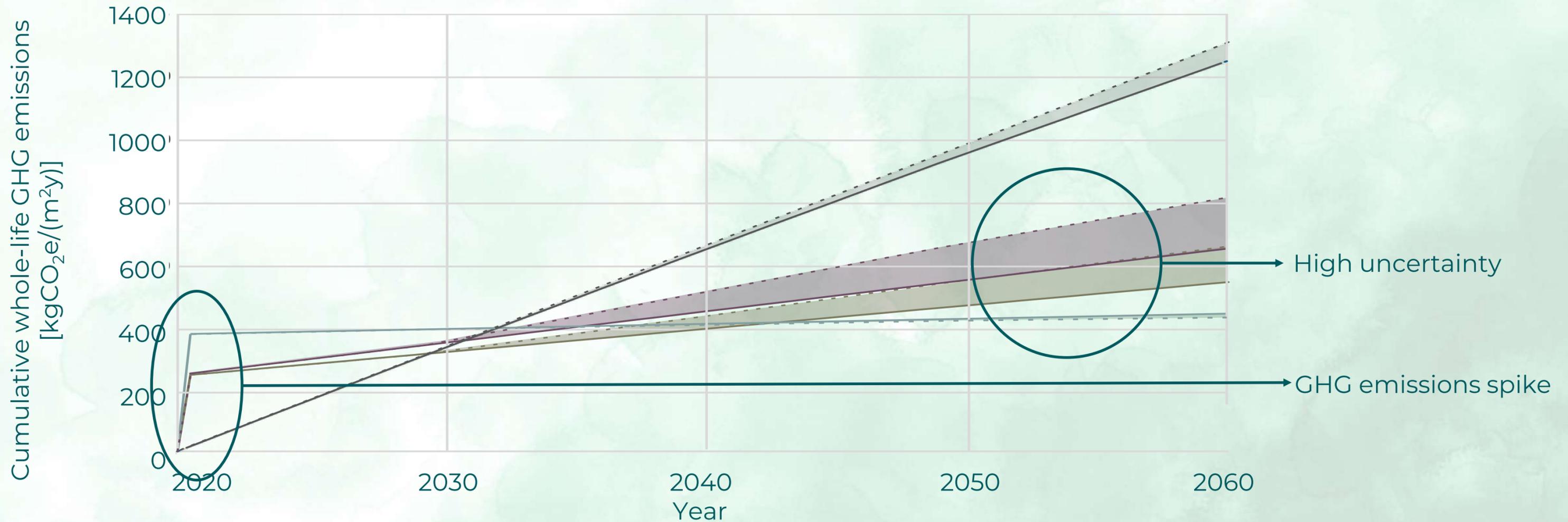
Poor energy-performing
buildings



Renovation rate

European Parliament and Council of the European Union. (2024). Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings (recast) (EU 2024/1275). Official Journal of the European Union. <http://data.europa.eu/eli/dir/2024/1275/oj>
Climate Action Network Europe. (2025). National Building Renovations Plans (NBRP): A Powerful tool for a just and climate-resilient built environment. <https://caneurope.org/content/uploads/2025/06/Briefing-National-Building-Renovations-Plans.pdf>
Energy Performance of Buildings Directive. (s.d.). https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/energy-performance-buildings-directive_en

Project background



Bertini, A., Al-Obaidy, M., Dasse, M., Amaripadath, D., Gobbo, E., & Attia, S. (2025). Parametrization of variables affecting the whole life carbon performance of nearly zero energy residential building renovation. Building and Environment, 278, 113013.

Aim of the project

Parametric and **Dynamic** LCA model for retrofitting residential buildings

- 1 Coupling** Building Performance Simulation and Life Cycle Assessment
- 2** Including **time** in the model: long-term approach, dynamic modelling scenario
- 3** Including **multiple parameters** in the model

Expected outcomes

- 1 Parametric decision support system** informing solutions with a net reduction in life cycle GHG emissions
- 2 Datacube** of different renovation scenarios for residential buildings
- 3 Dynamic dashboard**

Stakeholders



The team



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Aurora Bertini, PhD student



(Prof. André Stephan)
Prof. Emilie Gobbo
Maxime Dasse, PhD student

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THANK YOU FOR YOUR ATTENTION

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Project website

