

New online tool to evaluate and compare energy efficient renovation options for buildings

29 August 2024 – EURAC Research Center has developed [a new online tool](#) designed to support energy efficiency initiatives and renovation strategies for European residential and office buildings.

This tool, created as part of the Implementation Working Group on Energy Efficiency in Buildings ([IWG5](#)), aims at enhancing energy efficiency and reducing CO₂ emissions. It provides a comprehensive parametric simulation-driven database that addresses energy consumption, costs, and environmental impacts across various building typologies.

The IWG5 tool offers a range of baselines for [five European climate zones](#), enabling users to define benchmarks based on existing building characteristics such as building envelope thermal transmittance (U-values), Heating – Ventilation and Air Conditioning (HVAC) system types, and efficiency levels. By integrating data from extensive simulations and life cycle assessments, the tool equips users to evaluate renovation options effectively, leading to more informed and sustainable decision-making by public authorities, building owners or operators and other stakeholders planning large-scale renovation projects.

Key features of the IWG5 tool include:

- **Building envelope parameters:** Detailed information on U-values, materials, and insulation levels.
- **HVAC system types and shading control:** Insights into systems' efficiencies and control logic for shading systems.
- **Energy simulation data:** Extensive parametric simulations covering various renovation scenarios.
- **Life Cycle Assessments (LCA):** Environmental impact data calculated using Open LCA.
- **Life Cycle Cost (LCC) analysis:** Economic feasibility studies over a 50-year period, including investment and maintenance costs.
- **Choice between three building types:** office buildings, single family houses and multi-family homes.
- **Choice of several heating and cooling systems** including gas boilers (old and new), air and ground sourced heat pumps, as well as district heating.

In addition, the tool allows users to filter data, compare baselines and different renovation scenarios across various European climate zones and building archetypes. Users can also download data and connect to the application programming interface (API) for integration into their own applications and workflows.

To account for the impact of climate change, the tool incorporates both current and future (2050) weather data, ensuring robust and relevant data for long-term planning and adaptation strategies. The advanced simulation environment developed for IWG5 is designed to be adaptable, with potential for further enhancements to investigate the performance of more efficient systems and materials.

This online tool was created using the results from a deliverable produced by EURAC Research for IWG5: "[Report presenting a new baseline for IWG targets](#)".

The IWG5 tool is now available online and targets specifically the European building stock: <https://tools.eeb.eurac.edu/iwg5/>

For more information about the tool, please contact:

Simulations and database

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For more news on the project and on actions to decarbonize the buildings sector, [subscribe to the "Policy Radar" newsletter](#), visit our website www.iwg5-buildings.eu and follow the project on social media (@IWG5_Buildings).

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