
CO₂ Reduction Potential through Housing Efficiency

Leveraging Demographic Transition for Climate-Effective Transformation

Addressing the 40% of global CO₂ emissions caused by the building sector through innovative housing activation and age-appropriate concepts



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Project Idea: Concrete Solutions for Housing Activation



The Problem

Germany faces a shortage of 1.4 million apartments and many single-family homes are "under-occupied" (Empty-Nest Syndrome) by owners aged 65+, leading to high per-capita emissions

The Approach

Utilizing life-stage transitions to retirement as a catalyst for voluntary housing adaptations, such as subdivision or conversion

The Innovation

Integrating energetic renovation with spatial efficiency to meet the 2045 climate neutrality goals while addressing the housing shortage

Target region

An area which serves as a model region due to its high density of senior-led households and aging building stock as the primary target for CO₂ reduction, for example the Ruhr region with its 5.1 million inhabitants, about a quarter are senior-led households. 60% were constructed before 1978 and more than 63% are single-family homes

Impact: Maximizing space efficiency without new land consumption or high "grey energy" emissions from new construction.

Scientific & Technological Expertise

3. Lifecycle Assessment

Analyzing both direct operational emissions and "grey energy" from construction materials

2. Quantitative Modeling

Calculating CO₂ reduction potentials across different housing and renovation scenarios

1. Barrier Analysis

Identifying psychological, socio-economic, and structural hurdles that prevent owners from renovating or adapting their homes



Methodological Rigor

Applying qualitative surveys and participatory research designs to ensure social sustainability

Expected Impact & Collaboration

Environmental Impact

80% of the buildings that will exist in 2050 are already standing today. However, the current renovation rate of 0.7% is far below the 2% required for climate neutrality.

Social Impact

Improving the quality of life for seniors while creating living space for families without developing additional land.

Strategic Goal

Developing a scalable blueprint for age-appropriate, ecologically sustainable urban living.



Key Insight: Activating older homeowners in single-family homes can double renovation rates and significantly reduce per-capita CO₂ footprints.

Partner Profile: Research & Municipal Stakeholders

🏛️ Research Institutes

Seeking experts in **Social Sciences** and **Construction Economics** to validate intervention designs. Focus on psychological and organizational barriers in regions with similar demographic challenges.

🔧 SMEs & Start-ups

Seeking partners to develop digital, EU-wide advisory and financing tools. Focus on creating low-threshold digital platforms that help homeowners visualize renovation benefits and financial models.

🏘️ Municipal Stakeholders

Looking for **Cities** and **Housing Associations** to serve as pilot regions. Partners will test housing activation approaches and implement participatory counseling models in local neighborhoods.

👥 NGOs & Civil Society

Engaging citizen groups and senior associations to promote social sustainability. Partners will help bridge the gap between technical solutions and the lived reality of older residents, ensuring high acceptance.



🎯 Strategic Goal

Ensuring cross-regional validation and practical implementation. The goal is to create a scalable blueprint for climate-effective housing transformation across diverse structural contexts.

Join the Transformation: Solve the Housing Crisis



A sustainable, age-appropriate housing market that meets climate goals and social needs.

We invite partners to co-develop scalable solutions for EU-wide implementation. Together, we can transform the existing building stock into a resource for both people and the planet.

Let's transform the building sector together.

Get in touch to discuss collaboration:
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