Transitioning buildings to full reliance on renewable energy and assuring inclusive and affordable housing

Keywords: Building sector, decarbonisation, affordability, inclusiveness, transformation pathways

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Synopsis
This project focuses on transitioning buildings to full reliance on renewable energy, while assuring inclusive and affordable housing.

The Decarb_Inclusive project combines
(1) techno-economic modelling of decarbonisation scenarios with
(2) an analysis of possible effects on real estate prices and aspects of social inclusion, and
(3) transdisciplinary research on policy options to implement social innovations.

The active engagement of stakeholders and municipalities ensures the targeting of policy makers and academia. To maximise the science-society interface of the project an award (NaWo Award) was designed and tendered to find and select environmentally and socially sustainable housing innovations.

Framework and constraints in housing transition

Severe housing depreciation
Public spending on housing
Wohnungsgemeinnützigkeitsgesetz
Social inclusion and affordability
Austrian climate & energy strategy
Energy prices
EU energy policy provisions
Social welfare
Parls agreement
Income at market prices
Sustainable development goals
Demographic trends
Regional & local energy targets
Living conditions
Policy provisions
Housing prices
Wohnbauförderung
Socio-economic context
Accumulation of debt
Reconstruction
Interest rates
District heating
Energy efficiency
Roof-top PV
Green gas
Construction sector
Ownership structure
Building stock & occupancy

Techno-economic modelling of decarb. pathways
The decarbonisation pathways for the Austrian housing sector are developed with a strongly disaggregated bottom-up model of the Austrian building stock (Invert/EE-Lab). In the following results selection we present the initial annual costs for single family houses with the annual costs after renovation, maintenance and heating system change in 2050.

Figure: Annual costs for heating in the decarbonisation scenario compared to the status quo by initial heating systems and renovation measures carried out

Contact and further information
The research leading to the presented results was performed in the framework of the project Decarb_Inclusive for the ACRP (Austrian Climate Research Program) with the funding number K17AC0K13648 (10th Call, 2017)

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Structures of housing provision (SHPs)
Achieving fully decarbonized and affordable housing needs to take into account the historically contingent and heterogeneous nature of housing provision. Drawing on Michael Ball, we employ the concept of structures of housing provision. Each structure – while not independent from each other – follows its own internal logic and relates to a specific set of actors and functions covering issues of (re-)production, ownership and consumption of housing.

For Austria we identify five such main structures:
(1) Owner-occupied detached and semi-detached houses
(2) Owner-occupied flats
(3) Private rental housing
(4) Housing provided by limited-profit housing associations
(5) Municipality or Public housing

Social innovation
The socio-ecological transformation in housing requires an innovative mix of effective governance, participation and co-determination by all stakeholders to ensure social inclusion. Social Innovations are social in their ends and means, e.g. co-working or co-living of people from diverse social backgrounds and age groups.

Project timeline

Start: 03.2018
End: 03.2020

NaWo Award Winners & best practices case studies

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