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 decorbonisation 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 Paris agreement Housing affordability
Income at market prices Sustainable development goals

Demographic trends Regional & local energy targets

Living conditions Policy provisions Housing prices Policy targets Wohnbauförderung

Socio-economic context Housing tenures
Accumulation of debt

Mietrechtsgesetz Dwelling types

Economic conditions Biomass Renewable energy potentials

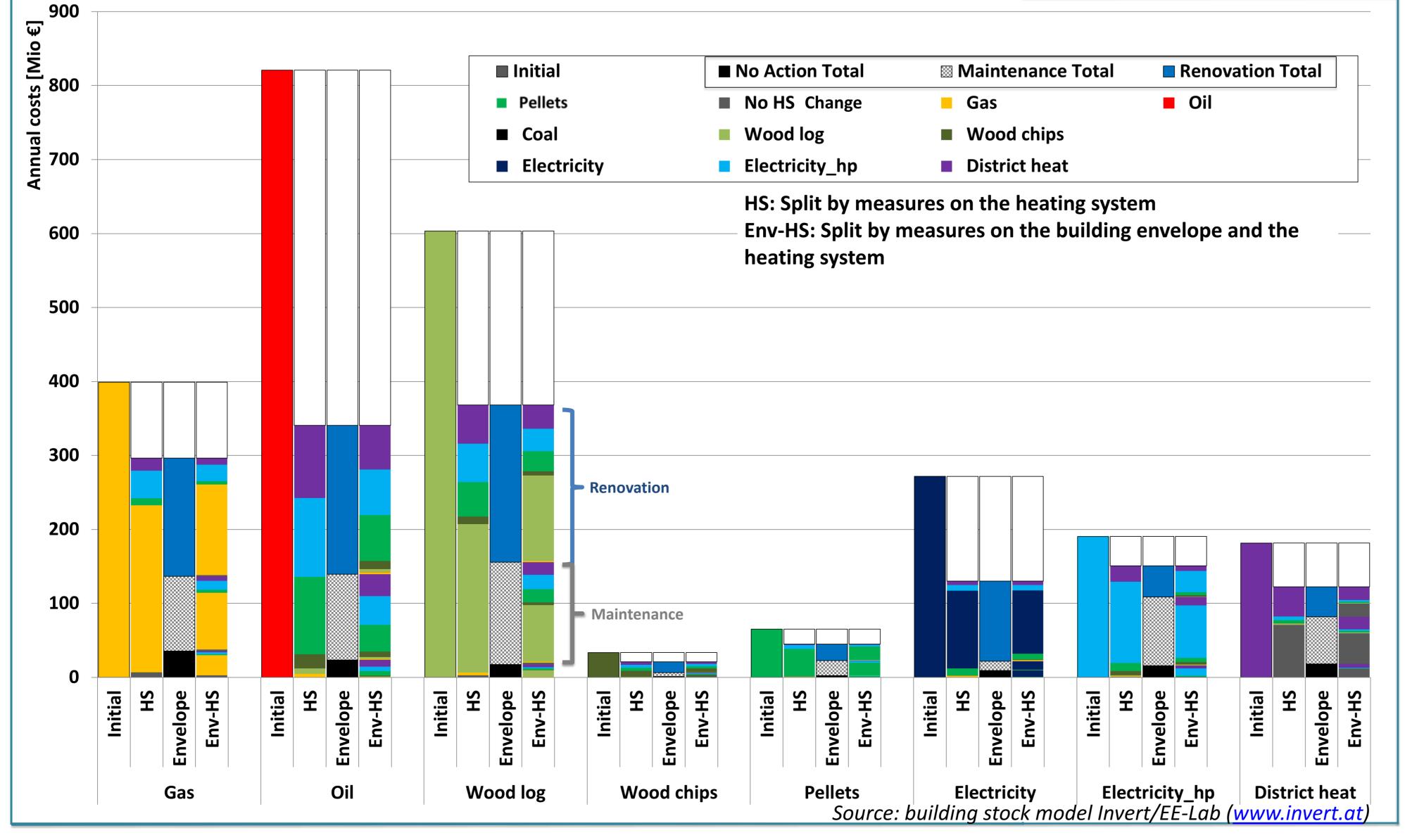
District heating Ambient heat Interest rates

Energy efficiency Roof-top PV
Construction sector Roof-top Solar thermal
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



Project timeline NaWo-Focus Groups NaWo Award Klimatag Final Conference Start 03.2018 04.2019 03.2020 End Interdisc. framework SHPs & Interviews Case studies Pathway modelling Social innovation Reporting

NaWo Award Winners & best practices case studies



Social innovation

House of Commons in Innsbruck (Tirol).

Source: Energie Tirol/Blitzkneisser

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. coworking or co-living of people from diverse social backgrounds and age groups.

Bikes and Rails (Vienna).

Source: Bikes and Rails

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

Contact and further information

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