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THE DRIVERS OF RENOVATION CHOICE AND DERIVED POLICIES TO MOBILIZE THE ENERGY EFFICIENCY POTENTIALS IN THE RESIDENTIAL BUILDINGS SECTOR

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Overview

Despite relatively low net direct costs, and despite conspicuous indirect co-benefits, the re-investment cycle is rarely used to improve the energy efficiency of Swiss residential buildings. However, from both an economic and an ecological point of view, these low-cost energy efficiency potentials are essential to be tapped. The papers reports on a research project whose goals were therefore the following. Firstly, the present pattern of building renovation had to be determined empirically in order to improve the understanding of the behavior of the stakeholders (building owners, renovation companies) within the present legal and economic framework. Secondly potential barriers that hinder building renovation in general and energy-efficiency improvement in particular had to be identified. Conversely enabling factors that actually triggered such renovations were analyzed and weighted regarding their relevance. Thirdly, strategies and policy measures were designed aiming at accelerating the building renewal so as to make use of the available potentials for energy efficiency.

Methods

The renovation and overhauling behaviour of building owners is influenced by both exogenous and endogenous explanatory factors (see Ott, Jakob et al., 2005 for an overview). The current renovation behaviour and the relevant factors of influence on renovation activities were analysed based on two methodological approaches. The first one consisted in a policy analysis of the existing framework conditions and an analysis of the stated goals and motivations of building owners regarding their buildings. The second methodological approaches included a discrete choice model of individual renovation choices. The exogenous factors of the policy analysis included building and planning regulations, energy, climate policy and air hygienic regulations, tax law, rent law, financing, building management and economic-efficiency considerations, renovation costs, local demand for housing and other general frame conditions (such as energy prices, mortgage interest rates and financing conditions) that could both hinder or stimulate energy efficient renovation. The analysis of endogenous factors included social and internal factors such as owner type and age, motivations, building related goals and strategies, knowledge, and others. A two stage survey of building owners of single family homes (SFH) and multi-family homes (MFH) as well as administrators/managers (of MFH) was conducted to empirically determine their past renovation behaviour, their main motivation and their perception of the exogenous factors, including their subjective relative weighting. It is distinguished between owners having realised energy efficiency renovation and owners who conducted only overhauling or renovations with energy relevance or didn't realise any renovation. From the data obtained in the survey a discrete choice model is estimated, modelling the choice between two basic renovation modes, namely energy efficient renovations (e.g. façade insulation) and non energy-improving overhauling (e.g. façade painting).

Results

Results show that renovation decisions are driven to a large extent by technical considerations (life time of building components) and internal motivations of the owners. Besides of exogenous factors such as the housing rental law and (market) structural reasons, a lack of information and motivation is at least an equally relevant barrier hindering energy efficient renovation modes. Regarding economic considerations there are two side of the medal. On the one hand economic considerations were rarely named as a main driver by those who executed an energy efficiency renovations, the main drivers rather being technical, energy saving and environmental considerations. On the other hand economic reasons such as lack of economic viability or high financial needs (up-front investments) are named more frequently as an obstacle for energy efficiency renovation by those who didn't execute an energy efficiency renovation.

Conclusions

The main stream lines of an energy efficiency strategy to mobilize the respective potentials in the building stock are: (1) Improving the transparency and level of information about living and building quality and energy-related features to create increased demand and quality awareness among users and to provide owners with an improved and more comprehensive decision basis along with strengthening the competence of owners and purchasers in using the existing technical and economic potentials. (2) Promoting quality control and technology benchmarking, training of the planners, users and businesses to develop the renovation market, to reduce transaction costs and application risks as well as to speed up learning effects. (3) Improving the framework conditions, especially regarding passing on costs/rent law, in order to make the market mechanisms function better in the field of energy-related building renovation. (4) Promoting the energy-related renovation of the existing stock to correct the partial market failure (split incentives). Hence the measures include legal measures, tax instruments and other economic incentives, information and marketing instruments, and others. Grouping the policy measures is necessary to take into account the interdependences of different barriers along the decision chain. The strategies and measures under consideration were characterized by their effectiveness and efficiency, the legal prerequisites involved and their acceptance.

References

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