Introduction to Panel 7 Policies for a green recovery in the buildings sector

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Introduction

Buildings are the key sector when it comes to the potential for further energy savings. This is well-recognised in various national and international modelling studies. However, it is less clear how those savings can be obtained and there are many financial and non-financial barriers to reducing energy demand in buildings.

The European Green Deal and the Renovation Wave highlight the importance of better and more effective buildings policy to improve the energy performance of the European building stock. Net zero emissions targets mean the complete decarbonisation of buildings. At the same time, the renovation rate and depth are far lower than what they should be in order to address the climate crisis, and the still high market share of fossil heating systems also does not fit into the picture of a climate-neutral building sector.

However, there is also a live opportunity to rethink and reset buildings policy in Europe: At European level, a review of legislation including the Energy Efficiency and Renewable Energy Directive is under way. In response to the coronavirus pandemic and the resulting economic fallout many national governments have put forward short-term policies providing a stimulus for energy efficiency in buildings. At the same time, the pandemic has shown how quickly, powerfully and target-oriented state systems principally can counter a fundamental crisis.

It is in this context that this panel provide a suite of policy solutions including building performance and regulation, the decarbonisation of heating, finance and investment for energy efficiency in buildings, new delivery models for energy efficiency, system integration of building energy efficiency and broader policy approaches.

Building performance and regulation

In view of the long investment cycles in the building sector it is necessary to ensure today that building retrofit is compatible with long-term decarbonisation goals. Not only for new buildings, but also for the refurbishment of existing buildings, a nearly zero energy standard should be the performance benchmark.

Thomas et al. (peer-reviewed paper 7-114-21) develop proposals on how the design and recommendations of Energy Performance Certificates (EPC) can be adapted and used to stimulate deep retrofits better than today. They present lessons learnt from the discussion with stakeholders at the national and European level and from the testing of the proposals and tools in a variety of buildings.

With minimum energy efficiency standards (MEPS) and building energy codes two regulatory routes driving improvements in building energy efficiency are compered by Hinge & Brocklehurst (peer-reviewed paper 7-148-21). They conclude that – depending on their specific design – both approaches can be appropriate levers to achieve significant savings in the existing buildings stock.

Amado et al. (peer-reviewed paper 7-202-21) analyse the extent to which the nZEB standard implemented in Portugal today. Their research shows that the nZEB standard diffuses only slowly and that more effective policy interventions are needed to accelerate this.

A phenomenon that has not received as much attention yet is analysed by Meier et al. (peer-reviewed paper 7-059-21). They investigate opportunities to save electricity in buildings during times when nobody is in them. Based on their research the energy savings potential ranged up to 90 % during these vacant periods.

Decarbonisation of heating

Given that in most European countries, buildings are currently reliant on fossil fuels for their heating needs, the topic of building energy efficiency is also highly relevant for the discussion around the decarbonisation of heating. This topic was addressed in three papers and abstracts, all focusing on Germany where heating is currently a topic high on the agenda.

Köhler et al. (peer-reviewed paper 7-016-21) present a portfolio of measures and policy instruments with which decentralised heat generation no longer emits carbon dioxide, final energy consumption can be reduced, and district heating can be expanded. Their analysis underlines the great urgency with which policymakers must act: Most of the instruments should be introduced and implemented before 2025.

A key issue and potential barrier to decarbonising heating is the public acceptance of policy interventions. Pröpper et al. (peer-reviewed paper 7-113-21) develop a conceptual framework to study policy acceptance, in particular for the heating sector. The research shows that policy makers need to pay sufficient attention to public acceptance if they want to succeed with reducing emissions from heating buildings.

Acceptance of interventions is also dependent on the public discourse. Schwenke et al. (extended abstract 7-140-21) show that understanding how lobbying impacts the discourse is important for realising feasible climate or energy policies.

Finance and investment for energy efficiency in buildings

There is a rich literature on financing energy efficiency that has also partly been facilitated through eceee conferences and proceedings. With finance and investment needs remaining high it is no surprise that also in 2021 several papers addressed the question how to stimulate energy efficiency investment.

Batsaikhan & Jourdan (extended abstract 7-102-21) outline how the European Central Bank's Targeted Longer-Term Refinancing Operations (TLTROs) can provide the firepower to the Commission's "Renovation Wave" to accelerate energy efficiency renovations across Europe.

Britto & Dehler-Holland (peer-reviewed paper 7-125-21) undertake economic modelling and discover that wealthier consumers are in general harder to influence via policies. Their research demonstrates that tax and subsidy schemes have effects of comparable sizes but that their effect when combined is greater than the sum of their individual contributions.

National examples of financing schemes from Eastern Europe are not covered well by the existing literature. Korytárová (peer-reviewed paper 7-214-21) helps filling this gap by providing an overview of financial mechanisms for renovation of public buildings in Slovakia. Her work identifies lessons learned as well as risks and opportunities of large-scale building retrofit.

New delivery models for energy efficiency

One challenge in the transformation of the building sector is the specific on-site implementation of deep retrofits. Delivery models are needed to help owners master the complex task of comprehensively renovating a building and to find their way through a market that is often very fragmented. Milin & Bullier (peer-reviewed paper 7-076-21) present a review of various initiatives that aim at developing integrated service offers for the energy renovation of private housing. After defining the concept of Integrated Home Renovation Services they analyse the different steps of the corresponding customer journey and illustrate how the user experience could be improved, based on local experiences.

Unlike the EPC, the Building Renovation Passport (BRP) is a very in-depth advisory tool which provide long term, personalized, step by step renovation guidance to homeowners. With the 'wongingpas', presented by Spillemaeckers et al. (peer-reviewed paper 7-072-21), the Flanders region in Belgium is taking a very comprehensive BRP approach. The experience from the development of the 'wongingpas' shows that it is important to involve the users from the very beginning, as well as to adapt the design to the respective national, regional or local context.

One-stop shops (OSS) aim at providing information and advice to consumers at a single point of contact and to make energy retrofits simple and straightforward. Réfabert et al. (peer-reviewed paper 7-108-21) develop recommendations on how to create a supportive framework of OSS in the European and national policy context.

System integration of building energy efficiency

Building policy tends to focus on the individual building. Going beyond the narrow scope of an individual building, Shnapp & Paci (peer-reviewed paper 7-222-21) introduces the concept of Positive Energy Districts and shows how to handle energy performance targets by moving beyond individual buildings towards a district level. The research shows that the EPBD's cost-optimality calculation methodology, designed to calculate the minimum performance of individual buildings, can, with some adaptation, also be utilised on a district scale.

When it comes to defining efficiency requirements, policy makers mainly look at costs and benefits in terms of energy consumption. The evaluation of efficiency policies can be broadened to the multiple benefits beyond energy and cost savings. Paci & Shnapp (peer-reviewed paper 7-223-21) provide guidance to policy and decision-makers in developing a methodology for the inclusion of multiple benefits in a cost/benefit assessment of energy efficiency policy. The approach might encourage policy makers to quantify the benefits of more effective energy efficiency policies and programmes and drive higher levels of renovation, thus supporting the EU's Renovation Wave.

Reindl & Palm (extended abstract 7-215-21) analyse the role of property owners of non-residential buildings in Sweden as change agents for promoting the expansion of PV. The authors identify barriers and discuss first recommendations how they could be overcome in order to tap the large PV potential on the roofs of commercial buildings.

Broader policy approaches

Much of the debate about energy efficiency policy focuses on the national or European level in Europe. Palmer & Gillich (peer-reviewed paper 7-183-21) broaden our perspective and examine the role of municipalities in this context using the UK

as an example. The authors discover that there is potential for local authorities to develop novel approaches to retrofit processes, by taking the role of 'middle actor', reshaping the customer journey and engaging a range of stakeholders to stimulate local economies and deliver on social and environmental goals.

Equity concerns around the energy transition have come to the fore in recent years, for example through the gilets jaunes in France in 2018. Robles & Neves (peer-reviewed paper 7-130-21) analyse the main Portuguese public policies targeting energy consumption in the residential building sector and perform a comparative review of these measures, in terms of amount of public, financing, the technologies used, and the types of households reached. Their results show that policies should include explicit energy poverty provisions to ensure that the poorest in society can benefit from energy efficiency policy.

If policy is to succeed, engagement with the wider public and especially owner-occupiers is critical. Rowlatt et al. (extended abstract 7-129-21) review UK policy and regulation in this context. The authors evaluate and highlight current practice and provide recommendations for how to engage owner occupiers more effectively.