Justice in decarbonizing the heating system consistent with the Paris Climate Agreement: subsidy balance between landlords and tenants at the multi-apartment building level

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# Motivation and core objective (Auf der ersten Seite mit Methode)

The recently published „Fit for 55“ package by the European Commission [1] shows a concrete roadmap to 2030 towards achieving at least a 55% reduction in greenhouse gas emissions compared to 1990 and being consistent with the Paris Climate Agreement. The measures enshrined promise a just and sustainable future for all European citizens and a socially balanced transformation of the energy system. Decarbonizing the residential and commercial heating sector in a fair manner requires special efforts especially in urban areas. One of the main reasons for this is that many people live in rented dwellings with natural gas floor heating boilers. A change of the heating system to a sustainable alternative is therefore only possible there if adequate incentives are provided for the landlord and tenants.

Against this background, the core objective of this work is to investigate a fair and socially balanced decarbonization of a multi-apartment building regarding its heat demand. This is also associated with the owner ship structure of the building between a landlord (owner) and several tenants.

In particular, the main research question is which financial incentives provided by the governance (e.g., investment grants for the owner and heating costs subsidies for the tenants of a multi-apartment building are necessary to make decarbonization of the heating system fair for both parties (

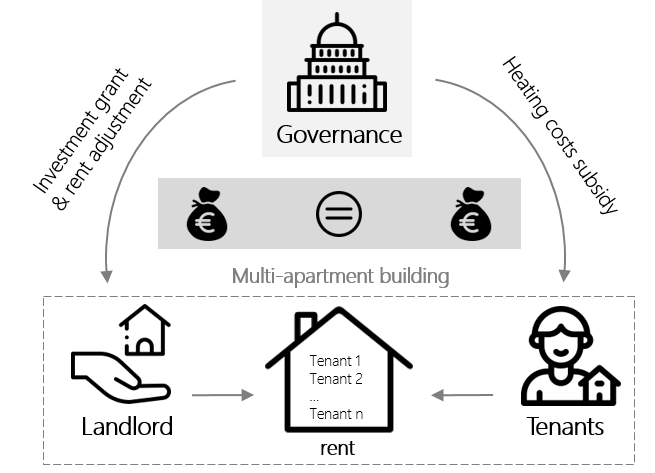


Figure 1

# Methodology and case study

To determine the cost-optimal financial incentives by the governance, we propose an optimization model. The model’s objective function is to minimizing the governance’s net present value as

|  |  |
| --- | --- |
|  | (1) |

Where

The main constraints hineinschreiben.

The proposed model is applied to a representative multi-apartment building in an urban area. It is assumed that the building has a single landlord (owner) and 30 different tenants.

# Results and conclusions

# References

[1] European Commission, „Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Fit for 55': delivering the EU's 2030 climate target on the way to climate neutrality, retrieved on 29.09.2021 under https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0550 (2021).

Kleinere Schriftart wenn notwendig.

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