



Using narratives to infer preferences in understanding the energy efficiency gap

Tobias Wekhof, Sébastien Houde

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An opportunity for energy efficiency



Research Questions

Key barriers to
and determinants
of energy
efficiency

- Barriers: financial or home perceived as energy efficient enough.
- Determinants: wait until necessary to replace broken parts.

What policies
would
households
favor?

- Before increasing subsidies, address the information problem: many homeowners are unaware of existing policies.

Household Survey Zürich, 2020

- Household survey in the Canton of Zurich in early 2020, only single-family home-owners
- 3.471 respondents out of 16.700 invitations

Table 1: Summary Statistics by Household Type

Variable	Non-Takers	Takers
<i>Building Characteristics</i>		
Building Age (years)	57.31	56.13
Floor Size (m ²)	167.24	168.78
Rental Value (CHF/month)	4'045.96	3'772.20
% Oil/Gas heating	52.40	48.50
% Heat Pump	26.10	34.40
% Other Heating	21.50	17.10
% Solar PV	13.40	20.00
<i>Demographics</i>		
Income	12'455.70	12'517.97
Age	61.36	58.13

Open-ended questions can give insights



Novel Research Design: Eliciting Energy Efficiency Narratives



Idea: ask why respondents renovated (or not), in open and closed way



Closed: multiple choice with pre-defined answers, different for takers/non-takers



Open: *"Describe the reasons why you decided (not) to carry out an energy-efficient retrofit. Please write a short text of about 4 sentences."*

Example Answers - Determinants

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- *"The house is well insulated. The windows are still good. The oil consumption is not enormous. The heating isn't old yet."*
- *"To reduce the carbon footprint. The house dates from the 1970s and was poorly insulated. The renovation also improved the quality of the rooms. The independence from oil is an additional benefit."*

Example Answers - Policy Preferences

- *"Creating uncomplicated incentives with little bureaucracy; offer advice; advertisement for good projects"*
- Use **machine learning** to classify text answers into topics

Difference between open and closed answers

Table 2: Barriers to Energy Efficiency Retrofits for Non-Takers

Barriers	Type	Open	Closed
The building is already energy efficient	Market	49.5	38.4
Too expensive	Financial	26.2	21.9
Old Age	Market	8.9	0.0
Too complicated	Non-Market	7.2	10.0

Table 3: Determinants of Energy Efficiency Retrofits for Takers

Determinants	Type	Open	Closed
Replace broken elements	Market	45.5	57.6
To reduce my ecological footprint	Non-Market	30.0	69.0
To save money	Financial	28.8	36.7
To increase comfort	Non-Market	24.6	68.5
Increase resale value	Financial	4.8	25.2

Policy Awareness is low

Supplementary Table 13: Policy Awareness and Usage for four major Swiss policies

Policy	Non-takers	Takers
	% Aware of subsidy	
Mortgage program	43.82	43.86
Local subsidies	82.22	84.90
Preferential taxes	79.33	85.32
Federal building program	66.06	73.97
Policy Awareness (/4)	2.70	2.87
	% Used subsidy	
Mortgage program	6.29	8.33
Local subsidies	21.78	33.27
Preferential taxes	30.89	56.43
Federal building program	14.48	25.97
Policy Use (/4)	0.68	1.22

Policy Preferences: subsidies and information

Table 4: Policy Preferences from Open-Ended Answers

Policy Preference	Non-Takers	Takers
More subsidy (market)	40.6	44.4
More information (behavioral)	20.8	19.8
Less bureaucracy (non-market)	16.3	19.5
Focus PV	12.6	17.9
Focus Heating	11.3	13.8
Standards (behavioral)	10.0	10.7
Tax deduction (market)	9.1	8.9
Pollution tax (market)	8.5	8.6

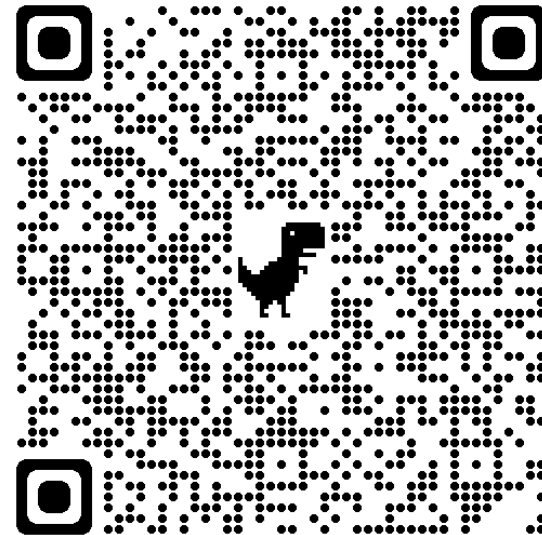
Take-Aways

- Non-takers believe few opportunities for energy efficiency exist in their home.
- Reasons for making an energy-efficiency investment: **non-market benefits, financial considerations, and obsolescence.**
- Most **observed characteristics** that influence retrofitting are challenging to target for policymakers.
- Consider lowering subsidies when used for broken parts
- Increase awareness: information campaigns for subsidies and easier access to energy audits (GEAK)
- Non-renovators: evaluate how high subsidies must be and if this is feasible

Further Information



Academic Paper



Policy Article

Dr. Tobias Wekhof | Postdoctoral Researcher
ETH Zurich | Center of Economic Research | ZUE E11 |
Zürichbergstrasse 18 | CH-8092 Zürich
<https://tobiaswekhof.com> | twekhof@ethz.ch