

Occasions for energy-efficient renovation: A targeted approach to stimulate homeowners' uptake of energy advice

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Abstract

To achieve a climate-neutral building stock, almost every building in Germany must undergo deep renovation and remaining heat supply must switch to renewable energies. However, many homeowners remain unaware of the need to renovate their homes. Despite recent improvements, uptake of energy advice and renovation rates fall far short of the necessary.

This paper analyses how opportunities for renovations like change of ownership, repair measures or biographical changes can be used for a more targeted approach to activate homeowners for energy advice. The study focuses on owners of detached or semi-detached houses in Germany.

We identified and prioritised occasions that could trigger energy advice and renovation and linked them to target groups. So-called personas illustrated core target groups with their motives, needs and obstacles. Focus groups validated the identified occasions and motives and added new insights. Customer journeys then illuminated particularly relevant occasions as well as their possible links to energy advice and allowed us to identify promising communication approaches.

As a result, we found that owners want trustworthy, holistic and independent advice on their property that goes beyond pure energy issues. While climate protection and ecological motives are relevant arguments to owners, they are not central drivers for measures. Furthermore, there is a lack of information about qualified energy consulting services and their benefit to homeowners. For communication of subsidised energy

advice, we identified a necessary shift in three respects: (1) by linking promising occasions to customer journeys and using multiple touchpoints to target groups; (2) by addressing the owners' wishes for advice that goes beyond pure energy issues and (3) through aligning the communication for energy advice with the actual motives of the target groups. Accordingly, a broad bundle of measures is necessary.

Introduction

To achieve a climate-neutral building stock, almost every building in Germany must undergo deep renovation and remaining heat supply must switch to renewable energies – but many homeowners are yet unaware of the need to renovate their homes. Energy advice could inform them about savings potential, show possibilities and costs of renovation and pave the way for much-needed deep renovations. At the same time many of today's energy advice clients have already decided to renovate before getting the advice¹. However, many renovations are still carried out without an energy advisor's support.

In this paper, we assume that the willingness to carry out energy renovation results from several factors: occasions such as damage repairs or the purchase of a home, motives and barriers, individual factors and the general context play a role. Every year sees about 200,000 changes of ownership of exist-

1. According to PWC (2019) concerning energy advice on residential buildings, a large proportion clients use the advice to compare the economic viability of investment alternatives or to obtain confirmation or optimisation of their own planning. For the energy advice provided by German Consumer Organisations, PWC (2017) states that for the majority of the owners advised, the advice was triggered by a concrete energy-related renovation project.

ing residential buildings. Such renovation occasions could be starting points in communication, reach more potential clients and foster energy advice - and ideally, under good framework conditions, lead to actual energy renovation measures. Based on these considerations, we identify two goals: (1) Make energy advice a natural step when owners decide to carry out energy renovation, and (2) Reach as many owners as possible who have a potential reason to renovate and who could be motivated to renovate through energy advice.

This paper is based on the authors' study researching innovative concepts for energy advice for residential buildings, full details of which are reported in Ellermann et al. (2020).

Occasions that could trigger energy advice and energy-efficient renovation

ENERGY ADVICE FOR HOMEOWNERS IN GERMANY

In Germany, the market for energy services, energy audits and energy advice remains stable. It has proven robust through the pandemic but has not shown much growth. The annual market survey for 2020 (BfEE 2021) estimates a supply of just under 8 000 professionally active energy advisors nationwide, excluding energy auditors for industrial plants and processes. Supply varies greatly from region to region. Energy advisors largely engage only in passive acquisition of new customers, supposedly due to high workload. For the current demand and across Germany, the survey deems the supply of qualified energy advice is sufficient (BfEE (2021)).

This paper looks more closely at state-subsidised energy advice, namely two programmes. On the one hand, the Federal funding programme for energy advice for residential buildings ("Bundesförderung Energieberatung Wohngebäude"). It subsidises a maximum of €1,300 for detached or semi-detached houses, and €1,700 for multi-family buildings, but no more than 80 % of the total cost. The programme promotes detailed and tailored advice, often in the form of individual renovation roadmaps. The German Federation of Consumer Organisations (vzbv) also offers government-funded energy advice but focuses on less detailed forms of advice.

For years, the demand for the Federal funding programme for energy advice stagnated at around 6 000 to 8 000 energy consultations per year. With the introduction of higher funding rates in 2020 (80 % instead of formerly 60 %) and a bonus funding on implemented renovation measures based on an individual renovation roadmap, demand has attained roughly 16 000 energy consultations in 2020 and 17 000 energy consultations in the first half of 2021 alone (Bundesanzeiger (2020), BAFA (2022)).

WHICH OCCASIONS COULD TRIGGER AN INTEREST IN ENERGY ADVICE?

The questions why building owners carry out energy renovation and what barriers hinder them have already been extensively studied (cf. Albrecht et al. (2010); BAFA (2014); DENEFF (2017); Fabbri et al. (2018); Renz & Hacke (2016); Stieß et al. (2010); Weiß et al. (2018); Wilson et al. (2015)). Further studies analyse the motives and renovation obstacles of people who have already accessed energy advice (cf. Dunkelberg & Stieß (2011); Duscha et al. (2005, 2008, 2014); PWC (2017, 2019); Schüle et al. (2011)). However, there have been less investiga-

tions about owners who have not yet carried out energy renovation or have not yet used energy advice. An exception is e.g., the qualitative study by Renz & Hacke (2016), which explicitly includes non-refurbishers. Similarly, BfEE (2021) asks for reasons why no energy advice was or is taken up. And Baumhof et al. (2019) analyse behavioural beliefs and environmental awareness of future refurbishers vs. non-refurbishers.

Occasions as possible trigger points for energy-efficient renovation have already been analysed cf. Stieß et al. (2010); Weiß et al. (2018); Wilson et al. (2015)). Vondung (2017) underlines the importance of trigger points for energy advice in an empirical experiment. However, we found a concrete and comprehensive view of occasions as triggers for energy consultations still to be missing for the German context.

METHODOLOGICAL APPROACH

The analysis takes place in three steps:

Analysis of occasions as influences for energy advice

An analysis of occasions was the first step. Where possible, annual case numbers were researched and tendencies of future evolutions estimated. A variety of indicators then served to assess suitability of the occasions as starting points in communication for energy advice.

Segmentation of target groups for energy advice

The target group analysis was based on a special analysis of the 2018 microcensus provided by the Federal Statistical Office². This statistic combined data on the year of construction, the year the household moved in, the age of the main income earner, income and children under 18 in the households for all owner-occupied homes.

Qualitative validation of occasions and their influence in focus groups

We conducted four focus group workshops with homeowners and potential disseminators who could inform homeowners about energy advice. Table 1 shows the groups' composition. The focus groups took place in the cities of Mannheim and Hanover.

The aim of the focus groups was to validate the previous findings concerning occasions and target groups and to shed a light on relevant motives. The participants also described typical customer journeys for different occasions and identified suitable opportunities to recommend energy advice. Each workshop lasted 2.5 hours and had six participants (excl. facilitator). The disseminators' focus groups were to recruit professionals less well researched so far, but that are close to relevant occasions for energy renovation.

ANALYSIS OF OCCASIONS AS INFLUENCES FOR ENERGY ADVICE

The occasions were divided into the four main categories, namely technical or building-related occasions, personal occasions, legal occasions and informative triggers. Some categories overlap, e.g., when information also influences personal motives. Table 2 lists the occasions we found to have the highest priority in each category.

2. This evaluation was made available by the Federal Statistical Office upon request, the evaluations were published in Ellermann et al. (2020).

Table 1. Composition of the four focus groups.

Two focus groups with owners	Two focus groups with disseminators
2 x Generation 50+, moved in between 1991 and 2000, at least one household without children	1 x bank advisor, with customer contact, among others in relation to financing house purchase
1 x established professionals without children, 35 – 50 years old, moved in between 2001 and 2015	1 x employee of an independent credit intermediary, working on real estate loans
2 x established families, 35 – 50 years old, moved in between 2001 – 2015 and between 2016 – 2020, children in the household	1 x agency manager insurance company, with customer contact
1 x young family or couple, 25 – 35 years old, purchase of a (semi-)detached house planned	1 x branch manager DIY store, operating in areas with detached or semi-detached houses
	1 x window manufacturer, with customer contact, customer base in detached or semi-detached homes
	1 x heating installer, with customer contact, customer base in detached or semi-detached homes

From the analysis and the focus groups, the following occasions emerge as most important influences for energy advice: maintenance and damage repair, change of ownership, and living space adaptation.

SEGMENTATION OF TARGET GROUPS FOR ENERGY ADVICE

The following segmentation uses the year of move-in as the primary criterion. In conjunction with the secondary criteria of age, income, children and year of construction, we identified five target groups among of owner-occupiers in detached and semi-detached houses:

- 1. Senior citizens with property, moved in before 1990:** Senior citizens are a large group (35–40 %), but with poor marginal conditions (especially access to loans). They are therefore not prioritised.
- 2. Generation “50plus”, moved in between 1991 and 2000:** Most are couples without children in the household. A majority have paid off their mortgage and earn a medium income. More than half moved into their house when it was a new building 20–30 years ago.
- 3. Established professionals without children, moved in between 2001 and 2015:** About half of this group has paid off their mortgage; they mostly earn a medium income.
- 4. Established families with children, moved in between 2001 and 2015:** 30–40 % of these families moved into a new building some 7 to 20 years ago. A third have paid off their mortgage. They mostly earn a medium income, but investments are limited due to the cost of raising children.
- 5. Young families with their own home, moved in from 2016:** This is group is cross-sectional: families who have recently acquired property and others who are planning to do so. Predominantly, they earn a medium income, more than two thirds have not yet paid off their mortgage. Not more than a fifth moved into a new building³.

QUALITATIVE VALIDATION OF OCCASIONS AND THEIR INFLUENCE IN FOCUS GROUPS

The focus groups confirmed buying a house (especially relevant for younger target groups), living space adaptations, and damage repairs as most important occasions. They added desire for beautification, inspiration from others and innovations on the market as new occasions (cf. Table 1).

The most important motives as appeared in the focus groups are as follows:

- **Value preservation** is the most important motive across all target groups. Participants mentioned value preservation spontaneously, i.e., unprompted by the facilitator. Value-preserving measures are often visual home improvement and modernisation, repair of wear and tear.
- **Security** was as a new and relevant motive for all owners. Security is an important motive for modernisation of windows and doors and of course the installation of security systems.
- **“Feel-good motives”** are relevant. They include aspects like appearance, optics, comfort, cosiness, etc. Thermal comfort also plays a role. A conjecture is that comfort could also conceal the topic of accessibility (e.g., as provision for old age), which has less relevance individually.
- **Self-fulfilment** was an important motive, mentioned spontaneously without being prompted by the facilitator. Owners pursue home improvement measures as projects because they simply no longer like some aspects, i.e., it is a combined motive of appearance, value preservation and comfort.
- **Innovation and smart home** (“to be at the cutting edge of technology”) seems to be more relevant in middle age; the small number of participants only allows stating a tendency.
- **Climate protection and ecological motives** are of medium importance. They appear as an additional argument or added benefit of a measure. Participants were increasingly aware of ecological issues, but showed other motives that were clearly more important. In one of the groups, there was

3. Based on Destatis (2020)

Table 2. Occasions as possible triggers for energy advice and their estimated frequency in Germany.

	OCCASION	EXPLANATION OF EX-ANTE-PRIORITISATION	INSIGHTS FROM FOCUS GROUPS
TECHNICAL	Maintenance / damage repair	Pro: High number of cases (800,000 renovation measures for exterior building components, 600,000 new boilers installed per year), proximity to energy renovation Con: Diverse artisans involved therefore may be more difficult to address.	Damage repair confirmed as one of the most important occasions for energy advice and renovation HVAC maintenance confirmed as meaningful and relevant
	Change of ownership (purchase)	Pro: High number: around 200,000 changes of ownership of existing residential buildings per year (of which 170,000 are owner-occupied homes). Numerous disseminators, high contact quality, high proximity to energy renovation, legal obligation to offer energy advice introduced in Germany, but not enforced. Con: High time pressure for buyers, especially in urban areas.	Confirmed as one of the most important occasions
PERSONAL	Living space adaptation	Pro: High number of cases, close to energy-efficient renovation, younger owners tend to want to expand, older owners often want to convert, e.g. granny annexe. Con: No recurring event.	Changes due to new living situation confirmed as one of the most important occasions
	Desire for beautification, inspiration from others	n/a, new input from focus groups	New occasion emerged from focus group
	Innovations on the market	n/a, new input from focus groups	New occasion emerged from focus group
LEGAL	Energy Performance Certificates (EPC)	Pro: Energy advisors are easy to address, many have a high level of contact intensity, and are close to energy renovation. Con: Owners usually commission EPCs directly before sale or rental; from the owner's point of view, these are not good times for renovation.	Discussed, but NOT confirmed
	Immission protection measurements and chimney cleanings / inspections	Pro: Very high number of cases (6.5 million immission measurements, 25 million chimney cleanings per year), Chimney sweeps: very easy to address and very high contact intensity*	Discussed, but NOT confirmed for immission protection measurements, medium relevance for chimney cleanings
	Replacement of wood-burning stoves and other small furnaces due to legal requirements	Pro: Very high number of cases (between 2019 and 2024, up to 1.7 million stoves will have to be replaced or retrofitted annually), chimney sweeps: very easy to address and very high contact intensity	Not discussed in focus groups
	Retrofitting obligations under the Building Energy Act	Pro: Chimney sweeps: very easy to address and very high contact intensity, proximity to energy-efficient renovation due to the fact that German chimney sweeps regularly check heating systems. Con: Enforcement deficits means low number of cases of boilers affected by the replacement obligation	Not discussed in focus groups
	Addressing in the DIY store	Pro: Very high number of cases (41.7 million customer visits per year), great potential, easy to address as a multiplier. Con: Possible competition with customer services offered by the DIY market.	Some home owners question DIY store advisors' competence
INFORMATIVE	Tax return (draw attention to tax incentives for renovation)	Pros: High number of cases, high frequency of events. Tax advisors and income tax assistance associations could be addressed as disseminators, high quality of contact. Cons: Tax advisors and comparable disseminators are not familiar with energy-efficient renovation. Poor access to people with low income and pensioners who rarely use tax advisors.	Tax returns or visits to tax advisors discussed, but NOT confirmed

* Basic energy consulting is part of chimney sweeps' vocational training; and industry associations offer further training courses in the field. A search in the database for energy advisors qualified for federal funding programmes revealed about 360 chimney sweeps registered as energy advisors for homeowners (<https://www.energie-effizienz-experten.de/>, last accessed 25 February 2022).

a tendency that younger participants attribute a higher importance to ecological motives.

- **Accessibility** could not be confirmed as a primary motive but is rather an accompanying result of other measures (e.g., “And then, when we renovated the bathroom, we immediately installed a level shower”). However, the low importance could also be due to the participants being below retirement age.

Important overarching insights concerning the customer journeys are:

- There is a fundamental need among owners for **complexity reduction and comprehensive advice**. They would appreciate an advisor who knows the house and respective needs and can make recommendations regarding financing, choice of artisans, etc.
- Especially with regard to financing, **subsidy advice** or “not missing out on subsidies” is relevant. Research of available subsidies seems tedious.
- The respondents often get advice and recommendations from their own network (expert friends). Researching on the internet seems lengthy, often confusing and not very helpful.

Conclusions

We found that relating energy advice to triggering occasions is beneficial for advancing buildings retrofit. Particularly relevant occasions are buying a house (especially relevant for younger target groups), living space adaptations, and damage repairs. Considering customer journeys linked to these occasions helps using touchpoints that bring target groups into contact with energy advisors.

Another finding was that the owners' needs and wishes go beyond advice on pure energy issues. Owners, and those who seek to become owners, want trustworthy, holistic and independent advice on their property that includes a range of topics, including financing, subsidies and choice of artisans.

Climate protection and ecological motives are good additional arguments for renovation measures, but not their central drivers. Communication for energy advice should therefore also address other motives, as owners pursue renovations as projects for self-fulfilment. Further important motives are value retention, security and “feeling good” as well as a desire for beautification. At the same time, there is a lack of information about qualified energy advice and its benefits, which needs to be addressed.

Further research should follow up motives in time. Especially with the climate crisis worsening, ecological motives may gain importance. If energy-efficient renovations become more frequent, attitudes towards them could evolve. Upcoming legal requirements, above all minimum energy performance standards for existing buildings, could create a new range of occasions that trigger the demand for energy advice.

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