Zukunft Bau

STRUCTURE SUMMARY REPORT

title

Long version title:
Social science evaluation of the model program "Efficiency House Plus Standard". Usability, acceptance and controllability of energy consumption. (Part I - Builders)

Cause / initial position

The „Efficiency House Plus Standard“ network covers 36 single-family houses and apartment buildings as well as one renovation project. With this initiative of the BMUB (formerly BVMVBS) this new building standard gets evaluated and promoted. The acceptance of the inhabitants of "Efficiency Houses Plus” is an important indicator for the chances of the Standard to establish itself on the market.

Object of the research project

The network includes a variety of architectural styles, technological equipment levels and user groups (owners, tenants, prefabricated house providers, housing projects, apartment).

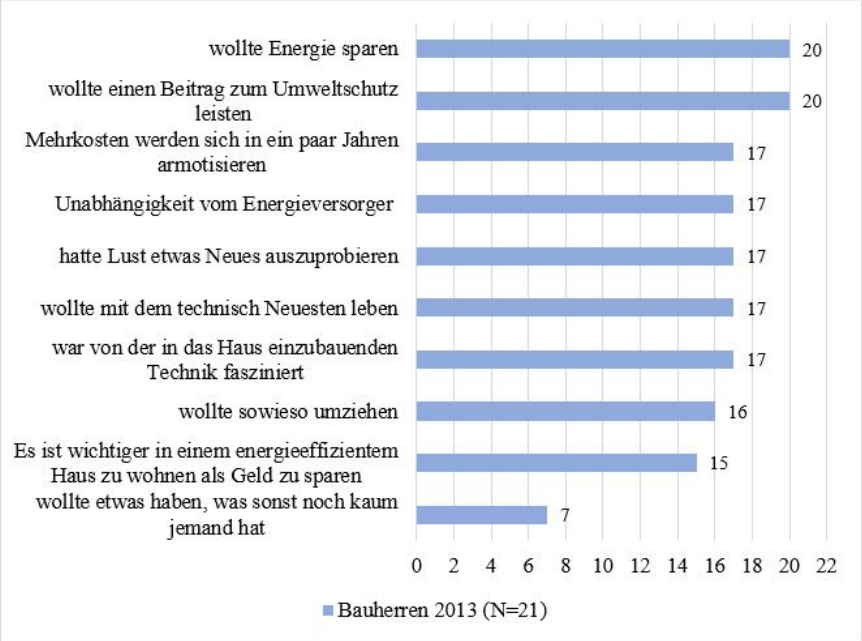
Figure 1: Overview of the network "Efficiency House Plus Standard"

The aim of the trace-research was to work out why builders build an "Efficiency House Plus" and what their expectations and fears therefore are, how they assess the functioning and control of house technic and what experience they have gained during the realization of their buildings. In addition, it should be found out what kind of social

group builders are and how energy using habits change after moving into an efficiency house plus.

The assessments and experiences of the builders were surveyed from 2013 to 2015 using questionnaires (16 or 14 buildings) and qualitative interviews (eleven).

The idea of building an "Efficiency House Plus" arised to almost all builders during the planning process: most of them planned their house as most energy-efficient and extended the standard to include the "plus" later. Architects, energy consultants or prefabricated house suppliers often gave the suggestion, in case the planning expertise did not do the clients themselves. Participation in the "Efficiency House Plus Standard" funding program has also made it possible to increase the energy efficiency standard.



** alle Angaben in absoluten Häufigkeiten; dargestellt sind die Werte der Kategorien „stimmt genau" und „stimmt eher"*

*Figure 2: Motivation to Build or Own an "Efficiency House Plus"**

The motives for building an "Efficiency House Plus" focus on ecological and economic reasons such as "saving energy", "making a contribution to environmental protection" and "being independent of the (public) energy suppliers at a large extend". The "desire to try something new" and the "fascination for building technology" are also important. In contrast, the status-oriented motive "want to have something that hardly anyone has" did not matter as much (see Fig. 2).

"Maybe we're a little bit proud of how we are able to live there. We notice the big interest in the house. We are able to show that we open the windows, do not measure anything or use switches all the time. I really see me in a function of an ambassador." (Interview No. 5, Ms. E.)

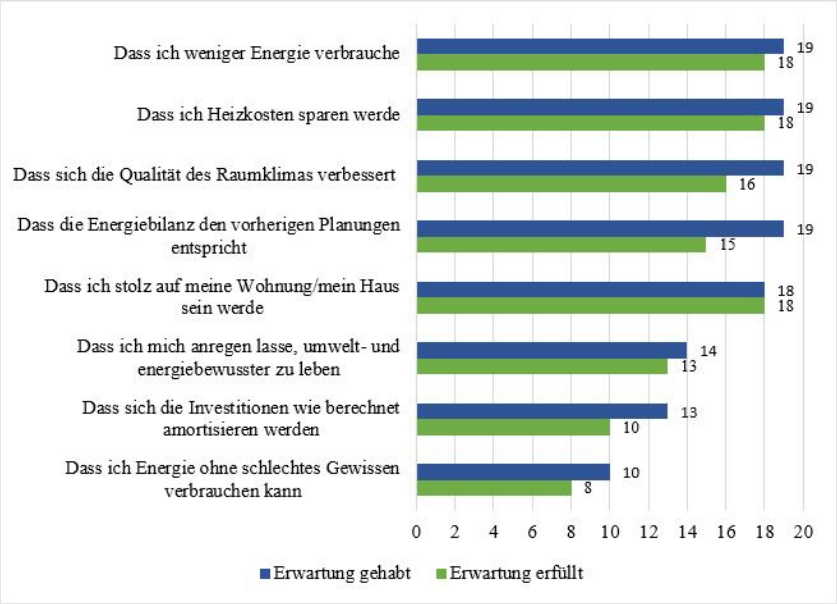


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*Figure 3: Positive expectations and their occurrence **

Retrospectively asked for their expectations and fears, as well as their occurency, it appears that lower energy consumption, reduced heating costs and pride in one's home have occurred for (almost) all who had these expectations (see Fig. 3).

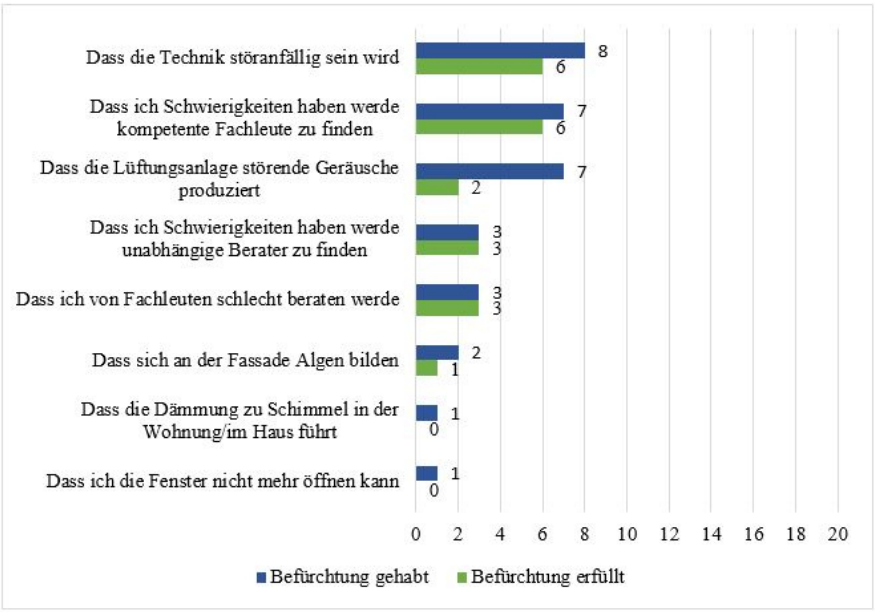

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*Figure 4: Fears and their occurrence **

Concerning the indoor climate, not all expectations could be met in individual cases. A minority of builders had feared that the ventilation system would produce disturbing noises, that the technology was susceptible to failure and that it could be difficult to find competent experts for the implementation. For that minority, the fears (not the expected noise from the ventilation system) did occur (see Fig. 4).

In the process of planning and implementation, as well as during regulation of building services, there are currently still a number of barriers to be overcome for builders, which will become less in time as a result of the growing experience with this construction method and the bundling of knowledge or comprehensive networking at the planning level.

The builders assessment of the buildings and the technology used is quite positive: the floor plan and the size of the house chosen by the them evidently prove to be suitable in practice, and everyone considers the living as comfortable. The design of the lighting conditions and the choice of living environment are also considered successful.

The regulatory options for heating and ventilation systems are judged positively, both in terms of functionality and reliability. The operation of the ventilation system is considered to be more reliable than the heating.

Despite the pleasant, constant room temperatures, some miss the radiated heat of an oven or fireplace.

Especially shortly after moving in the humidity was perceived too low. In the course of time, the correct setting of the ventilation system was found, activities for humidification were taken or a habituation took place.

The energy produced by the houses is enough in the annual balance for the houses and their inhabitants throughout the year.

Constantly updated Information of the measurements is available on the Internet at http://www.bmvi.de/DE/EffizienzhausPlus/Monitoring/node.html and on the webpage of the "Forschungsinitiative Zukunft Bau".

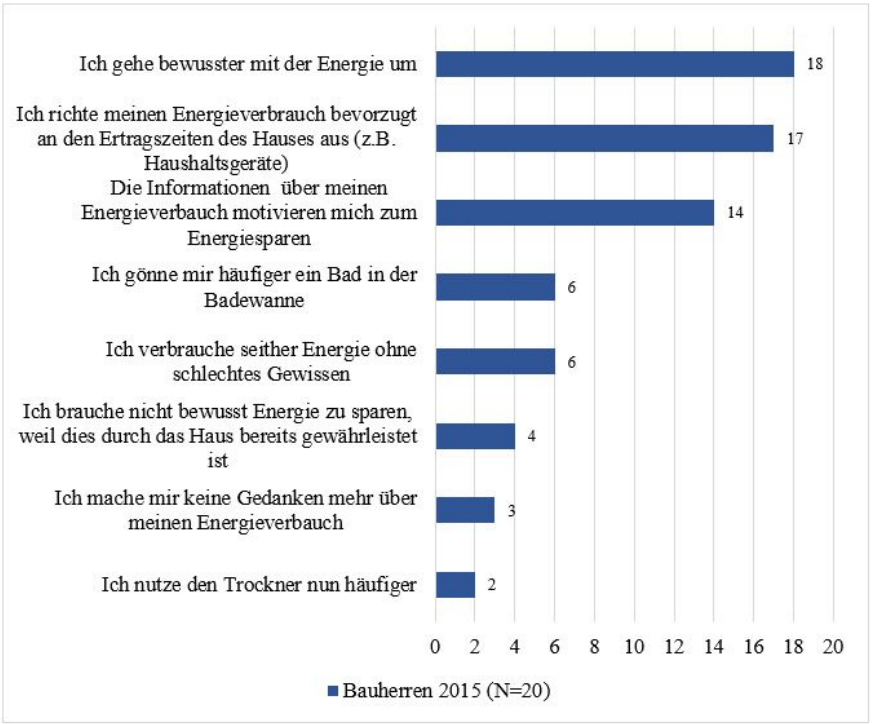

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*Figure 5: Handling energy after moving in **

When dealing with energy, it was found that the principle of an "Efficiency House Plus" encourages to operate domestic appliances especially during an high energy output of the house. Calculating with the produced energy as well as visualizing the energy output and consumption of the house seems to create a great energy awareness, to encourage an economical consumption and to raise the ambition to manage only with the energy produced by the house.

"We pay more attention than before, because you can see, so and so much came in today and so - I would never have thought - but as starting the washing machine, oven or dishwasher - I try that this will be mainly noon or when the output is highest. I would not say that we dispense of anything, you just see you do not have that much energy. But you do have a more conscious use of electricity and energy. You can follow it exactly. I would not say that we are stingy, but you pay attention, because you know where it comes from. (Interview No. 4, Mrs. D.)

Beyond the analysis of reasons for the move, expectations and fears as well as the everyday suitability of the building, another aim was to get to know the client's attitudes, in particular their technical affinity and their energy and environmental behaviour.

The group of builders consists mainly of formally high-educated in good professional positions, which have an above-average income. With regard to general attitudes to technology, ecological principles and energy-saving behaviour, it turned out that the clients are principally technophile and especially ecological and energy-conscious.

However, there are differences besides all open-mindedness for technology. Some builders only want to understand the basic functions of the technology they use, and others have the ambition not only to operate this technique, but also to understand how it works.

Above all the surveyed builders have a pronounced awareness and knowledge of their own energy consumption. This is accompanied by a very economical use of energy. Nevertheless, they do not want to give up comfort in favour of saving energy

Conclusion

All in all, the continuous evaluation of the Berlin “Efficiency House Plus” and the results of the surveys of the network show that living in such a house can be extremely comfortable and does not involve any losses. Living in such a house gives the energy topic a great presence in everyday life and can encourage the ambition of the most efficient use of resources in the home. Thus, this energy concept proves to be a day-to-day realization of their main motives: saving energy, contributing to environmental protection and being independent of fossil fuels and their pricing.

Key data

Short Title: Evaluation - "Efficiency House Plus Standard"

Researcher / Project Management: Dr. Eva Schulze

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PICTURES / Figures:

5 - 7 Printable image data as a separate file (* .tif, * .bmp, ...) with a resolution of at least 300 dpi in the image size (eg width 10 - 20cm). Images free of third party rights.

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Picture 1: Overview of the model projects of the network “Effizien-zhaus Plus Standard”.jpg
Caption: Overview of the network “Effizienzhaus Plus Standard”

Figure 2: Figure 2_Motivation into an Efficiency House Plus zu_Bauherren.jpg
Caption: Motivation to build or purchase an “Effizienzhaus Plus”*

Figure 3: Figure 3_Expectations and Reality_ Builders.jpg
Caption: Positive expectations and their occurrence *

Picture 4: Picture 4_Fearings and reality_owners.jpg
Caption: Fears and their occurrence *

Figure 5: Figure 5_Umgang mit Energie_Bauherren.jpg
Caption: Handling energy after moving in *