THE THIRD SUCCESS FACTOR OF RENOVATIONS WITH ENERGY AMBITIONS

A. van Hal[1]*

[1] Nyenrode Business Universiteit/ Delft University of Technology, P.O. Box 130 - 3620 AC Breukelen/ P.O. Box 5043 2600 GA Delft, the Netherlands

*Corresponding author; e-mail: a.vahal@nyenrode.nl

Abstract

Everyone acknowledges the importance of sufficient financial resources and well-functioning technologies when it comes to renovation processes with energy ambitions. However, Dutch experiences show that these two factors alone do not automatically result in success. More is needed, and this 'more' has to do with less concrete, but in the existing living environment very influential factors such as emotions and wellbeing. This hard to grasp factor is called 'the third success factor of energy friendly renovation processes'. In the Netherlands, the questions 'What exactly is this third success factor?' and 'How to integrate knowledge about this third success factor in the rational-oriented building industry?' have been put high on the agenda of people who want to achieve the national energy goals related to the built environment. Research that combines knowledge from human sciences with energy efficient renovation experiences, the development of new educational methods, and a search for success stories has been part of joined efforts to find answers to these questions. A national knowledge platform called 'HomeMates' has been established to bundle and share all these findings. The Dutch experiences are described and discussed in this paper. They are also linked to Canadian experiences, based on the results of a project of Parallel52º, the Dutch Canadian Sustainable Building and Planning network. In this project, Dutch findings and findings in the Toronto area were compared and discussed.

Keywords:

Renovation; Housing; Energy; Success factor

1 INTRODUCTION

There is a widely supported feeling of urgency regarding climate change. The Paris Climate Conference in 2015 resulted in a worldwide agreement. In the swirl of activities surrounding the negotiations, cities launched initiatives too. By the time of closing, the portal listed commitments from 2250 cities. [1] Evidently cities are taking responsibility.

In the Netherlands, climate change is also a hot topic. The national government has set goals to reduce it, several times already. The latest and most important initiative is the 2013 Energy Agreement for

Sustainable Growth (*Energieakkoord voor duurzame groei*). In this agreement, more than forty organizations, including local governments, have laid the basis for an energy and climate policy. The purpose of the Energy Agreement is to achieve a wholly sustainable energy supply system by 2050. [2]

Many Dutch local governments set climate change-related goals high on their agenda and many activities focus on the built environment. The built environment in the Netherlands is responsible for about 20% of the Dutch CO2-emissions. Privately owned houses create 40% of the emissions produced by the built environment while rented houses create 25%. Housing associations own 70% of the rented houses. [3] Since the Dutch population keeps growing, the energy consumption of the housing stock will continue to rise. [4]

2 DUTCH ENERGY EFFICIENCY POLICIES

The Dutch national Meer-met-Minder (More-with-Less) program was initiated in 2009, with the goal to insulate 300.000 houses a year in a way that improves the energy quality with two Dutch label steps. [6] Unfortunately, a recent evaluation shows that the program does not meet the expectations. Between 2009 and 2012 the number of dwellings that were insulated fluctuated between 200,000 and 250,000, and did not show any signs of an upward trend. [4]

The activities of municipalities are focused mainly on privately owned houses. In this sector, many energy efficiency measures are taken. There is an upward trend in the number of houses that improved the energy quality with one measure (e.g. floor, wall, roof or window insulation, solar cells), so not the preferred combination with other energy efficiency measures (which is necessary to reach the two-label-step). [5]

Housing associations have been active in this field for a long time as well. However, they are not as successful as expected either. The previously mentioned evaluation shows that the current target of the association of housing corporations Aedes, to bring the housing stock of their members up to an average of energy label B, will not be reached if the current pace of the progress holds. [4]

One of the main reasons for the disappointing results is that many residents are not taking the step to a combination of measures. This is caused by the fact that for residents this is a complex decision where many aspects have to be taken into consideration. The behavioral model for energy saving behavior of tenants and homeowners (see fig. 1) show the complexity from the perspective of the government, that has to take all these factors into account. The model clearly shows that there are several motives to decide to, or to decide not to take energy efficient measures (e.g. comfort, money savings, certainty, safety, care for the environment and several emotional motives) and that there are many physical and social issues that affect the decision (e.g. age and energy performance of the dwelling, savings and income of the residents, opinion of neighbors and family).[6] Some practical questions will come up, such as: ‘Will I be living here long enough to benefit from this financially?’ and ‘Are the adjustments to my dwelling easy to implement or not?’ But also more emotional considerations can play a part, such as: ‘Will my neighbors be doing the same?’ and ‘Am I going to spend my money on saving energy or on a new kitchen?’ Some considerations can even be very emotionally charged, like ‘I’d want to, but I’m afraid of the mess and nuisance’ and ‘I don’t want strangers in my house’.

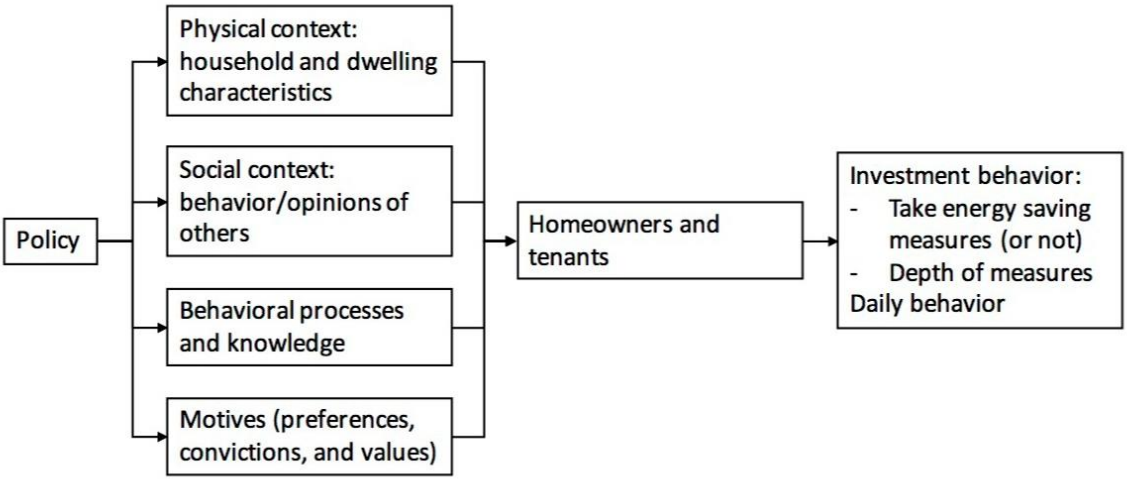

Fig. 1: Behavioral model for energy saving behavior of tenants and homeowners [7]

These last two issues introduce another factor that followed from the evaluation: professionals often assume that residents make rational decisions. Despite the fact that most governmental policies are based on the idea of a rational and calculating 'homo economicus', also behavioral processes affect the decision (like loss aversion, fear for nuisance, etc.). Decisions are not always rational. [6]

3 A MERGER OF INTERESTS

Professionals should be well prepared to handle these two aspects (complexity and emotionality). To do so, a perspective and a strategy that will be described in this paper is helpful. One of the bases of the perspective and strategy is that energy efficiency (and sustainability overall) is not an important issue for most residents. [8] This means that it is not enough to just bring up good arguments for energy saving measures, more is needed. To compete with other products, taking energy efficiency measures in their homes has to awake some kind of enthusiasm. This idea forms the basis of the 'Mergers of Interest'-Perspective. This is a way of looking at the issue which assumes that people will start taking sustainable measures sooner when they also contribute to their personal desires. What keeps them up at night? What are their dreams? If professionals would succeed in combining their knowledge of energy efficiency measures with such desires, chances that the previously described problem of residents will choose for a more ambitious improvement of the energy quality of their houses will increase sharply.

A quote from the book 'Mindfield' serves as a metaphor: "Every time someone – male or female – saw a product that they genuinely found to be attractive, the blood flowed to a small area at the front of the cerebral cortex. The medial prefrontal cortex lit up on the photo like a flame." [9] Like I wrote in 'the Merger of Interests 2.0' [10]: " I realized when reading Frank's words that what has occupied me now for more than twenty-five years, is this: will it ever be possible on a large scale to get people's medial prefrontal cortexes to light up if they see sustainable building materials or measures, or just think about them?"

The Merger-of-Interest Perspective and the resulting Merger-of-Interest Strategy are related to this line of thought. The strategy enhances the chance of sustainable innovations with an integral quality, so with

more qualities than just sustainability ones, which makes them more attractive for many more reasons than just energy or environmental ones. The strategy consists of three steps with a fixed sequence [11]:

Step 1: Drawing up an inventory of the interests of people here and now (including all those involved in a project, thus including the offering parties).

Step 2: Defining sustainability measures that promote these interests.

Step 3: Seeking (innovative) funding models that make investments in such measures possible.

The following logic lies at the heart of this sequence: if you offer people something that meets their needs (helps to resolve their problems or helps to embody their ideals), an inner wish is created to have access to it (the medial prefrontal cortex lights up). Then preparedness to be creative in seeking innovative funding models also increases.

An example that illustrates the operation of the Merger of Interests approach will now be outlined: the shoe rack example. When a few years ago a graduate of the Delft University of Technology asked the residents of some portico flats about their feedback after the replacement of their heating system by a more energy efficient alternative, most of them were negative. They complained about the mess, the nuisance of the strangers in their home, the noise of the new system, and that they now had less storage space. However, the feedback of one of the projects was very positive. In that project, they installed the new systems in the hallway, in front of all the front doors. So, in this case, everyone was left with more storage space instead of less, and no strangers had to come inside the homes to maintain the system. Moreover, the system was combined with a shoe rack. This solved the nuisance of the pile of shoes in front of the front door. There was clearly a win-win situation here. After this, the residents generally appeared to have a more positive attitude towards energy saving measures. Without a thorough analysis of what is important to the residents, this solution would have never been achieved.

This example also show the emotional charge that is associated with renovation. The previously mentioned irrational behavior is deeply studied by several scientists and is not as unpredictable as thought at first sight. The title of the inspiring book by Dan Ariely illustrates this very well: *predictably irrational*. [12] However, psychology and behavioral economics are part of a school of science that is often neglected in the education of Dutch housing specialists. Knowledge from human sciences like psychology, behavioral economics, sociology and anthropology, is hardly integrated.

This is a missed opportunity which is clearly illustrated by the example of the payback time:

Virtually every professional who wishes to have a resident opt for energy measures works with a payback period. It concerns a simple sum: the amount of the investment is paid back over a certain period of time, because the costs for energy are lower than they were previously. Nevertheless, residents are often less enthusiastic than the professionals expect them to be. Knowledge from human sciences explains why. For example, the concept known as *loss aversion* is the natural tendency of people to attach greater importance to avoiding loss than to making a profit. Another concept that applies is *delay discounting*, where the value of something decreases instinctively with time, thus with delay. What made perfect sense rationally, becomes emotional and thus the perception changes completely. [13]

Based on the previous, it can be concluded that to enlarge the enthusiasm of residents, professionals should look beyond just the energy efficiency measures. They have to broaden their view and not only focus on the success factors they are mainly educated in: sufficient financial sources and well-functioning technologies. Working towards a merger of interests and using existing knowledge of human sciences are important steps that should be taken.

4 THE THIRD SUCCESS FACTOR

Striving for a merger of interests by broadening the scope and using the knowledge of human sciences is what we call 'the third success factor' (next to sufficient financial sources and well-functioning technologies), which explains the title of this paper. This third success factor can be compared to what often is called 'the X-factor' of a successful singing performance (next to good looks and a great voice): it also concerns a seemingly vague but undeniably influential element of success.

To support professionals by handling the aspects of complexity and emotionality several Dutch professionals, specialized in housing renovations with energy ambitions, joined forces to find an answer to the following question: 'How to integrate knowledge about this third success factor in the rational oriented building industry?' Supported by the Dutch government they established a knowledge platform to integrate this existing knowledge in practice. This knowledge platform is called 'HomeMates': professionals with energy ambitions working together to improve the overall quality of dwellings.

The term 'together' is key to the message that is conveyed by the knowledge platform. It has three different meanings: wanting together (not only the professionals, but also the residents have to want it, that is why their interests have to be determined), bringing together (the interests of the residents have to be combined with the challenge of energy efficiency), and to achieve this, people have to work together.

In 'wanting together' and 'bringing together', the first two steps of the Merger of Interests strategy can be found. The third one, 'working together', relates to the fact that connecting the needs and interests of the residents with energy measures requires intense collaboration between various parties.

To communicate the third success factor as appealing and efficient as possible, various ways of transferring knowledge are conceived through the knowledge platform. Because it is known that good examples are usually being followed, 'success stories' are gathered. For professionals who really want to delve into all success factors of housing renovations with energy ambitions, the Delft University of Technology developed a blended education program in which professionals work together with students of the university. For professionals who only want to take the online classes, an online program is currently being created. This will be in English, so interested people who are not Dutch can follow the course as well.

Since it is known that 'experiencing' increases the chance that knowledge will actually be applied, a half-day reality game has been developed. A lifelike situation is outlined where the professionals try to seduce residents to invest in a combination of energy efficient measures for their dwellings. In the game, professionals place themselves into the position of the different stakeholders. Besides transferring practical knowledge, the goal of this game is to improve cooperation skills.

Additionally, several half-day master classes for specific subjects are being offered, ranging from 'collaborating with residents' to 'the consequences of the third success factor on the organization of companies'. A network of experts with a lot of experience and knowledge in the field is involved with the knowledge platform HomeMates [14]. They developed a master class as well. When a project encounters a specific problem that can possibly be solved by using the knowledge of the third success factor, some of these experts come over for an afternoon to help them. And of course, literary sources are distributed by the knowledge platform. The knowledge about the third success factor is also transferred through blogs, tweets and discussion boards.

5 CONCLUSION

This paper will be concluded with the question if the third success factor of housing renovations with energy ambitions is typical Dutch or not. During the year 2014 this was one of the questions a group of Dutch and Canadian sustainable stakeholders focused on through a series of themed video conferences and a workshop. In this project of Parallel52º, the Dutch Canadian Sustainable Building and Planning

network, they shared their experiences, insights, and recommendations, also related with housing renovations with energy ambitions.

From all of the sessions, where more questions were discussed, the outcome was assimilated into "10 Best Things to Know". Two of these 'things' were closely related to the ideas and knowledge behind the 'third success factor': 'Energy cost alone isn't a big enough motivator for change', and 'Climate change talk is a turn off'.

Overall, it became clear that the Dutch and Canadians have a lot in common. They are more alike than they are different. They can inform and inspire each other much more than they do now. For this reason, more knowledge about and experiences with the third success factor of renovations with energy ambitions should be exchanged.

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