

Brokering energy efficiency: the role of real estate agents in the markets for residential energy efficiency and renewable energy solutions

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1 Introduction

This paper focuses on housing markets and on the practices of real estate agents through which installed energy systems get traded and valued as houses change owners. There are number of reasons for focusing on the valuation practices and consumers-as-investors is relevant. Firstly, rising energy prices have made the costs of heating and cooling more relevant. Energy efficiency can indeed make a difference in terms of making do with limited means. Secondly, technological development offers energy technologies that are of long life span. Solar PV and ground source heat pumps (GSHP) represent significant upfront costs which are expected to yield benefits over extended period of time. PV or GSHP-systems as technologies prompt an investment logic, and the economic feasibility of different energy solutions may improve significantly if the impact of property values is included (Entrop et al 2010). Thirdly, market based ideology certainly pushes individual people to an investment logic by suggesting various ways in which individuals need rationalize everyday activities and make wise decisions about investments of different forms of capital to secure future well-being. Finally, and reflecting the above, ownership changes have been in explicit focus of energy policy via the launch of the European Energy efficiency certificate (EPBD directive)

We adopt a sociology of markets perspective (Callon et al 2002; Callon and Muniesa 2005; Becker 2011) and highlight market devices and valuation practices in the secondary market of private detached houses. At times of ownership changes, technological arrangement that have been previously bought and installed, are 'put into the market' in quite special context. They are merchandise which buyers might not know much about or care for. The competence of sellers, buyers and real estate agents, and the devices and the practices of market exchange have clear implications on the value and worth of energy efficiency and renewable energy technologies.

Evidence is inconclusive in terms of how (well) the real estate markets work in respect to energy efficiency (Laquantra et al 2002; Lande 2008). Some of the earlier research suggests systematic under-valuation of energy efficiency (Entrop et al 2010; Sorrell 2007). Lande (2008) has indeed found that homeowners themselves expect such redundancy and depreciation of their energy efficiency investment at the housing market. More recent econometric analysis suggests that energy efficiency labels, made investments and achieved good energy efficiency performance are capitalized in the markets of private housing (Brounen and Kok 2011). Yet, location, type of housing and customer segments seem to impact on how 'rational' the market valuation of energy saving technology is (Hoen 2013; Hoen et al 2013; Högberg 2013). To say the least, research is needed, among other areas, on real-estate agents and the way they contribute to the visibility of energy efficiency in the housing market. More particularly, sociology of markets approaches might help to substantiate the results of econometric analyses and suggest reasons for contradictory results of the valuation of energy solutions in the markets.

The work of real estate agents is an extensive field of study of its own. Sociological studies on the way housing markets get performed has been, however, in the focus of limited number of studies. Bourdieu's (2005) work on the structuring of French housing markets highlights the way that housing offerings are made available in wide social networks and how the final 'decision' of individual consumers is catered and predetermined in many ways. More recently Munroe and Smith (2008) have analysed performative price setting practices by real-estate agents in the Edinburgh housing. Yet, little research has addresses the processes in which detached houses change ownership from the point of view of energy efficiency. As an exception, Aune (2012) has studying the Norwegian housing market and market devices. She suggests that energy efficiency does not feature as a sales argument. Drawing on such literatures we suggest that value of capital assets such as

real estate, and energy related investments therein, depend on the professional fields, the institutional mechanisms and particular calculative devices that support or undermine dimensions quality within a particular asset category.

. We detail the following three related research questions:

- 1) What kind of actor constellations and market devices are involved in the transactions on the market of detached houses?
- 2) How is energy efficiency of buildings and HVAC-systems objectified and made marketable and calculable in the secondary markets of detached houses?
- 3) What is the role of real estate agents in making energy efficiency feature in market transactions?

The empirical focus of the paper is on market exchanges of residential detached, single family houses in Finland. We have collected new empirical material by interviewing both real estate agents (interviews with 17 agents) and households who have recently bought a house (interviews with 15 households). Whereas the results of household interviews have been recently published (Rinkinen and Jalas forthcoming), we focus in this paper on the interviews with real estate agents and their market practices. In addition to the interviews we draw of first hand experience of attending viewings of detached houses

We begin by justifying the research of real estate markets as part of sustainability transitions and by briefly introducing market devices as the conceptual framework. The empirical analysis includes an overview of devices at use and a closer look at the enactment of the value of energy efficiency by real estate agents. We conclude by considering implications of our findings and the limitation for more significant role of the real estate agents.

2 Real estate agents in sustainability transitions

The operation and maintenance of existing housing stock contributes a major share of energy demand and related CO₂ emissions. Consequently, diffusion of housing related technology such as insulation and new, improved technologies of lighting, heating, cooling and ventilation appear as a major technology trajectory of sustainability transitions. While studies of the adoption of such technologies has accumulated a large body of evidence, there is an assumption that purchases of, investments in and engagement with such technologies concern new offerings. However, this technology is also traded in the market of existing housing and private real estate. For example in Finland, during the year 2013, 14000 existing detached houses were sold. In the same period, building of new houses was only half of this volume: 7717 building permits for detached houses were issued¹.

The first-hand and the second-hand market are not isolated. In our interviews and more broadly based on our experience, most people who considered such integrated sustainability solutions engage in cost-benefit assessments. When payback times extend towards more than 10 years or approach 20 years, even the calculative households may doubt the reasonability of the investment. The calculation is not only about the savings achieved, but also the value of the investment as part of the value of the real estate. Yet, the

¹ Suomen virallinen tilasto (SVT): Rakennus- ja asuntotuotanto [verkkojulkaisu]. ISSN=1796-3257. joulukuu 2013, Liitetäulukko 3. Myönnetyt rakennusluvut asunnoille, kpl . Helsinki: Tilastokeskus [viitattu: 3.4.2014]. Saantitapa: http://www.tilastokeskus.fi/til/ras/2013/12/ras_2013_12_2014-02-26_tau_003_fi.html

arguments of increased property value as a rationale to engage in sustainability lack credibility, and our household interviews document uncertainty of employment or other reasons of a need to sell the house as obstacles for investments. In other words, making long-term investments in housing calls for better understanding of market capitalization of investments in energy efficiency and renewable energy generation (Entrop et al 2010).

The role of market intermediaries such as installers and advisers in energy efficiency investments has been pointed out to be critical in the deployment of low carbon technology in domestic housing (Owen 2014). However, little research has been done on the potential role of real estate agents through whom a significant share of houses pass as exchanges are carried out in the housing market. Real estate agents might be in key role in securing the value of existing investments, in pointing out opportunities for feasible energy improvements, and building credibility and momentum for low carbon technologies. However, such new roles stretch the professional field of real estate agents who praise a neutral role of matching buyers and sellers.²

Literature in the sociology of markets addresses economic activities with theories that emphasize the collective and negotiated nature of markets. Prices, i.e. market valuation, are one key outcome of markets (Callon et al 2002). They are affected and can be partly explained by networks of co-operation, by institutions that affect competition, information cost and market uncertainty as well as by cultural meanings that regulate what can be traded and how pricing should be done (Beckert 2011, Callon and Muniesa 2005).

Callon and Muniesa (2005) argue that any product or service must be 1) objectified and 2) singularized in order to be exchanged at the market. Objectification refers to a materiality of what is being exchanged. Objectification of a house might appear straight forward, as property rights delineate clear borders around a house. However, property rights are not exclusive. Institutions and other people possess rights over properties that are exchanges. Moreover, neighbours and broader surroundings are in effect often part of the package. Objectification, nevertheless, refers to the procedures that detach the good from the seller and make it transferable to the buyer.

Singularization of the good refers to an iterative process in through which a product is made valuable. As Callon and Muniesa (2005) write, singularization implies 'a gradual definition of the properties of the product, shaped in such a way that it can enter into the consumer's world' (2005, 1233-1234). To enter the world of consumers or buyers is to make sense in it in terms of qualitative differences. This is why Callon and Muniesa also argue that through singularization a good is placed in a frame with other relevant goods. It is the attributes of quality and settings of comparison that make the good calculable.

Munroe and Smith (2008) have utilized Callon's theories to study exchanges and pricing in a rapidly growing market. They claim that a sociological perspective of markets substantiates views offered by psychology and behavioural economics. While the latter has formulated the claim that market behaviour is not always rational, Munroe and Smith point to the role of social interaction and networks. They also argue that home-seekers are often uncomfortable at the market and rather than to engage in information seeking, speculation

² Moving homes has been suggested as a window of opportunity for interventions in energy use habits and energy efficiency (Gnoth 2013, Rinkinen & Jalas 2016). However in this paper we focus on the way real estate agents partake in value attribution of existing technologies rather than their role in advising and launching additional investments.

and extended comparison, they invest in being able to secure a home and get out of the market. Their findings indicate that domestic energy technologies may also be put into frames which are not only about performing calculations but justifying particular market logics. Moreover, unwilling and disinterested consumers suggest a key role for the intermediary actors of real estate markets

Empirical material

In order to study the making of the markets of energy efficiency and renewable energy, we have interviewed real estate agents and house owners as well participated in viewings and used the Internet search engines. We draw on 18 interviews made in different cities of Finland. The interviews lasted from 15 minutes to one hour and were conducted with real estate agents having expertise from 1 to over 20 years. The interview themes and data are presented in in table 1.

Interview questions

- Personal background and HVAC-knowledge
- What kind of experts are involved in the transactions in the markets of detached houses?
- What is the role of the heating system when selecting a house?
- Are there particularly difficult heating systems on the market?
- What do real estate agent do when encountering a poor energy performance in a house to be sold

The interviews have been transcribed and coded. However, in March 2016, the analysis of the interviews is still incomplete.

Market structures for residential energy efficiency in Finland

The real estate agent

The role of real estate agents differs by country and by market. Finnish real estate agents operate with little jurisdiction: the business is in principle open to anyone and the formal requirements of competency are low. In our sample, the knowledge of technical aspects of housing varies greatly and depends on the individual work history and inclination of the agent. Most agents work on provision which depends directly on their success as individuals. Hence there is little sharing of work within offices apart from the tendency of agents to get clients from particular areas. There is thus also limited collegial support to assess different energy systems.

In the Finnish market most agents are hired by sellers. Moreover, most of houses in Finland are sold based on an 'asking price' which typically are above the final realized price. Auctions which start with low asking prices are rarer to date. The job of the agent hence is to 1) value the real estate as high as realistic in respect to the properties of the house and the market condition and 2) place it in the market via several channels such as personal networks and Internet market places.

Market devices

Market devices refer to 'the material and discursive assemblages that intervene in the construction of markets.' (Muniesa et al 2007). They consist of various technologies and practices which facilitate the settling of the price and market transaction. Electronic, internet based databases and search tools have obviously

affected the way houses are being traded. It is much easier for market actors to compile set of options and rate them with different criteria. While sellers and buyers rely most on public market offers and tools of making comparisons therein, real estate agents use electronic systems which allow them to view previous, actual sales prices of similar houses. Asking prices thus follow the previous sales prices of houses with similar attributes in terms of location, size, age and technical properties.

There are currently two competing major marketplaces for detached houses in Finland with roughly equal market share. Focusing on the figures of market leader etuovi.com in January 2014 reveals more than 1000000 searches weekly: Attending the housing markets amounts to close to a pass time in Finland. Of these searches 32% on a detached house. Etuovi, unlike the other major service provider also allows for heating systems to be used as search criterion. In 2013, this criterion was used in 1,7% of all searches. Presuming that this is only relevant for detached houses, roughly 5% of searches on detached houses use a criterion on heating systems. The order of desirability in the criteria is district heat, GSHP, electricity, wood, oil. The results indicate that albeit it is possible, heating systems are not often used to form comparative sets and qualify houses.

Another key device for making more idiosyncratic judgments is a technical survey which is either done prior to putting a house on the market or as a condition on an agreed transaction. Surveying is conducted by professional surveyors and typically seen to ensure the technical and structural soundness of the house. Interestingly, the surveys typically have little to say about energy efficiency beyond commenting on the technical condition and expected lifespan of the heating system. The logic of technical surveys is to point investment needs and renovation deficits which might be directly deducted from sales price but not to point out investments that might be feasible and economically sound ways of reducing the energy bill.

We deliberately asked about the role technical surveys. In general all agents agreed it to be the standard practices except in new houses. However, there are different practices of carrying out the survey. Some of the agents prefer to make the survey prior to pricing the house as if to 'fix' the merchandise.

It speeds up the sale and gives a more reliable impression about the house, and if there are problems [with the house] I can agree the price with seller, because it is the problem of the seller. **HL 4:13**

Larger share of the agents prefer to conduct the survey together with the prospective buyer. The latter practice facilitates a thorough inspection of the house and materially embedded discussion in which the agent can remain neutral but has in any case a decisive role as an initiator. The former practice on the other hand reflects a more distant role of the agent of setting the price based on product characteristic prior to putting it on the market.

The document of the technical survey is sometimes very good, it is a diary for, so you remember, what you need to do in five years or ten years. **P 8: 8:6**

The energy efficiency certificate introduced by EU EPBD directive is a market device designed to effectively convey information about the energy efficiency and performance of the house. It is a rating based on the technical specification of the house and a calculation of energy consumption per surface area. However, this device is broadly discredited amongst our interviewees. They rather use the evidence of real energy costs of previous owners as a proxy of the costs for new residents. While the practicality of such an approach is clear, it nevertheless undermines opportunities to spot and act on energy consumption figures that are disproportionate.

In addition, there is the mortgage agreement with banks which could potentially affect the transactions. However, rather than assessing the house and the energy costs associated with it, banks customarily offer mortgage which covers 60 to 80% of the price depending on the perceived risks. Our interviews give only limited views on how banks get involved, but interestingly there is a category of money that is labelled as renovation loan which is available on top of the purchasing price for well justified investments which should lower the maintenance costs or increase the market value of the house. Renovation loan, which is available also for post-purchase cost of energy efficiency improvements interestingly extends the conditions of mortgage in time and imply that the house is managed as an asset under similar terms and criteria over extended period of time

Finally, public energy advisory bodies³ and private companies offer calculation tools to assess heating system investments. While these are planned to be used for acquiring new heating systems, they can be used to assess heating systems of existing houses. However, interviews with real-estate agents or with consumers have neither hinted at the use of such calculators when at the markets for existing detached houses

Put together, such devices can help the parties of markets exchanges in the housing market to recognize mutual interests and agree on a value of house and a heating system or other investments in energy efficiency. However, beyond this face-to-face interaction and various heuristics of action in housing market effect the valuation of energy efficiency solutions. We next turn to the principle categories and binary oppositions which are used by real estate agent when talking about houses and their heating systems.

Principle categories of houses from the point of view of energy efficiency and heating systems

In the housing market, the qualification of energy efficiency is in a flux. While there is increasing prominence of a product category of passive houses and near-net-zero-energy-buildings, this does not imply that energy efficiency is often calculated. Rather, it is placed in a setting where it serves as a binary qualification that need not be included in calculation. Binaries and principle categories extend beyond passive houses.

Table 1 presents prevailing house categories which were used by Finnish real estate agents in the interviews.

Category	Implications
A house to be demolished	Seller takes no responsibility of the condition of house
Old house	Requires that new owners accommodate the old house
30 years old house	Heating system is in the end of technical lifespan
Well-maintained house	Heating system has been updated along with other technical updates
As new house, less than five years	No technical surveys are needed

While these categories create expectation in terms of and connect to different aspects of energy efficiency, heating system is a specific quality attribute of a detached house in Finland. Real estate typically distinguished between Oil-heating, Direct electricity heating, Central heating with electricity boiler, Ground-source heat pump and Wood-based central heating. In addition to this, they recognize the need of secondary sources of heat which typically include fireplaces as well air-to-air heat pumps.

³ <http://lammitysvertailu.eneuvonta.fi/>

Yesterday I had first viewing in one that still had oil heating, I had even those who turn on their heels at that point
P14: 14:1

Principle categories of houses (Table 1) acted as a way for making sense of heating system investments. When replying to our direct question whether an investment of 20000 euros in GSHP system would pay off at the point of sale, the agents frequently referred to different types of houses. A house which is in general in good condition benefits from GSHP investment, but if the house had not been otherwise maintained, agents doubted the economic logic of making GSHP investments prior to selling the house. Investment can keep a house in a category of not needing a renovation.

Enacting calculative frames

The value of an energy efficiency investments is first addressed in the negotiation of the asking price of a property. This includes, as agents say, getting the first number of the price correctly. At times agents compete for clients and thus need to give optimistic valuation of the property. At the same time, they report to take up problematic issues of house, which may include heating systems of particular kind, and suggest devaluation based on such issues

The initial price is only the starting point of price setting, albeit important benchmark: less than 90% of initial price is regarded to signal a non-competent and flawed price valuation by the agents; public reduction of the asking price is another negative outcome of flawed pricing. Whether it is due to unrealistic prices or the narrow markets, detached houses typically sell for a long time: the statistics of the service etuovi.fi indicate an average time of a year.

The negotiation of a price thus begins with a professional comparison of similar houses that is prompted by owners requesting a high price and agents balancing between getting the client and not promising too much as a starting price. The valuation of the property is based on sales statistics and on collegial discussions. Yet individual agent stick to their contacts and customers are seldom given to any other agent of the office. This is a potential mechanism of diminishing the visibility and devaluation of energy solutions: initial contacts are made and hold irrespectively of expertise in the relevant housing type or technology therein.

When at markets, the categorization of heating systems is key to their valuation. GSHP are reported to give a clear benefit and direct electricity and oil to present obstacles. Agents however emphasize that the energy expenses of previous owners form the backbone of the discussion around energy related aspects. Again if they are within a proper range, for example 20000kWh per annum for a direct electricity heating, they arouse little more discussion.

We also asked the agents on their strategies of selling non- energy efficient houses. How might the agent try to minimize the negative impact of low energy efficiency on sales price. One obvious way is to try to bridge the gap by suggesting alternative heat sources such as fireplaces. A second related strategy is to list conversion strategies; oil based heating can be changes to GSHP relatively easily and direct electricity heating can be supported with Air-to-air heat pumps. A different strategy is to examine the previous consumption patterns which underlay the energy consumption figures: here the practices range for ordering infrared-imaging to merely listing the heated spaces of the previous owner. Discussion also address the previous owners and, e.g. the number of water-hungry teens, and the indoor temperatures.

The market performances of energy efficiency also hinge on the professional ethics of real estate agents. Agents in our interviews claim that they need to be honest and point out to flaws in the house and misguided expectations of energy costs. Such practices of problem-shooting and devaluation of properties with poor energy efficiency contribute to relatively better prices of energy efficiency.

If we know it's an old and bad house, with high electricity bills, we have to say it is because bad system, frankly. I guess you saw the water dripping from the roof. **P 7: 7:4**

One clear example of a seasoned agent reasons that he wants to act as a semi-expert – not qualifying to the level of technical experts but nevertheless using his position of seeing multiple houses and being a professional in the housing field.

With this experience, if you can give advice to people, they have a big impact. I think the agent should act as an advisor too. **P15: 15:7**

The role of advisor includes different things for different agents: While the seasoned agents above might extend their role to organising infrared imaging, others suggest that they merely give contact information of building and energy efficiency professionals, price estimate and in general engage in vision of how to improve or develop the real estate.

On the other hand, many limit their active role to situations in which the potential buyer raises the issue and doubt their skills and the desirability of acting as an energy expert

If I start to give too much advice to the buyer, they will hold me as a fool, why are you explaining us those things even if we never asked. **P6: 6:28**

Discussion

The interviewed real estate agents clearly are able to put detached houses on the market in a way that makes energy efficiency and renewable energy visible and calculable, and thus contribute to the market value of this technology. A generally held view that 'A house never remains unsold because of the heating system' testifies that heating arrangements are brought into the realm of calculation with little problems.

Beyond this, one of the basic dividing aspect of the real estate agents work is whether they (want to) act as consultant for the maintenance and upgrading of the housing stock which passes through their hands. Most of the agents we have interviewed do not want to expand their professional activity into such advisory roles. The active advisor role puts them into positions for which they currently have little expertise for and which contradicts their basic logic of getting houses sold with proper prices.

An advisor role seems also problematic from the point of view of working for the seller. In most cases advising is based on flaws and defect of the property, and taking them up leads to devaluation of the property. Yet, such a devaluation is part and parcel of supporting the value of made investments in energy efficiency. The advisor role of the real estate agent can be nevertheless played undercover. The way that some agents insist on carrying out technical surveys in the presence of the buyers exemplifies a role in creating discursive spaces about energy efficiency. Indeed, the role of the real estate agent is much more controversial in pointing out defects in energy efficiency than in seeking for premium for made investments. On the other hand, relying solely on energy expenses of previous owners closes much discussion even if it seems to fulfill basic criteria for real estate agents proper conduct of 'presenting the facts'.

Even if the boundaries of the goods are clear and the attributed of quality established, different calculative tools produce asymmetries. Callon and Muniesa (2005) perceive a conflict of calculative devices and argue that a compromise at markets is not so much of value but of how to calculate value. A compromise so reached, configures encounters with various levels of computerization and automata. In the case of setting the price of detached houses, there is a collective agreement that location overrides any other product characteristic. This is reinforced with the calculative devices that allow for location specific pricing history to be accessed and, on the other hand, to devices that do not enable to search for and market the quality attributes of energy efficiency.

References

- Aune, M. (2012). Making energy visible in domestic property markets: the influence of advertisements. *Building Research & Information*, 40(6), 713-723.
- Beckert, J. (2011). Where do prices come from? Sociological approaches to price formation. *Socio-Economic Review*, mwr012.
- Bourdieu, P. (2005). The social structures of the economy. *Polity*.
- Brounen, D., & Kok, N. (2011). On the economics of energy labels in the housing market. *Journal of Environmental Economics and Management*, 62(2), 166-179.
- Callon, M., & Muniesa, F. (2005). Peripheral vision economic markets as calculative collective devices. *Organization studies*, 26(8), 1229-1250.
- Callon, M., Méadel C., and Rabeharisoa, V. (2002). "The economy of qualities." *Economy and society* 31(2): 194-217.
- Entrop, A. G., Brouwers, H. J. H., & Reinders, A. H. M. E. (2010). Evaluation of energy performance indicators and financial aspects of energy saving techniques in residential real estate. *Energy and Buildings*, 42(5), 618-629. doi:<http://dx.doi.org/10.1016/j.enbuild.2009.10.032>
- Gnoth, D. (2013). Moving home and changing behaviour—implications for increasing household energy efficiency. *ECEEE Summer Study Proceedings: Rethink, Renew, Restart*.
- Hoehn, B. (2011). An analysis of the effects of residential photovoltaic energy systems on home sales prices in California. Lawrence Berkeley National Laboratory.
- Hoehn, B., Wiser, R., Thayer, M., & Cappers, P. (2013). Residential Photovoltaic Energy Systems in California: The Effect on Home Sales Prices. *Contemporary Economic Policy*, 31(4), 708-718.
- Högberg, L. (2013). The impact of energy performance on single-family home selling prices in Sweden. *Journal of European Real Estate Research*, 6(3), 242-261.
- Lande, C. D. (2008). *Homeowner Views on Housing Market Valuation of Energy Efficiency: An Empirical Investigation* (Doctoral dissertation, The University of Montana).
- Laquatra, J., Dacquisto, D. J., Emrath, P., & Laitner, J. A. (2002). Housing market capitalization of energy efficiency revisited. *ACEEE Summer Study of Energy Efficiency in Buildings, Teaming for Efficiency, Proceedings*, 8.
- Munro, M., & Smith, S. J. (2008). Calculated affection? Charting the complex economy of home purchase. *Housing Studies*, 23(2), 349-367.
- Muniesa, F., Millo, Y., & Callon, M. (2007). An introduction to market devices. *The sociological review*, 55(s2), 1-12.
- Owen, A., Mitchell, G., & Gouldson, A. (2014). Unseen influence—The role of low carbon retrofit advisers and installers in the adoption and use of domestic energy technology. *Energy Policy*, 73, 169-179.

Rinkinen, J. & Jalas, M. (2016). Moving home: houses, new occupants and the formation of heating practices. *Building Research and Information*, DOI: 10.1080/09613218.2016.1143299.