



The Hassle Factor as a Psychological Barrier to a Green Home

G. de Vries¹ · M. Rietkerk² · R. Kooger³

Received: 14 December 2018 / Accepted: 12 February 2019 / Published online: 28 February 2019
© The Author(s) 2019

Abstract

In order to reach climate goals, policymakers stimulate homeowners to invest in sustainable measures in and around their house. Unfortunately, however, the number of green home measures lacks behind. This article introduces perceived hassle as an important reason for this shortfall. It is claimed that homeowners perceive hassle during different stages of their (customer) journey towards a green home; the awareness stage, the consideration stage, and the decision stage. It is further theorized that people delay taking green home measures in order to avoid the anticipated stress caused by the accumulation of these hassles. Exploring the hassle factor as a psychological barrier to a green home can advance the successful implementation of policies that stimulate sustainable housing. On the one hand, our insights can help homeowners to overcome their obstacles to invest in green measures. On the other hand, they can help policymakers to improve their policies. It suggests de-hassling policy interventions and discusses their effectiveness.

Keywords Hassle · Sustainability · Energy efficiency · Climate change · Green housing · Psychology · Barriers

Global warming is one of the greatest challenges the world faces today. In order to counter its potentially harmful consequences in the long run, humans need to change their behaviour in the short run. Policymakers promote three important strategies for this behaviour change: use

✉ G. de Vries
g.devries-2@tudelft.nl

¹ Faculty of Technology, Policy, and Management, Delft University of Technology, P.O. Box 5015, 2600 GA Delft, the Netherlands

² Milieu Centraal, Nicolaas Beetsstraat 2A, 3511 HE Utrecht, the Netherlands

³ ECN part of TNO, Radarweg 60, Amsterdam 1043 NT, the Netherlands

energy more efficiently (i.e., energy efficiency), adapt to the effects of climate change (climate change adaptation), and make a structural change in energy systems (energy system transition) (e.g., European Commission 2018).

Homeowners are an important audience for energy policies. That is, households account for a large part of all carbon dioxide (CO₂) emissions: one of the main contributors to global warming. Furthermore, households have a large variability in (energy) consumption patterns (e.g., Eurostat 2017; Gardner and Stern 2008; Hamilton et al. 2014). Homeowners can reduce their CO₂ emissions when they invest in sustainable measures in and around their property. Examples of such measures are roof and floor isolation, solar panels, and heating or cooling systems. Compared to renters, homeowners are a preferred target group because they have a higher income, can decide more autonomously to invest in green measures, and are more quickly to invest in green home measures than renters (e.g., Davis 2011).

Unfortunately, despite the efforts of policymakers, the number of homeowners that invest in green measures lacks behind (e.g., Amel et al. 2017; Bolderdijk and Steg 2015; Ölander and Thøgersen 2014). This short communication claims that perceptions of hassle partly underlie this shortfall.

Contribution

The main scientific contribution of this short communication is its focus on hassle as a barrier to a green home. Hassle is a micro-stressor that is empirically understudied. We introduce the theory that the accumulation of perceived hassle during a homeowners' journey towards a green home can lead to considerable stress and inaction. This theory extends general research on psychological barriers to sustainable consumption, and deepens in particular the concept of "effort" (e.g., Gatersleben et al. 2002). This extension is relevant because psychological factors are important barriers to sustainable consumption. That is, people are not entirely driven by economic or rational considerations when it comes to green home investments. In fact, people often respond in unexpected and undesirable, irrational ways to rewards and sanctions that were intended to stimulate green behaviours, even when they report themselves that they have the intention to act green (e.g., Amel et al. 2017; Frederiks et al. 2015; Steg and Vlek 2009).

This communication stresses the importance of research on and application of behavioural insights in environmental policymaking. For an effective shift in sustainable household behaviour, policies need to consider psychological factors in addition to technological, financial, and information barriers (e.g., Amel et al. 2017; Newman and Fernandes 2016). Governments and institutions increasingly follow up on this (e.g., Grimmelikhuisen et al. 2017; Halpern 2015). However, the field of behavioural public administration has only just started (Schillemans and de Vries 2016), in particular when it comes to environmental policies.

The communication contributes to society because its insights on the hassle factor can advance the successful implementation of environmental policies. On the one hand, it can raise awareness among homeowners about their barriers to invest in green measures. Awareness of the hassle factor might help them overcome these barriers. On the other hand, policymakers can use this paper to design effective interventions that support homeowners in their green decisions (e.g., Frederiks et al. 2015; Vandenbergh and Gilligan 2017). We will provide suggestions for interventions in this communication.

The Hassle Factor

Hassles are “the irritating, frustrating, distressing demands that to some degree characterize everyday transactions with the environment. They include annoying practical problems such as losing things or traffic jams and fortuitous occurrences such as inclement weather, as well as arguments, disappointments, and financial and family concerns” (Kanner et al. 1981, p.3). Hassles can be potent sources of stress when they act cumulatively, in particular, when compensatory positive experiences are absent (McLean 1976). Stress is an unpleasant state-of-being, and one of the ways people cope with it is by avoiding the situation or action that causes the stress (e.g., Roth and Cohen 1986). So, if homeowners perceive accumulated hassle during their journey towards a green home, their stress levels increase, leading eventually to avoiding to take green measures.

Awareness Stage

Homeowners can perceive hassle at three stages during their journey. The first of which is the moment they become aware of green home measures, for example, when presented with (public) information. Public information about energy efficiency is often perceived as complex (Schalkwijk 2017) which slows down information processing (e.g., Chaiken 1980; Petty and Cacioppo 1986). Furthermore, when information about energy policies is too technical and detailed, people find it difficult to understand the core message which can prevent them to act positively upon this message (e.g., de Vries 2017; de Vries et al. 2014). Public information about energy policies is important to stimulate sustainable behaviour (e.g., Milbrath 1995). However, when people perceive reading it as hassle and the information is neglected in return, governments fail to hit their mark (Gardner and Stern 2008; Ölander and Thøgersen 2014).

Consideration Stage

At the second stage of the journey towards a green home, homeowners consider and balance benefits and disadvantages of measures. They encounter two types of hassle during this consideration stage. The first hassle is to find a reliable contractor and arrange the construction. Homeowners find it hard to find a contractor they can trust (DECC 2011) and they feel inhibited by the logistical difficulties of arranging the work from – often multiple – contractors (Gardner and Stern 2008). A second hassle factor in the consideration stage is the perceived disruption in households that comes along with the construction (Aravena et al. 2016). In particular for loft insulation, the perceived hassle of clearing belongings from the loft area before insulation could prevent homeowners from taking up this green home measure (DECC 2011).

Decision Stage

During the decision stage, the main hassle is the application for subsidies or loans. Because financial restraints are often mentioned as barrier, a popular policy-tool to stimulate green home investments are monetary incentives (e.g., Bolderdijk and Steg 2015). Homeowners are either limited in their financial resources or perceive that the benefits of a measure (lower energy bills, climate benefits) do not outweigh the monetary costs (e.g., Aravena et al. 2016). Unfortunately, monetary incentives are not as effective as expected (e.g., Allcott and

Greenstone 2012). Several surveys indicate that homeowners find it a hassle to apply for subsidies or loans, leaving them to postpone the application. Application can be a hassle when homeowners do not know where to apply, how to apply, and under which conditions they get the money (e.g., Allcott and Mullainathan 2010; DECC 2011, 2013).

In conclusion, the hassle factor appears to be an important psychological barrier to a green home. Homeowners perceive hassle when they inform themselves about green home measures, when they consider to invest in a measure, and when they have decided to invest. As stated before, the accumulation of hassles could lead to stress and ultimately to inaction, even with enough information and money. Therefore, new energy policies should be aimed at removing hassle.

Interventions

If policymakers want to pave a hassle-free way for citizens towards a green home, interventions are needed that make the green behaviour easier and more convenient than the status quo (i.e., green nudges, Schubert 2017). See Table 1 for an overview of the stages, the hassle factors in that stage and the intervention – or nudge – that could be taken.

Awareness Stage

Clear, concise, and credible information about green home measures could prevent perceptions of hassle in the awareness stage. Gardner and Stern (2008) suggest that in order to be effective, information should (1) focus on a small number of specific actions with a large impact, (2) repeat the message frequently through multiple media outlets, and (3) use sources that are credible to target audiences. Where possible, the messages should arrive when the target group is set to make a choice about the issue the message addresses. In our case, that could be when citizens plan to move house or renovate their house.

A similar result is found in a Chinese study to the role of public information in increasing homebuyers' willingness-to-pay for green housing. There is a weak demand for green housing in Chinese cities, and the researchers wanted to know to what extent this weak demand was influenced by weak (public) information. They conducted an experimental study and found that households can be encouraged to purchase green measures if they are presented with more reliable, accurate, and concrete information (Zhang et al. 2016).

Research to the impact of framing on the effectiveness of public communications further confirms the finding that information should be clear, concise, and credible (de Vries 2017). Experiments show that too much details can dilute the persuasiveness of a core message (de Vries et al. 2014), and that the impact of information partly depends on expectations about the intentions of the source (de Vries et al. 2016).

Table 1 Stages, the hassle factors in that stage and the intervention that could be taken

Stage	Hassle factor	Intervention
Awareness	Complex information	Clear, concise, and credible information
Consideration	Difficult to find/manage contractor	One-stop shops
	Disruption of the household	Offer non-technical help
Decision	Applying for money	Prefilled application forms

Consideration Stage

Interventions for removing the hassle factor in the consideration stage could be aimed at the pre-selection of contractors and help to minimize household disruption. A well-cited example of removing perceptions of hassle and disruption in the consideration stage is a behavioural trial following up on the finding that homeowners did not isolate their lofts because they perceived too much hassle of clearing belongings from the loft area before insulation (DECC 2011, 2013). The main de-hassle intervention was to offer help by clearing the loft area. More specifically, the researchers offered technical installation (applying insulating floorboards) in combination with clearing the belongings in the loft. The results show that when homeowners were interested, they were prepared to pay more for this combination than for the offers separately (either the application of the boards or clearing). In short, offering help to minimize disruption could (partly) remove the hassle-factor (DECC 2013). However, we should be cautious with drawing the conclusion that offering help is the solution for a hassle-free consideration stage, based on the loft trial. First, the sample was too small to guarantee external validity: the conclusions cannot be generalized to all homeowners. Second, empirical, systematic research to the relative impact of offering help compared with other interventions is lacking.

Local and national governments experiment with the provision of free and trustworthy energy audits, lists of approved contractors, and help to find the right type of green home measures in so-called one-stop shops (e.g., DECC 2011). In the Netherlands, these stops are called energy-counters. They are expected to be effective but because most of these stops are locally run, general evaluation of their efficiency is not available.

Decision Stage

Literature does not provide a clear answer to the question how to ease the application process for subsidies. However, a study on default policies (i.e., the alternative the consumer receives if he/she does not explicitly request otherwise) to engage consumer green behaviour might give a direction for interventions. The study shows that consumers are more likely to switch to a green service if the option of green is implied as the default and consumers can *opt-out*, compared to when consumers need to explicitly ask (*opt-in*) for switching to a green service (Theotokis and Manganari 2015). This knowledge might be transferrable to the application of loans and subsidies as such that when homeowners go to an application site, their personal details and the application for the loan can be prefilled. The only thing homeowners need to do is opt-out or modify the prefilled information.

Discussion

The main take-away of this short communication is that the accumulation of hassles that homeowners encounter during the process of greening a house can lead to stress and ultimately to inaction. We identified four types of hassle from literature: informational hassle in the awareness-stage, the hassle of finding and managing contractors, the disruption of the household in the consideration stage, and finally money application hassle in the decision stage. Empirical research could reveal whether or not there are more types of hassle.

One way to investigate this is by conducting a large-scale survey. Ideally, such a survey should be expanded to several countries and distributed among a heterogeneous group of respondents in order to control for internal and external factors that might influence hassle perceptions.

This short communication zoomed in into a rather homogeneous group: homeowners. However, the amount of people that (privately) rents their home is growing (Hope and Booth 2014), making renters an interesting group to include in an empirical study to hassle perceptions. It might be interesting to compare perceptions of hassle for homeowners who rent out their house, and renters. We predict that homeowners perceive hassle during different stages towards a green home than renters. Homeowners probably perceive most hassle during the process of deciding and buying green measures, and searching for subsidies. Renters might perceive most hassle when the measure is installed. The solutions homeowners take to reduce perceptions of hassle (for him or herself) might not be in the best interest of the renter, for instance when the owner chooses for a cheaper, but more intensive, and time-consuming instalment, leaving the tenant in a disruptive household. This tenant–landlord problem (Hankinson 2018) connects to the classic principal–agent problem that occurs when one person or entity (the “agent”) makes decisions that impact another person or entity (the “principal”). This dilemma exists in circumstances where agents are motivated to act in their own best interests, which are contrary to those of their principals.

We strongly suggest that energy policymakers take perceptions of hassle into account. We proposed several interventions that could help de-hassling. In the awareness stage, policymakers can put effort in the production of clear, concise, and credible information. In the consideration stage, they can offer personal help to find and manage trustworthy contractors and minimize disruption of the household. In the decision stage, policymakers can de-hassle by setting up prefilled application forms.

De-hassling might not be easy so to implement though. Behaviour change interventions only have a limited capacity to affect sustainable behaviour. Human behaviour is extremely complex and affected by multiple factors. That can be internal factors such as personality traits, motivation, pro-environmental knowledge, awareness, values, attitudes, emotion, locus of control, responsibilities, and priorities (Allcott and Rogers 2014; Basic-Sontic et al. 2017; Hamilton et al. 2014). However, also external factors such as institutional, economic, social, and cultural factors affect sustainable behaviour (e.g., Kollmuss and Agyeman 2002). Moreover, what is perceived as hassle one day might not be perceived as hassle the other day due to shifts in mood or emotions. This complexity might call for a targeted approach instead of a mass approach (in line with Baptiste et al. 2015).

A possible place to start a tailor-made hassle-free journey towards a green home could be the one-stop energy shops we mentioned previously. These shops can be localized regionally in towns and municipalities but governed nationally in order to make efficient use of resources such as expertise and subsidies. Personal “energy coaches” (located in the energy shops) could inform homeowners on suitable measures, prices, trustful contractors, and offer support by applying for money. Of course, the design, implementation, and regulation of targeted, tailor-made environmental policies such as energy shops take a lot of time and money. But so does inaction to take green home measures.

Funding information This study is part of a research project funded by the Rijksdienst voor Onderneming Nederland. Call: TSE-17-12-01 (Socially responsible innovations). Project number TESE117008.

Open Access This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

- Allcott, H., & Greenstone, M. (2012). Is there an energy efficiency gap? *Journal of Economic Perspectives*, *26*, 3–28.
- Allcott, H., & Mullainathan, S. (2010). Behavior and energy policy. *Science*, *327*, 1204–1205.
- Allcott, H., & Rogers, T. (2014). The short-run and long-run effects of behavioral interventions: Experimental evidence from energy conservation. *American Economic Review*, *104*, 3003–3037.
- Amel, E., Manning, C., Scott, B., & Koger, S. (2017). Beyond the roots of human inaction: Fostering collective effort toward ecosystem conservation. *Science*, *356*, 275–279.
- Aravena, C., Riquelme, A., & Denny, E. (2016). Money, comfort or environment? Priorities and determinants of energy efficiency investments in Irish households. *Journal of Consumer Policy*, *39*, 159–186.
- Baptiste, A. K., Foley, C., & Smardon, R. (2015). Understanding urban neighborhood differences in willingness to implement green infrastructure measures: A case study of Syracuse, NY. *Landscape and Urban Planning*, *136*, 1–12.
- Bolderdijk, J. W., & Steg, L. (2015). Promoting sustainable consumption: The risks of using financial incentives. In L. A. Reisch & J. Thøgersen (Eds.), *Handbook of research on sustainable consumption* (pp. 328–342). Northampton: Edward Elgar Publishing.
- Busic-Sontic, A., Czap, N. V., & Fuerst, F. (2017). The role of personality traits in green decision-making. *Journal of Economic Psychology*, *62*, 313–328.
- Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology*, *39*, 752–766.
- Davis, L. W. (2012). Evaluating the slow adoption of energy efficient investments: Are renters less likely to have energy efficient appliances? In D. Fullerton & C. Wolfram (Eds.), *The design and implementation of US climate policy* (pp. 301–316). Chicago: University of Chicago Press.
- DECC. (2011). *Understanding potential consumer response to the green deal*. London: Department of Energy and Climate Change.
- DECC. (2013). *Removing the hassle factor associated with loft insulation: Results of a behavioural trial*. London: Department of Energy and Climate Change.
- European Commission. (2018). *Adaptation to climate change*. Available at: https://ec.europa.eu/clima/policies/adaptation_en. Accessed 20 Dec 2018.
- Eurostat. (2017). Greenhouse gas emissions statistics – air emissions accounts. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Greenhouse_gas_emission_statistics_-_air_emissions_accounts. Accessed 22 Feb 2019.
- Frederiks, E. R., Stenner, K., & Hobman, E. V. (2015). Household energy use: Applying behavioural economics to understand consumer decision-making and behaviour. *Renewable and Sustainable Energy Reviews*, *41*, 1385–1394.
- Gardner, G. T., & Stern, P. C. (2008). The short list: The most effective actions U.S. households can take to curb climate change. *Environment: Science and Policy for Sustainable Development*, *50*, 12–25.
- Gatersleben, B., Steg, L., & Vlek, C. (2002). Measurement and determinants of environmentally significant consumer behavior. *Environment and Behavior*, *34*, 335–362.
- Grimmelikhuijsen, S., Jilke, S., Olsen, A. L., & Tummers, L. (2017). Behavioral public administration: Combining insights from public administration and psychology. *Public Administration Review*, *77*, 45–56.
- Halpern, D. (2015). *Inside the nudge unit*. London: WH Allen.
- Hamilton, I. G., Shipworth, D., Summerfield, A. J., Steadman, P., Oreszczyn, T., & Lowe, R. (2014). Uptake of energy efficiency interventions in English dwellings. *Building Research & Information*, *42*, 255–275.
- Hankinson, M. (2018). When do renters behave like homeowners? High rent, price anxiety, and NIMBYism. *American Political Science Review*, *112*, 1–21.
- Hope, A. J., & Booth, A. (2014). Attitudes and behaviours of private sector landlords towards the energy efficiency of tenanted homes. *Energy Policy*, *75*, 369–378.

- Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine*, 4, 1–39.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8, 239–260.
- McLean, P. (1976). Depression as a specific response to stress. In I. G. Sarason & C. D. Spielberger (Eds.), *Stress and Anxiety* (Vol. 3, pp. 297–323). Washington, D.C.: Hemisphere.
- Milbrath, L. W. (1995). Psychological, cultural, and informational barriers to sustainability. *Journal of Social Issues*, 51(4), 101–120.
- Newman, T. P., & Fernandes, R. (2016). A re-assessment of factors associated with environmental concern and behavior using the 2010 General Social Survey. *Environmental Education Research*, 22, 153–175.
- Ölander, F., & Thøgersen, J. (2014). Informing versus nudging in environmental policy. *Journal of Consumer Policy*, 37, 341–356.
- Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. *American Psychologist*, 41, 813.
- Schalkwijk, M. (2017). Energie besparen doe je nu. Eindrapportage campagne-effectonderzoek. Kantar Public.
- Schillemans, T., & de Vries, G. (2016). Behavioral insights in public administration. *Bestuurskunde (Public Administration)*, 25, 3–8.
- Schubert, C. (2017). Green nudges: Do they work? Are they ethical? *Ecological Economics*, 132, 329–342.
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29, 309–317.
- Theotokis, A., & Manganari, E. (2015). The impact of choice architecture on sustainable consumer behavior: The role of guilt. *Journal of Business Ethics*, 131, 423–437.
- Vandenbergh, M. P., & Gilligan, J. M. (2017). *Beyond politics: The private governance response to climate change*. Cambridge: Cambridge University Press.
- de Vries, G. (2017). How positive framing may fuel opposition to low-carbon technologies: The boomerang model. *Journal of Language and Social Psychology*, 36, 28–44.
- de Vries, G., Terwel, B. W., & Ellemers, N. (2014). Spare the details, share the relevance: The dilution effect in communications about CO2 capture and storage. *Journal of Environmental Psychology*, 38, 116–123.
- de Vries, G., Terwel, B. W., & Ellemers, N. (2016). Perceptions of manipulation and judgments of illegitimacy: Pitfalls in the use of emphasis framing when communicating about CO2 capture and storage. *Environmental Communication*, 10, 206–226.
- Zhang, L., Sun, C., Liu, H., & Zheng, S. (2016). The role of public information in increasing homebuyers' willingness-to-pay for green housing: Evidence from Beijing. *Ecological Economics*, 129, 40–49.