Why do energy conservation policies mobilise the behavioural sciences rather than the social sciences? A few lessons from the emergence of the behaviour change agenda in Japan

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Keywords

behavioural change, behaviour, policies and measures, social practices, public policy, household sector

Abstract

Behaviour change policies have been gaining momentum since the 2000s, especially in the energy conservation field. At the same time, studies about energy consumption behaviours and practices have been increasing. They are usually categorised into two approaches, namely behavioural and socio-anthropological, which have both gained legitimacy and become institutionalised. However, despite the availability of the two perspectives, energy conservation polices mobilise behavioural sciences much more than socio-anthropological approaches. While this issue has already been discussed by scholars, this paper sheds some light on it by drawing upon an empirical study on the rise of behaviour change in Japan's energy conservation policy. Indeed, the challenges faced by Japan, that is drastically reducing its energy consumption while supporting economic growth, are no different to those of most OECD countries. Furthermore, Japan's strategy has similarly long been dominated by techno-economic approaches. Thus, the Japanese case provides a valuable insight into how energy conservation policies change and utilise the behavioural sciences. Drawing upon literature in public policy analysis and policy transfer, I argue that the success of the behavioural sciences can be explained by the coherence of their discourse – and the "mismatch" of socio-anthropological ones – with the culture and expectations of energy conservation policymakers. Three interrelated factors explain this coherence. First, the translation of the behavioural sciences into economics increased their legitimacy and made them appear more scientific in the eyes of policymakers. Second, recent transformations in their methodology enhanced the accuracy and reliability of their results, thus providing practical tools to policymakers. Third, behavioural approaches deliver concrete levers of actions which are compatible with the pursuit of economic growth. For these reasons, and in contrast with socio-anthropological approaches, the behavioural sciences are considered as "practical knowledge" by policymakers.

Introduction

In most OECD countries, behaviour change policies have been gaining momentum since the 2000s in various fields, including energy conservation. At the same time, studies about energy consumption behaviours and practices have been increasing, especially in the US and in European countries (Sovacool 2014; Stern 2014). This abundant research includes various approaches that stand in sharp contrast with techno-economic perspectives that used to prevail in the past and did not consider that human and social issues matter much when dealing with energy consumption (Wilhite et al. 2000; Lutzenhiser 1993). Work focusing on energy consumption behaviours and practices encompasses a wide variety of perspectives and disciplines with their own specificities. Still, the literature often distinguishes two kinds of approaches (which may not be exclusive), namely behavioural and socio-anthropological (Evans et al. 2012; Shove 2010; Wilhite et al. 2000). On the one hand, behavioural approaches mainly include research in psychology, behavioural economics, cognitive science and brain science, which I will refer to here as the behavioural sciences. Focusing on the human dimension of consumption, the individual,

through his decision-making process and his behaviour, is their privileged scale of analysis. On the other hand, socio-anthropological approaches basically encompass sociology, anthropology and ecology, which I will term the social sciences in this paper[1]. They consider the social dimension of consumption, focusing on the impact of social groups, representations, institutions, etc. on behaviours rather than on individuals *per se*. Socio-anthropological approaches often dismiss the notion of "behaviour" because of its individualistic and anti-sociological perspectives, preferring instead to talk about "social practice", for instance (Evans et al. 2012; Shove 2010; Wilhite et al. 2000). In a similar vein, the ECEEE Summer Studies' panel dedicated to energy consumption issues uses the notion of "dynamics of consumption".

Both behavioural and socio-anthropological approaches of energy consumption have gained legitimacy and, to some extent, have become institutionalised. The former benefits from the triumph of the Behaviour, Energy and Climate Change Conference (BECC) held in the US every year since 2007. The latter became well-known through the success of social practice theories in academia and in ECEEE Summer Studies in the 2000s. However, despite the availability of these two approaches, policymakers utilise the behavioural sciences much more than the social sciences in energy conservation policy (Jones et al. 2013, Evans et al. 2012; Shove 2010). Socio-anthropological approaches are not entirely absent from public policy: while not explicitly referring to them, a few schemes can be considered to display a practice-based perspective (Evans et al. 2012: 118-124). Still, for a decade, most measures have drawn upon the behavioural sciences and targeted individuals to change their behaviour. This mobilisation is increasingly explicit, as exemplified by the appointment of Cass Sunstein as administrator of the White House Office of Information and Regulatory Affairs in 2009, the creation of the Behaviour Insights Team in the UK in 2010 (Jones et al. 2013: 23) and the setup of similar governmental bodies in Denmark, France, Germany, the US and other countries. Some scholars argue that social practice theories are not helpful for designing behaviour change policies because they do not provide sufficient understanding of energy consumption and do not formulate clear levers of action (Jackson 2005: 63-64). Others object that socio-anthropological approaches are keys to reduce households' energy consumption because of the unrealistic nature of behavioural sciences' models of human behaviour and endeavour to develop practice-based policy initiatives (Evans et al. 2012; Shove 2010).

This paper does not aim to demonstrate which of the behavioural and socio-anthropological approaches must be used to design behaviour change policies, since effective energy conservation policy should probably mobilise both bodies of knowledge. Instead, my objective is to help explain why policymakers utilise behavioural sciences rather than social sciences, and thus to indicate a few features that may help social scientists to have greater influence in policymaking. Since this question has already been discussed theoretically by prominent researchers (see above), I propose to shed some light on it by drawing upon an empirical study I conducted on the rise of behaviour change measures in Japan's energy conservation policy. I argue that Japan's case provides a valuable insight into how energy conservation policies change and why the behavioural sciences are more successful than the social sciences in their design. Indeed, the challenges faced by Japan, that is drastically reducing CO_2 emissions and energy consumption while supporting economic growth and respecting democracy, are no different to those of most OECD countries. Furthermore, the Japanese strategy has similarly long been and still is dominated by techno-economic approaches (Watanabe 2011; Oshitani 2006), as conceptualised by Western researchers (Wilhite et al. 2000; Lutzenhiser 1993), which failed in reducing energy consumption in Japan's residential sector so far (Yamaji 2015; Watanabe 2011).

The first and second sections of this paper introduce the study methodology and its theoretical framework. The third section deals with the emergence of behavioural approaches in Japan's energy conservation policy. It highlights the plurality of factors involved: besides structural constraints such as the urgency of mitigating climate change and the focusing event of the Fukushima disaster, a small group of policy entrepreneurs have played a central role in importing new knowledge and policy tools from abroad. Indeed, they supported the promotion of energy conservation behaviours and provided policy tools informed by behavioural sciences to the Ministry of Economy, Trade and Industry (METI) and the Ministry of Environment (MOE). In the fourth section, I argue that the main reason behind the success of behavioural approaches is the coherence of behavioral sciences' – and the "mismatch" of social sciences' – discourse with the culture of not only policymakers, but also these influential policy entrepreneurs who believe that changing behaviours matters.

Methodology

This paper draws upon several qualitative research methods. On the one hand, I conducted about forty semi-structured interviews with Japan's energy policy stakeholders (including civil servants, think tanks, companies from the industrial sectors and experts from academia) and academic researchers in behavioural and social sciences working on energy consumption. Half of these interviews were carried out during my visits to Japan in 2014 (9 months) and 2015 (1 month) and the other half through skype meetings, while a couple of stakeholders were surveyed by email. I also interviewed a dozen European and American researchers involved in ACEEE, ECEEE, BECC and BEHAVE. Interviews and regular email exchanges with Alan Meier and Deborah Poskanzer, as well as with Harold Wilhite, have been highly valuable for their familiarity with the stakeholders of Japan's energy conservation research and policy, and for understanding the impact of Meier's and Wilhite's visits to Japan. On the other hand, I analysed the METI's relevant plans and law revisions as well as the discussions within its Energy Conservation Committee (*Shōenerugī shōiinkai*) from 2000 to 2015. This Committee is a key advisory body providing expertise and policy recommendations to METI concerning Japan's energy conservation strategy. It includes the chairman of the Institute of Energy Economics of Japan (IEEJ) – Masakazu Toyoda since 2010 – and has been chaired

1. I recognise that economics is also a social science and that psychology is commonly included in this category. However, psychology and behavioural economics are also often defined as behavioural sciences. I eventually decided to distinguish between the social sciences and the behavioural sciences in accordance with the conception of most of the researchers and policymakers I have interviewed for this research.

since 2009 by the Jyukankyo Research Institute[2] (JYURI)'s CEO, Hidetoshi Nakagami. My interviews with Toyoda, Naoko Doi from the IEEJ, Nakagami's right-hand man, Chiharu Murakoshi, Sho Hirayama from JYURI, and researchers from the Central Research Institute of the Electric Power Industry (CRIEPI) were also of great help. Exploratory interviews firstly helped in identifying the key players advocating the promotion of energy conservation behaviours. Secondly, semi-structured interviews enabled me to reconstruct the events and to analyse stakeholders' narratives and perceptions of behavioural sciences in order to understand why they came to consider and favour these approaches.

Theoretical framework

This paper draws upon public policy analysis and policy transfer studies, which provide a solid theoretical framework for understanding both policy change and the mobilisation of knowledge in public policy.

Existing literature emphasises the fact that in most cases, policy change can only be explained by taking into consideration a wide range of heterogeneous factors. In his "policy window" model, John Kingdon (1995) argues that change is likely to occur at the confluence of three independent streams, namely the problem stream, the policy stream and the political stream. In other words, a new or a change of policy happens when, in a favourable situation, policymakers face a problem and solutions are available to solve it. A favourable situation can be brought by a political alternation or a shift in public opinion. Solutions can be made available, for instance, by the progress of knowledge or technological innovation. Problems may arise through the production and publication of indicators and statistics, the mobilisation of social movements and interest groups, or unexpected events. Thomas Birkland (2006) shows that although they do not always lead to policy change, "focusing events" such as earthquakes or nuclear accidents may compel governments to deal with new issues. Most scholars consider that significant policy changes mainly result from these perturbations or from other external factors such as policy alternations. However, these events are not sufficient: new issues reach the agenda and materialise in policy change only if solutions are available. Both the rise of problems and the provision of solutions depend on the efforts of individual or collective and governmental or non-governmental players referred to as "policy entrepreneurs". Other approaches consider that policy change may also occur without any focusing event, due to cognitive factors (see for instance Hall 1993). Learning processes would explain incremental policy change and may, over the long term, bring about radical change. Cognitive approaches are fruitful because they unveil the impact of ideas and beliefs in the policymaking process as well as in the definition of stakeholders' interests and strategies.

This brief literature review shows the manifold factors potentially involved in policy change. It suggests the importance of paying attention to the effects of both external and punctual events, such as disasters and political alternation, and less noticeable and more diffuse factors, such as the progress of knowledge and technological innovation. It also highlights the key role of policy entrepreneurs in the definition of problems and the provision of solutions. Cognitive approaches consider that these entrepreneurs mobilise and succeed after having learnt from past policy experience or discovered new knowledge and policy tools. As termed by David Dolowitz and David Marsh (2000), policy change may also result from "learning from abroad" processes. Policy transfer studies analyse how ideas, institutions and measures circulate from exporting countries to importing countries. This literature emphasises the key role of non-governmental players in the circulation of policy tools and knowledge, leading to a certain convergence of domestic policy agendas. Diane Stone (2004) specifically depicts how international organisations, Non-Profit Organisations (NPOs) and think tanks exchange ideas through international and transnational networks, and promote them in their own domestic policy context. These non-governmental actors act as "policy transfer entrepreneurs" (Dolowitz and Marsh 2000: 345) and are likely to play a key role in policy change, as explained by Stone (2004: 18): "They provide essential services for decision-makers by acting as resource banks; advocating policy ideas and developing discourses of transfer; as well as spreading ideas and information through their professional networks and into media and civil society".

Paying attention to these non-governmental actors is crucial for understanding how international policymaking and agendas can generate domestic policy change. This is especially relevant when studying Japan since scholars suggest the influence of US policies (Schwartz 1998) especially in the energy and climate mitigation fields (Watanabe 2011). As suggested by Diane Stone (refer above), the prestige which a body of literature benefits from in other countries and international organisations may explain its success in domestic policy. Indeed, such a "consensual knowledge" (Stone 2004: 6) is likely to be mobilised in policymaking when promoted by domestic policy entrepreneurs but also foreign, international or transnational organisations. Behavioural sciences have specifically become a "consensual knowledge" in academia, as indicates the Clark Medal won by Matthew Robins in 2001, the Nobel Prize awarded to Daniel Kahneman in 2002 and the triumph of Sunstein and Thaler's *Nudge* in 2008, for instance. This is especially the case in the energy efficiency field: many research institutions in the US – such as ACEEE – have recently recognised the relevance of behavioural sciences, which benefit from unprecedented interest and audience since BECC was launched in 2007. Furthermore, the success of behavioural approaches in general and to energy efficiency goes beyond the research sphere and has reached the governmental agenda in many OECD countries (Jones et al. 2013). Therefore, one can assume that the international prestige and recognition of behavioural sciences as a "consensual knowledge" is one of the factors explaining their mobilisation in energy conservation policy in Japan. The efforts of organisations such as BECC and ACEEE for promoting behavioural approaches, although specifically in the US, support this hypothesis.

However, the mobilisation of certain knowledge in policymaking cannot be exclusively explained by their prestige and consensual nature at an international level. Indeed, institutional approaches of public policy underline the fact that

2. Often referred to as a think tank, JYURI is a private research centre specialising in various areas with a focus on energy efficiency issues, especially in the residential sector.

policy change is also strongly framed by institutions. Therefore, the mobilisation of knowledge depends on its coherence with government bodies' specific policymaking processes and routines, as well as with policymakers' ideology, skills, culture, representations and understanding of problems. Some authors have specifically worked on the conditions under which policy tools and knowledge are likely to be co-opted by policy entrepreneurs and then, eventually, generate policy change. Peter Hall (1993) emphasises the power of economic ideas, which are likely to provoke policy change, especially when new theories become prevalent in academia. Deborah Stone (1989: 289) considers that the policy impact of ideas is highly variable: complex causal explanations, for instance, would not help policymakers much because they would not provide well-identified targets and levers of action. In the same vein, Jean-Gustave Padioleau (1977: 948–949) argues that some measures have a greater "policy practicability" than others, while Henri Bergeron and Jean-Noël Jouzel (2011) contend that the mobilisation of "practical knowledge" enables policy entrepreneurs to generate change. Building on Tim Jackson's argument (refer above), one could assume that the behavioural sciences are used in public policy because they are perceived as "practical knowledge" by policymakers, whereas the social sciences are not. This perspective may explain why Japanese policies mobilise the former rather than the latter, since while behavioural economics and psychological approaches recently became very popular, social practice theories have also become institutionalised and gained legitimacy in academia and in ECEEE Summer Studies.

The next section analyses the emergence of behaviour change policies in Japan's energy conservation strategy since the early 2000s, with a focus on the 2010s. The institutional setting of Japan's energy policy and the factors of this emergence are helpful to understand why policymakers mobilise the behavioural sciences rather than the social sciences.

The emergence of the behaviour change agenda in Japan and the impact of the Fukushima disaster

THE EMERGENCE OF THE BEHAVIOUR CHANGE AGENDA IN JAPAN AND THE RECENT RISE OF BEHAVIOURAL SCIENCES

As mentioned in the introduction, regulation, voluntary approaches from the private sector, market tools and economic incentives have dominated Japan's energy conservation policy since its inception in the 1970s (Yamaji 2015; Watanabe 2011; Oshitani 2006). However, the Japanese government has recently begun to proactively promote "energy efficient behaviours" (*shōene kōdō* in Japanese, *shōene* meaning, depending on the context, "energy saving", "energy conservation" or "energy efficiency"). This concern for behaviours is not entirely new: after the first oil crisis, the government urged people to adopt "energy saving lifestyles" (*shōene raifusutairu*) while Prime Minister Ohira promoted an "energy saving look" (*shōene rukku*) in the aftermath of the second shock. Still, the notion of "behaviour" has become increasingly popular among policymakers over the last decade and has now reliably reached the governmental agenda.

As a first step, in 2005 the MOE launched the Team Minus 6 % campaign, aiming at promoting low carbon behaviours through public mass media, after the enactment of the Kyoto Protocol the same year (Tan et al. 2008) and the early 2000s energy crisis in Tokyo (Meier 2005). This initiative included the famous "Cool Biz" scheme, which attempted to change social norms and make it acceptable to wear more light and casual clothes at work during summer (Evans et al. 2012; Tan et al. 2008). Team Minus 6 % was renamed "Challenge 25 Campaign" in 2010 and "Fun to Share" in 2014, while "Super Cool Biz" was introduced after March 2011. From the early 2010s on, behavioural sciences have been explicitly and more strongly mobilised by the MOE and the METI. The former formed in 2010 the "Communication and Marketing Working Group", composed of three behavioural scientists who introduced methods and theoretical models from behavioural economics and social psychology to promote eco-friendly purchases and investment (Granier 2015). The same year, the METI, which is responsible for energy policy, appointed one of Japan's most prominent behavioural economists, Takanori Ida, as special advisor for its smart grid strategy and the experimentation of demand-response (Granier and Kudo 2016; Granier 2015). The significance of behavioural approaches to energy conservation was strengthened with the revision of the Energy Saving Law in 2013 and the enactment of a new in 2014, Ida being among the key experts consulted by the METI. In 2015, the ministry commissioned Opower Japan and JYURI to test Opower's Home Energy Reports (HERs) with 40,000 households (Hirayama et al. 2016)[3]. The same year, a researcher close to the MOE contended in a magazine published by the Japanese Government that besides technological innovation, Japan's climate change mitigation strategy also "makes use of psychosociology, behavioral economics and the analysis of big data" (Fujino 2015). Lastly, the following year, the MOE (2016: 32) announced in its budget for 2017 a call for projects to experiment "behavioural sciences-based approaches", including "nudges", to "promote behaviour change". In sharp contrast, social sciences are neither mentioned, nor used by the METI and the MOE for designing behaviour change measures[4].

HOUSEHOLDS' ENERGY CONSUMPTION AND CONSERVATION: A LONG-STANDING PROBLEM REINFORCED BY THE MARCH 2011 DISASTER

In accordance with Kingdon's "policy window" model, behaviour change, following a two-stage process, reached the agenda once energy consumption behaviours[5] became a significant problem in the eyes of Japanese policymakers. In the first instance, from the 1990s onwards, *energy consumption in the residential sector*[6] has emerged as a problem. Indeed, while

3. This pilot study shows that within two months, households receiving HERs reduced their electricity consumption by 1,2 % on average compared to control-group households (Hirayama et al. 2016).

4. It should be noted that besides this suggestive overview, the promotion of behaviour change has not replaced previously existing measures, nor has it become prevailing in Japan's energy conservation policy. Yet, there can be no doubt that behaviour change and the behavioural sciences have, at least for the moment, reached Japan's energy conservation policy agenda.

5. I use "energy consumption behaviour" instead of "practices-that-use-energy" in accordance with the discourse of Japanese policymakers, who share a behavioural rather than a social practice approach to household consumption: "energy consumption behaviour" (*enerugī shōhi kōdō*), "energy behaviour" (*enerugī kōdō*) and "energy conservation behaviour" (*shōenerugī kōdō* or *shōene kōdō*) are amongst their most frequent expressions.

6. What is referred to as the "residential sector" in official documents from the METI and the MOE encompasses households, commercial facilities as well as public and private sector offices.

energy conservation was already key to Japan's energy strategy, the METI and the industrial stakeholders considered that after decades of efforts, there was no longer room for further improvements in the industry, at least not without hindering its competitiveness (Watanabe 2011; Oshitani 2006). Therefore, they stated that it was time to increase energy conservation efforts in the residential sector, especially since household energy consumption had skyrocketed due to lifestyle changes – the proliferation of electronic devices and the higher standards of comfort and convenience being specifically underlined. This focus on the residential sector was gradually reinforced when the mitigation of climate change reached the international agenda and energy conservation became Japan's main approach to reduce CO_2 emissions. While the METI aimed at preserving the industrial sector, the MOE also began to target the residential sector, but for a very different reason: to drastically reduce emissions, further energy conservation was needed in all sectors, residential and industrial included (Watanabe 2011; Oshitani 2006). In a second phase, *energy consumption behaviours* became a problem because energy conservation measures in the residential sector, although effective, did not reduce the overall energy consumption. The Top Runner programme proved very successful in improving the energy efficiency of appliances (Kimura 2010), but their dissemination was not sufficient and could not offset the rise in consumption due to lifestyle changes. Thus, throughout the 2000s, METI's Energy Conservation Committee stated that improving the efficiency of appliances and promoting their dissemination through economic incentives was not sufficient and should be supplemented by additional measures to promote more effectively and expand the scope of energy conservation behaviours.

Kingdon (1995) specifies that policy windows may rely more strongly on the policy stream than on the political stream. This is the case of the behaviour change agenda in Japan, since the rare and ephemeral political alternations (1993-1994 and 2009-2012) did not trigger significant changes in the energy conservation strategy (Granier 2017). Similarly, there was no shift in public opinion throughout the period, a clear majority of Japanese citizens being aware of energy issues and climate change and in favour of energy conservation policies (Watanabe 2011). However, the triple disaster of March 2011 – earthquake, tsunami and nuclear accident – must be considered as a focusing effect which played a crucial role in the emergence of the behaviour change agenda (see Granier 2017). First, it both reinforced the perception of the problem of energy consumption behaviours, especially during peak demand periods, and the support or at least acceptance of the citizenry for State intervention (Yamaji 2015, Kimura and Nishio 2013). Second, it accelerated the liberalisation of the energy sector, which planned to introduce competition in the electricity and gas retail markets in 2016 and 2017 respectively. Thus, providing energy conservation services to households became a new issue for the long-standing actors and newcomers of the energy sector (Granier 2017).

However, as Kingdon (1995) and Birkland (2006) argue, problems and focusing events, even in a favourable context, do not generate policy change if no solutions are available. And it is precisely because METI's policymakers did not identify suitable policy tools that they could not face the problem of the increasing energy consumption in the residential sector. The discussions within the Energy Conservation Committee throughout the 2000s as well as the testimonies of the energy conservation stakeholders show this very clearly: until the 2010s, even the advocates of behaviour change policies recognised they had no concrete measures to offer. Therefore, the stringency of climate change mitigation and the urgency driven by the Fukushima disaster do not suffice to explain the recent emergence of behaviour change policies, nor do they explain why policymakers mobilised the behavioural sciences rather the than social sciences. Admittedly, since socio-anthropological approaches require taking into consideration many factors and aim at medium to long term social changes, they may not be adequate for emergency situations such as the aftermath of Fukushima. However, both approaches are not exclusive; moreover, behavioural sciences reached Japan's energy conservation policy agenda in 2010, that is before the disaster. Drawing on a cognitive and micro-level analysis of policymaking, I argue in the next section that a small group of policy entrepreneurs have played a central role in the emergence of the behaviour change agenda, providing to METI officials solutions they had learnt from abroad.

The key role of policy entrepreneurs in the mobilisation of behavioural sciences: learning and importing from abroad

Policymaking in Japan is characterised by the institutionalised participation of non-governmental stakeholders within advisory bodies named *shingikai*. These ministerial "councils" or "committees" gather university professors and representatives from NPOs, think tanks and interest groups from the private sector. *Shingikai* are considered as playing a significant role in providing knowledge and policy tools, especially in technical policy areas (Schwartz 1998). METI's Energy Conservation Committee specifically brings together the stakeholders of Japan's energy conservation policy, who themselves provide ideas and policy proposals to the ministry. Non-governmental actors who participate in METI's *shingikai* are thus likely to provoke policy change by framing both the problems tackled by the ministry and their solutions, doing so within but also outside *shingikai*. I argue that three such actors, namely JYURI, CRIEPI and the IEEJ, with the help of Opower Japan, successfully urged the METI to mobilise the behavioural sciences, drawing on the US and UK experiences they had learnt from.

JYURI is probably the main policy entrepreneur promoting behavioural approaches and played a significant role in their agenda setting, as reflected by its joint experimentation of Opower's HERs with Opower Japan in 2015–2016, on behalf of the METI. This think tank, founded by Nakagami en 1973, provides its expertise concerning energy efficiency and conservation to ministries, local governments and various private companies in the energy sector. It is composed of researchers with a technical background, i.e. in engineering and/or architecture. Since the 1970s, Nakagami have been a regular member of dozens of *shingikai* and is considered as one of the most prominent specialists in energy efficiency in Japan. He has been chairing the Energy Conservation Committee since 2009, after having been appointed deputy chairman in 2000. JYURI and Nakagami have been promoting energy conserva-

tion efforts in the residential sector since the 1980s, speaking at *shingikai* and parliamentary committees. At the same time, Nakagami, Murakoshi and other JYURI members became familiar with American energy efficiency experts, such as Lee Schipper and Meier whom they met in Japan. They started to attend ACEEE and ECEEE Summer Studies in the mid-1990s, and hosted Wilhite in their office in Tokyo from October 1993 to December 1994, through the intermediary of Meier. Nakagami, Murakoshi and Wilhite conducted together a survey on the diversity of household energy-use behaviour in Japan and put it in perspective with the case of Norway, using a socio-anthropological approach (Wilhite and al. 1996). In the following years, Nakagami increasingly urged the METI to improve energy conservation in the residential sector, although he did not refer to behavioural sciences or to social sciences at that time.

The year 2010 marks a turning point for energy conservation policymaking in Japan. As previously mentioned, Ida, one of Japan's most prominent behavioural economists, became METI's advisor to Japan's smart grid development strategy. Meanwhile, the MOE launched the Communication and Marketing Working Group, partly composed of behavioural scientists[7]. But, more importantly for Japan's energy conservation policy, both JYURI and a few researchers from CRIEPI began to give close attention to the recent behavioural research and measures implemented in Europe and the US in the field of energy conservation. CRIEPI is a think tank providing its expertise to the METI, electric power companies and other actors regarding electricity issues. Similarly to JYURI's, its researchers most often have an engineering background. And it was specifically one of CRIEPI's engineers, Kimura, who introduced behavioural approaches from the US – Opower's HERs and Hunt Allcott's works – to the METI. Indeed, in December 2010, the ministry launched the Research Group on Energy Efficient Behaviour and Energy Management, chaired by Nakagami. Sugiyama, senior researcher and project leader in CRIEPI, was one of its permanent members and invited Kimura to present his expertise about behavioural approaches to energy efficiency. The previous year, Kimura wrote CRIEPI's first report mentioning both "psychology" and "behavioural economics" as relevant approaches to promoting energy efficiency (Kimura and Wakabayashi 2009). Subsequently, Kimura and his colleague Ken.ichiro Nishio decided to investigate behavioural approaches and their endeavour was supported by Meier and Jim McMahon from the Lawrence Berkeley Laboratory (LBL), who visited CRIEPI a couple of months later. The two researchers presented the recent Stanford Sensors & Energy Behavior Initiative led by Carrie Armel, and introduced a great deal of literature to Kimura and Nishio. The following years, the two Japanese colleagues studied behavioural approaches, started conducting field studies in Japan and dedicated several reports to the matter. Meanwhile, other researchers from CRIEPI began to mobilise the behavioural sciences in their studies and reports, while in addition to their scientific activities, Nishio and Kimura strongly promoted the mobilisation of the behavioural sciences to the METI and to the other stakeholders of Japan's energy conservation policy.

But let's go back to JYURI, which has probably been more influential, and directly so, in energy conservation policymaking. The think tank started to survey behavioural approaches in Europe and in the US as part of a partnership with Tokyo Gas. In 2010, JYURI researchers visited Wilhite and other researchers in Sweden and Denmark and attended the Smart Homes Conference in Vienna. The following year, they went to California and visited LBL, UC Berkeley, Opower and the Precourt Energy Efficiency Center (PEEC), where Armel introduced them to behavioural sciences. Toshiya Okamura from Tokyo Gas participated in this trip and arranged to stay one year in PEEC in 2012–2013. During his stay, he often received Japanese stakeholders and attended BECC 2012 in Sacramento. When Okamura came back to Japan in April 2013, Tokyo Gas and JYURI decided to create a BECC-like conference in Japan[8]. Okamura having been transferred to other functions, Ayako Mikami continued his work and in September visited Jim Sweeney, director of PEEC, and Margaret Taylor, a researcher from the same institution, who had just become co-chair of BECC. The project of BECC Japan was then confirmed and finally adopted when Nakagami, Murakoshi, Mikami and others met BECC representatives at the US conference in November. Meanwhile, JYURI made a great effort to make Japanese behavioural scientists direct their research towards energy conservation behaviours[9]. Nakagami and his colleagues contacted Japanese specialists in behavioural economics, social psychology and educational sciences. They then launched, along with other researchers in architecture, the Society of Energy Efficiency and Behavior (SEEB) which aims at promoting behavioural research and measures in the energy efficiency field (Hirayama 2015). With the official support of the METI and the MOE, they organised an inaugural symposium in February and the first BECC Japan was held in September 2014 in Tokyo, with Taylor and Wilhite as keynote speakers. In the 2015 edition, METI and MOE officials participated in a panel discussion moderated by Nakagami and where they emphasised the need for further research and measures aiming at promoting energy efficient behaviours. In addition, besides pushing behavioural approaches in METI's Energy Conservation Committee, parliamentary commissions and through BECC Japan, Nakagami also proactively promoted behavioural change policies and sciences through a dozen interviews he gave and papers he wrote in the media between 2010 and 2015[10].

Although later than JYURI and researchers from CRIEPI, the IEEJ also came to advocate the mobilisation of the behavioural sciences to the METI. And similarly, they did so after

7. I do not explain the activities of this working group in detail because the reports it has produced were ultimately not taken into account by the MOE and did not result in any concrete measure (see Granier 2017).

8. It is interesting to note that Nakagami and others previously attempted to create an Asia-Pacific Council for Energy Efficient Economies (APCEEE) in the late 1990s/early 2000s.

9. Indeed, although there were a few social psychologists working on pro-environmental behaviours (mainly Yukio Hirose and his students Kaori Ando, Susumu Ohnuma, Shoji Ohtomo and Junkichi Sugiura, as well as Michio Umino and his students, especially the sociologist Mikiko Shinoki), none of them used to work on energy consumption behaviours. Similarly, no Japanese behavioural economists used to work on environmental or energy behaviours at that time, with the exception of Ida who had just started his research in this field. A few researchers had recently started to investigate energy consumption behaviours, such as Kimura and Nishio from CRIEPI and Yoshie Yagita, but they did not have a behavioural or social sciences background.

10. Especially in three of them (Nakagami 2014, 2012, 2010).

having learnt them from the US and from Europe. The IEEJ is a think tank specialising in energy economics, which used to be part of the METI and still today works closely with the ministry. Toyoda, chairman and CEO of the IEEJ since 2010, spent indeed thirty years of his career in the METI and became its Vice-Minister for International Affairs in 2008. Before 2013, the IEEJ had not been significantly advocating or investigating behaviour change policies. This changed when Toyoda met Sweeney at the 2013 Annual Conference of the International Association of Energy Economics in Daegu, South Korea. While sitting close to each other at the keynote speakers' table for dinner, Sweeney introduced the behavioural sciences to Toyoda, who quickly set up a team dedicated to energy conservation in the commercial and residential sectors. In October, led by Doi, the team travelled to Europe to learn about the UK Green Deal policy in London, visit the IEA in Paris and meet experts in the energy performance and insulation of buildings in Denmark. The second part of their trip led Doi and her colleagues to California, where they visited – among other institutions – LBL and Stanford, and met Sweeney to learn about behavioural sciences and their practical implementation in California. This supported Toyoda's speech at the Energy Conservation Committee in July 2014, in which he put forward the "opportunity of changing behaviours through energy conservation advice based on behavioural sciences" and referred to the comparison of households' energy consumption in the US.

In addition to JYURI, IEEJ and researchers from CRIEPI, Opower Japan has also played a significant role in the success of behavioural approaches in Japan, after the American company opened an office in Tokyo in 2013. It first worked with TEPCO and has been pressing the METI and the Japanese electric power companies to develop energy conservation advice services. Its director of regulatory affairs, Ken Haig, has given dozens of speeches and interviews at seminars, conferences and in the media, and has been in regular contact with officials from the METI and the MOE as well as with the other energy policy stakeholders, including JYURI, CRIEPI and the IEEJ. Opower Japan's efforts successfully resulted in Japan's first large-scale HERs pilot study, implemented with JYURI and commissioned by METI, between 2015 and 2016 (Hirayama et al. 2016). Last, as explained earlier, the MOE called for further experiments in this perspective in its budget for 2017.

In summary, the emergence of the behaviour change agenda in Japan's energy conservation policy can partly be explained by the persistence of an increasingly serious problem that is the continuous rise of energy consumption in the residential sector, and the failure of past measure to solve it. However, throughout the 1990s and 2000s, there was no solution available in the eyes of policymakers. The situation drastically changed in the 2010s for two reasons. First, the problem became more stringent because of the increasing urgency of climate change mitigation and the March 2011 disaster. Second, a small group of policy entrepreneurs learnt and imported into the Japanese policymaking process new knowledge and policy tools that had been developed a few years earlier in Europe and in the US: behavioural sciences and their use in energy conservation advice. As in the Japanese context, behavioural approaches to energy conservation gained momentum globally because of the increasing stringency of environmental and energy issues. But they also benefited from the world success of the behavioural sciences in both academia and public policy. Therefore, the mobilisation of behavioural sciences rather than social sciences in Japan – as well as elsewhere – can partly be explained by the prestige of the former. However, I argue in the next and final section that the success of behavioural approaches in Japanese energy conservation policy suggest other factors explaining this phenomenon.

Why policymakers mobilise the behavioural sciences rather than the social sciences?

A FEW ANSWERS SPECIFIC TO THE JAPANESE CASE: EMERGENCY, "CONSENSUAL KNOWLEDGE" AND THE SPREAD OF BEHAVIOURAL ECONOMICS

Some factors in the success of behavioural approaches are very specific to the Japanese case. First, as previously mentioned, the Fukushima disaster called for prompt measures with immediate effects. Since socio-anthropological approaches conceive behaviour or social practice change in a medium-to-long-term perspective, they could not appeal to policymakers. Second, behavioural sciences became to some extent a "consensual knowledge" in energy conservation research and policy, especially in the US. This clearly contributed to the success of behavioural approaches in Japan's energy policy, through the efforts of a small group of policy entrepreneurs. The research communities in ACEEE Summer Studies, BECC and BEHAVE, played a significant role in producing new ideas and publishing papers based on behavioural sciences. Third, the Japanese literature dedicated to environmental and consumption behaviours is richer in the behavioural sciences – mainly psychology – than in the social sciences, and the few sociological approaches to the issue mainly provide a quantitative and psychological perspective. International reference works in environmental psychology have also been translated into Japanese and widely used and discussed by Japanese scholars for decades. Similarly, behavioural economics became extremely popular in Japanese academia, bookstores and media in the late 2000s, with dozens of books dedicated to this new discipline, including *manga* textbooks. Several major works were translated and published in Japanese, such as *Nudge* and other best-sellers by Kahneman, Dan Ariely and Robert Cialdini, while the Association of Behavioural Economics and Finance (*Kōdō keizai gakkai*) was created in 2007. In contrast, neither socio-anthropological approaches to energy efficiency, nor social practice theories in general, have become successful or institutionalised in Japan. Therefore, social sciences-based policy solutions are clearly less available in Japan than they are in the US and in European countries.

Still, researchers from JYURI, CRIEPI and the IEEJ are familiar with the English literature about energy conservation, have been visiting European and US research institutions (LBL, PEEC, UC Berkeley, UC Davis, etc.) and – for some of them – attending ACEEE and ECEEE Summer Studies since the 1990s. JYURI's members, especially, have repeatedly participated in both Summer Studies' panels dedicated to the human, behavioural or social dimension of energy consumption, and more recently in the BECC and BEHAVE Conferences. Nakagami and Murakoshi met Schipper, who supported socio-anthropological approaches, in the 1980s, and hosted Wilhite, who

theorised them, in their institute in 1993–1994. Not only have they become familiar with the American anthropologist, but they have also conducted qualitative interviews and co-written papers together (Wilhite et al. 1996). Therefore, Nakagami and Murakoshi discovered socio-anthropological approaches before learning about behavioural sciences. Subsequently, the success of the latter cannot be explained by its availability alone. I argue that besides their prestige, the compatibility of behavioural sciences with energy conservation policymakers' ideology, skills, culture and representations greatly explains their success, in Japan but also elsewhere.

HOW THE BEHAVIOURAL SCIENCES BECAME "PRACTICAL KNOWLEDGE" THROUGH THEIR ECONOMICISATION, CHANGES IN THEIR METHODOLOGY AND NORMATIVE COHERENCE

As mentioned above, new knowledge and policy tools feeding into Japan's energy policy are usually provided by experts and industry representatives gathered in METI's *shingikai*. Therefore, the nature of the knowledge and policy tools mobilised in policymaking depends, in the first instance, on the choices of policy entrepreneurs who are recognised and valued by METI. It ultimately depends on the endorsement of these knowledge and policy tools by METI officials and their partners from the industrial sector. Policy entrepreneurs in the energy conservation field, such as JYURI, CRIEPI and the IEEJ, most often have an engineering background and/or an education in economics with little or no training in social sciences. Moreover, in Japan – but this applies to most OECD countries –, energy conservation policies have for decades taken a techno-economic approach that values both technical and economic knowledge and tools. Thus, it is not surprising that once policy entrepreneurs close to the government came to consider that changing behaviours was important, they preferred the behavioural sciences to the social sciences. In this section, I will demonstrate that three interrelated factors explain this: first, the translation of behavioural sciences – especially social and cognitive psychology – into economics increased their legitimacy and made them appear more scientific in the eyes of policy entrepreneurs and policymakers. Second, technology innovation and recent transformations in the methodology of the behavioural sciences enhanced the accuracy and reliability of their results, thus providing practical tools to policymakers. Third, by recommending targeting the individuals rather than the social structure, behavioural approaches provide concrete levers of actions and are compatible with the pursuit of economic growth in a capitalist economy. For these three reasons, and in contrast with the social sciences, the behavioural sciences are considered as "practical knowledge" by policymakers.

Firstly, as termed by a Japanese interviewee, the "absorption" of psychology by economics – i.e. the birth of behavioural economics – gave a new status to the behavioural sciences. This clearly increased their legitimacy and value in the eyes of the stakeholders of Japanese and other countries' energy conservation policy, specifically characterised by long-standing techno-economic approaches that pay little attention to humanities and social sciences. Indeed, there was already some research in psychology applied to energy consumption behaviours in the late 1970s and early 1980s. Paul Stern, Elliot Aronson and other psychologists from UC Santa Cruz formed a panel dedicated to "social sciences" at the first ACEEE Summer Study in 1980. Referring to Kahneman's works and criticising economic theories of rational behaviour, their publications largely prefigured what is today famous as part of behavioural economics (Archer et al. 1984: 3; Aronson 1980: 411). However, it is only recently that behavioural sciences have attracted policymakers' and other economic players' attention. Indeed, the recent translation of psychological theories into economics dramatically increased their scope and their legitimacy, although most of the prestige has been captured by behavioural economists. A social psychologist I interviewed specifically declared he was "not a big fan of behavioural economists", considering that "they are studying what psychologists have been studying for years without getting credit". Still, while in the 1980s, behavioural scientists used to criticise economic approaches from outside, their absorption by economic theory in the 2000s made a big difference and provided them unprecedented audience and influence.

The "economicisation" of behavioural sciences had great effects on Japanese policy entrepreneurs' attention to behavioural approaches. Indeed, while some of them were not familiar at all with psychological theories, others overtly rejected them. A policy entrepreneur explained that while he used to consider psychological approaches as "too phenomenological", he recently changed his mind and would be glad to have psychologists and behavioural economists hired by his institution. Another one said that before the late 2000s, he was not convinced by the literature about behavioural aspects of energy consumption and considered that concepts in social psychology were "too complicated".

But this formal "economicisation" of behavioural sciences is not the only reason for their recent success in policymaking: this is, secondly, explained by significant changes in behavioural research itself, which relies on more robust methodology and investigation tools since the 2000s than it used to in the 1980s. A Japanese policy entrepreneur explained that he and his colleagues "found [behavioural economics and nudges] very exciting… because there are a lot of ideas that are very practical, most of them have already been implemented in the real world … They already evaluated their effect … Traditional psychological research cannot provide practical information for policy making." In the same vein, another researcher said he prefers behavioural economics to psychology because it relies on field work rather than laboratory research, while others emphasised the "more scientific" nature of Randomised Controlled Trials (RCT) used in recent behavioural research.

This suggests that the behavioural sciences have not only been translated into the language of economics: their methodology has also become more sophisticated with the use of large scale field experiments and quantitative research. This was enabled by the great progress achieved with advanced metering infrastructure and big data analysis, as reflected by the success of Opower's HERs: unlike in the 1980s, behavioural scientists can now analyse the energy consumption patterns of thousands of households with extreme accuracy. Thus, its combination with RCT and/or big data analysis is a key factor explaining the mobilisation of behavioural sciences in policymaking. These new methods provide behavioural approaches with quantitative and guaranteed results, which can furthermore be tested before gearing up to large-scale imple-

mentation. This is in coherence with the techno-economic background of policymakers, their expectations in terms of "practicable knowledge" and their recent and growing consideration for evidence-based policies.

Thirdly, in line with my second point and as noted by Jackson (2005: 63–64), behavioural approaches are convenient for policymaking because they provide concrete measures to change behaviours – see Thaler and Sunstein's nudges or Opower's HERs. In contrast, socio-anthropological approaches often highlight complex causal explanations and recommend comprehensive policy interventions aiming at changing social representations, beliefs and imaginaries as well as the global social and physical structures. This rarely enables the implementation of concrete, short term and/or assessable measures, although research has increasingly been led in this perspective (Evans et al. 2012; Shove 2010). This leads to another contrast between behavioural and socio-anthropological approaches: their coherence with the objectives of policymakers that go beyond energy conservation *per se*. Indeed, and again this does not apply to Japan only, the supremacy of the METI over the MOE implies that energy conservation strategies are compatible with the pursuit of economic growth in a capitalist economy. While behavioural approaches do not usually question this perspective, socio-anthropological approaches often do, as reflected by social practice studies and by Wilhite's latest book, significantly entitled *The Political Economy of Low Carbon Transformation: Breaking the Habits of Capitalism*.

Conclusion

In summary, analysing the emergence of the behaviour change agenda in Japan's energy conservation policy through the lens of political science helps explain why policymaking mobilise the behavioural sciences rather than the social sciences. Some factors are specific to Japan: first, the post-Fukushima emergency called for short term measures best provided by behavioural approaches. Second, policymakers have for decades been carefully examining and relying on energy conservation research and tools developed in the US and Europe. Third, while there are a few environmental psychologists and behavioural economists in Japan, socio-anthropological approaches applied to energy issues – social practice theories in particular – have not experienced much development. Therefore, the behavioural sciences are mobilised in Japan's policymaking partly because they became a "consensual knowledge" in both academia and public policy in many OECD countries, especially in the energy conservation area, through ACEEE Summer Studies and BECC. Beyond the case of Japan, the success of the behavioural sciences also stems from the fact that they emerged as "practicable knowledge" in the eyes of policymakers who have been implementing a techno-economic approach for decades. The economicisation of the behavioural sciences through the rise of behavioural economics and the sophistication of research methods and analysis tools enabled by technological process have been key factors in this process. Last, the compatibility of the behavioural sciences with policymaking is not limited to cognitive features: it is also normative, since neither behavioural economics nor psychology overtly question economic growth and capitalism, while socio-anthropological approaches often do. Thus, this case study suggests a few characteristics that may help social scientists to have greater influence in policymaking and enable the design of more comprehensive and effective energy conservation policies.

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Acknowledgements

I gratefully acknowledge the financial support provided by the Programme Avenir Lyon Saint-Etienne within the programme Investissements d'Avenir operated by the French National Research Agency (ANR) in 2014 (ANR-11-IDEX-0007), and Grant-in-aid (2013) of the Japan Society for the Promotion of Science (JSPS). I also wish to express my profound gratitude to the dozens of researchers and other energy policy stakeholders in Japan, Europe and the US, who answered my emails and accepted to meet me or to talk with me by phone or skype. While I unfortunately cannot mention all of them here, I would like to express more specifically my thanks to K. Ando, J. Asuka, N. Doi, J. Edahiro, J. Fujino, I. Garabuau-Moussaoui, S. Hirayama, K. Kawamoto, O. Kimura, H. Komatsu, K. Haig, T. Ida, J. Laitner, B. Litt, L. Lutzenhiser, I. Matsukawa, H. Matsunami, A. Meier, A. Mikami, S. Mikiko, K. Murakami, C. Murakoshi, K. Nishimura, K. Nishio, Y. Oishi, S. Ohnuma, S. Ohtomo, D. Poskanzer, L. Schuck, A. Smits, M. Sugiyama, T. Sugiyama, N. Tarui, M. Toyoda, Y. Ushifusa, E. Vine, M. Wakabayashi, W. Wang, K. Watanabe, H. Wilhite, Y. Yagita and K. Yamaji. Last, I warmly thank my thesis supervisor Yveline Lecler and co-supervisor Mathieu Brugidou for their guidance and precious comments.