



# Willingness to know and talk: Citizen attitude toward energy and environmental policy deliberation in post-Fukushima Japan

Hidenori Nakamura

Department of Environmental and Civil Engineering, Toyama Prefectural University, 5180 Kurokawa, Imizu, Toyama 939-0398, Japan



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## ABSTRACT

By employing an online social survey in a prefecture that is home to a nuclear power plant and a prefecture that consumes a large amount of energy, this paper investigates the following elements: levels of desire to understand the issues relevant to complex energy and environmental policies, their willingness to talk about such issues in a random sample at the national and prefectural levels, and the relationship between these two elements. Results found that 70–85% of respondents showed a moderate or strong willingness to learn about 14 relevant issues ranging from nuclear waste management to policy transition periods. Moreover, 35% of respondents indicated a moderate or strong willingness to participate in a national- or prefectural-level random sampling citizen dialogue on energy and environmental policy. A stronger desire to learn about the issues is directly associated with a greater willingness to participate in public discussions. The Japanese government produces and disseminates pertinent information reflecting the results of public dialogue, which shows citizens' increasing willingness to participate in debates at the national level, particularly for those who are more inclined to pay for renewable energy. This survey shows the propensity of Japanese citizens to engage in talks on energy and environmental policy.

## 1. Introduction

The Great East Japan Earthquake and the subsequent Fukushima Daiichi nuclear power plant accident in March 2011 inspired new attempts to increase citizen participation in forming energy and environmental policy in Japan. The Japanese government conducted a series of participatory studies of innovative post-Fukushima energy and environmental strategies, including random sampling-based citizen deliberation, or deliberative polling (Energy and Environment Ministerial Committee, 2012). The Japan Network for Climate Change Actions, a non-governmental organization (NGO) and independent researchers conducted deliberative polling using the same strategy in Kawasaki, a large city in the Greater Tokyo Area (Citizen Deliberation Committee for Energy and Environment Strategy, 2012). Indeed, public opinion had a notable impact on Japan's nuclear energy policy after the Fukushima disaster, at least for a short period (Watanabe, 2016; Takao, 2016). However, effective public debate on sensitive and complex policy topics (such as nuclear power) requires that citizens desire to learn about the various issues and backgrounds of specific policies, and be willing to discuss these matters with each other, even when their positions and value systems differ. Using an online social survey, this study examines citizens' inclination to know and talk about energy and environmental policy issues in post-disaster Japan, both in urban and

nuclear power plant-hosting prefectures.

### 1.1. Post-Fukushima proposals on energy and environmental governance

Reflections on the Fukushima nuclear accident highlighted the significance of public participation in energy and environmental policy decisions as a key lesson of the disaster. It is necessary to recognize society's immaturity and irresponsibility in decision-making process, as well as reforms that enable the public to participate in the decision-making process in an informed and responsible way (Funabashi, 2012). The Fukushima disaster can be understood as a structural calamity “that appear[ed] at the science-technology-society interface” (Matsumoto, 2012, 2013). More specifically, it was connected to “failures attributable to the malfunctioning of the institutional design of various multiple channels that connect science, technology, and society, and of mechanisms in which multiple heterogeneous agents were involved” (Matsumoto, 2012, 2013). To overcome such a crisis, different interpretations of scientific and technological knowledge that can explicitly demonstrate the reasoning behind the corresponding conclusions should be involved in order to facilitate communication between government, industry, academia, and civil society for the purpose of public discussions (Matsumoto, 2012). Reflecting on nuclear power after the Fukushima accident, science, technology, and society studies (STS)

E-mail address: [hdnakamu@pu-toyama.ac.jp](mailto:hdnakamu@pu-toyama.ac.jp).

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suggested an open discourse with wider boundaries to create a more just energy system (Butler et al., 2013). Lessons learned by former Japanese nuclear policy-makers have made it clear that the label of “structural disaster” can be applied to the Fukushima accident; therefore, improved transparency and citizen participation in the decision-making process is needed (Suzuki, 2016).

### 1.2. Citizen participation in energy and environmental policy in post-Fukushima Japan

Post-Fukushima Japan experienced a proactive citizen participation movement regarding energy and environmental policy. In this context, two deliberative opinion polls were conducted. Citizen volunteers organized discussions on energy and the nation's future, regardless of their positions on nuclear power (Everyone's Energy and Environment Conference, 2012), and an NGO-like citizen group advocated for a national advisory referendum on nuclear power policy (Let us decide together: National referendum on “nuclear power, 2011). In 2012 and 2014, a series of open meetings were held to promote engagement in forming regional energy policy by concerned citizens in the greater Nagoya area (Chubu Energy Citizen Conference, 2014; Takeuchi, 2016). Moreover, during 2012 and 2013, local residents from both large urban areas and nuclear power plant-hosting communities signed and filed petitions to hold local advisory referendums on restarting the area's nuclear power plants (Kokubun, 2013).

Several online social surveys conducted after the disaster suggest that deliberative polling might be another measure of citizen participation in energy and environmental policy (including nuclear power policy) in Japan (Nakamura, 2014, 2015). A survey carried out in four large cities and one rural zone in 2012 showed a stronger willingness to participate in deliberative opinion polls than to serve as a conventional committee member, and a desire to discuss local energy policy (Nakamura, 2015). A national survey revealed that citizen willingness to participate in national deliberative polling on nuclear power policy regarding severe accidents and nuclear waste management was as strong as their propensity to participate in local talks on community-level energy and disaster management policy (Nakamura, 2014).

### 1.3. The quality of deliberation and the Japanese context

In deliberative polling, the quality of deliberation is measured using five variables: *information* (sufficiency, correctness), *substantial balance* (opposing opinions), *diversity* (participants' socioeconomic conditions), *integrity* (the examination of different views and opinions), and *equality in consideration* (examination not by people, but by content) (Fishkin, 2009). To ensure the right conditions for collecting information and a substantial balance, the participants need to want to know the facts, logic, contrary positions, value systems, and potential benefits of wide-ranging issues. Moreover, participants must be willing to talk with others and listen to different ideas—even if they do not agree with them—in order to meet the conditions of diversity, integrity, and equality.

However, researchers have found that Japanese people are less willing to talk with others who have different value systems and life circumstances (Hirata, 2012; Kitagawa and Hirata, 2008). In order to hold effective public deliberation on energy and environmental policy in post-Fukushima Japan, it is essential for citizens to want to both understand and discuss the complexity of such policies. Nonetheless, the status of citizen willingness to learn more about these policies has not been studied, and the relationship between the willingness of learning and the desire to engage in dialogue is unclear.

### 1.4. Relevant studies on citizen attitudes toward energy and environmental policy in post-Fukushima Japan

Apart from the two online social surveys described in Section 1.2,

which focus specifically on citizen attitudes toward participation in public deliberation on energy and environmental policy, several surveys have been carried out to investigate public awareness of energy policy in post-disaster Japan. McLellan et al. (2016) conducted a nation-wide survey to examine consumer preference and behavior toward sustainable transitions to decentralized energy systems. In another nation-wide survey, Morita and Managi (2013) analyzed household power demands by considering the characteristics of power sources in order to study energy policy after the Great East Japan Earthquake. In the two large urban centers of Nagoya and Toyota, Takeuchi (2016) surveyed citizen attitudes toward autonomous regional energy systems such as the decentralization of policy formulation; the use of local, renewable energy resources; and local government engaging with the energy business. By surveying citizens near a nuclear power plant before and after the Fukushima accident, Kato et al. (2013) studied the impact of the accident on citizens' attitudes toward hosting a nuclear power plant in their prefecture. The first three surveys were online, while the last was a random sampling-based postal survey. The studies by McLellan et al. (2016), Takeuchi (2016), and Kato et al. (2013) used descriptive statistics for analysis, while Morita and Managi (2013) employed regression analysis (choice-based conjoint analysis) for inference. Nonetheless, a survey and analysis of citizen attitudes toward knowledge of energy and environmental policy, as well as the desire for public talks on these issues, have not been attempted by previous studies.

### 1.5. Citizen attitudes toward political and social activities in pre- and post-Fukushima Japan

Unfortunately, no surveys were conducted in Japan before the Fukushima accident on citizen attitudes toward energy and environmental policy—including nuclear energy, waste, and disasters—specifically focusing on the willingness to participate in random-sampling based deliberation. Therefore, we had no natural experimental data against which to examine the effects of the Fukushima accident on Japanese citizens' willingness to talk in random-sampling dialogue. However, the International Social Survey Programme (ISSP), a nationwide random sampling-based social survey, was conducted in 2004 and 2014 (i.e., before and after the 2011 Great East Japan Earthquake). These two surveys centered on citizenship for international comparison. They revealed that Japanese willingness to participate in political and social activities decreased between 2004 and 2014 (Kobayashi, 2015). Social activities include signing petitions, making donations and organizing fundraising for social and political activities, participation in political gatherings, and expressing opinions to statesmen and government officials. Yet these findings pose another question: How can we understand both (a) the low level of willingness to participate in political and social activities shown in a social survey, and (b) the simultaneously demonstrated grassroots, proactive engagement in dialogue on energy and environmental policy in post-Fukushima Japan?

By employing an online social survey in two of Japan's prefectures—one covering a large urban area and the other hosting a nuclear power plant—this research first clarifies these populations' levels of interest in educating themselves about various issues that are necessary to comprehensively discuss energy and environmental policy options and their reasoning. Next, it statistically investigates the relationship between the willingness to know about and discuss these issues through deliberative polling on energy and environmental policy in post-Fukushima Japan.

## 2. Methodology

### 2.1. Survey

The online survey, conducted in late October 2015, polled 3000 individuals in their 20–60 s who lived in the adjacent prefectures of

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