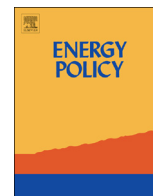




ELSEVIER

Contents lists available at SciVerse ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

A case study of economic incentives and local citizens' attitudes toward hosting a nuclear power plant in Japan: Impacts of the Fukushima accident

Takaaki Kato^{a,*}, Shogo Takahara^b, Masashi Nishikawa^c, Toshimitsu Homma^b^a Faculty of Environmental Engineering The University of Kitakyushu, 1-1 Hibikino, Wakamatsu-ku, Kitakyushu, Fukuoka 808-0135, Japan^b Nuclear Safety Research Center, Japan Atomic Energy Agency 2-4 Shirakata-shirane, Tokai, Naka-gun, Ibaraki 319-1195, Japan^c Aoyama Gakuin University 4-4-25 Shibuya, Shibuya-ku, Tokyo 150-8366, Japan

HIGHLIGHTS

- The Fukushima accident shocked Japan's nuclear policy.
- Citizens' attitudes toward incentives of hosting a nuclear power plant surveyed.
- More citizens thought negatively about incentives after the Fukushima accident.
- The bribery effect, mode and amount of incentives affected citizens' attitudes.

ARTICLE INFO

Article history:

Received 2 May 2012

Accepted 18 April 2013

Available online 18 May 2013

Keywords:

Nuclear power plant

Economic incentive

Fukushima accident

ABSTRACT

The attitude of local communities near a nuclear power plant (NPP) is a key factor in nuclear policy decision making in Japan. This case study compared local citizens' attitudes in 2010 and 2011 toward the benefits and drawbacks of hosting Kashiwazaki–Kariwa NPP. The Fukushima accident occurred in this period. After the accident, benefit recognition of utility bill refunds clearly declined, while that of public facilities did not, suggesting the influence of a bribery effect. The negative shift of attitudes about hosting the NPP after the accident was more modest in Kariwa Village, which saw a large expansion of social welfare programs, than in the other two areas, which lacked such a budget expansion. Policy implications of these results regarding the provision of economic incentives in NPP host areas after the Fukushima accident were discussed.

© 2013 Elsevier Ltd. All rights reserved.

1. Introduction

The series of accidents at the Fukushima Daiichi Nuclear Power Plant (NPP) that followed the Tohoku earthquake and the huge tsunami on March 11, 2011 have accelerated discussions on the safety of nuclear energy in Japan and elsewhere. An April 2011 national opinion poll in Japan showed that 41% of respondents believed that Japan should reduce or abolish the use of nuclear energy, a 13% increase from the figure of 28% in 2007¹ (Asahi Shimbun, 2011a). In August 2011, 68% of respondents preferred that Japan gradually reduce its use of nuclear energy² (Asahi

Shimbun, 2011b). Nuclear reactors throughout Japan are being shut down for regular maintenance. The Japanese government plans to resume operation of these reactors after completing maintenance, but this is not an easy task. Mainichi Shimbun (2012) reported in March 2012 that 57% of respondents were opposed to reopening these reactors. The Fukushima accident clearly changed people's views on nuclear energy at a national level.

However, the attitudes of local communities that host NPPs may be different from the national view. We have engaged in a case study of the three areas around the Kashiwazaki–Kariwa NPP in Niigata Prefecture. Our focus is on the compensation scheme used by the government to balance the risks of NPPs by providing economic incentives to local communities. This compensation scheme has been thought to be a powerful tool that enables the national government and nine regional-monopolistic utilities in Japan to expand the capacity of nuclear energy. This study compares the attitudes of citizens in the Kashiwazaki–Kariwa area

* Corresponding author. Tel.: +81 93 695 3237; fax: +81 93 695 3337.

E-mail addresses: tkato@kitakyu-u.ac.jp, dc825u@bma.biglobe.ne.jp (T. Kato).¹ The answer was chosen from four options: "Increase," "Keep the present level," "Reduce," and "Abolish." The 2011 survey excluded the areas damaged by the Tohoku Earthquake.² This survey excluded the areas damaged by the Tohoku Earthquake.

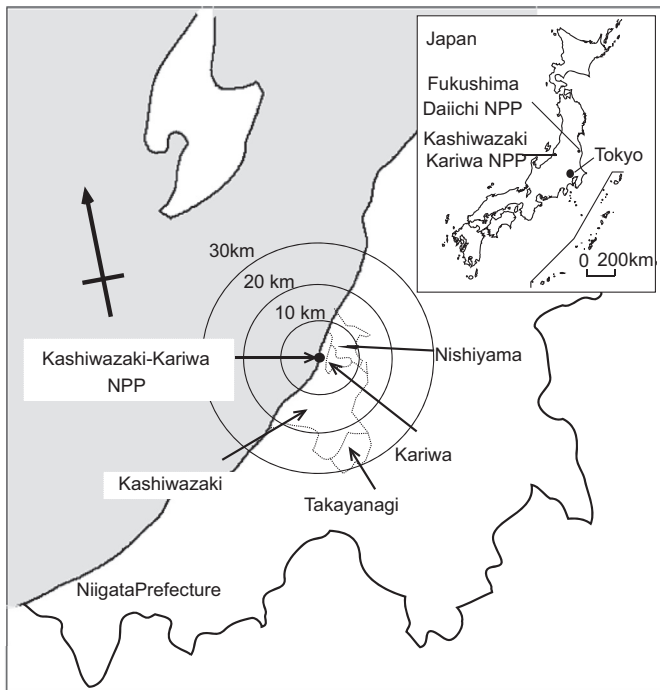


Fig. 1. Map of areas surrounding the Kashiwazaki–Kariwa NPP.

before and after the Fukushima accident toward this compensation scheme. We investigate the following points.

- Citizens' attitudes toward the local benefits of hosting the Kashiwazaki–Kariwa NPP
- Citizens' attitudes toward the local drawbacks of hosting the NPP
- A comparison of the relative size of the local benefits and drawbacks
- The relevance of the benefit-drawback comparison to attitudes toward hosting the NPP

The Kashiwazaki–Kariwa NPP is owned by Tokyo Electric Power Company (TEPCO), which is the owner of the tsunami-damaged Fukushima Daiichi and Daini NPPs. The Kashiwazaki–Kariwa NPP has seven boiling-water reactors and is one of the largest NPPs in the world. Its first reactor went into service in 1985 and its seventh in 1997. The power plant sends almost all the electricity it produces to the Tokyo Metropolitan Area and not to the local communities near the NPP. Fig. 1 shows the map of the area surrounding the Kashiwazaki–Kariwa NPP. The NPP compound is on the boundary between Kariwa Village and Kashiwazaki City. We conducted social surveys in three areas: Kariwa Village, the original territory of Kashiwazaki City before its expansion in 2005, and the former Nishiyama Town. Nishiyama Town was an independent municipality before it merged with Kashiwazaki City (along with Takayanagi Town) in May 2005. Hereafter, these three areas are referred to as “Kariwa,” “Kashiwazaki,” and “Nishiyama,” respectively. The Tohoku earthquake caused a tremor with a five-plus intensity on the Japanese seven-stage seismic scale in these areas. However, the tremor did not physically damage these areas because its epicenter was more than 350 km away. There was no increase in the radiation level in these areas as a result of the radioactive materials released from the Fukushima Daiichi NPP. However, the Fukushima accident should have given local residents a clear indication of the possible social chaos triggered by a severe nuclear accident.

In this study, we mainly compare the results of our social surveys conducted in January 2010 and December 2011. We consider three potentially influential factors on the attitudes of local citizens toward the benefits of hosting the Kashiwazaki–Kariwa NPP.

- Expenditure of the local government.
- The bribery effect.
- The pace of the local economy.

The first factor is positively related to the benefits of hosting the NPP, while the other two factors are negatively related. The bribery effect was introduced by Frey et al. (1996) as a decisive factor in the effectiveness of using compensation to influence public opinion about hosting a noxious facility. Although the bribery effect played a significant role before the construction of the facility in their model, we think that this effect is important even after the construction of an NPP.

The remainder of this article is organized as follows. The second section shows the importance of local opinions to Japanese nuclear policy and an outline of the economic incentives provided to areas that host NPPs. The third section summarizes our survey methodology. The fourth section contains our survey results and discussions, and the fifth section concludes the article.

2. Importance of regional opinions and economic incentives to Japanese nuclear policy

Opinions within regions that host or will host an NPP have been a major factor in nuclear policy decision making in Japan. National opinions did not play a significant role prior to the Fukushima accident (Independent Investigation Commission Targeting the Fukushima Nuclear Accidents, 2012). According to Miyamoto (2004), who summarized five series of national opinion polls between 1978 and 2001 conducted by the central government, mass media, and research organizations, opposition to the use of nuclear energy never exceeded half of respondents except for in Asahi Shimbun's survey in 1990. During the decade of the 2000s, a series of survey by the central government suggests that national opinions have shifted toward a favorable view of nuclear energy³. Thus, Japan did not encounter overwhelming opposition to nuclear power at the national level until the Fukushima accident. Therefore, the role of local host communities of NPPs became significant because they experienced many political disputes over the merits and safety concerns of the NPPs well before the Fukushima accident.

There are several cases in which a local advisory referendum and subsequent political decision resulted in the rejection of construction of a new NPP or the introduction of mixed oxide fuel to an existing reactor. A well-known example is the case of Maki Town in Niigata Prefecture (Kuwabara and Kuwabara, 2003). The governor of the prefecture hosting an NPP has the authority to effectively stop utilities from activating their reactors if he or she has strong safety concerns. Although the prefectural governor's authority is based on a gentlemen's agreement between the prefecture and the utility rather than law, it has become a de facto standard that an NPP cannot be operated without consent from the governor. The governor cannot ignore the opinions in the region around the NPP.

Economic incentives are provided to local communities that host an NPP to offset the anxiety about accident risks and to gain

³ Expansion of nuclear energy was supported by 42.7%, 55.1%, and 59.5%, respectively in 1999, 2005, and 2009 government surveys (Prime Minister's Office, 1999; Cabinet Office, 2005, 2009).

Download English Version:

<https://daneshyari.com/en/article/7404798>

Download Persian Version:

<https://daneshyari.com/article/7404798>

[Daneshyari.com](https://daneshyari.com)