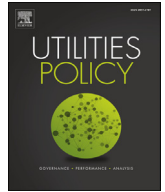




Contents lists available at ScienceDirect

## Utilities Policy

journal homepage: [www.elsevier.com/locate/jup](http://www.elsevier.com/locate/jup)

# Swaying public opinion on nuclear energy: A field experiment in Hong Kong

Tin Fai Kwok <sup>a</sup>, Chung Hang Yeung <sup>a</sup>, Yuan Xu <sup>a, b, \*</sup>

<sup>a</sup> Department of Geography and Resource Management, The Chinese University of Hong Kong, Hong Kong, China

<sup>b</sup> Institute of Environment, Energy and Sustainability, The Chinese University of Hong Kong, Hong Kong, China

## ARTICLE INFO

## Article history:

Received 5 January 2017

Received in revised form

8 April 2017

Accepted 8 April 2017

Available online xxx

## Keywords:

Information and public opinion

Nuclear energy

Field experiment

## ABSTRACT

This research focuses on understanding the significance of information in affecting public opinion. Nuclear energy is among the most controversial of policy issues and the information-saturated mature civil society of Hong Kong makes it an ideal location for this study. A novel field experiment is set up in which pro-nuclear and anti-nuclear information collected from local media reports is inserted into two identical questionnaires, to which respondents are randomly assigned. The percentage of the public who switched their opinion was estimated to be 5–37%, depending on the framing of the question.

© 2017 Elsevier Ltd. All rights reserved.

## 1. Introduction

The adoption of any critical energy or environmental policy is essentially based upon a society's collective decision. Few issues are more divisive and controversial than nuclear energy. Nuclear technology has attracted a disproportionate amount of public concern compared to other energy technologies, with its potential to trigger a massive loss of human lives in the case of accidents and its close relationship to global politics and national security. As Masco (2006) stated, nuclear technologies, in the form of nuclear weapons and other related facilities, have been viewed with anxiety and ambivalence. The fear of nuclear power stems from its being associated with nuclear weapons and nuclear warfare, and in the twenty-first century this fear is being intensified due to the rise of terrorism (Masco, 2006). The unthinkable prospect of nuclear war and national insecurity go hand-in-hand. Moving from this destructive side of nuclear technology to the constructive side, few types of modern energy sources have aroused such significant political controversies as nuclear energy does, due to numerous socio-political issues: the devastating consequences of nuclear accidents (despite their low probability); uncertainty about the technology; nuclear waste disposal; and the public emotions

aroused by these issues (Taebi et al., 2012).

Risk perception by the public on nuclear power is a major cause of anxiety and controversy. Public perceptions about energy alternatives, such as nuclear power, are related to their perceived risk and danger (Rosa and Dunlap, 1994). Instead of the technical analysis of risk, public risk perception is highly qualitative, involving individual psychological intuition, mental preparedness, and social experiences (Renn, 1998). Factors that influence individuals' nuclear attitudes have been studied; these include social location, values, trust towards the organisations, and perceived risk (Whitfield et al., 2008). Although a gap between the public's perception and the experts' assessments of nuclear risk cannot be simply explained by a knowledge gap, better information should contribute to the narrowing of this gap (Slovic, 2012). As stated by Stoutenborough et al. (2013), information is needed to provide a foundation for risk perception to develop. Different interpretation of risk information, given significant subjective impacts (such as emotions, personal experiences and socio-cultural factors), is another major cause of the gap (Gierlach et al., 2010).

Based on information inputs, through individual information processing and risk perception, opinion on nuclear energy is formed. The literature has not reached a consensus on the relationship between information and public opinion in this area. In order to provide information about nuclear energy to the public, the knowledge-deficit model is generally assumed. The reasons why the public rejects science are related to their understanding of and perceptions about science and its role in society (Wynne,

\* Corresponding author. Department of Geography and Resource Management, The Chinese University of Hong Kong, Hong Kong, China.

E-mail address: [yuanxu@cuhk.edu.hk](mailto:yuanxu@cuhk.edu.hk) (Y. Xu).

2006). It is sometimes suggested that public opposition is emotional and a result of ignorance, while the science is unquestioned. On the one hand, some studies have found no significant impacts of information to validate this assumption (Ramana, 2011). The problem may also be on the “scientific” side when experts fail to understand the public’s perceptions about risk. Taking the example of genetically modified maize in Mexico, Brunk (2006) argued that the conflict with the local farmers resulted from the experts’ failure to understand the social and cultural implications of GM maize’s “intrusion” into the local community. On the other hand, some studies have confirmed that information has discernible impacts. For example, a study in South Korea used the contingent valuation method to estimate the social value of nuclear energy, and better information was found to increase public support (Jun et al., 2010). The study by Stoutenborough et al. (2013) also suggested that a person who possesses more information tends to support nuclear power.

From the perspective of journalism, there is no absolute “unbiased” or “undistorted” news since, according to Gans (1979), “the mere act of reproduction would constitute a distortion on that reality” and “non-distortion” of news can be judged only from a “relational perspective”. In the real world, a single piece of information can be more or less biased, one-sided, manipulated, or sometimes even wrong. The internal values of the journalist and the practices of news gathering would cause bias in the news (Entman, 1990). The media play an influential role in public opinion formation on environmental issues through agenda setting, which is disclaimed by journalists, yet done (unintentionally) whenever they decide what to report and at what level of detail (McCombs, 2004). Doyle (2011) examined how the media have contributed to the reframing of nuclear power as a low-carbon substitute to mitigate climate change in the UK and how this influences public understanding. Palfreman (2006) gave a more detailed account of how information can be distorted during its conveyance: the “factual distortions” due to the journalist’s scientific illiteracy, the “narrative distortions” of reporting stories of readers’ interest instead of the facts, and the “distortions of balance” under the notion of “balanced coverage”. Instead of a one-way flow of information from the media to the public, there exists a two-way flow because the media adjust their reporting frame based on the interests of their readers or viewers.

A study of the power of the media on public opinion towards nuclear energy in the post-war USA up to the 1980s showed that the media discourse is influential on the formation of public opinion on the issue (Gamson and Modigliani, 1989). In their work, Gamson and Modigliani suggested that journalists play a double role in opinion formation. How and what kinds of information are delivered would affect the audience. With commentary, journalists also react to the issue that has been partly framed, giving opinions that are shared by the audience. The framing of the issue is recognised as an influential factor upon public opinion on the issue: whether nuclear power is regarded as a progressive means for economic development or a devil’s threat to safety would alter public perceptions and support for the utilisation of nuclear power. A study by Bickerstaff et al. (2008) indicated that public attitudes towards nuclear power are not necessarily fixed, but could vary depending on the framing, although an increase in preference towards nuclear power is probably a result of the reluctant acceptance of the lesser evil compared to other problems, particularly climate change. When put into the context of climate change mitigation and energy security, an increase in support for nuclear power is possible, although it would be a conditional and reluctant acceptance of nuclear power (Bird et al., 2014; Corner et al., 2011; Pidgeon et al., 2008). Conversely, when nuclear power is proposed as a solution to climate change, the public would also have a

lower tendency to decline the facts about climate change, which means that the framing of solutions could influence public perceptions of the problem (Pralle and Boscarino, 2011).

Pidgeon et al. (2008) also suggested that in the case of a major incident, public support would be withdrawn over concerns about safety, another possible frame. As illustrated by Bird et al. (2014), Australian public opinion on nuclear power shifted more to the negative side after the Fukushima incident. Mazur (1981) also suggested that on controversial issues like nuclear power, media coverage has a particular power in shaping public opinion, and the impact could be difficult to determine. Citing the example of the Three Mile Island incident, Mazur argued that the media could not only report the event, but also generate and shape controversy, given that the percentage of public opposition towards nuclear power coincided with the amount of media coverage. He further argued that the public tends to take a more conservative stand when faced with scientific controversies, citing that people who received both positive and negative information about fluoridation, tended to oppose it compared to those who did not receive the information. Even within scientific circles, support for nuclear power could be built by framing the issue in terms of “relieving the energy needs of the under-developed countries” and “utilising nuclear power for desalination”, as mentioned in Sovacool and Ramana (2015), showing that scientists are not “immune” to these rhetorical devices.

The issue of public risk perception further complicates the problem. Renn (1998) summarised some of the major frameworks of risk perception in a social scientific and technical analysis of risk. Likewise, public risk perception is affected by personal biases and issue framing (Renn, 1998). Kahan et al. (2007) suggested that even when the same piece of information is given, “identity-protective” cognition leads individuals to accept information when it is framed in a way that affirms their personal values and commitments. In addition, scepticism about information varies depending on the source of the information: the government; scientists; or the nuclear industry for instance (Greenhalgh and Azapagic, 2009). Renn (1998) proposed that there is a need for deliberative communications between experts, the general public, and industry regulators for effective mutual learning and better understanding of social values.

These literature provide examples of how framing influences public opinion formation. The focus was mainly on how framing can shift opinion, yet few studies have addressed how distorting information about the same issue or frame might influence public opinion. The frames most commonly discussed were risk perception and environmental concerns, including climate change. Issues other than these two are rarely encountered in the available public opinion polling analyses (e.g., Nealey et al., 1983; Rosa and Dunlap, 1994; Whitfield et al., 2008). Few studies have examined the relevance of other significant frames for policy-makers and utility regulators, including operating costs and reliability. Ansolabehere and Konisky (2009) discussed the issues of cost, siting, and environmental concern, but their work focused on the comparison of different energy sources apart from nuclear power. Thus, research relating to public opinion formation and nuclear power utilisation remains limited. Knowledge about public opinion in this area and the influence of issue framing is valuable for both the government and civil society in order to facilitate collective decision-making about nuclear energy. An understanding of public opinion can also help utility regulators improve their practices, such as information disclosure. The relevance of a particular aspect of nuclear power to the process of collective decision-making will be affected by public opinion, which is in turn shaped by information.

This paper aims to quantitatively measure “opinion switchers”, a group within the general public that could easily switch between

Download English Version:

<https://daneshyari.com/en/article/5106781>

Download Persian Version:

<https://daneshyari.com/article/5106781>

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