

## A Qualitative Study on Low Public Acceptance of Nuclear Power in Terms of Communication Problems

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### 1. Introduction

These days, nuclear energy has been highlighted as a promising alternative energy source not only because of its economic aspect, but also because of its environment-friendly properties.

Though it has conspicuous green advantages, nuclear power has in most cases not been welcomed by the public. This low public acceptance of nuclear power often incurs high social costs.

In this paper, the reasons for nuclear power's low public acceptance and some solutions to this problem are discussed in terms of communication problems.

### 2. Lack of Communication between Nuclear Industry (regulators, utilities) and Public

#### 2.1. Problem of trust

Trust is important for cooperation. Without trust, there can be no cooperation, and economic units will, finally, incur many costs [1]. The public does not trust sincerely workers or regulators in the nuclear industry because such workers and regulators have not tried very hard to gain the trust of the public.

Especially for regulators, the relationship with the public is kind of principal-agent relationship. The public can be regarded as the principal, and the nuclear regulator can be seen as an agent. Trust is very important in this relationship, but trust is not enough because there has so far not been enough communication between the two parties.

#### 2.2. Problem of asymmetric information

In information economics theory, asymmetric information causes a high degree of transaction cost, and can even result in adverse selection. Adverse selection is actually thought to occur in the energy market because of asymmetric information [1]. The public does not precisely understand the pros and cons of nuclear power. Usually, the public's information is excessively biased in the negative direction. Furthermore, this negatively biased information is normally highly exaggerated, or even totally wrong.

#### 2.3. Problem of poor image

This problem of information presentation is strongly related to the problem of biased information. Biased information has already accumulated in the public mind

for many years. Consequently, many people have a vague, abstract, and uncertain image of the nuclear power industry, and that image is connected to fear, dirt, and danger.

### 3. Solutions for Communication Problems

#### 3.1. Make public trust

A sense of ownership is one of the most important socio-economic values. The idea of the "tragedy of the commons" [1] illustrates for us how important such a sense of ownership can be.

Regulators should thoroughly be aware of their responsibility, but responsibility alone is not enough. Regulators should recognize that they regulate their own nuclear safety. Staff at utilities should also perceive that their negligence could directly affect the safety of their own families. If the interested parties work with a sense of ownership, they will not be remiss about their jobs; and, in such a situation, the public will be able to trust both regulators and utilities.

In recent days, the public has tended to rely for information more on staff of NGOs (Non-Governmental Organization) than on people in the nuclear industry [2]. From a common-sense standpoint, it should be obvious that people in the nuclear industry are more knowledgeable and professional regarding the nuclear field than are staff at NGOs.

The spontaneity of staff at NGOs is one of the reasons for this perception. NGO staffers work out of a sense of conscience, even though their salaries are quite low; on the other hand, people in the nuclear industry are hired for professional positions and are paid much more than NGO staffers. In the view of public, then, people in the nuclear industry seem not to be strict enough about their jobs because the profit of the nuclear industry is closely connected to the revenue of the government.

Regulators should be neutral, balanced, and unbiased about their jobs. There are various reasons for such a stance. One reason is that regulator pay derives from governmental funds. Regulatory bodies have been previously been put in charge of nuclear promotion because regulators can guarantee the high reliability of nuclear power plants. Such industry promotion can be related to exports of nuclear power or to domestic image promotion, and large national interests will be involved in such promotion. In such a situation, regulators will find it hard to talk honestly about any problems.

This is kind of principal-agent problem. Regulators are a kind of agency hired by the public. The public wants

regulators to do their jobs honestly, but the public is unable to fully monitor regulator performance [1].

Regulatory inspection by third parties can be suggested as a way of ensuring the objectivity of nuclear regulation.

### *3.2. Solution for problem of asymmetric information*

If there is asymmetric information, adverse selection can often occur in society [1]. Low public acceptance is a kind of adverse selection due to asymmetric information.

If accurate information is transmitted, public acceptance of nuclear power can be enhanced. The public's willingness to pay for nuclear power has been found to increase by about 69% after the dissemination of accurate information relating to nuclear power [3].

Unbiased information should be transferred to the public as early as possible. This kind of information transfer can be given by national education policy. From early childhood and adolescence, if well established information transfer is made a priority, the social costs that result from adverse selection due to asymmetric information will be greatly reduced.

In most cases, information delivered by people in the nuclear industry has been boring, abstruse, and opaque, because the industry has only emphasized technical aspects of safety. Needless to say, the public has never been fully able to understand such information, and so a failure of communication has occurred.

For the public, an emotional touch is strongly recommended. Rather than listing the kinds of safety features that are present in a nuclear power plant, or talking about the core damage frequency of nuclear power plants, people in the nuclear industry need a more delicate approach in order to move the public's mind.

### *3.3. Image promotion of nuclear power*

The formed image of a thing is important because it can directly affect the public [4,5,6].

In spite of its great contribution to human energy systems, nuclear power has developed an image that is poor for several reasons. First, nuclear power has been used in negative ways, such as in the development of the atomic bomb, and the carelessness of people in the nuclear industry has resulted in some accidents such as at TMI or Chernobyl. Second, the ineffectiveness of efforts by people in the nuclear industry to enhance public acceptance is mainly due to poor image of nuclear power. People in the nuclear industry need to promote a positive image of nuclear power.

KT&G is a Korean company that produces and sells cigarettes. Due to the harmful effects of cigarettes, the image of cigarette companies is extremely bad these days. Rather than talking about the cigarette industry itself KT&G undertook an image promotion campaign that emphasized youth and a sense of accepting challenges, and so the perception of smoking has changed very much for young people, and has come to be seen as stylish and sophisticated.

Second, the Korea Racing Authority (KRA), whose business field is horse racing, has insisted that horse racing is a sound leisure activity, very different from its original image, which was closely associated with the negative aspects of gambling. The KRA talked directly about horse racing and emphasized positive impressions of horse racing. From its campaign, the image of horse racing was positively renovated.

As they deal with a product or service whose images are basically poor, Korean nuclear companies have many similarities with the two companies mentioned above. The image renovation of Korean nuclear companies is necessary and will be the first step for the promotion of the positive image of nuclear power. First of all, intimacy should be provided to the public, because the public is not interested in nuclear power and does not understand it well. A strong economic, sustainable and eco-friendly image will be established by direct image promotion.

## **3. Conclusions**

The problem of low public acceptance is found to derive from a lack of communication between the public and people in the nuclear industry.

The problem of lack of communication was categorized into three subjects: a problem of trust, a problem of asymmetric information, and a problem of poor image.

In order to gain the public's trust, people in the nuclear industry should first of all cultivate a sense of ownership. Spontaneity is also important. Maintenance of regulatory objectivity should also be emphasized.

Appropriate information is needed for the solving of problems of asymmetric information. It is recommended that people in the nuclear industry utilize an emotional approach.

The image renovation of the Korean nuclear company is suggested. The final goal of this image promotion campaign for the nuclear power industry is to have the public understand nuclear power intimately, as an environment-friendly, economical, and sustainable source of power.

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