

## **Nuclear Experts' Perception of Lay Attitudes toward Nuclear Issues**

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## **ABSTRACT**

From the previous research performed during last years it became clear that the attitudes, opinions and perception regarding nuclear issues in the broadest sense including topics like radioactivity and properties of radiation, influence of ionizing radiation on humans, functioning of nuclear facilities and riskiness of support activities (e.g. transport) differ very much between nuclear experts and lay people. As nuclear experts should be involved in communication with the public on nuclear topics it is important to understand their understanding of the public opinions, because this could influence their attitudes toward the general public and their way of communication with them.

Study presents nuclear experts' perception of lay public attitudes toward nuclear issues and reasons behind them. With the help of internet survey within the members of Nuclear Society of Slovenia the opinions of Slovenian nuclear experts were collected. Especial emphasize was devoted to the consequence of existing experts' opinions regarding communication with lay public. Survey contain questions about different aspects of lay public knowledge and understanding of nuclear issues, ways of communication with the public, attitudes toward public participation in the decision processes, perception of the experts' role in the process, etc.

Key Words: attitudes, expert, nuclear,

## **1 INTRODUCTION**

There is widely known that lay people risk perception highly differ from expert beliefs. As this represent an important issue in risk communication, quite often causing mutual lack of understanding and even conflict, a number of studies was devoted to the problem (e.g. Slovic et al., 1987; Sjoberg, 1999; Schmidt, 2004). Morgan et al (2002) even studied mental models of risky technologies and compare them to expert models, developing also methodology for

acquisition of these models. Železnik (2009) studied lay mental models and found many mistaken beliefs, though their influence on decisions about nuclear issues was not so strong.

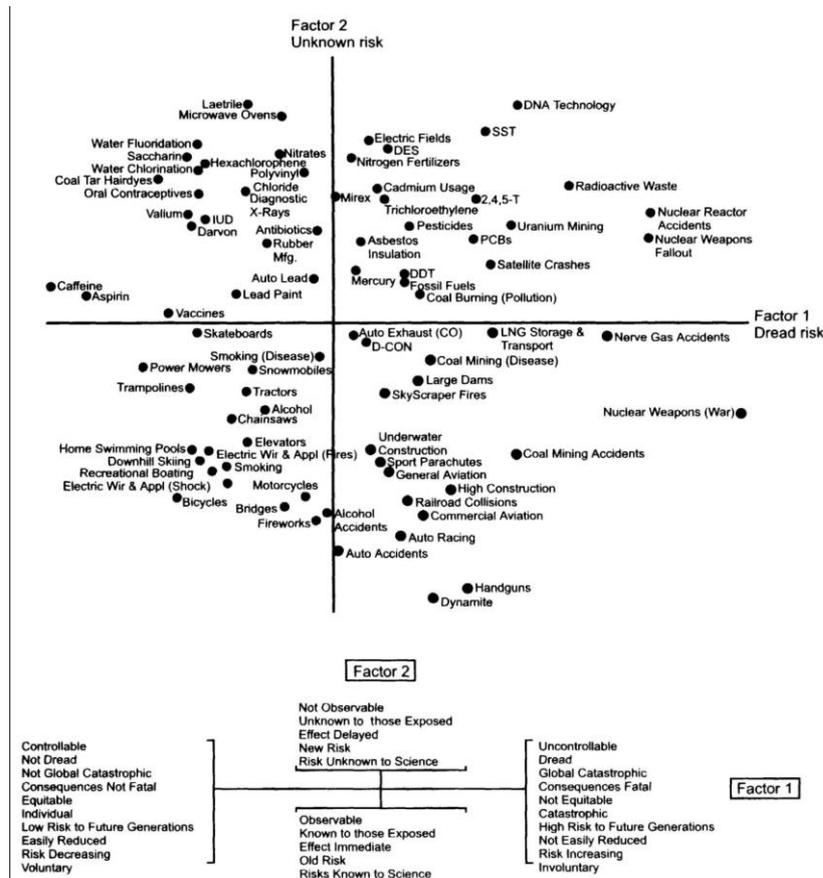


Figure 1: Location of 81 risks in two factors space, derived from relationships between 18 risk characteristics (Slovic et al., 1987)

Slovic and his co-workers were between the first who discovered lay people dimensions of risk perception (Fig. 1), finding that was repeatedly confirmed, but also criticized (Sjoberg, 1999). Beside different understanding of risk phenomena, the question of trust also influence public attitudes (Slovic, 2000).

In the present study authors try to establish experts view of nuclear issues and public attitudes toward them. Though there are a lot of public opinion polls involving public, experts are seldom involved in them, though they have often to communicate with the public. The study try to remove this deficit.

## 2 METHOD

*Participants:* Answers were collected from 66 participants, nuclear experts, mainly working in research/educational institutions (34,8 %), nuclear facilities, e.g. NPP Krško (31,8 %), in other organs (13,6 %) and institutions (7,7 %) connected to nuclear issues. Remaining 12,1 % were employed elsewhere, but considered themselves as connected to nuclear. Men (82,5 %) were prevailing, while average age of respondents was 45,73 years. Only one person has secondary education, while 5 has high school education, 29 faculty, 6 master's degree and 25 Ph D.

*Materials:* The questionnaire, used in the study, was based on the questions used in public polls in earlier years, to enable some comparisons with the answers of general public. Altogether 13 complex questions (with sub-questions) were used, covering demographic data, free associations test, opinions about economic use and safety of different power plants, about safety of nuclear waste repositories, different nuclear issues, reasons why public oppose nuclear objects, possible measures to change public attitudes and fears, perspective of nuclear energy development in Slovenia and elsewhere, and public involvement in decision-making about nuclear issues.

*Procedure:* Survey was carried out as internet survey (SurveyMonkey) during july and august 2013. Link was send to the members of Nuclear Expert Association of Slovenia with the request for participation.

### 3 RESULTS

It could be expected that nuclear expert perceive safety of NPP differently than lay people. Therefore they were asked to evaluate the safety of different power plants.

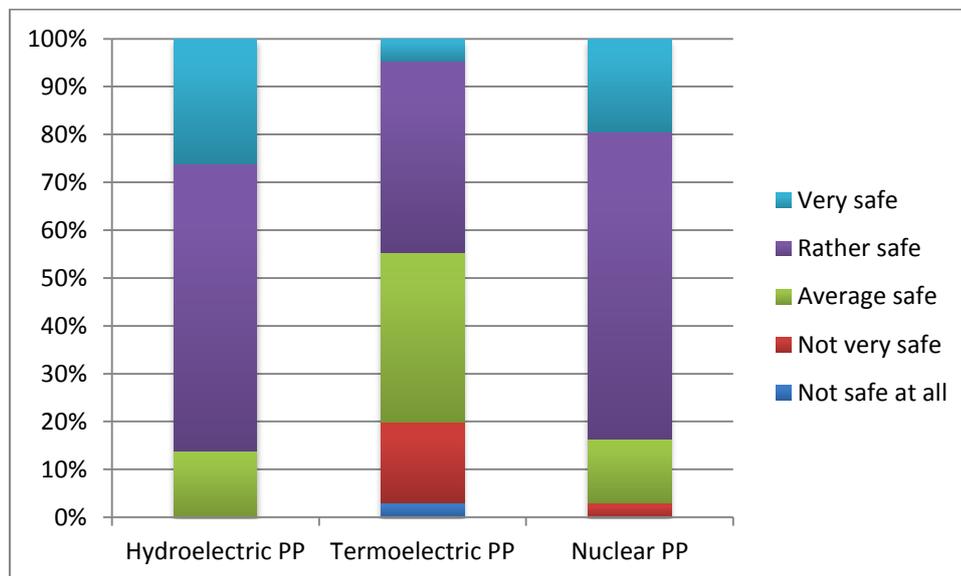


Figure 2: Perceived safety of different types of Power Plants

Evidently, for nuclear experts NPP are rather safe (Fig. 2), quite the opposite as with lay public. Is this because of their greater knowledge about nuclear issues, dramatic experiences during the known nuclear accidents that influence public opinion a lot is hard to say.

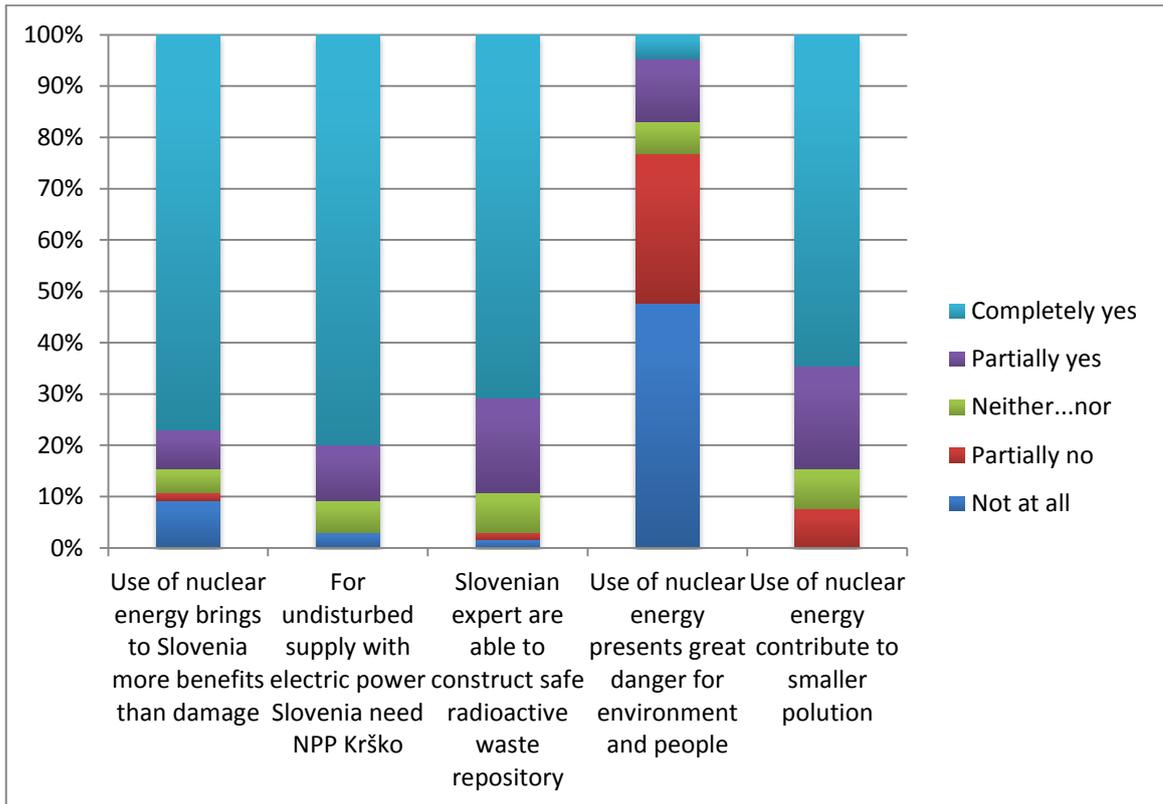


Figure 3: Experts' attitudes toward different nuclear issues

Expert are much more positively oriented toward the nuclear power than the lay public (Fig. 3). They perceive mainly its positive aspects. They also support construction of the new NPP in Slovenia (49,2 % unconditionally, and 27,7 % if NPP will be built according to safest modern technology).

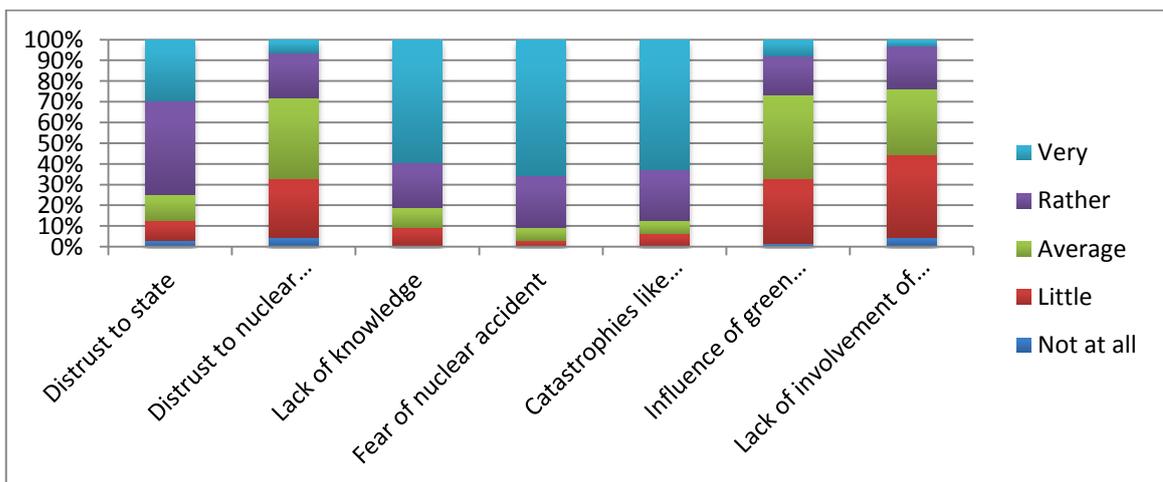


Figure 4: Influence of different factors on the public opposition to nuclear.

Experts evidently believe that lack of knowledge and fear of possible or existing accidents influence public opposition the most (Fig. 4). Lack of public involvement in decision making about nuclear issues is not a very influential factor for them.

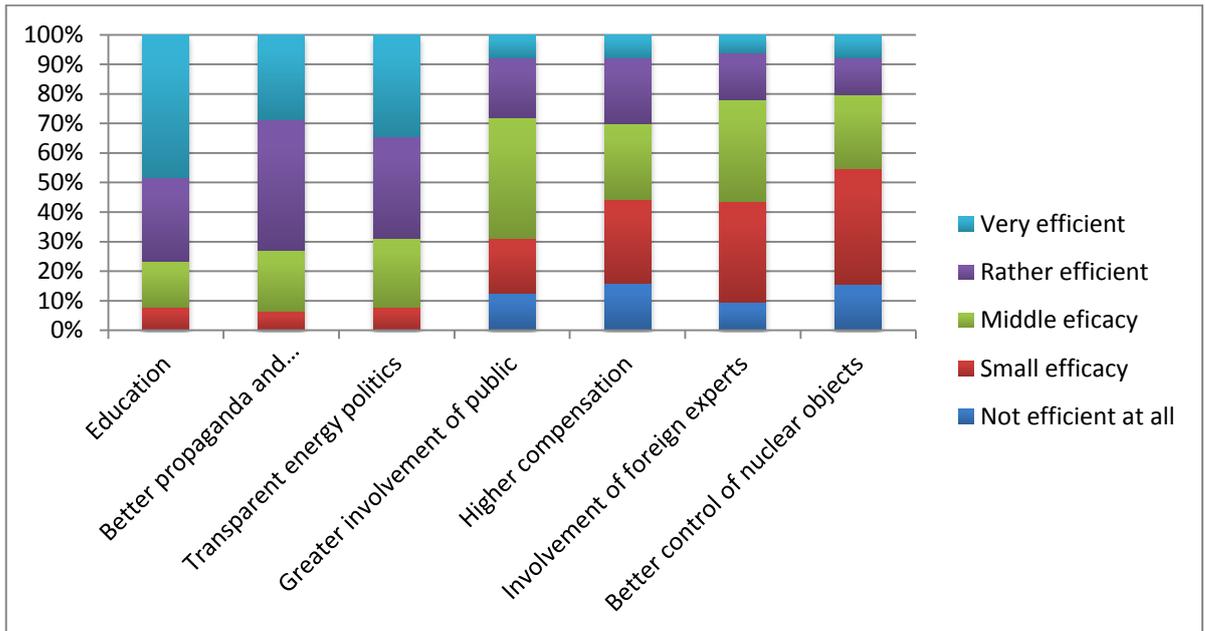


Figure 5: Efficacy of different measures for changing general public negative attitudes toward NPP

Experts believe more in the power of education and propaganda than in other measures. Classical and wrong views emerge again. Though the knowledge is important for people's attitudes and decision making, it is not enough. Trust and involvement in decision about nuclear are much more important than perceived by experts.

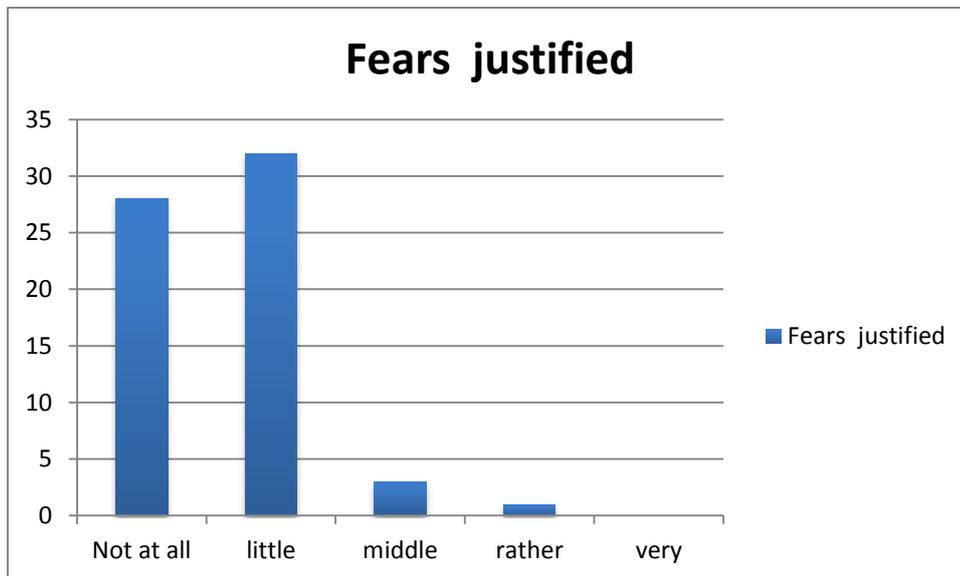


Figure 6: Beliefs of experts about people's fears of a possible nuclear accident in Slovenia

Optimistic views of experts strongly prevail. While safety record of NPP Krško and other nuclear facilities in Slovenia justify such a view, people are not so much optimistic.

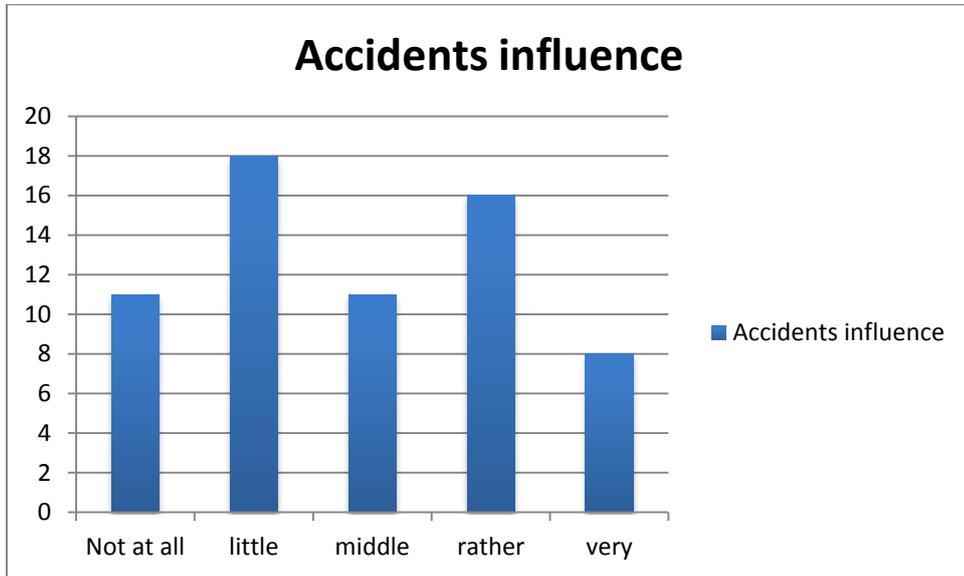


Figure 7: Influence of nuclear accidents at TMI, Chernobyl and Fukushima on the experts' views to nuclear safety

The picture is somewhat different here. More than a half of the experts believe that major nuclear accidents influence their view on nuclear safety.

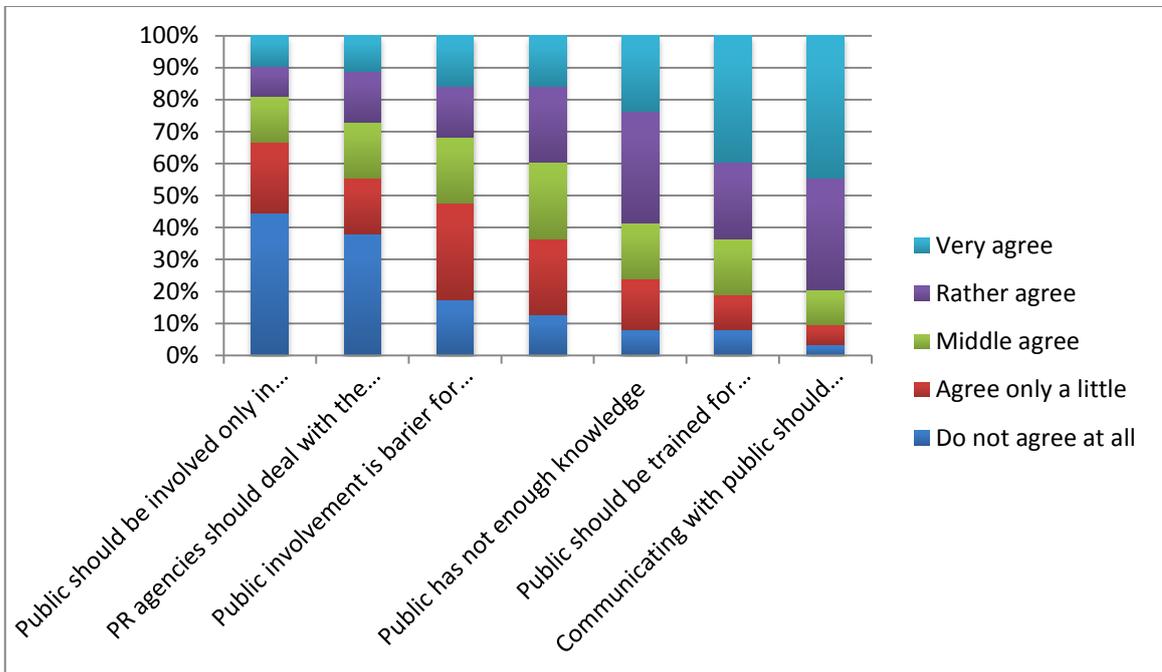


Figure 8: Experts' opinions about public involvement in nuclear issues

Though experts did not agree a lot with some extreme view of public exclusion from decision making about nuclear issues, ideas about public lack of knowledge and need for their training are present.

Only part of the survey results are presented without some in-depth analyses. Nevertheless standard view of the public as not enough educated appeared again. Evidently experts too should be educated about the public and its needs.

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