The role of women in nuclear - attracting public participation in regulatory decision-making process

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Abstract. Public participation is vital in demonstrating transparency and enhancing effectiveness of a nuclear regulatory process. As such, it is necessary for nuclear practitioners to involve the public in key nuclear delivery milestones. This paper specifically discusses challenges faced in attracting public participation throughout the nuclear regulatory decision-making process, and highlights the roles of women in nuclear (WiN) in initiating the said public discourse.

1. Introduction

The fundamental objective of a nuclear regulatory authority is to ensure an adequate level of protection of the public and the environment against any possible harmful effects of ionising radiation that could result from the use of nuclear energy and radiation sources. The nuclear regulatory authority strives to ensure that all its regulatory decisions are technically sound, consistent and timely. The nuclear regulator is also committed to ensure its regulatory decisions are transparent, have a clear basis in laws and regulations, and are fair to all parties. The nuclear regulator must consider itself as being accountable to the public, especially when it involves regulatory decisions, and be open to public scrutiny. Therefore, the public has the rights to be informed on the procedures and the results of the nuclear regulatory activities, and to participate in nuclear regulatory decision-making processes undertaken by the nuclear regulatory authority.

It was actually observed during the Fukushima nuclear incident that the Japanese public interest in nuclear piqued post-accident, especially when it involved the dissemination of information during regulatory decision-making processes. In fact, the Japanese public at the time thought that the dissemination of information was slow and untimely [1]. This adversely contributed to the public distrust and the loss of confidence in Japanese nuclear regulatory authority.

Nuclear regulators must therefore consider public participation as one of the key regulatory tools to improve transparency, efficiency and effectiveness of its regulatory process. Public participation must be pursued with the aim of improving the quality of regulatory decisions. This is especially important now since information, regardless of whether it is accurate or not, is truly at the tip of our fingers; public participation during the regulatory decision-making process is thereby particularly important to assure public confidence and understanding in the regulatory decision itself.

This paper attempts to discuss the challenges of attracting public participation during the regulatory decision-making processes and explore potential roles that women in nuclear can possibly play to help initiate the nuclear public discourse.
2. The needs for public participation in nuclear milestones
One of the key lessons learned from the Fukushima accident is that the public always has the right to be informed and consulted by the nuclear regulatory authority. This comes from one of the action plans highlighted by IAEA post-Fukushima, which focuses on communication and information dissemination. It was clearly stated that Member States should enhance transparency and effectiveness of communication and improve dissemination of information among operators, regulators and various international organizations. This should involve possibly the freest possible flow and wide dissemination of safety-related technical and technological information to enhance the nuclear safety [2].

Therefore, the regulator should always be open and transparent about how the decisions are obtained; in fact, the public can freely ask about anything so that the public are fairly confident that the regulatory authority is not hiding anything from them. This is actually in line with the basic principles of the regulatory authority relations with the public, in which a practical mean to provide the public an access to the information on its regulatory activities and procedures must be established. By having public that is fully aware of its decision-making process, the regulatory authority can thus be self-assured of its transparency, can have a clear basis in its laws and regulations, and can be deemed fair to all parties.

Nuclear safety is the primary concern for the regulator who needs to ensure that the licensee or industry is fulfilling their obligations. Eventhough the public does not have the technical background to understand regulatory requirements for nuclear safety, it is still an obligation for the regulator to inform and explain to the public what the requirements are for [3]. By having this platform of communication, the regulator now has the tool to approach the public directly which possibly establishes trust and accountability between the public and the regulator.

![Figure 1. A simple model of a robust national nuclear system [4]. (Note: ‘Regulation’ includes all regulatory activities and control, but a prime method of interaction and feedback is regulatory inspection activities.)](image-url)
Figure 2. Components of a strong stakeholder sub-system.

Figure 1 shows the interconnection between the licensee or industry, regulator and stakeholders. None of the entities can stand on their own, as a successful nuclear power programme requires close interaction between the different nuclear players [4]. Meanwhile, Figure 2 illustrates a possible holistic mechanism of public participation in regulatory decision-making process which involves multi layers of nuclear stakeholders [5].

Unfortunately, addressing the public during any regulatory decision-making processes is not a common practice in Malaysia. For example, in the Department of Environment (DOE) Environmental Impact Assessment (EIA) manual, regarding public participation, the public can review and provide comments for the EIA report at relevant DOE state offices, public libraries and local authority offices [6]; it is thus a one-way public participation route. The authors thereby suggest a two-way communication practise for the nuclear regulatory authority in Malaysia so that the authority can directly hear from the public and thus readily learn their worries and concerns. At the same time, the regulatory authority should have a ready-made platform to address any of the public concerns and possibly misinformation. This is especially important to gain public trust and understanding in the credibility and decision-making of the nuclear regulator. It should however be clear here that the motivation to involve public participation during the regulatory decision-making process is mainly to inform them of the correct information; public support is actually an indirect result of the successful public participation and should be the objective of this activity.

3. Roles of women in nuclear
Those who have been involved in the nuclear industry may easily notice that the industry is dominated by men. In fact, even though women make up half of the human population and there are significant numbers of women scientists and engineers around the globe, only 22.4% of the nuclear workforce is comprised of women [7]. This raises up few questions: does this imply that women are less interested in nuclear, and does the nuclear industry actually scare women off?

It is upon this observation that the three following objectives of Women in Nuclear (WiN) were crafted: (1) to attract more women to choose a career in nuclear, (2) to support women’s career progression in nuclear related fields, and (3) to promote dialogue within the nuclear industry that is in
line with WiN [8]. These objectives are necessary and timely to assure women can still play significant roles in the fight for clean energy against global warming. The role of women is especially important in attracting public participation during key nuclear delivery milestones, for example during regulatory decision-making process, so that the nuclear industry does not only appear inclusive but is also truly inclusive.

3.1. Women and Nuclear Public Participation

Nuclear is still a very sensitive subject. More often than not, the term ‘nuclear’ itself incites negative sentiments among the public because to them ‘nuclear’ is either a bomb or related to the Fukushima accident; the benefits of nuclear energy are thus lost in bad impressions. As such, feeding the public with the right information about nuclear is very important especially for a nuclear newcomer state like Malaysia.

It however admittedly not easy to disseminate correct information to the public. This is unavoidable due to negative impressions of ‘nuclear’. The nuclear industry must be strategic and selectively diplomatic in disseminating the correct information to the right audience. In fact, the authors are of the opinion that the right spokesperson for the nuclear regulatory authority should be a woman. This is because, from what we learned from Fukushima, women are in general more in tune with the perceived emotion of the public and thus are more relatable. A dialogue between women of common understanding can then be more productive especially when the discourse is centred around the safety of family and children.

Table 1 succinctly illustrates characteristic differences between men and women in communication [9]. It can be inferred from the table that women tend to look for commonalities in order to create connection with the audience while men tend to share experiences as a way of providing information rather than asking questions. In addition, men are generally selective listeners who focus mostly on the main points while women listen to each and every word and are more attentive to the both verbal and non-verbal cues during the communication. Thereby, women may possibly make a more relatable nuclear spokesperson than men. Furthermore, a female “spokesperson” can be more persuasive to mothers who have a big influence in the welfare of their children, whom may one day be future decision makers in the country.

It is upon the above observation that the authors are of the opinion that public participation during any nuclear regulatory decision-making processes can be more effective and more successful when the communication team involves women than an “all men” team. Men can nonetheless still be of a great assistance; men can help explain the technical aspects of the decisions while women can translate the points into laymen terms as women are naturally more nurturing and caring compared to men.
Table 1. Levels of communication between men and women.

| No. | Men                                                                 | Women                                                                 |
|-----|----------------------------------------------------------------------|----------------------------------------------------------------------|
| 1   | Men keep their problems to themselves and don’t see the point in sharing personal issues | Women are more likely to talk to other women when they have a problem or need to make a decision |
| 2   | Men tend to relate to other men on one-up and one-down basis. Status and dominance is important. | They are more relationship oriented, and look for commonalities and ways to connect with other women. |
| 3   | Men focus on talking and providing information rather than asking questions. They share experiences as a way of being one-up. | They focus on building rapport, by sharing experiences and asking questions. |
| 4   | Men can have a disagreement, move on to another subject and go get a drink together. | If women have a disagreement with each other it affects all aspects of their relationship. |
| 5   | Men build relationships while they are working on tasks with each other. | Get things done at work by building relationships. |
| 6   | Men move to solutions and problem solving right away. | Women want to talk about the problems and solve them collaboratively. |
| 7   | For men asking for help reflects instability to achieve on one’s merit. | Offering help and advice is a sign of care. |
| 8   | Men listen to the main points. They are selective listeners. | They listen to each and every word: they show attentiveness through verbal and non-verbal cues. |

4. Conclusions
The Fukushima accident had somewhat negatively blemished public trust in nuclear regulators around the globe and this had detrimentally affected the nuclear regulator’s credibility to regulate effectively. As Timothy Sloan, President and CEO of the Wells Fargo, remarked, “to regain the trust we have lost, we must continue to be transparent with all our stakeholders and go beyond what has been asked of us
by our regulators by reviewing all of our operations — leaving no stone unturned — so we can be confident we have done all that we can do to build a better, stronger Wells Fargo”.

The Malaysian nuclear industry is at a similar predicament; we should not leave any stone unturned in our mission to win public acceptance post-Fukushima for the successful delivery of nuclear power in Peninsular Malaysia. One of the key lessons learned from the accident is to consistently and openly consult the public in major nuclear milestones, especially in nuclear regulatory decision-making processes. The authors are of the opinion that in order to properly attract public participation in nuclear projects, women should be given a significant role, if not a leading role, in the nuclear communication team. This is because women, by nature, are more effective and relatable communicators than men. A more relatable and effective nuclear communication team can help to ensure the success of Malaysia’s nuclear power programme.

5. References
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