Institutional strength-in-depth in the context of decommissioning and learning from incidents (ORSAPP)

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The goal of the study

The goal of the small-scale study is to examine the robustness of Finnish nuclear community in the context of decommissioning and robustness of license holder in the context of incident investigations. The concept of institutional strength-in-depth (ISiD), introduced by the IAEA (2017) refers to the openness, transparency and questioning attitude, in core organizations in the nuclear sector. The concept is a reference point when examining the robustness in the inter-organizational and organizational contexts.

Research questions

- How robust is the Finnish nuclear community from the perspective of ISiD?
- What do the collaboration, expectations towards other organizations, as well as meanings related to decommissioning, reveal from the Finnish nuclear community's robustness in terms of institutional strength-in-depth?
- What kinds of rationality guides the identification, handling and learning from incidents?
- What do the identification, handling and learning of incidents tell about ISiD?
- How could organization learn more?

The data and method of analysis

The data of the decommissioning case consist of decommissioning reports and 6 interviews with experts from the Radiation and Nuclear Safety Authority (STUK), representatives from the Ministry of Economic Affairs and Employment (MEAE), and experts from a power company. Despite the small number of interviewees, the study provides a sectional view over the decommissioning and the relationships between the organizations.

The data of incident investigation case consist of 19 incident reports, and interviews with 3 experts from the power company. Method of analysis is qualitative content analysis.

MEAE: Finnish reputation and the social acceptablity of nuclear power

- Reputation and credibility of Finland as a country of high technology
- Posiva as the world's first disposal for spent nuclear fuel
- Social acceptability of nuclear power in Finland

STUK: Safety and pragmatic aspects

- Updating STUK Regulations
- Emphasis on own solutions and decision-making in decommissioning

License holder: Good management of decommissioning

- Responsibility and preparedness for decommissioning
- Trust in one's organization and decommissioning plans
- Decommissioning business as a tool for motivation and learning

Table 1. Meanings related to decommissioning

Strengths of the Finnish Nuclear community in the context of decommissioning

Finnish nuclear community is relatively robust as regards the following aspects: High technology in the final disposal of spent nuclear fuel storage, early planning of decommissioning, updated legislation, unique funding mechanism, low and medium level radioactive wastes of operating plants will be placed on the site. Moreover, openness and transparency characterise Finnish nuclear community in the context of decommissioning.

Instrumental rationality in the incindent investigations

Incident reports show that the instrumental rationality is organization's principal way to identify, handlle and learn from incidents. Instrumental rationality manifests itself in the form of procedures, such as accimap, which provides a general framework for investigations. Instrumental rationality in handling of incidents leads to narrow learning in terms of organizational aspects. Improving handling of and learning from incidents would require more nuanced understanding of interaction in organization context, e.g. power relationships and cultural frameworks.

Conclusions (case 1)

- **The findings of decommissioning case show that Finnish nuclear community is relatively robust as regards institutional strenght-in-depth and its characteristics, such as opennes and transparency.**
- **However the stakeholders' respect of each others' roles and responsibilities may hinder the questioning attitude, another characteristics of institutional strength-in-depth.**
- **In order to enhance the robustness of nuclear community in the phase of decommissioning, it would be important to develop risk management towards taking better into account qualitative risks and critical points, such as organizational and motivational aspects. There is no comparison regarding whether VYR funding is sufficient.**

Conclusions (case 2)

- **Incident reports show that the instrumental rationality is licensee organization's principal way to handle and govern incidents and learn from them. Accimaps and use of pre-job briefings can be good tools but they remain inadequate to address broader social and organizational context related issues. Therefore, in order to improve the handling of and learning from incidents, and particularly the handling of communication and organizational factors related aspects, adoption of reflexive responsive rationality is recommended. Recommendations are provided in the final report**

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