Effective Decision Rules for Public Engagement in Radioactive Waste Disposal

Mito Akiyoshi
William F. Lawless
John Whitton
Ioan Charnley-Parry
William Nicholas Butler

Research Problem: Decision rules for public engagement

Which decision rule facilitates the approval of deep geological disposal plans while achieving a successful outcome in social and technological terms, with the perception of fairness and legitimacy?

Majority-seeking rule (MR) or Consensus-seeking rule (CR)?

Theory (Lawless et al. 2010)

MR

- Increases concrete solutions available to groups.
- Sorts through best ideas.

CR

- Increases the number of risk perceptions over risk determinations, promoting illusions instead of improving social welfare.
- Depends on enforced cooperation designed to preclude challenges.

Research Sites and Methods

- Japan

Simulated workshop and survey

- The UK

Case study: Committee on Radioactive Waste Management

- The US

Case study: Department of Energy Citizen Advisory Boards

Findings

- Majority-seeking rule maximizes information processing and reduces the perception of "dread."
- Early public participation in the decision process has positive effects on the outcome
- Majority-seeking rule is effective in countries with different policy priorities and cultures.

Japan- a simulated workshop (May 2019)

- Participants: 51 university students (Senshu University and Meiji University).
- Five discussion groups: three MR groups, two CR groups. Each group decides whether to approve or disapprove the siting of Geological Disposal Facility near the universities, provided that the area is geologically the “best” candidate site.
- MR groups mention more place names, argue both pros and cons of having a GDF near campus.
- CR groups mention fewer place names, tend to focus on risks and accidents.

Japan- an online survey (July 2019)

- N = 3,188 (residents aged 20 to 69)
- Measured: Knowledge of HLW and interests in participatory approaches.
- Finding: Knowledge increases interests in participation in decision-making processes.

Participation = a + b(Knowledge: Nuclear)+ c(Knowledge: HLW)+ d(Vote)

- Finding: Over 70 percent support a referendum on the siting in the candidate community.

	Coeffcient	Std. Err.
Nuclear	0.13***	.015
HLW	0.03**	.014
Voting	0.024***	.004
R^2	.103	

UK – CoRWM and MRWS

- The Committee on Radioactive Waste Management (CoRWM) failed to utilize expertise from the social sciences and lacked credibility (Ball. 2006).
- UK central and local governments do not provide stakeholders with the power to veto decisions by MR (Whitton et al. 2015).
- The Managing Radioactive Waste Safety (MRWS) process employed public consultation to identify volunteer communities to be sites for a deep geological repository (2008-2013).
- The site selection process ended because of the opposition of the Cumbria County Council in 2013.

US- Department of Energy Citizen Advisory Boards

	Hanford (CR)	Savannah River Site (MR)
The number of HLW tanks cleaned and closed	0	8 cleaned and closed; from 1997
Canisters poured of vitrified HLW glass and stored ready for shipment to a HLW repository	0	4,200 canisters poured and stored; from 1996
Legacy transuranic wastes removed from site and shipped to the repository at WIPP, NM	11,000 drums	750 cubic meters

SRS-CAB Recommendation #345: Pollinator Land Use for SRS

1. Work with the Forest Service and Savannah River Ecology Lab to be represented in the Pollinator Health Task Force to learn more about how space at SRS could be used for pollination.

2. Collaborate with the Region IV Environmental Protection Agency to develop a plan for pollination, including funding, management and sustainability.

3. Given that funding may be a concern, consider working with local gardening clubs and associations that may be willing to assume some costs of the projects.

4. Based on feasibility, test the honey produced for contaminants.

Conclusion

- MR works across societies with different policy priorities and cultures.
- Early public participation in the decision process has positive effects.
- The Decide-Announce-Defend (D-A-D) approach does not work.