

Ethics of radioactive waste management: what are our responsibilities protecting today and tomorrow?

Behnam Taebi, 6 November 2017, The Celecton Fukushima
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Why social acceptance?

- Nuclear technology has brought great benefits but also many new and significant risks
 - Attempts made to assess risks, e.g. Probabilistic Risk Assessment
 - These method criticized for neglecting social aspects of risk
 - They neglect 'social acceptance'
- Public distrust about safety of nuclear reactors engendered a discussion on safety, culminating in designing safe reactors
- Opposition by the public is often seen as potential obstacle
 - Social acceptance has sometimes been reduced to "marketing methods to maximize the likelihood of successful introduction" of technologies (Schulte et al. 2004)

What good governance needs

- Social acceptance is a necessary but not sufficient criterion
 - There are important ethical aspects that it might overlook
- There are ethical analyses of technology
 - But they are often conceptual analyses and lack empirical insights
- Good governance of risky technology requires us to bridge the proverbial gap between acceptance and acceptability

Some definitions

- *Social acceptance* refers to the fact that a new technology/facility is accepted – or merely tolerated – by a community.
- *Ethical acceptability* refers to a reflection on the technology that takes into account the moral issues that emerge from the introduction of new technology/facility.

Structure of the talk

- Part 1: a review of social acceptance studies
 - And what they presumably cannot do
- Part 2: justice in ethics of radioactive waste management
- Part 3: Conclusions
 - Good governance of radioactive waste management

Part 1:

What social acceptance studies
can't do

i. Incomplete or faulty information

- Acceptance could be based on incomplete or faulty information
- Case: Uranium enrichment facility in Louisiana
 - Local communities were requested to “nominate potential sites for a proposed chemical facility”
 - First problem: communities were never informed about the nature of these facilities
 - Second problem: no quantitative or qualitative risk assessment were presented: “it was impossible to know, reliably, the actual risks associated with the plant”
 - Case drawn from (Wigly and Shrader-Frechette 1996)

ii. Acceptance for wrong reasons

- Risky technology might be accepted for (morally) wrong reasons
- Compensation or bribe?
 - On the one hand, distributive justice recommends compensation
 - On the other hand: without ethical guidelines, compensation could become an “exploitative, misleading or manipulative instrument” (Hannis and Rawles 2013)
- How and under which conditions should an affected group be compensated? Whom to compensate?

iii. Whose acceptance?

- Which public should accept new technology?
- In the Louisiana case, the opinion of host communities very close to the proposed facilities were not considered
- Studies on 'acceptability of renewable energy' show
 - Nation-wide consensus and local opposition
 - Of course, this does not mean that local communities should be overruled, because locals might be affected by a technology
 - Example drawn from (Walker 1995)
- Different people have different values and interests
 - Whose opinion(s) should be decisive?

iv. International risks

- Problem iii (whose acceptance) will be exacerbated when dealing with international risks
 - Some risks go in essence beyond national borders
- Example 1: nuclear power plants at the national borders
 - Austria is being surrounded by these power plants in Germany, Italy and the Czech Republic
- Example 2: multinational nuclear waste management
 - European Repository Development Organization (ERDO)
 - New developments in South Australia

v. Intergenerational risks

- Problem iii (whose acceptance) will again be exacerbated when dealing with intergenerational risks
 - Risk that stretch beyond the generational borders, into the future
- How should we deal with the intergenerational distributions of risks and benefits
 - What level of risks can we transfer to future generations?
 - Alternatively, what level of protection should we offer people in the future?

vi. Distribution of risks & benefits

- New technology makes new winners and losers
- How are the risks and benefits distributed?
 - Often benefits are nation-wide, and burdens local
- More complex: temporal distribution of burdens & benefits
 - This gives rise to questions of intergenerational justice
- Intergenerational justice issues are not necessarily taken into account in social acceptance studies.

Part 2:

Justice in ethics of radioactive waste management

Justice and Radiation Protection

- In the seminal ICRP 1977 Publication, *justice* features as a key (ethical) issue
 - For instance in the principles of *Justification*
 - Even when there are *justifiable* benefits, we should *optimize* the levels of radiation and respect the *Dose Limit Principle*
- The principle of RP aim at establishing justice and/or reducing injustice (or inequity)
 - “When the benefits and detriments do not have the same distribution through the population, there is bound to be some inequity. Serious inequity can be avoided by the attention paid to the protection of individuals” (ICRP 1991, Par. 101)

Justice is a core ethical value of RP

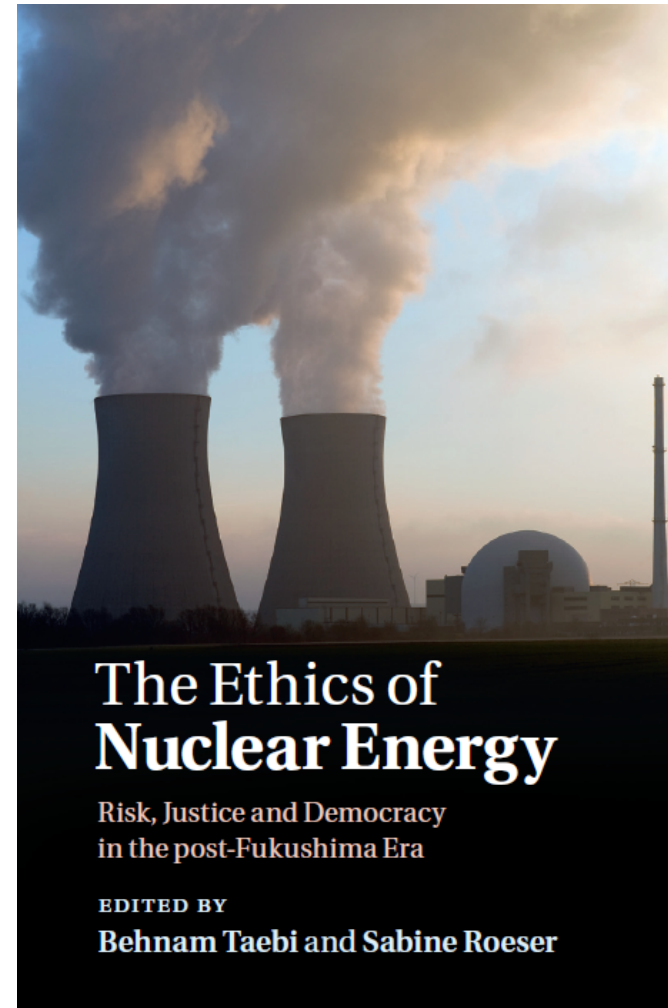
- In a forthcoming ICRP publication on the 'Core Ethical Values of RP' (ICRP TG94), justice is mentioned as one of the 4 key values
 - Together with 'Beneficence and non-maleficence', 'Prudence' and 'Dignity'
- ICRP Publication 138 (TG94 publication on ethics)
 - "Justice is usually defined as fairness in the distribution of advantages and disadvantages among groups of people (distributive justice), fairness in compensation for losses (restorative justice), and fairness in the rules and procedures in the processes of decision-making (procedural justice)."

Justice and broader energy debate

- In broader energy issues, there is an emerging field on 'Energy Justice' that emphasizes three dimensions
 - Distributive justice
 - Procedural justice
 - Recognition
- Energy justice partly stems from the literature on environmental justice in the 1980s and 1990s

Ethics of nuclear energy

- In the broader discussions on the ethics of nuclear energy, justice often features as one of the key concepts



Justice & radioactive waste

- Avoiding *undue burdens* for future generations is a principle stemming from intergenerational justice.
- Various ICRP and IAEA publications (but also NEA publications) emphasize the need for considering the interests of future generations
- One of the key rationales for geological disposal to other options for dealing with radioactive waste is the belief that it best guarantees intergenerational justice

Part 3: Conclusions

Good governance of radioactive waste management

What justice, for whom?

- Good governance of radioactive waste management would require us to at least consider distributive and procedural justice
- Distributive justice
 - In the distribution of burdens and benefits between communities (and the nation) but also perhaps between countries
 - As well as the level of *permissible* radiation risks that we transfer into the future
- Procedural justice
 - A fair decision-making procedure that is inclusive

It is only about justice?

- I do not claim the ethics of nuclear waste management to be *only* about justice
- Indeed, the other 'core ethical values' are absolutely relevant to consider and address
- I do believe that many important ethical issues of radioactive waste management could better be understood and addressed when we consider distributive and procedural justice properly

Are we there yet? New challenges!

- Acknowledging that we have to include justice is one thing, including it in the procedures is a whole different thing.
- Questions that need to be answered (future research)
 - Whose opinion (should) count?
 - Who gets to decide what is fair procedure and distribution?
 - How do we deal with different stakeholders' (diverging) opinions?
 - How should we decide on the interest of future generations?
 - Which future generations do we consider? Near future and distant future's interest could contradict when we follow different waste management strategies.

Thank you

- This talk was based on these papers
 - Taebi, B. 2017. Bridging the gap between social acceptance and ethical acceptability. Risk Analysis 37 (10): 1817-1827. [available online](#)
 - Kermisch, C. and B. Taebi. 2017. Sustainability, Ethics and Nuclear Energy: Escaping the Dichotomy. Sustainability 9 (446). [available online](#)
- Both papers are **Open Access** and available online (free of charge)
- Comments on the presentation and the papers are appreciated, now or later by email

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