The future of radioactive waste governance: Lessons from Europe

Rinie van Est & Maarten Arentsen
Rathenau Instituut, The Hague, The Netherlands

Reform meeting 25
October 3-7 2022

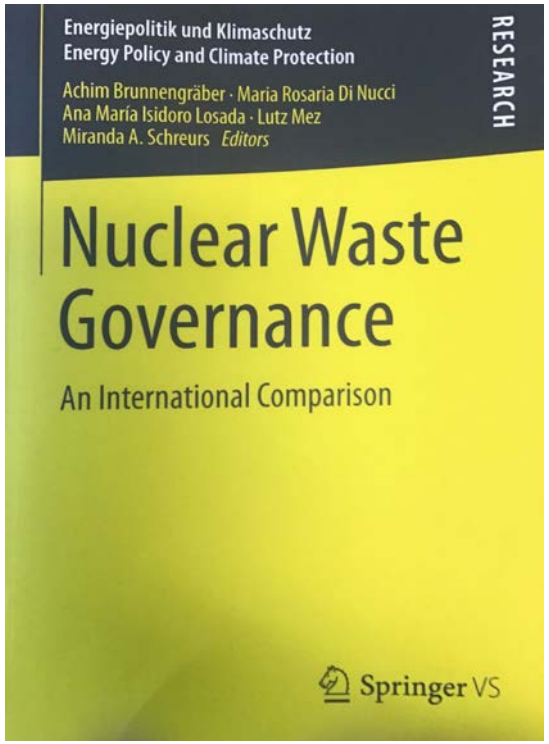
Background: Why this edited volume?

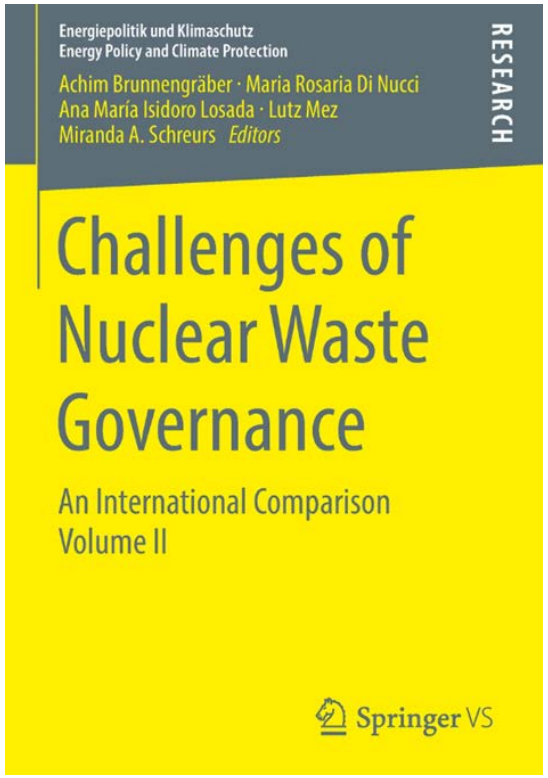
- Assignment Rathenau Instituut:
- Advising on a society approved decision making proces about long term management of radioactive waste by means of research and dialogue between stakeholders, experts and citizens.

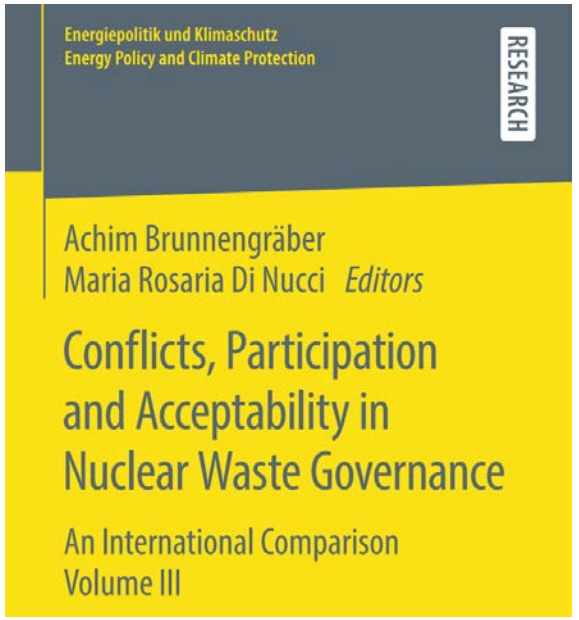
- Components of research:
  - The governance in past, present, future and “elsewhere”

- “Elsewhere” is addressed by the edited volume

Starting point: State of the art on governance







Observations:

- Widespread societal resistance
- A highly challenging problem
- A reconsideration of national governance approaches:
  - From:
  - expert-dominated top-down governance with decide-announce-defend (DAD) communication strategy
  - To:
  - engage-deliberate-decide (EDD) communication strategy

  - a ‘participatory turn’ in RWM governance strategy (Bergmans et al, 2014)

A challenging problem: RWM is socio-technical "Wicked" problem (Brunnnengräber, 2019) 1/2

- Nature of the problem:
  - Not only facts play a role, but also changing narratives (visions, values and expectations)
  - Not only technical, but basically sociotechnical problem without blueprint of solutions
  - A double jeopardy situation: Safety requires security, but raises security concerns
  - Systemic risks involved arising from the interaction between technology, politics, society and economics
  - Vast time scales involved

A challenging problem RWM is socio-technical "Wicked" problem (Brunnnengräber, 2019) 2/2

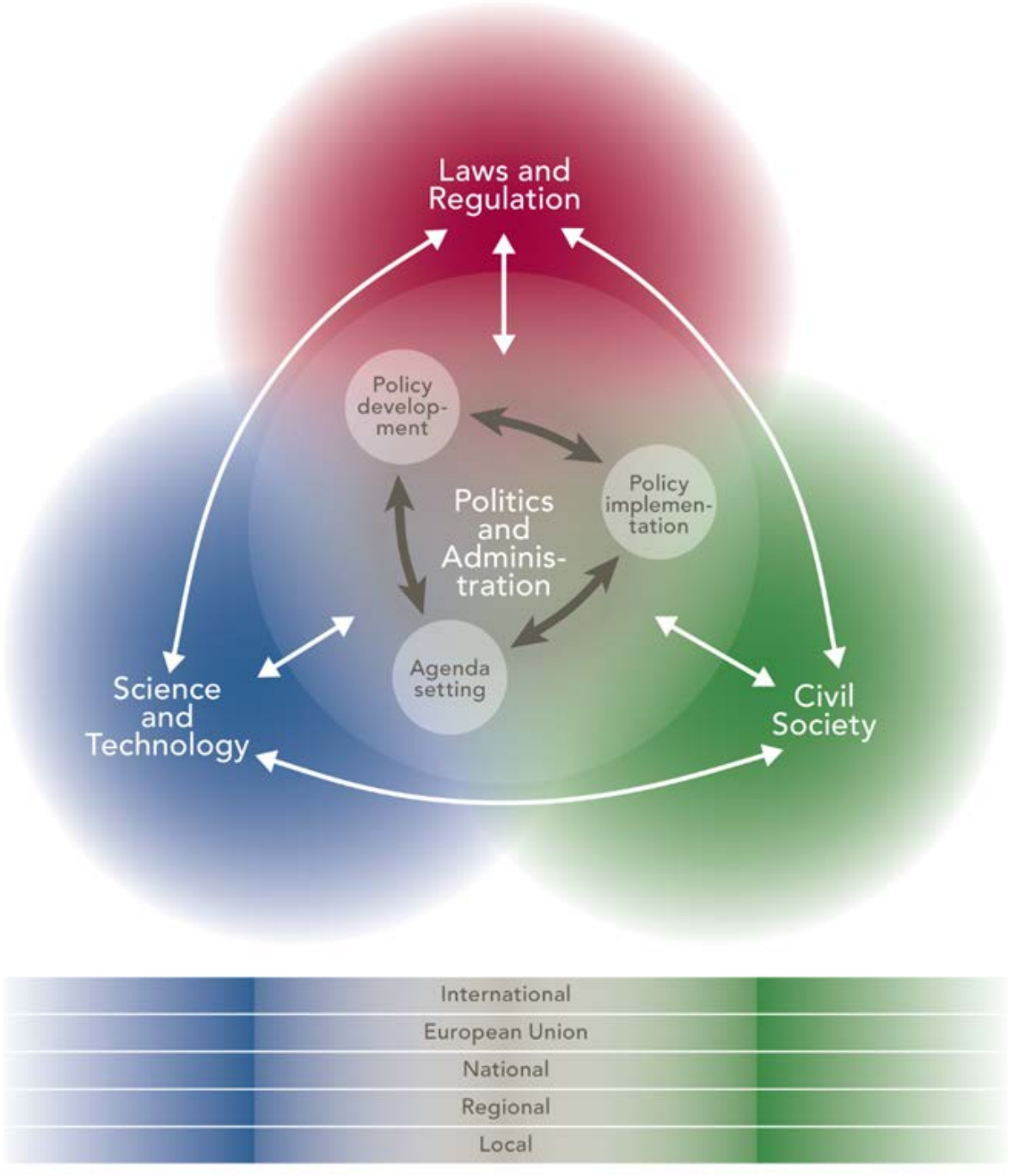
- On the governance of the problem:
  - A country specific national governance approach (political, social and cultural country background)
  - A multi-level governance challenge (embedded in supranational to local institutions)
  - Wide spectrum of actors involved: a landscape of conflicting actors
  - Inter- and transdisciplinary research required: crossing boundaries of different scientific fields.
  - Radioactive waste governance forms a democratic challenge and is about "reshaping state authority, a shift in responsibility and the integration of civilian knowledge and experience"

Central question:

- What lessons do the country studies teach us about the governance of long-term RWM?

Analytical perspective

Governance ecosystem



Kool et al., 2017

Content

On participatory turn in RWM governance

- Lesson 1: RWM governance currently tries to experimentally shape the participatory turn
  - a paradigm shift in the relationship between civil society and the scientific and technological and political-administrative domains.
  - From decide-announce-defend (DAD) strategy towards an engage-deliberate-decide (EDD) strategy in country-wide real-life experiments.

On RWM in the context of nuclear energy

- Lesson 2: RWM governance is affected by planned and unplanned nuclear energy developments

  - Waste problem “solved”= more nuclear energy (Finland)
  - Waste problem not “solved” = no new nuclear (Spain)
  - Legacy waste versus new waste (UK)
  - Nuclear disaster and phasing out nuclear (Germany)
  - Nuclear disaster and public opinion on nuclear (Sweden, Italy)
  - Ukraine war puts nuclear on the agenda again (Netherlands)

On RWM as a multi-level governance phenomenon

- Lesson 3: The interaction between international and national levels regarding nuclear safety and radiological protection is well-coordinated and institutionally embedded (all countries)
- Lesson 4: The option of a multinational geological waste disposal facility is seriously considered and explored (It, DK, B and NL).
- Lesson 5: There is a need to achieve more coordinated interaction between national, regional and local levels (Spain versus Switzerland)
- Lesson 6: Reliability and validity of research on technological safety and risks play a central role in the siting process for a geological disposal facility (credibility of science)
- Lesson 7: A siting process for a geological disposal facility raises the question to what extent it fits in with local development visions (fit with local development plans: areas with and without nuclear background, local voluntarism (Fin, SP, UK, It)

NL

1) minimisation of the generation of radioactive waste;
2) safe management of radioactive waste;
3) no unreasonable burdens on the shoulders of future generations;
4) the producers of radioactive waste are responsible for the costs of its management.

BE

1) a flexible and stepwise approach,
2) practicing transparency,
3) providing clarity about the link between participation and decision-making,
4) ensuring monitoring and control, and
5) robust financing.

On laws and regulations: Creating a legal basis for decision-making around RWM options

- Lesson 10: It is important to anchor policy principles and technological options in law
  - Codification of societal and political learning and agreement
  - Examples: France, retrievability; in Germany, the retrieval period; and in Belgium and Finland, passive safety.
  - Italy: 15 criteria for site selection

- Lesson 11: It is important to legally underpin decision-making procedures
  - Example Switzerland's Sectoral Plan for Deep Geological Repositories of 2008 arranging the process of finding locations for the final disposal of LLW, ILW, and HLW. Three phases:
    - Phase 1: selection of suitable geological areas
    - Phase 2: at least two potential siting areas for LLW, ILW and HLW or one site for a combined repository proposed with proper public participation
    - Phase 3: nomination of two disposal sites or the site for a combined repository planned and to be approved by parliament and the electorate in 2031 at the latest.

On science and technology domain: Towards an institutionally diverse knowledge landscape

- Lesson 12: It is important to be transparent about and openly debate scientific uncertainties about suitable RWM methods and geological formations, as knowledge development is dynamic

- Lesson 13: The policy principle of retrievability implies a significantly longer period of active safety before moving on to passive safety

- Lesson 14: There is a need for interdisciplinary and transdisciplinary knowledge, and social science can play a central role in this

- Lesson 15: There is a need for the institutional distribution of knowledge

On Civil society: The challenge of informing and engaging civil society

- Lesson 16. There is a need for joint production of socially robust knowledge

- Lesson 17: There is a need to clarify and enhance the role of societal engagement in various steps of the political decision-making process

Maarten Arentsen
Rinie van Est (Editors)

A big thank you to all contributing authors

Coming soon