NIMBY and nuclear communities:
How are they connected?

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Deconstructing “acceptance”
Social science perspectives on the siting processes of radioactive waste repositories

Outline

- Background facts
- Search of SNF disposal site and social science
- NIMBY and nuclear communities
- Latent NIMBY in a nuclear community
- Conclusions

BACKGROUND FACTS ON FINNISH NUCLEAR WASTE POLICY

POSIVA's site investigations at Olkiluoto – Underground rock characterisation facility ONKALO, depth ~400 m

Transformation of nuclear waste policy

- **Technocratic approach 1980-1985:**
  - Suitability studies – priority in geological circumstances
  - No interaction with public– municipality was informed
- **Challenge to technocratic approach 1986-1992**
  - local opposing movements
  - some local meetings organized by local activists and organizations
- **The interactional phase 1993-2000**
  - EIA law and industry more open – interaction was required
  - public meetings and hearings organized by the industry or responsible ministry

Stepwise timetable of 1982

Raumolin 1982

Time	Planned tasks
1980-1982	Suitablility study with safety analyses
1983-1985	Preparation for the preliminary site characterization
1986 – 1992	Preliminary site characterization in chosen areas (5–10 sites)
1993-2000	Additional siting studies (2–3 sites)
2001-2010	Detailed studies of chosen disposal site and preplanning of the siting and the encapsulation plant
2011-2020	Planning and construction of the disposal site and the encapsulation plant
2021-2050	Final disposal facility is operational
2050-2060	Closing of disposal site

DETERMINED (DESPERATE?) SEARCH OF SNF DISPOSAL SITE

Search of political fixes

- Globally the controversy of SNF siting has generated huge amounts of research (Salomon et al. 2010)
- Social science research as an example of efforts to find solution
- Studies ranging from
    - social, ethical and political issues to
    - judicial, economical and information questions
- Indication of how multidimensional the question of acceptance is

Three Decades of Social Science Research on High-Level Nuclear Waste

(Salomon et al. 2010)

1. **Period from the mid-1970s to the early 1980s**
   - e.g. institutional dimensions → countries attempted to find institutional solutions to the problem
2. **Period in the early 1980-1995**
   - efforts to site nuclear waste repositories, some progress in Sweden, Finland, and the United States, and general stalemate elsewhere
   - accelerated research on
     - risk perception
     - stigma and public trust
     - siting conflicts

Three Decades of Social Science Research on High-Level Nuclear Waste

(Salomon et al. 2010)

3. Period, since the mid-1990s

- characterized by failure and continuing political stalemate, with the major exception of Nordic countries
- attention to
  - public participation
  - political systems and international solutions
  - ethics
  - risk perceptions and
  - siting conflicts

Five periods of Finnish social science research on siting of SNF (Nurmi et al. 2012)

1. **From 1990 to 1994**
   - conflict studies
2. **From 1994 to 1999**
   - diversification of issues to needs of EIA and DiP – reflecting approaching decision-making (Litmanen 2008)
3. **From 2000 to 2004**
   - post site selection period → studies on EIA, media, decision-making, conflicts
4. **From 2005 to 2010**
   - focus on host municipality, Eurajoki
5. **Ongoing from 2010-2015:**
   - follow-ups, socio-technical challenges, international comparison, Posiva's PR-works

NIMBY AND NUCLEAR COMMUNITIES

NIMBY

- The term *not in my backyard (NIMBY)* is used to refer to the local communities' social response to unwanted, but otherwise necessary facilities
  - E.g. waste or industrial facilities having negative environmental and health impacts
- Many socially beneficial projects are perceived to be locally harmful
  - generating substantial social and political resistance and conflict (Lesbirel and Shaw 2000)
- Project's costs and risks geographically concentrated while the benefits accrue to a larger, more dispersed population (Kraft & Clary 1999)

Nuclear communities as solutions

- Radioactive waste has been the Achilles heel of nuclear industry (Blowers, Lowry & Solomon 1991)
- Siting has been a political problem
  - conflictual relationships between participants
  - conflict over goals, motivations, ideology, and values
- Already in the 1970s it was referred to a NIMBY - syndrome as most obvious political issue connected to SNF storage problem (Jakimo and Bupp 1978; Ostrander 1980)
- Due to difficulties in finding greenfield sites, nuclear industry have become interested nuclear communities
  - "experience worldwide shows […] it is with nuclear host communities that progress in facility siting has been made quickest" (NEA, 2003, 25).

Nuclear communities 1/2

- Nuclear industry's presence defines the whole community
  - “It is assumed that nuclear activity is not just something that is going on in the area, but instead being 'nuclear' becomes part of the community's identity." (Kari 2009, 3; Kari et al. 2010, 92.)
  - "communities who host nuclear activities and are conscious of their nuclear identity". (NDA 2007, 89)
- Also community's inhabitants have developed familiarity with nuclear activities

Nuclear communities 2/2

- Inhabitants of a nuclear community tend to be more positively disposed towards nuclear activities than the general public (e.g Easterling & Kunreuther 1995; Eiser, van der Pligt & Spears 1995; Kiljunen 2007; van der Pligt 1992)
- Attempts to site nuclear facilities are affected by economic and power relations (e.g. Blowers 1999; Jacob 1990; Darst & Dawson 2010; Elam & Sundqvist 2009; Gunderson & Rabe 1999; Chung & Kim 2009; McCutcheon 2002; Kojo & Richardson 2014)
  - indicating that communities are more susceptible to industry's advances due to their vulnerability, dependency or economic needs

United we stand? Assumed acceptance in a nuclear community

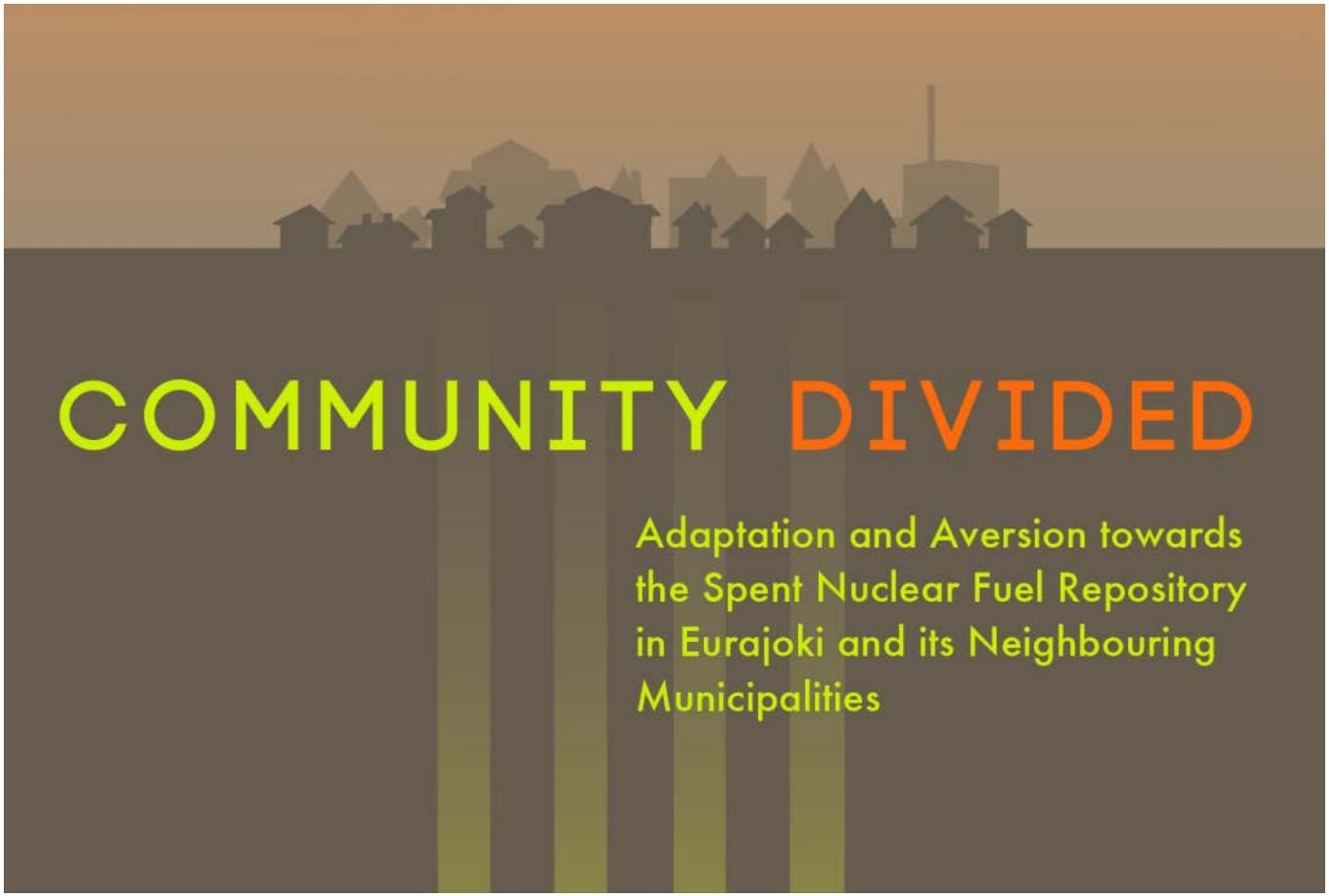
- Community itself is somewhat elusive concept
- Usually term community refers to rather stable cultural issues such as
  - collective identity
  - feeling of unity
  - recognition of common interests
  - connectedness & engagement of actors
  - belonging to or being part of something
- Homogenize the understanding → more dynamic and sophisticated view is needed

Dynamic issues behind the idea of community

- The term community also refers to social cohesion and value consistency
  - Social relations & interaction creating cohesion and value consistency
  - Emotional adjustment & congruence, group pride and also conformity pressures
- Thus important to note is that
  - community relations and sense of community changes with time
- Nuclear communities tend to *develop* pragmatic acceptance or tolerability
  - rather than embracing the prospect of hosting nuclear facilities (e.g. Bergmans et al. 2008, 62)
- What does it mean in practice?

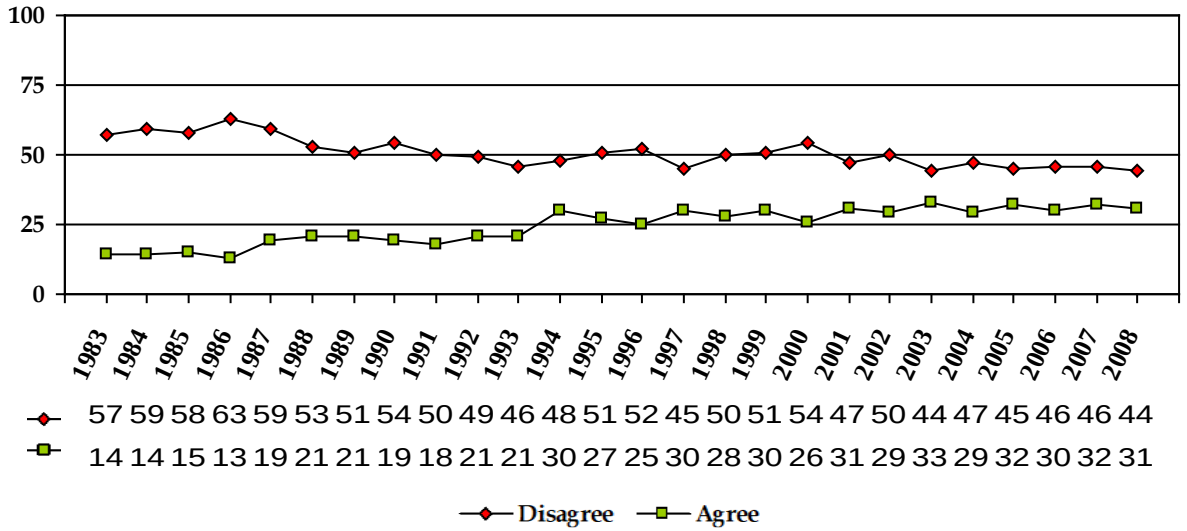
LATENT NIMBY IN A NUCLEAR COMMUNITY

Attitudes towards SNF disposal (Kari et al. 2010)



Finns attitudes towards safety of final disposal have changed slowly

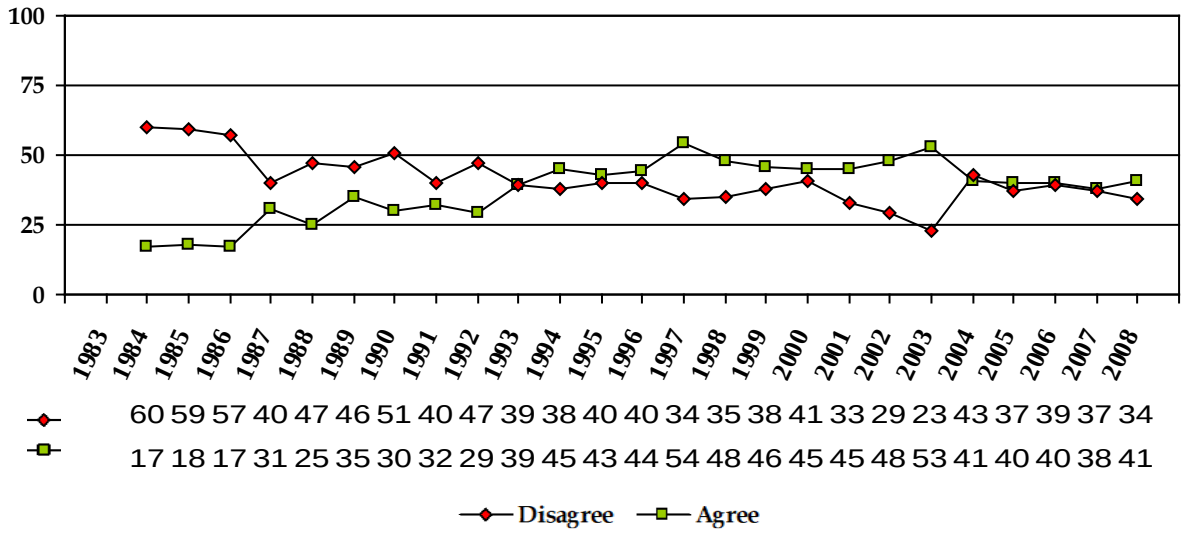
- **Finns attitudes towards safety of final disposal have changed slowly more positive from the beginning of 1980s**



Extent of Finnish disagreeing and agreeing with the view that final disposal in Finnish bedrock is safe (%)
Based on data from annual Finnish energy attitudes study (1983–).

Attitudes in Eurajoki, nuclear community

- In Eurajoki the development of attitudes have not been so straightforward as among general public



Extent of residents of Eurajoki disagreeing and agreeing with the view that final disposal in Finnish bedrock is safe (%) Based on data from annual Finnish energy attitudes study (1983–).

NIMBY inside the nuclear community

- There is a latent social cleavage in the Eurajoki and its neighbouring communities
  - a hidden division or dividing line
  - e.g., there is a discrepancy between women and men in most issues
  - also political affiliation affects on opinion
- Higher income, better education and occupational status → more positive
- Lower income, less education and lower occupational status → more negative
- Potential for social tensions and conflicts?

Yes does not mean yes for every actors

- Residents of Eurajoki slightly more favourably inclined towards ”their own actors’” SNF disposal than the residents of neighbouring municipalities (Kari et al. 2010)
- However, more hostile to other actors needs (Fennovoima)
  - 62 % disagree in Eurajoki whereas amoung neighbours 48 %

		Totally disagree / disagree	Neutral	Agree / totally agree
Eurajoki	**Nuclear waste produced by TVO and Fortum should be disposed of in Olkiluoto**	36	23	42
	I accept expansion of the repository for the needs of TVO and Fortum	39	19	42
	I accept expansion of the repository also for the needs of other Finnish actors	62	19	20
Neighbours	**Nuclear waste produced by TVO and Fortum should be disposed of in Olkiluoto**	40	29	31
	I accept expansion of the repository for the needs of TVO and Fortum	37	25	39
	I accept expansion of the repository also for the needs of other Finnish actors	48	25	28

Extent of agreement with certain statements regarding final disposal (%). Comparison between Eurajoki and neighbouring municipalities

CONCLUSIONS

Nuclear communities' complex reality

- Official decisions pave the way to transformation of attitudes
  - Maturation of public opinion due to determined political and techno-scientific pretreatment and initialization
- Cultural adaptation to nuclear industry during the decades → cultural cohesion and value congruence
  - However, adaptation is not harmonious nor homogenously dispersed
- NIMBY towards newcomers
- Nuclear community is internally divided
  - Attitudes of affluent people and more disadvantaged people can be quite extreme
- Latent conflict or social tensions inside the nuclear community?

Recent publications

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- Litmanen, Tapio, Kojo, Matti and Nurmi, Anna (2012) Socio-Technical Challenges of Finland's Nuclear Waste Policy: Discussion of the Techno-Scientific Community on the Geological Disposal of Spent Nuclear Fuel. Risk, Hazards & Crisis in Public Policy, 3(3), 84-103.
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- Kojo, Matti & Oksa, Anna (2014) Adaption of the Swedish KBS disposal concept to Finland: A technology transfer case study. http://urn.fi/URN:ISBN:978-951-44-9515-1
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- Litmanen, T. Kojo, M. & Kari, M., "The Rationality of Acceptance in a Nuclear Community. Analyzing Residents’ Opinions on the Expansion of the SNF Repository in the Municipality of Eurajoki, Finland." International Journal of Nuclear Governance, Economy and Ecology, vol. 3 (1), 2010, 42-58.
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- Litmanen, Tapio, "Nuclear Power in Societal Flux. The Renewal of Nuclear Power in Finland in the Context of Global Concern Over Energy Security." Nuclear Safety and Simulation, Vol. 1, Number 4, December 2010, 280-290.
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Thank you
for your attention!