



EU-H2020- SHARE-Decommissioning
On-line Workshop, December 1-3, 2020



Group A

Session 1: Safety and Radiological Protection

Session will start at 13:50 CET

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 847626.



Group A

Session 1: Safety and Radiological Protection

Agenda

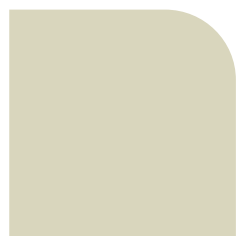
GROUP A			
① Safety and Radiological Protection			
Dec. 1st Link teams 1st Plenary	9:00 CET- 13:40: Plenary session (see general program) and switch to breakout sessions		
Dec. 1 st Link teams Dec 1st Group A	International initiatives		
	13:50	1A	Presentation of ETSON by Karine Herviou, IRSN (10 min)
	14:00	1B	Presentation of NEA Regulator forum by NEA (10 min)
	14:10	1C	Presentation of "SHARE" European Platform for Social Sciences and Humanities research relating to Ionizing Radiation, by Susan Hodgson, EXETER/ Tanja Perko, SCK-CEN (10 min)
	14:20	1D	Presentation of first achievements from SHARE in this area + introduction to post it session, by Reika Svoke, IFE
	14:40- 16:50 - Post it session by sub-thematic area		
	Link MURAL 10	10	International harmonization of safety standards and safety approaches / Decommissioning
	Link MURAL 11	11	- Development / National regulatory guidance for Decommissioning: Preparatory activities
	Link MURAL 12	12	- Development / National regulatory guidance for Decommissioning: Dismantling
	Link MURAL 15	15	Methods and tools for nuclear safety
Dec 2d Link teams Dec 2d Group A	9:00 - 11:10 - Post it session by sub-thematic area		
	Link MURAL 13	13	Development / National regulatory guidance for Decommissioning: Clearance of structures and materials
	Link MURAL 14	14	Development / National regulatory guidance for Decommissioning: Final site release
	Link MURAL 17	17	Development of radiological protection approaches and guidance for Decommissioning
	Link MURAL 16	16	Methods and tools for conventional industrial safety



ETSON

The European Technical Safety Organisations Network

Karine HERVIOU, chairwoman of the Technical Board on Reactor Safety (IRSN, France)



ETSON goals



Promote and develop best practices in nuclear safety



What is ETSON?

The European Technical Safety Organisations Network (ETSON) serves as a common platform to its member organisations

- to form a suitable forum for voluntary exchanges on safety analyses and R&D in the field of nuclear safety by sharing experiences and exchanging technical and scientific opinions,
- to contribute to fostering the convergence of technical nuclear safety practices within the European Union and beyond,
- to further the planning of nuclear safety research programmes and facilitate their implementation,
- to facilitate the application of the European directive on nuclear safety, and
- work together in safety assessment and research projects funded separately and organised by the respective members in dedicated consortia.

Each ETSON member organisation commits itself to a set of jointly agreed basic values.

ETSON members

Germany - GRS
Founding member since 2006
Independent organisation providing technical and scientific safety expertise to nuclear regulators worldwide. 450 employees.

Finland - VTT
Member since 2008
Independent institution conducting research on safety, waste management, etc. 2,900 employees including 200 people in nuclear activities.

Lithuania - LEI
Member since 2009
Expertise and research organisation in engineering, nuclear safety, hydrology, metrology, environmental protection. 300 employees.

Ukraine - SSTC NRS
Associated member since 2010
State scientific and technical organisation supporting nuclear and radiation safety regulation. 253 employees.

Russia - SEC NRS
Associated member since 2012
Scientific and technical support organisation on nuclear and radiation safety regulation. 350 employees.

Japan - NRA Secretariat
Associated member since 2014
Regulatory organisation 1,000 employees.

Belgium - Bel V
Founding member since 2006
Non-profit nuclear expertise institute for nuclear safety and radiation protection. 80 employees.

United Kingdom - Wood RSD
Member since 2015
Independent organisation providing the full range of scientific and technical regulatory support. Core TSO team of 50 augmented by more than 1,000 technical specialists.

France - IRSN
Founding member since 2006
Public institute providing research and expertise in nuclear safety and radiation protection (human and environmental). 1,800 employees.

Switzerland - PSI
Member since 2012
Largest research centre for natural and engineering sciences within Switzerland. Currently 1,800 employees, of which 250 work in the areas of nuclear safety, waste management and radiation protection.

Czech Republic - RC Rez
Member since 2008
Engineering and scientific research private company dedicated to nuclear technology in various domains and focused on sustainable energy. 900 employees.

Italy - ENEA
Member since 2016
Public non-profit organization providing research, technology innovation and advanced services in the energy sector. 2700 employees of which around 25% work in areas relevant to nuclear safety, waste management and radiation protection.

Slovenia - JSI
Member since 2013
Leading Slovenian scientific research institute, covering a broad spectrum of basic and applied research. 930 employees with 60 persons in nuclear activities.

Romania - RATEN ICN
Member since 2017
Research organization providing the scientific and technical support for the nuclear power program in Romania. 650 employees.

Hungary - MTA EK
Member since 2015
Leading Hungarian academic research institute in the field of nuclear safety and security, energy security and materials science. 380 employees with 150 persons in nuclear activities

Slovakia - VUJE
Member since 2010
Research institute on nuclear facilities in Slovakia. 800 employees with 200 people involved in TSO activities.

ETSON organisation



Technical Board on Reactor Safety

- Support harmonization of safety assessment principles and methodologies in Europe
- Promote a pertinent and robust safety assessment based on:
 - up-to-date scientific and technical knowledge and latest state-of-the-art methods
 - technical skills of the TSO experts, enhanced by collective expertise
- Identify generic safety issues





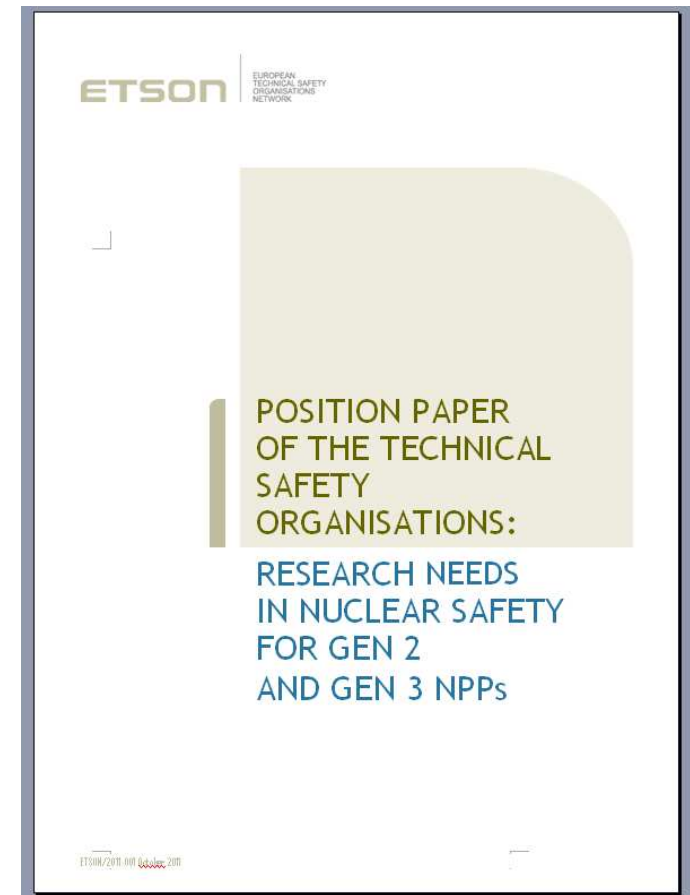
TBRS outcomes

- Safety assessment guides
- Technical workshops
 - *Aircraft crash...*
- Technical reports, position papers
 - *Comparison of rules-making and practices concerning RPV integrity assessment*
 - *How to observe safety culture and HOF issues?*
- Publications
 - *PSA Lessons Learned from viewpoint of the ETSON TSOs*

Knowledge: involvement in research

ETSON members have been involved in European research platforms since the very beginning:

- Active participation in SNETP governance bodies, and contribution to the research Agenda
- ETSON developed its own prioritization review and published a **position paper** in 2011 updated in 2018
- ETSON has been very active in NUGENIA, to influence innovation in favor of safety improvements
- Several TSOs are actively involved in other Platforms : nuclear waste management; radiation protection (SITEX, MELODI)





Experts' Group on Decommissioning

- Overview of LWR decommissioning programs in Europe within the next decades. Experience feedback from TSO's safety reviews on dismantling and decommissioning, approaches and findings
- Safety demonstration approach of LWRs throughout the decommissioning— How to deal with the post-operation phase? How to deal with mandatory periodic safety reviews and how to integrate them with the decommissioning authorization process?
- Dismantling strategies applicable to LWRs
- Assess how to gather experience feedback from decommissioning for R&D purposes – How to benefit from “end-of-life” tests. Provide an opportunity to have reliable and valuable data for R&D purpose



Experts' Group on Decommissioning

❑ Potential interaction with the ERG:

Share Project, LD-Safe project and Pleiades Project.

❑ Possible interaction with other international or European networking organizations:

IAEA International project on completion of decommissioning,

NEA/CDLM Expert Group on a Holistic Process for Decision Making on Decommissioning and Management of Complex Sites,

EC-H2020 R&D projects (on Platform based on emerging and interoperable applications for enhance decommissioning processes: PLEIADES – 2020-2023 and on Laser Dismantling Environmental and Safety Assessment: LD-Safe – 2020-2024)

*For harmonized and enhanced nuclear safety
assessment practices in Europe...*



*To download the (Technical) Safety Assessment Guides
visit: <http://www.etson.eu/reports-and-publications>*

Thank you for your attention!

Key radiological protection aspects of relevance to decommissioning: CRPPH perspectives

Thierry Schneider
CRPPH Chair / Director of CEPN

EU-H2020- SHARE-Decommissioning
On-line Workshop, December 1-3, 2020

Introduction

- Some challenges associated with decommissioning and legacy management (from EGLM report):
 - Regulatory frameworks for protecting people and the environment
 - Characterisation of circumstances
 - Societal aspects
 - Deciding upon and achieving end-states
 - Long-term protection values
- Recent developments from CRPPH to be considered:
 - Workshop on Stakeholder Involvement on Risk communication
 - Workshop on Optimisation: Rethinking the Art of Reasonable

Public Involvement in Nuclear Activities: An Ongoing Challenge for all Countries

- NEA 2nd Workshop on Stakeholder Involvement on Risk Communication held on **24-26 September in 2019**.



- Dialogues towards better understanding of radiological risks
- All NEA committees, media and public invited to get collective wisdom.

NEA 2nd Workshop on Stakeholder Involvement

Some main Findings from the Sessions (1)

- Risk communication is a multidimensional, socially and technically complex and resource-intensive activity
- Communicating risk: not a one-step process but a dynamic one:
 - Needs time to be established in a sustainable way
 - Have to evolve in an anticipated manner as society and stakeholders' needs and expectations evolve
- Dialogue with stakeholders should be institutionally required for regulators

NEA 2nd Workshop on Stakeholder Involvement

Some main Findings from the Sessions (2)

- NGOs and local stakeholders have specific local knowledge and understanding: essential information to regulatory authorities
- Local and long-term engagement is key for the trustworthiness
- “Safe” and “Risk” are linked concepts
 - Risk can be quantified,
 - But the acceptability of risk, and whether a situation is safe, is a subjective judgement.
- Discuss “Impact” and “Effects” rather than “Risk”

NEA 2nd Workshop on Stakeholder Involvement

Follow-up Items

- Important to engage with the young generation
- Build trust, local engagement
- Situation complexity requires big picture focus
- Experts need communication training
- Vital to have adequate resources support communications

NEA Workshop on Optimisation: Rethinking the Art of Reasonableness

13-15 January 2020, hosted by the Portuguese Institute of Oncology and the Centre for Nuclear Sciences and Technologies in Lisbon, Portugal

- **Objectives:**
 - Exchange of experiences and identification of approaches to better achieve protection outcomes.
 - Help the membership rationalise optimisation choices, and contribute to the evolution of the system of radiological protection.



NEA Workshop on Optimisation: Rethinking the Art of Reasonableness

Main findings (1)

- Reasonableness:
 - a case-specific
 - stakeholder dependent
 - circumstance driven judgement
 - informed by the scientific understanding of the risks involved,
 - and best built in an atmosphere of trust between the decider(s) and affected stakeholders brought together
 - in a fair and sustainable process
 - in which prevailing circumstances can be discussed and balanced

NEA Workshop on Optimisation: Rethinking the Art of Reasonableness

Main findings (2)

- Optimisation of exposure:
 - Not synonymous with the optimisation of radiological protection
 - Often led to a narrow focus on radiological protective measures, and to residual exposures that are minimised rather than optimised
- Optimisation of overall, well-being based protection:
 - Inherently broader, and focused on addressing all the relevant aspects of the big picture
 - Multi-dimensional, multi-disciplinary status of stakeholder well-being is the objective of optimisation in any circumstances

NEA Workshop on Optimisation: Rethinking the Art of Reasonableness

Main findings (3)

- To achieve an optimum state of well-being requires:
 - Development of a broad and common understanding of the prevailing circumstances and the hazards they present;
 - Assessment of radiological and other risk protection options and of the consequences each protective measure might cause;
 - Set of tools to compare and balance different risks and benefits;
 - Equitable and sustainable stakeholder involvement process.

Way forward

- Preparation of a workshop on the practical implementation of optimisation in decision-making processes
- Toward a single framework where:
 - all risks and benefits need consideration – holistic approach;
 - appropriate expertise is needed to address each risk and benefit;
 - stakeholder involvement in a trusted process is essential;
 - a judgmental compromise is needed to identify the best protection option. Tools are needed to compare various options and risks
- Engage the reflections for practical application in different domains and address the similarities and differences from circumstance to circumstance

Thank you for your attention



Decommissioning: Importance of societal aspects



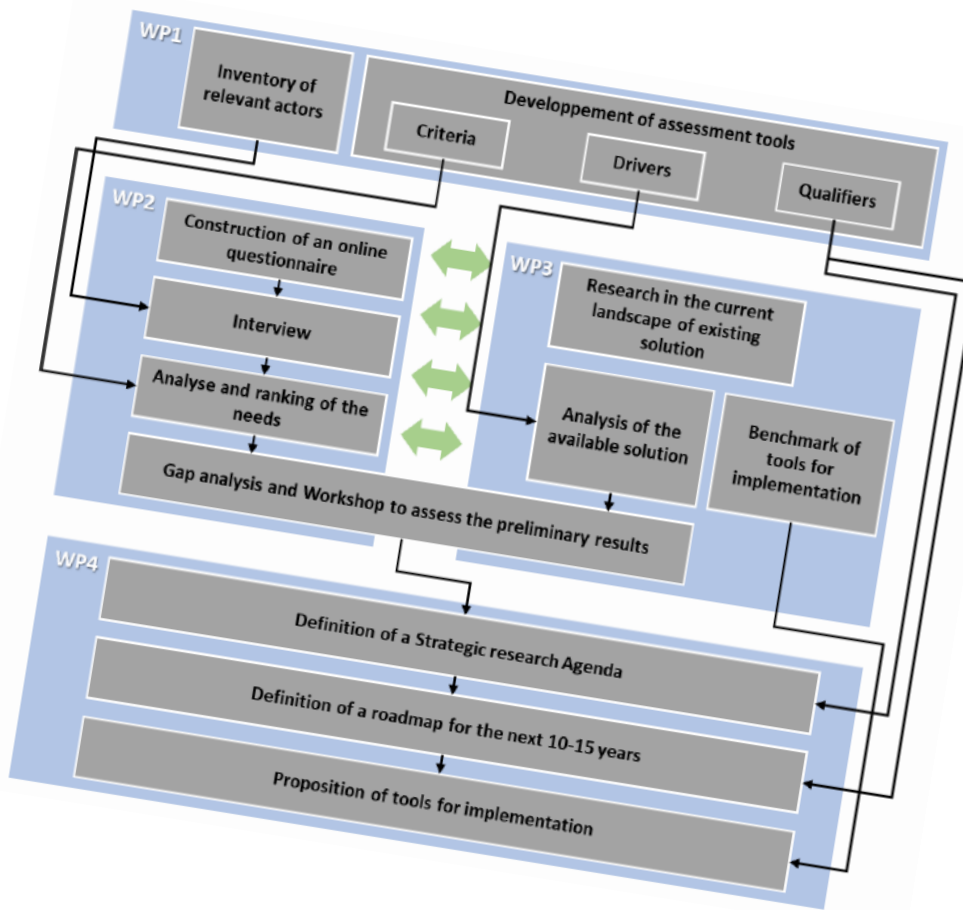
Tanja Perko

on behalf of the European Platform
for Social Sciences and Humanities research
relating to Ionising Radiation (SHARE)

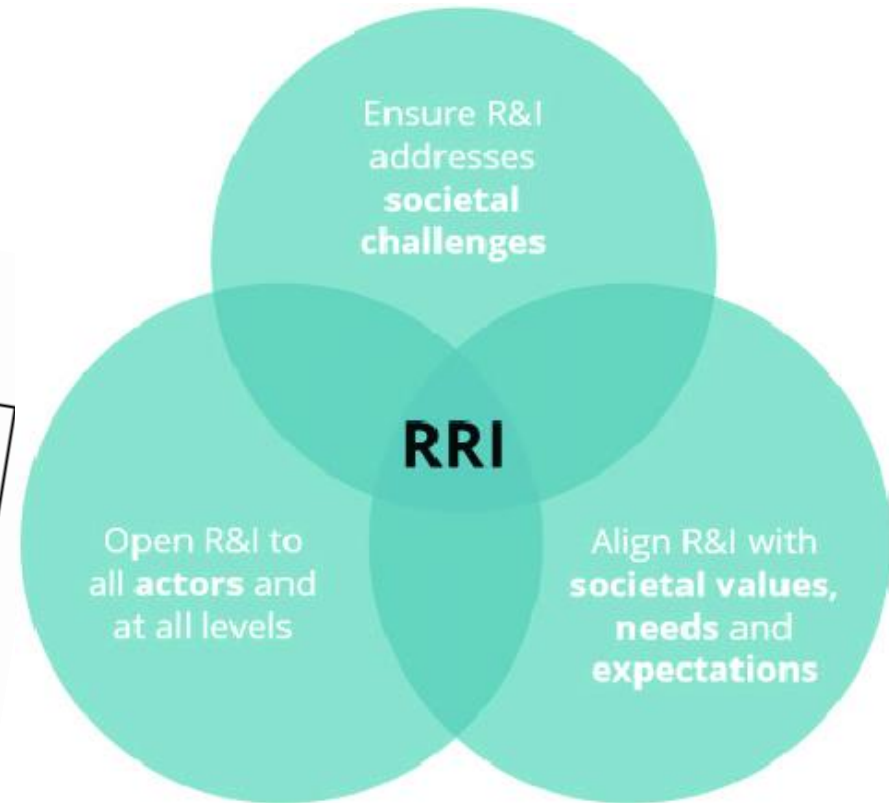
Why do we need to address societal aspects in the decommissioning research agenda?

- Decisions related to decommissioning projects **cannot be isolated from socio-political and economic environments.**
- Different societal groups may have an influence on decommissioning programmes, which may **affect their duration, cost and efficiency.**
- Due to the intensified societal and political demand on **transparency and risk communication, uncertainties concerning decommissioning** will be increasingly important.
- Experiences of different countries point out to the importance of paying attention to the societal aspects of decommissioning project planning and its implementation at an **early stage.**
- The need to **investigate opinion, attitudes, views and concerns related to decommissioning** is recognised in international guidelines and documents related to the nuclear fuel cycle.
- A strong need to develop **communication and stakeholder engagement guidelines** to support timely and cost-effective decommissioning projects.

SHARE decommissioning approach



European approach

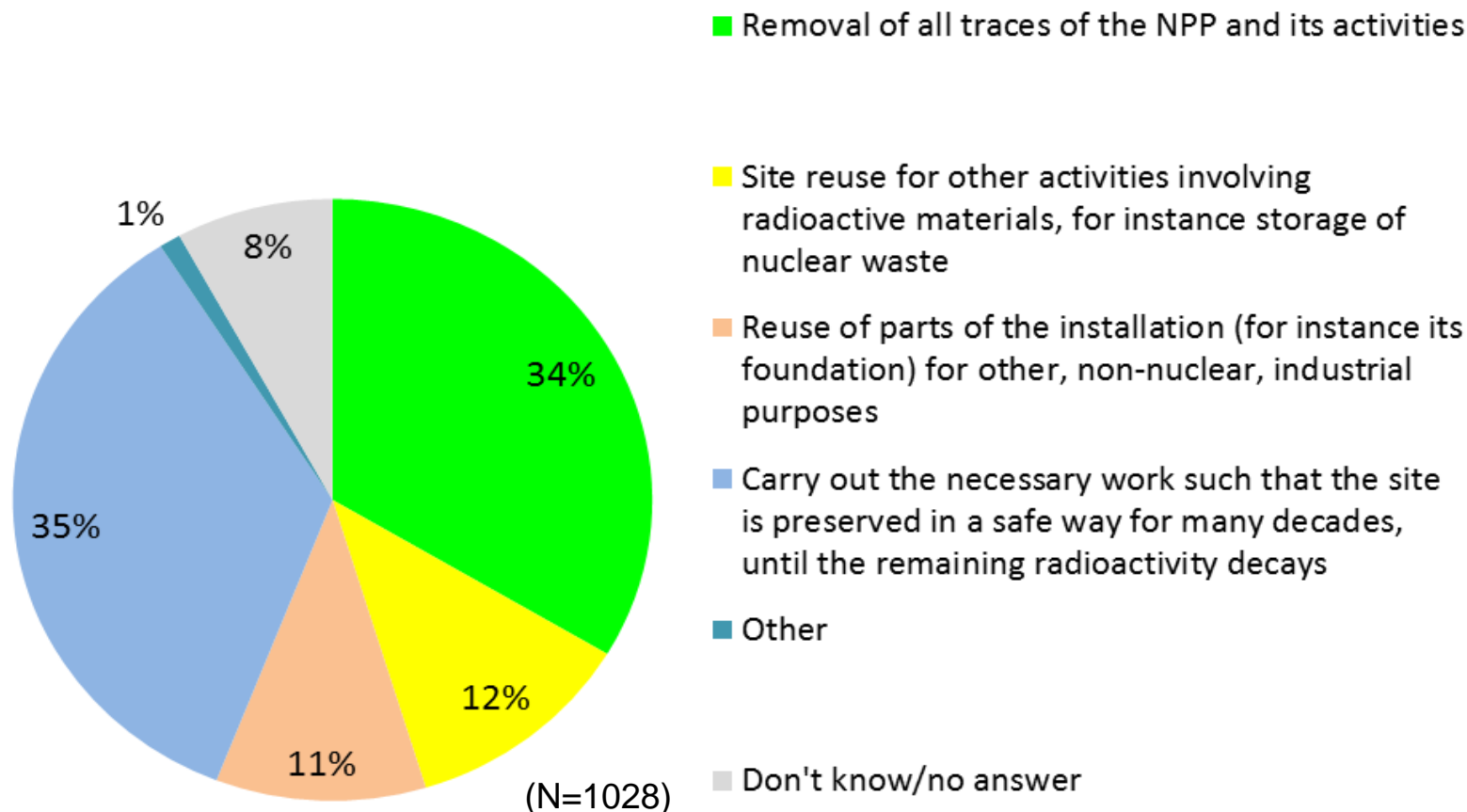


Institutional changes
towards **responsible**
research and innovation

Achievements in Horizon 2020
and recommendations on the way forward

Decommissioning for & with society

In your opinion, what should happen with a nuclear power plant after it is shut down?



Source: SCK CEN Barometer (2015)

Social science, those disciplines that deal with **human action in its social, political and cultural aspects**, can contribute significantly and meaningfully to the decommissioning projects.



SSH researcher preparing for measurement of emotions due to **communication of uncertainties** related to decommissioning
Method: embedded experiment in CAPI



Decommissioning related **research** is in our SSH strategic research agenda

Is societal research in your agenda?

RL1 [..] Factors influencing perceptions, expectations & behaviours

regarding radiological protection and applications of ionising radiation

RL2 Holistic approaches to governance
of ionising radiation exposure situations

RL3 Responsible Research and Innovation
in radiological protection and applications of ionising radiation

RL4 Stakeholder engagement practices
in relation to radiological protection and applications of ionising radiation

RL5 Risk and health communication

RL6 Radiological protection culture

Some SSH research topics related to decommissioning

- To investigate public and stakeholder expectations, views and concerns regarding different phases in the decommissioning of reactor sites, using information from both potential sites and real situations.
- To analyse those factors influencing perception and acceptance of decommissioning projects.
- To identify major societal constraints and uncertainties that the organisation responsible for decommissioning may encounter when implementing decommissioning, along with potential approaches to addressing the constraints.
- To propose innovative approaches to public involvement and communication strategy for future timely and cost-effective decommissioning projects.

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Social sciences and Humanities in ionising radiation REsearch

European Platform for Social Sciences and Humanities research relating to Ionising Radiation



Mission: to stimulate and facilitate the integration of social sciences and humanities in research, practice and policy related to ionising radiation, including, for example: **dismantling and decommissioning, site remediation, radioactive waste management**, nuclear energy production, safety-security, fuel cycle, emergency preparedness and response, medical applications, NORM, radiation protection, etc.

<https://www.ssh-share.eu>

Some references of our members relevant for decommissioning

- Perko, T., Monken-Fernandes, H., Martell, M., Zeleznik, N., & O'Sullivan, P. (2017). [Societal Constraints Related to Environmental Remediation and Decommissioning Programmes](#). Journal of Environmental Radioactivity, published on line doi: 10.1016/j.jenvrad.2017.06.014. doi: 10.1016/j.jenvrad.2017.06.014
- Coppens, Tom; Van Dooren, Wouter; Thijssen, Peter (2018). [Public opposition and the neighbourhood effect: how social interaction explains protest against a large infrastructure project](#), Land use policy - ISSN 0264-8377 - 79, 633-640
- Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika. (ISBN 978-83-231-4284-3)
- Durdovic, M., J. Mlynar. 2019. [“Energy and the public. How societies communicate and decide about energy issues?”](#) Pp. 96–138 in Stankiewicz, P. et al. Integrating Social Sciences and Humanities into Teaching about Energy: TEACHENER EDUKIT. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika. (ISBN 978-83-231-4284-3).
- Bergmans, A. & Verhaegen, M. (2016). [How stakeholder and citizen participation influences evaluation criteria for megaprojects](#). The case of the Belgian LILW repository. In: Lethonen, M., Joly, P-B., Aparicio, L. (eds.) Socioeconomic evaluation of megaprojects. Dealing with uncertainties. London/New York: Routledge - Earthscan, 111-133. ISBN 9781138656116

Litmanen, T., & Kojo, M. (2011). **Not excluding nuclear power: the dynamics and stability of nuclear power policy arrangements in Finland**. Journal of Integrative Environmental Sciences, 8(3), 171-194.

Mihók, P. 2020. **Understanding political institutional support for completing the Mochovce nuclear power plant**. In: Progress in Nuclear Energy 120(1).

Mihók, P. 2013. **Compensations and community benefits for municipalities located near nuclear facilities in Slovakia: historical overview and stakeholders views in 2013**. IPPA project Deliverable no. 4.4, Euratom Contract no. FP7-269849.

Mihók, P. 2011. **Risk communication and knowledge management in a nuclear sector: a case study about the experience of Slovak non-governmental organisations**. In: Knowledge Management Research and Practice 9 (3), 228–235.

Oughton, D., Forsberg, E.-M., Bay, I., Kaiser, M., & Howard, B. (2004). **An ethical dimension to sustainable restoration and long-term management of contaminated areas**. Journal of Environmental Radioactivity, 74(1–3), 171-183. doi:10.1016/j.jenvrad.2004.01.009

- Latré, E., Perko, T., & Thijssen, P. (2017). [Public opinion change after the Fukushima nuclear accident: the role of national context revisited](#). *Energy policy*, ISSN 0301-4215-104, 124-133
- Latré, E., Thijssen, P., & Perko, T. (2019). [The party politics of nuclear energy: Party cues and public opinion regarding nuclear energy in Belgium](#). *Energy Research & Social Science*(47), 192-201.
- Turcanu, C., Perko, T., & Schröder, J. (2011). The SCK•CEN Barometer 2011 - [Perception and attitudes towards nuclear technologies](#) in the Belgian population. BLG-1082
- Molyneux-Hodgson S, Hietala M (2016). [Socio-technical Imaginations of Nuclear Waste Disposal in UK and Finland](#). In Hindmarsh R, Priestley R (Eds.) *The Fukushima Effect: a new geopolitical terrain*, Routledge, 141-161.
- Perko, T., Turcanu, C., & Carlé, B. (2012). [Media Reporting of Nuclear Emergencies: The Effects of Transparent Communication in a Minor Nuclear Event](#). *Journal of Contingencies and Crisis Management*, 20, 52-56.
- Durdovic, M., J. Mlynar. 2019. [“Philosophy and Ethics of Energy Development. What are the most general questions concerning our attitudes to energy technologies?”](#) Pp. 53–95 in Stankiewicz, P. et al. *Integrating Social Sciences and Humanities into Teaching about Energy: TEACHER EDUKIT*.



Social sciences and Humanities in ionising radiation REsearch



European Platform for Social Sciences and Humanities research relating to Ionising Radiation



**is open to contribute to:
strategic research agenda, roadmap and conduct research
in the field of decommissioning**

<https://www.ssh-share.eu>