

INTERGENERATIONAL STEWARDSHIP CULTURE

10 April, 2024 • Niels Henrik Hooge, NTW, and
Gabriele Mraz, NTW



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AGENDA FOR THIS SESSION

1. Input and inspiration

Presentation on CS expert's views on intergenerational stewardship and of some main arguments developed in several EURAD discussions

Exhibition of drawings from the last ICS workshop (in the room, and online available via

https://drive.google.com/drive/folders/1-AjZbQRBHxCcurGFSdPIPf9kvh_hlPh?usp=sharing)

2. Time for reflection and writing down:

What aspects you consider the most important to focus on?

3. Creating a clustered picture with all cards on the klaxoon-screen

4. Discussing and reflecting this picture



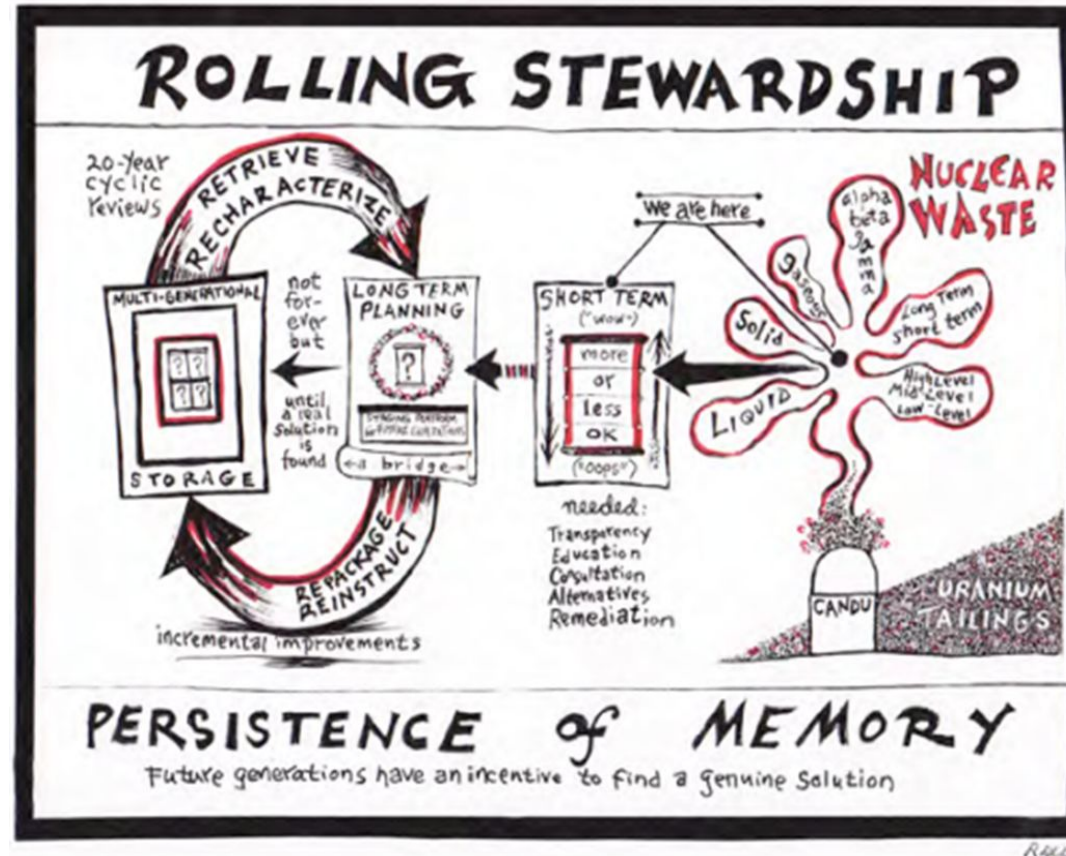
OVERVIEW OF THE PRESENTATION

1. Definition of intergenerational stewardship culture and short historical overview of long-term and rolling stewardship (1-8).
2. Legal implementation of long-term and rolling stewardship (1-2).
3. Arguments for and against rolling stewardship (1-2).
4. Proposals for possible way forward in regard to intergenerational stewardship culture (1/1)

DEFINITION OF INTERGENERATIONAL STEWARDSHIP CULTURE 1/8

- **INTERGENERATIONAL STEWARDSHIP CULTURE** encompasses rolling stewardship and long-term stewardship.
- Rolling stewardship signifies an **intergenerational management concept** requiring monitoring and maintenance of the RW for an in principle an **indefinite period of time**, with responsibility being passed on from one generation to the next, preserving the possibility of **retrieval, recharacterization and repackaging** of the RW.
- It also requires a **mechanism for reinstructing the next generation**, providing detailed information on the RW and the associated hazards.
- This process could last **until a final safe solution is found** which would no longer require constant care and memory.

DEFINITION OF INTERGENERATIONAL STEWARDSHIP CULTURE 2/8



[Gordon Edwards 2013](#)

DEFINITION OF INTERGENERATIONAL STEWARDSHIP CULTURE 3/8

The Concept of Abandonment

1. Humans have never permanently disposed of anything.
2. Assumes a permanent solution to waste problem exists.
3. Monitoring the waste ceases after abandonment.
4. Retrieval is difficult or impossible.
5. Containers will inevitably disintegrate.
6. If leakage occurs timely corrective action is not likely.
7. Abandonment will eventually result in amnesia.
8. Difficulty in communicating to unknown future societies.
9. No intention to truly solve the problem of nuclear waste.

The Concept of Rolling Stewardship

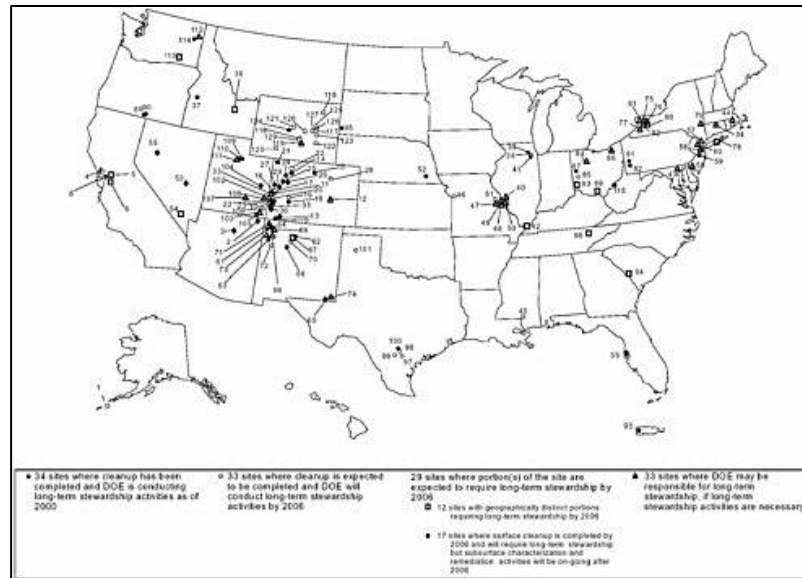
1. Humans can contain waste securely for decades at a time.
2. Recognizes a solution to the problem does not yet exist.
3. Continual monitoring of waste is essential.
4. Retrieval is anticipated and actively planned for.
5. Periodic repackaging is an integral part of the process.
6. If leakage occurs timely corrective action will be taken.
7. Rolling Stewardship is based on persistence of memory.
8. Information is readily transmitted to the next generation.
9. Ongoing reminder that the problem remains to be solved.

[Gordon Edwards 2013](#)

DEFINITION OF INTERGENERATIONAL STEWARDSHIP CULTURE 4/8

- THE BASIS OF ROLLING STEWARDSHIP IS LONG-TERM STEWARDSHIP (LTS).
- LTS is necessitated by the **more than 140 sites** in the United States heavily contaminated by radioactive substances (*cf. the map*).

Map of sites anticipated to require LTS by [DOE](#)



DEFINITION OF INTERGENERATIONAL STEWARDSHIP CULTURE 5/8

- The afore-mentioned sites are part of the legacy of nuclear-weapons production during the Manhattan Project and the Cold War.
- They continue to be dangerous to the public health and the environment and require management into an indefinite future.
- The U.S. Department of Energy (DOE) dubs its activities beyond closure of contaminated sites long-term stewardship.
- **DOE's DEFINITION OF LTS**: *The physical and institutional controls, and other mechanisms needed to ensure protection of people and the environment at sites where plans have been developed to complete clean-up after site closure (e.g., landfill closures, remedial actions, removal actions, and facility stabilisation). This includes land-use controls, monitoring, maintenance, and information management.*

DEFINITION OF INTERGENERATIONAL STEWARDSHIP CULTURE 6/8

- **STRONG AND WEAK VERSIONS OF ROLLING STEWARDSHIP:**
- One could ask where LTS **ends** and rolling stewardship **begins**.
- Whether LTS constitutes a weak version of rolling stewardship, could be a question of terminology, but first and foremost **delineation of the two concepts**.
- Apart from the fact that LTS focuses on radioactive contamination and rolling stewardship mainly pertains to geological disposal of RW, there appears to be **more similarities than differences** between the two (*see figure on the next slide*).

DEFINITION OF INTERGENERATIONAL STEWARDSHIP CULTURE 7/8

Weak and strong versions of rolling stewardship

Parameters	Weak version	Strong version
Time horizon	Few human generations	Indefinite
Scope	Final disposal of RW	Final disposal of all toxic, long-lived waste
Start-up	After closure of DGR	Before and after closure
Character	Reactive (mitigation)	Preventative
Continuity	Broken	Unbroken
Framework	Stop and go policies	Established institutional mechanisms
Normativity (statutory)	Allowed by law	Required by law
Safety	Not part of safeguards	Part of safeguards
Stakeholder involvement	No or little	Comprehensive
T&PP	Decide, announce, defend	Established institutional mechanisms
Funding	By subsequent generations	By the waste-producing generation(s)
Terminology	Semantically not different from LTS	Semantically very different from LTS

DEFINITION OF INTERGENERATIONAL STEWARDSHIP CULTURE 8/8

- **FOUR PILLARS IN ALL VERSIONS OF ROLLING STEWARDSHIP:**

- I. In spite of the long time-horizon, **continuous KNOWLEDGE MANAGEMENT**, including memory keeping.
- II. Unbroken **possibility of REVERSIBILITY** of all crucial decisions in RWM in all phases of the disposal process, including **post-closure** of GDR in the strong version of RS.
- III. Unbroken **possibility of RETRIVABILITY and RECOVERABILITY** of the **radioactive waste**, including during **post-closure** of GDR in the disposal process in the strong version of RS.
- IV. Continuous **ACCESS TO RESOURCES** for the rolling stewardship, including for all stakeholders and CS.

LEGAL IMPLEMENTATION OF INTERGENERATIONAL STEWARDSHIP CULTURE 1/2

- ROLLING STEWARDSHIP IN CURRENT NATIONAL, EUROPEAN AND INTERNATIONAL LAW:
- **Very little implementation** of any strong version of rolling stewardship in current national, European and international law.
- However, by some rolling stewardship perceived as a succession of stewards tending to needs from one generation after another, the [U.S. DOE's Site Transition Framework](#) has been seen as a step in this direction, because it identifies documents that should be passed to new site owners or stewards.
- However, the Framework only ensures that a document is passed, **not that it contains what it is supposed to**, or that the relevant underlying information is available and accessible.

LEGAL IMPLEMENTATION OF INTERGENERATIONAL STEWARDSHIP CULTURE 2/2

- Lack of implementation is not the case with LTS, especially in regard to U.S. national law and parts of European law.
- **IN THE U.S.**, on a site-specific basis, where residual hazards remain after nuclear clean-up activities, management of any associated LTS is conducted in accordance with DOE Orders and guidance, Federal, State and local environmental and resource protection laws, and site-specific agreements between DOE and U.S. State and Federal environmental regulators.
- **IN EUROPEAN LAW**, LTS is not addressed because of the legacy of nuclear-weapons production, but is necessitated by the many Uranium Mine and Mill Tailings (UMMT) sites located in 12 of the EU MS. Subsequent EU Commission reports have concluded that there is a need for an effective set of measures for coordinated institutional control of UMMT, which only LTS can provide.

ARGUMENTS FOR AND AGAINST ROLLING STEWARDSHIP 1/2

- **ARGUMENTS SUPPORTING ROLLING STEWARDSHIP:**
- **THE MAIN ARGUMENT:** A strong emphasis on safety under all conditions as the primary goal of RWM and final disposal of RW, which should not be diminished, offset or compromised.
- Hence, rolling stewardship is the best manifestation of the precautionary principle.
- As an intergenerational management concept dealing with uncertainty, rolling stewardship sets out to define an “**intergenerational common good**” in order to address the uncertainties triggered by the extremely long time-horizons of the issues that it deals with.
- It represents a strong manifestation of both the **responsibility principle** and **intergenerational justice**.

ARGUMENTS FOR AND AGAINST ROLLING STEWARDSHIP 2/2

- **ARGUMENTS AGAINST ROLLING STEWARDSHIP:**
- **THE MAIN ARGUMENT:** Its **perceived lack of practicality**, because it is doubtful whether it can be sustained for tens or hundreds of thousands of years.
- Due to its **high economic costs**, it could also be argued that it puts undue and disproportional burdens on future generations, thus **violating the polluter pays principle**.
- Rolling stewardship also raises some fundamental questions regarding the long-standing discussion on **whether obligations to future generations exist** and if so, how far they go, whether a comparative, egalitarian or absolute standard should be applied, and how risks and **uncertainties** should be dealt with.

PROPOSALS FOR A POSSIBLE WAY FORWARD 1/1

1. Establish that intergenerational stewardship culture is **not an “alternative” notion**.
2. Show that it is a **dynamic concept** that could manifest itself in **different versions** (not a “one size fits all”).
3. Discuss openly its **pros and cons**.
4. Demonstrate its **close affinity with LTS**, which has already been implemented in particular U.S. national and also in European law.
5. Promote **research on not only rolling stewardship, but also on LTS**, which appears already to have the interest of the European Commission, and by promoting research on LTS try to increase the interest for rolling stewardship.
6. Try to integrate research on intergenerational stewardship culture in the **EURAD project**.



INTERGENERATIONAL STEWARDSHIP CULTURE IN EURAD DISCUSSIONS – SOME MAIN ARGUMENTS/OPEN QUESTIONS

- Is the post-closure phase even in the scope of EURAD?
- Is it useful to develop a “Plan B” in parallel? (Plan A = DGR, passive safety)
- What is acceptable for future generations? What is reasonable (f.e. save some budget?)
- Can research on rolling stewardship/intergenerational stewardship culture be integrated into EURAD-2?
- ROUTES Recommendation StSt-2: Identification of challenges related to long-term / rolling stewardship

AGENDA FOR THIS SESSION – NEXT STEPS

1. ✓ Input and inspiration

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2. Time for reflection and writing down (10 min): What aspects you consider the most important to focus on?

Choose 3 aspects and write them on a card (in the room index cards are available, online you can write in the chat, or you can use klaxoon directly: <https://app.klaxoon.com/participate/board/GDWXADE>; for this you will have to register under this link for this programme, it is for free)

Please keep description of the aspect very brief, only a few words

3. Creating a clustered picture with all cards on the klaxoon-screen

4. Discussing and reflecting this picture