

HARPERS WP4 CIRCULAR ECONOMY WORKSHOP - ONLINE SESSION 1

22nd February 2023 – 10.00-12.00 CET ([TEAMS link to Session 2](#))

INTRODUCTION AND SCOPE OF THE WORKSHOP

Circular Economy concepts and principles aim to minimise waste and make more efficient use of available resources through, e.g., design considerations, careful operations and by recovering and regenerating products at the end of a facility lifecycle.

Efficient and sustainable waste management focusing on waste reduction, reuse and recycling would ensure that valuable materials are reinjected into the market. The circular approach will result in a more efficient and effective decommissioning in terms of environmental impacts and primary resource consumption.

Even if existing facilities were generally designed for a linear lifecycle, there is a great potential to align their approach to decommissioning with circularity principles.

In this context, differences in regulatory requirements translate into different prerequisites for reaching circularity. This includes for example, different approaches and criteria for clearance, and whether buildings and other structures can be repurposed or must be removed.

HARPERS Work Package 4 aims to identify the most important conditions and opportunities for establishing a Circular Economy in radioactive waste management activities across Europe. The outcomes will provide Member States, the European Commission and other interested Stakeholders with guidance on implementing Circular Economy principles and facilitating the safe reuse and recycling of materials.

In the first phase (Phase 1a) of the project, the objective of WP4 is to identify and prioritise the needs and opportunities for Circular Economy considerations, to define themes to be proposed for deeper analysis in Phase 2.

A detailed list of topics (challenges/needs - related to harmonisation of practices, regulations and standards for Circular Economy) has been developed within WP4, based on the input of the different partners (representing different types of organisations) and on the review conducted on the existing literatures (including SRA, position papers and past and on-going projects). The topics were clustered into 7 main categories as reported in **ANNEX 1**.

Two online workshops have been planned to present and discuss the technical topics with the interested external Stakeholders. Each workshop will include technical presentations from HARPERS partners and participants engagement through online polls and Q&A/open discussion session (see the Agenda in **ANNEX 2**).

Slido tool will be used during the event and the instruction on how to use it is reported in the **ANNEX 3**.

The feedback and input received from the participants will be further analysed by the HARPERS WP4 partners and will feed into the prioritisation of topics for Phase 2 of the project.

ANNEX 1 - List of Topics (challenges/needs) grouped into 7 main Categories

CATEGORY	TOPIC	WHAT (Challenge/Need)	WHY
INVENTORY	1	Common waste and radioactive materials recyclable or reusable	Surveying to find common issues for harmonised approach
	2	Classification and management of hazardous waste - link with European Green Deal (Circular Economy Action Plan) and the Waste Regulation	Maintain clean recycling streams and increase the confidence in using secondary raw materials
	3	Harmonised system to classify waste to promote circularity Inventory management as a prerequisite for circular economy	Optimising the routing of the material towards re-use and recycling will minimise the radioactive waste inventory and preserve natural resources as well as reduce the environmental impact
RECYCLING AND REUSE	1	Availability of technology and facilities to process waste / Benchmarking of technology for recycling and reuse	Create a system for by-products and raw materials exchange between nuclear facilities' waste generators and potential end-users (industrial symbiosis approach).
	2	Available technologies and circular economy approaches already implemented in non-nuclear field	Gain information and lessons learned for a more sustainable decommissioning
	3	R&D for new technologies for recovery, recycling and reusing of materials	Increase efficiency / reduce cost
	5	Reuse of structure, systems and components (including reuse of the site)	Minimise waste and recover and reuse valuable materials
	6	Create markets for recycled materials / Enable routes for cleared wastes (e.g. metals)	Further promote recycling of materials and reduce costs
	7	Compliance of the recycling option with the applicable regulation (including clearance and specific criteria for recycling)	Improve environmental sustainability (preserve natural resources).
	8	Identification of criteria for material reusing (e.g. quality, durability, ...) - focused on material physico-chemical characteristics	Promote material reusing and reduce generation of waste
	9	Recycled materials traceability	Harmonised systems to track and manage information on recycled materials

CATEGORY	TOPIC	WHAT (Challenge/Need)	WHY
	10	Quality assessment of recycled materials (in comparison with a new one)	Promote use and create market for recycled materials
	11	Safety and ALARA issues for recycling	
	12	Costs and time needed for implementation of recycling solutions	
	13	Public expectation / constraint, transparency and engagement around reusing and recycling	Raising public awareness on circular economy issues + societal engagement to enable recycling
TECHNOLOGIES FOR MATERIAL AND WASTE TREATMENT	1	Benchmarking of technologies and facilities for radioactive material and waste treatment	Create a widespread and structured system of technologies/facilities to be more effective
	2	Mobile system	Reduce environmental impact and enable reuse and recycling
	3	Optimisation of treatment technologies (e.g. decontamination)	Minimise waste and facilitate reuse and recycling
CLEARANCE	1	Free release of waste and materials arising from decommissioning (framework for clearance and regulatory discrepancies - Harmonised regulations to enable recycling)	Minimise waste to be disposed of. Optimising the routing of the material towards re-use and recycling will minimise the radioactive waste inventory and preserve natural resources as well as reduce the environmental impact
	2	Unconditional clearance: use of general limits Conditional clearance: no international guidance but only national and site-specific	Promote reuse (for free release) Promote recycling in nuclear and non-nuclear field for conditional clearance
	3	Clearance of very lightly contaminated liquids	
CHARACTERISATION	1	Facilities for free release	Enhance flexibility on characterisation approaches to be used for material clearance
	2	Conservative clearance standards can still be a challenge	
	3	Regulatory requirements could consider different approaches: e.g statistical approaches	

CATEGORY	TOPIC	WHAT (Challenge/Need)	WHY
MULTI CRITERIA ANALYSIS OF STRATEGIES	1	Digital tools and advanced technologies to support decision making processes and circular economy principles	Facilitate quick decision making and optimise decommissioning, waste management and radiation protection.
	2	Socio-economical assessments of the different strategies envisaged (linear vs circular)	Cost-benefit analysis to evaluate the option of reuse and recycle and facilitate decision making
	3	Multicriteria decision making for final end-state	
TRANSVERSAL	1	Sharing good practices	Crosscutting to all the previous topics
	2	Regulatory/Public engagement	
	3	Knowledge Management and Training	
	4	Various Stakeholder integration	

ANNEX 2 – HARPERS WP4 online Workshop Agenda

- 10.00-10.05** **Workshop Opening**
WP4 Leader (F. Pancotti - SOGIN)
- 10.05-10.15** **General introduction HARPERS Project**
Project Coordinator (R. Szőke - IFE)
- 10.15-10.30** **Participants Self Introduction**
Moderator: F. Pancotti (SOGIN)
- 10.30-10.50** **Part 1 _ Circular Economy Introduction + Slido Polls**
F. Pancotti (SOGIN)
- 10.50-11.10** **Q&A - Open Discussion**
Moderator: F. Pancotti (SOGIN)
Support: R. Sciacqua (SOGIN) – A. Bruno (AMPHOS 21) – L. Vaillant (CEPN)
- 11.10-11.15** **Break**
- 11.15-11.35** **Part 2 _ Circular Economy Topic Description + Slido Polls**
F. Pancotti (SOGIN)
- 11.35-11.55** **Q&A - Open Discussion**
Moderator: F. Pancotti (SOGIN)
Support: R. Sciacqua (SOGIN) – A. Bruno (AMPHOS 21) – L. Vaillant (CEPN)
- 11.55-12.00** **Closure of the Workshop**
F. Pancotti (SOGIN)

ANNEX 3 – Instruction on how to use Slido

Slido is a simple tool that allows you to easily submit your questions and express your opinion by voting on live polls.

A specific event “#XYZX XYZ” will be prepared for the workshop.

On-line participants can join Slido by scanning a QR code or by typing the event code:

1. Take out your smartphone / Tablet / PC
2. Scan the QR code or open the web browser and go to www.slido.com and enter the event code

During the event participants can:

Vote on-line polls (“Polls”)

- Few polls have been prepared and they will be launched by the speaker during the presentation
- Participants can vote the Slido polls through their own devices (“Polls” function)

The poll results will be displayed in real time on the speaker’s screen

Ask questions (“Q&A”)

- Participants can ask questions, add comments or suggestions in any moment during the event with Slido app (“Q&A” function) or by using the “chat” function on MS TEAMS
- Participants can vote the questions/comments they consider most relevant (by clicking the thumb up button) to highlight the most popular ones and drive the following discussion
- Questions/comments will be collected and displayed on the speaker’s screen during the specific Q&A-Open Discussion Sessions

