

SHARE

H2020 NFRP-2018 CSA: Coordination and Support Action

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D2.1: Draft Questionnaire

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V1	02.12.2019	Emilio Garci Neri [ENRESA]	Writing and structuration of th deliverable
V2	05.12.2019	Pierre JOLY [EI]	Review and finalisation of the deliverable

Abstract

This deliverable presents a first draft questionnaire that will be submitted for comment and approval to the ERP of the project in order to build the final version that will be use in our inquiry.

Deliverable content

1.1 Structuration of the questionnaire:

The questionnaire is composed of two main parts:

- A first one identifying the inquired stakeholder profile and explaining the survey objectives as well as giving instruction on how to complete the survey.
- A second one consisting in the core questionnaire

1.2 Questionnaire

Survey of Decommissioning Research Needs

STAKEHOLDER PROFILE

TO BE ADAPTED ACCORDING TO WP1 OUTPUT

Respondent Name: _____

Organization Name: _____

Discipline: _____ [Will include pull-down menu to include the following items: program management, licensing, radiation protection, waste management, research, human resource management, financial management, and “other”]

Type of Organization: _____ [Will include pull-down menu to include the following items: power reactor operator, research reactor operator, waste site operator, service provider, R&D, regulator/government organization, and “other”]

Decommissioning Experience Level: _____ [Will include pull-down menu to include the following items: none, planning, project execution on going, completed/nearly completed project(s), and not applicable]

Survey Objective

In the frame of the EU Project SHARE (Stakeholder-based Analysis of Research for Decommissioning) an inclusive roadmap for near future research will be generated with the conjoint input of the stakeholder community. This survey is a first step to establish a strategic research agenda (SRA) to define research and innovation priorities and develop an inclusive roadmap for joint near future decommissioning research for stakeholders to improve safety, reduce costs and minimize environmental impact in the decommissioning of nuclear facilities.

Various decommissioning methodologies, technologies and managements tools are at the level of maturity. However, there are still many challenges ahead. Research and innovation activities, addressing policy, economic and social issues at the same time, can play an essential role in solving them. We want

to figure out where there are gaps in our knowledge and experience, and which are the terrains we need to investigate and develop in priority.

The goal of the roadmap is to organise the topics identified in the SRA (Strategic Research Agenda) in such a way that those relevant for joint activities are addressed in time according to the requirements, showing how topics should be implemented and deployed.

The identification of the most promising research and innovation topics will support EU and stakeholders in their understanding and evaluation of the strategic areas to be recommended for financial support in the next decades.

Survey Instructions

The SHARE project has identified major areas and essential topics in the field. We ask you to assess your needs for enhancement of the current situation for each topic in function of importance and urgency using a rating scale from 1 to 5 with 5 expressing the highest need.

Please add non-identified topics in the different areas and rate them similarly in function of importance and urgency with the same rating scale.

No rating is required when you judge the topic not relevant for your needs.

QUESTIONNAIRE

General overview

Decommissioning related fields for which innovation may be enhanced

1. Could you please weigh the need for innovation in decommissioning in the fields of:

- Safety and radiological protection development
- Technology improvement
- Cost management and reduction
- Stakeholders understanding and engagement

Comments on need for innovation by fields:

2. Which are the main drivers in your decommissioning projects?

- Safety
- Environmental aspects
- Time
- Cost
- Materials management
- Public acceptance

Comments on Drivers for decommissioning:

Safety and Radiological Protection aspects

Could you please rate the need for innovation in relation to the following points?

3. International harmonization of safety standards and safety approaches for D&D
4. Development for National regulatory guidance for D&D
 - a) Preparatory activities
 - b) Dismantling
 - c) Clearance of structures and materials
 - d) Final site release
5. Methods and tools for safety culture and quality assurance
6. Methods and tools for industrial safety
7. Development of radiological protection approaches and guidance for D&D

Comments on Safety and Radiological Protection Topical Area:

Cost

Could you please rate the need for innovation in relation to the following points?

8. Methodologies and guidance for cost estimation
9. Software tools for cost estimation
10. Development of mechanism and methodologies for cost benchmarking

Comments on Cost Topical Area:

Project Planning and Management

Could you please rate the need for innovation in relation to the following points?

11. Methodologies and software tools for comparison of alternative D&D strategies
12. Methodologies for risk assessment for decommissioning planning
13. Methodologies and software tools for project management and performance monitoring
14. Tools for work data collection in the field
15. Applicability and digital transformation to D&D (4D, big data, business intelligence)
16. Methodologies and procedures for D&D
17. Supply chain management
18. Procurement models for D&D
19. Methods and tools for communication (public, communication)

Comments on Project Planning and Management Topical Area:

Workforce for decommissioning

Could you please rate the need for innovation in relation to the following points?

20. Organizational model (staff and resources)
21. Methods and software tools for knowledge management
22. General education for decommissioning
23. Methodologies and tools for task specific training

Comments on Workforce for decommissioning Topical Area:

Characterization

Could you please rate the need for innovation in relation to the following points?

24. Guidance for historical site assessment
25. Technology for characterization (radiological inventory)
26. Characterization of irradiated components and areas
 - a. Metal

- b. Concrete
 - c. Graphite
27. Characterization of contaminated areas
- a) In depth contaminated concrete
 - b) Soils
28. Upgraded technologies for hard to measure areas (high walls, embedded components...)
29. Standards for statistical sampling
30. 3D Modelling and geostatistical software applications
31. Sample analysis technologies
32. Upgraded sensing technologies for in situ characterization
33. Alpha and beta nondestructive measurements

Comments on Characterization:

Site preparatory activities

Could you please rate the need for innovation in relation to the following points?

- 34. Adaption of auxiliary systems (ventilation, electrical, monitoring, etc.)
- 35. Preparation of infrastructures and building for decommissioning (storages, capabilities for material sorting and treatment...)
- 36. Systems decontamination (internal)
- 37. On site Spent fuel management

Comments on Site preparatory activities Topical Area:

Dismantlement.

Could you please rate the need for innovation in relation to the following points?

Technologies and methods related to:

- 38. Segmentation of large irradiated metal components (reactor vessel internals, etc.)
- 39. Handling, segregation and loading of segmented elements and secondary waste
- 40. Segmentation of large surface-contaminated components
- 41. Dismantling of surface-contaminated piping and small components
- 42. Segmentation of interior concrete structures (e.g., bioshield)
- 43. Building surface in situ decontamination (concrete)
- 44. Removal of radiological embedded elements
- 45. Demolition of large, reinforced concrete structures
- 46. Robotics and remoted control tools for dismantling

Comments on Dismantlement Topical Area:

Environmental remediation and Site Release

Could you please rate the need for innovation in relation to the following points?

47. Clearance of surfaces and structures (interiors and exteriors)
 - a. Methodology and procedures
 - b. Instrumentation and logistics
48. Characterization methods and technologies to identify subsurface contamination
49. Modelling and statistical tools to analyze contaminant transport in subsurface soil and groundwater
50. Soil remediation technologies (washing, bioremediation, fixing contamination)
51. Remediation of contaminated groundwater (radiological)
52. Methodologies and techniques for final release survey of the Site
 - a. Surface
 - b. Subsurface
53. Tools for statistical analysis and management of release survey data

Comments on Site Release Topical Area:

Decommissioning material Management

Could you please rate the need for innovation in relation to the following points?

54. Inventory forecast (Radiological and no-radiological)
55. Identification of management routes for materials including RW
56. In situ Radioactive Waste characterization and segregation
57. Radioactive Waste decontamination
 - a. Physical
 - b. Chemical
58. Radioactive Waste treatment processes

Type of materials

- a. Metals
- b. Concrete
- c. Aqueous liquids
- d. Non aqueous liquids
- e. Organic materials

Other:.....

Waste classification

- a. LLW
- b. VLLW
- c. ILW

Technologies

- a. Melting
- b. Compaction
- c. Plasma
- d. Incineration
- e. Other

59. Radioactive Waste conditioning
60. Radioactive Waste packaging and logistics
61. Characterization and survey of containerized radioactive waste
62. Material clearance
 - a. Methodology and procedures
 - b. Instrumentation and logistics
63. Management of hazardous and toxic (asbestos, PCB, etc.)
64. Conventional material recycling (circular economy)

Comments on Decommissioning Waste Management Topical Area: