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EUROPEAN PROJECT "SHARE"

Stakeholders-based Analysis towards More Collaborative Projects of Research for Decommissioning

<https://share-h2020.eu/>
[linkedin.share-h2020-project](#)
[linkedin/group SHARE Road map for Decommissioning](#)

SNETP Forum, February 4th, 2021
Christine GEORGES, CEA



CHALLENGES AND ECONOMICAL STAKES IN DECOMMISSIONING

A certain level of industrial maturity for Decommissioning of rather 'standard' nuclear facilities relying mostly upon proven processes and technologies, e.g. for PWR

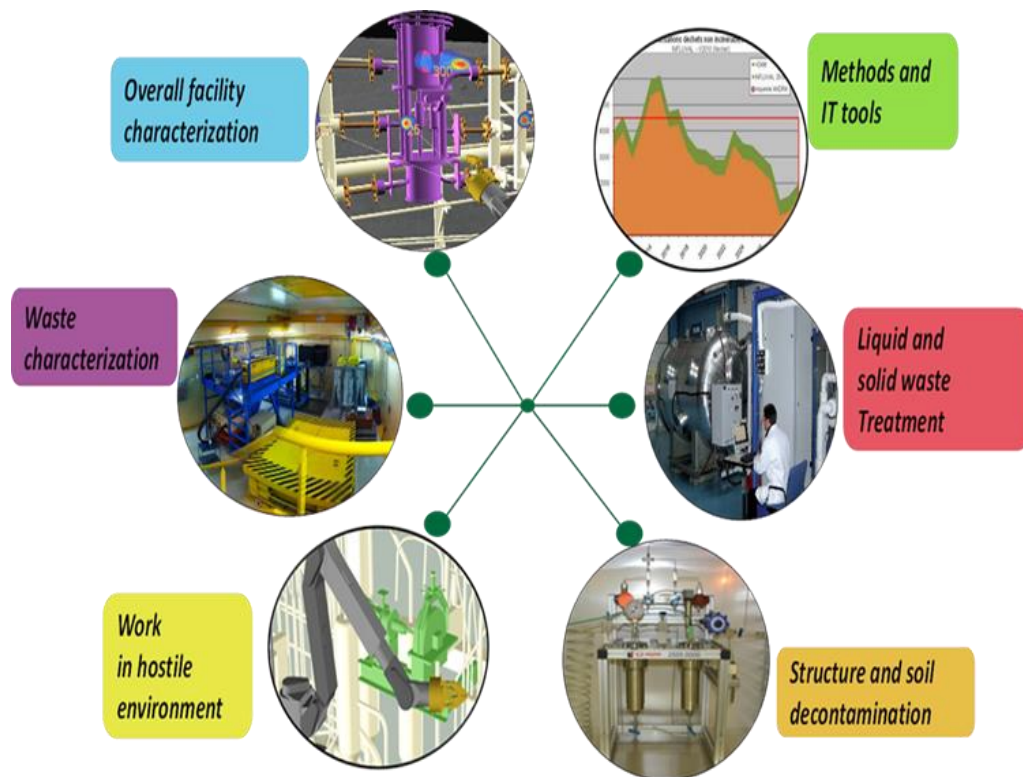
➡ **Need to build on these : methodology and even standardization wherever + few possibilities of optimization/ cost reduction (digital tools, laser cutting, waste routes, etc)**

But still a number of technological challenges for the decommissioning industry, e.g.. graphite reactors, fuel cycle back end facilities or other legacy waste

➡ **- Need to accelerate projects in order to decrease fixed costs**
- Research targeted to the actual needs of end users, in a “waste- led approach”

Also, non-technological issues, e.g need to stimulate young generation on the necessary competences

➡ **Education and training, Competence maintenance, Project management, Contracting, Dialogue with society, regulators, etc.**



Situation in 2016 : need for more impulse

On one hand:

- Increasing difficulties for Individual countries to justify expenditures on new developments that can require more than 10 years to be completed
- Reluctance on sites to use innovative technologies and search for approved technologies to minimize risks
- Industrials need confidence in markets and associated business plans before investing in industrialization.

On the other hand

- Significant redundancy and duplication in current Research programmes for Decommissioning in different countries
- Already lot of cooperation (IAEA, NEA, etc.) , but... few real projects in common in 2016



More impulse needed to develop and to use research and innovation in Decommissioning projects and to promote and organize at international level the co-financing of developments and demonstrators



Euratom research and training programme H2020 NFRP-2018-5: coordination and Support Action to the European Commission

«SHARE » = STAKEHOLDERS-BASED ANALYSIS OF RESEARCH* FOR DECOMMISSIONING

June 2019 / November 2021

“Development of a roadmap for decommissioning research aiming at safety improvement, environmental impact minimisation and cost reduction”

Horizon2020 - SHARE

STAKEHOLDER'S NEEDS

Questionnaire

Open Inline
Consultations



Gap Analysis

CURRENT AVAILABLE SOLUTIONS



Strategic Research Agenda

SRA

Roadmap



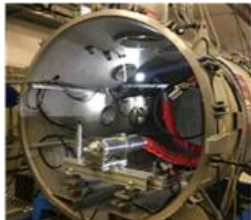
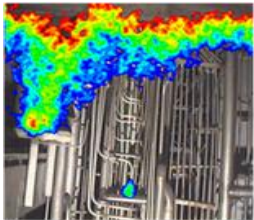
Project focused on a Wide Decommissioning community, along the value chain.



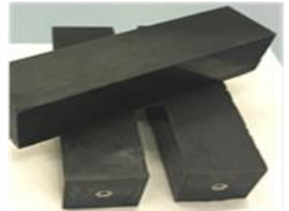
(*): “Research”= R&D, R&I, methodologies, standardization, etc. in technical and non technical areas

IDENTIFICATION OF THEMATIC AREAS WITH NEEDS

Consortium identified 8 thematic areas divided into 71 sub-thematic areas of decommissioning as the basis for the survey.



1. Safety and radiological protection aspects
2. Project management and costing
3. Human resources management
4. Characterisation during decommissioning
5. Site preparatory activities
6. Dismantling
7. Environmental remediation and site release
8. Management of material and radioactive waste from decommissioning

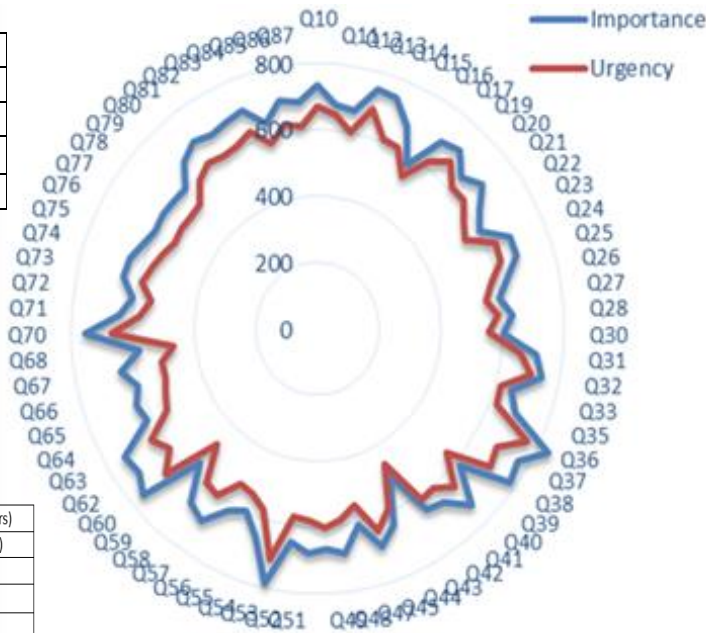


FULL ANSWERS FROM 224 STAKEHOLDERS WORLDWIDE

- Survey sent to 650 stakeholders from across the decommissioning value chain
- Were asked to score each of the sub-thematic areas with respect to the importance and urgency of 'the need for research', using a Likert scale 0 to 5.
- Scores given by stakeholders (224) for each sub-thematic areas were totalled, showing few differences in the scoring in terms of importance or in terms of urgency.

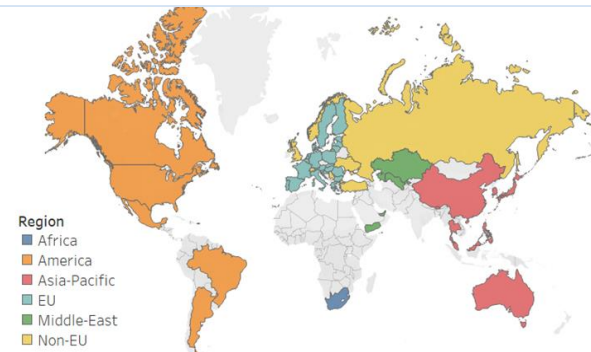
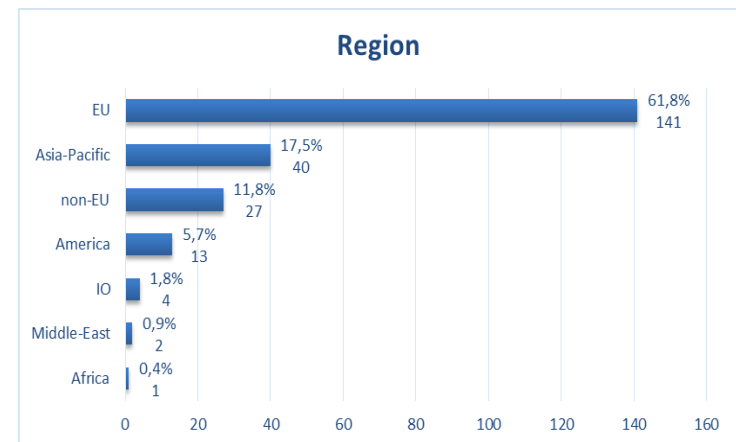
For importance of needs:

Between 0 (no need) and 1 (very low need)
Between 1 (very low need) and 2 (low need)
Between 2 (low need) and 3 (medium need)
Between 3 (medium need) and 4 (High need)
Between 4 (High need) and 5 (Very High need)



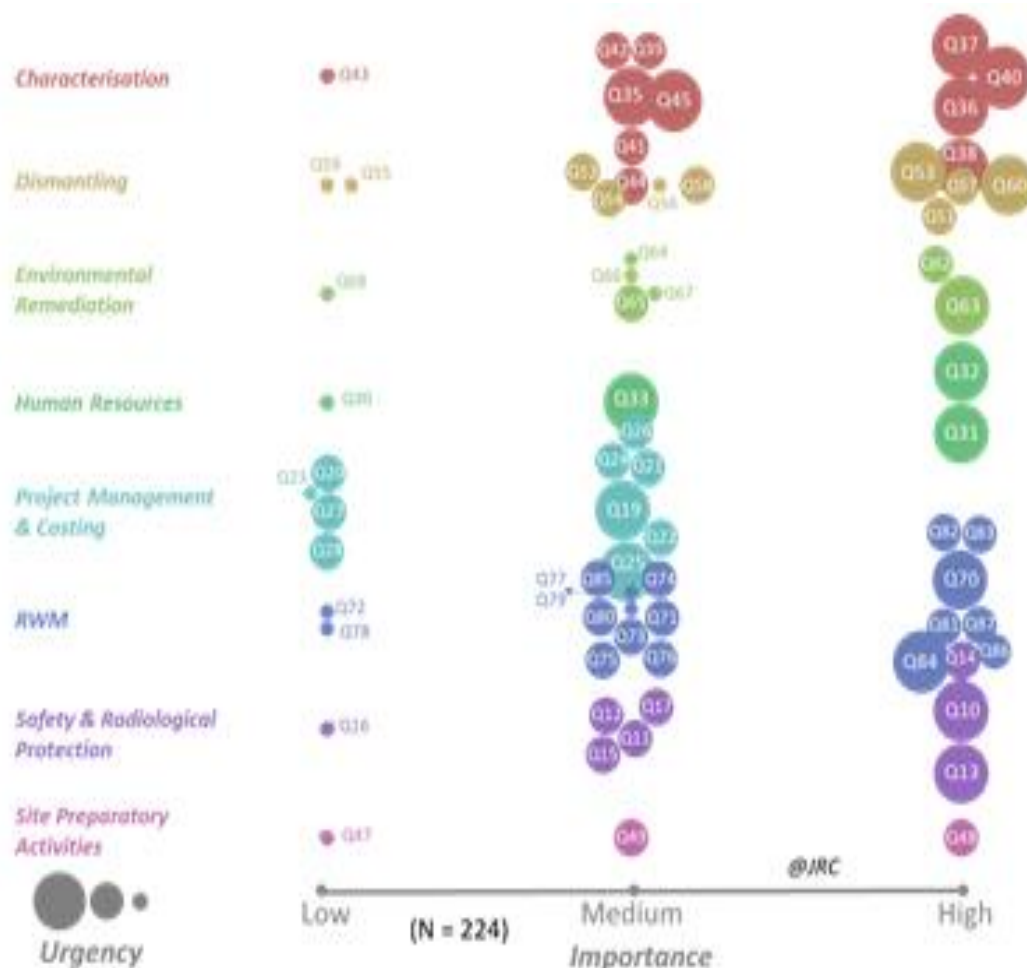
For Urgency of needs

Between 0 (no urgency) and 1 (beyond 15 years)
Between 1 (beyond 15 years) and 2 (15 years)
Between 2 (15 years) and 3 (10 years)
Between 3 (10 years) and 4 (5 years)
Between 4 (5 years) and 5 (less than 5 years)



FIRST GLOBAL ANALYSIS OF THE SURVEY'S RESULTS

This first global analysis confirmed the need for Research in all eight thematic areas, with top-scoring needs in sub-thematic areas:



TOP SCORED SUB-THEMATIC AREAS	SCORING
36 - INVENTORY ASSESMENT (RADIOLOGICAL AND NON-RADIO.)	836
53 - IN SITU RADIOACTIVE WASTE CHARACTERIZATION	787
38 - CHARACTERIZATION OF CONCRETE ACTIVATED COMPONENTS	779
37 - CHARACTERIZATION OF METALLIC ACTIVATED COMPONENTS	762
60 - ROBOTS AND REMOTE CONTROL TOOLS FOR DISMANTLING	757
70 - MANAGEMENT ROUTES FOR MATERIALS INCLUDING RADIOACTIVE WASTE STREAMS	756
13 - DEVELOPMENT FOR NATIONAL REGULATORY GUIDANCE FOR CLEARANCE OF STRUCTURES AND MATERIALS	748
14 - DEVELOPMENT FOR NATIONAL REGULATORY GUIDANCE FOR FINAL SITE RELEASE)	743
32 - GENERAL EDUCATION FOR DECOMMISSIONING	742
63 - CHARACTERIZATION METHODS AND TECHNOLOGIES TO IDENTIFY SUBSURFACE CONTAMINATION	734
40 - TECHNOLOGIES FOR HARD TO ACCESS AREAS	732
62 - CLEARANCE OF SURFACES AND STRUCTURES (INTERIOR AND EXTERIOR)	723

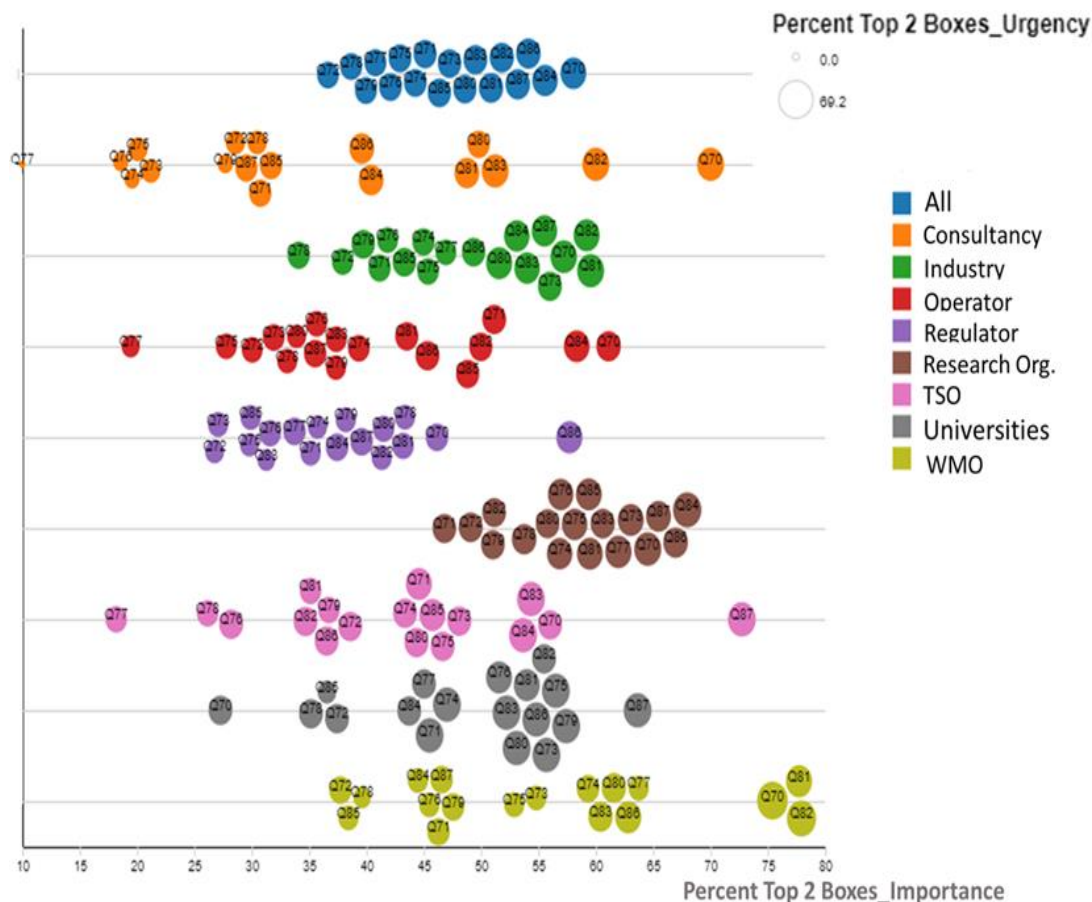
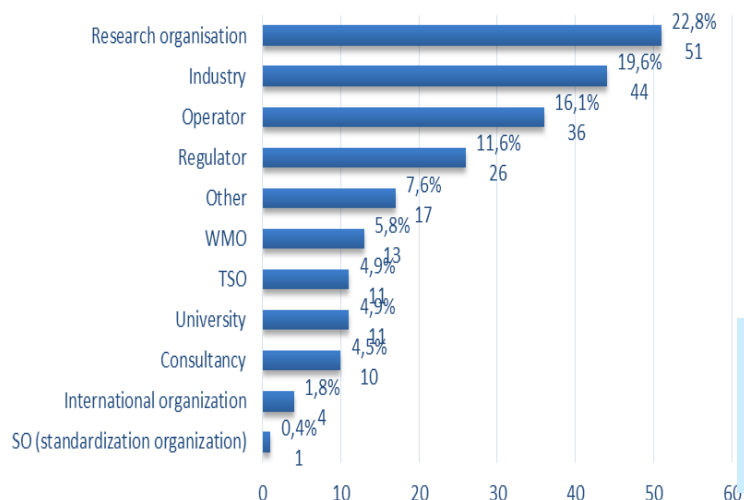
DETAILED ANALYSIS UNDERWAY

By type of stakeholders, by country and by type of facility

Example within the RWM thematic area among vs stakeholders types

- Comparison on the basis of the percentage of stakeholders having scored “4” (high) or “5” (very high) for the importance of needs in Research for each sub-thematic area.

Type of organization



Each circle represents a sub-thematic area and color indicates the stakeholder type. The urgency is given by the size of the colored circles, on same principle.

COORDINATION WITH OTHER INTERNATIONAL INITIATIVES UNDER WAY

To avoid duplication of work

<p>①</p> <p>Safety and Radiological Protection</p>	<p>②</p> <p>Project Management and costing</p>	<p>④</p> <p>Characterization</p>	<p>⑥</p> <p>Dismantling technologies</p>	<p>⑧</p> <p>Management of Waste</p>
<p>ETSON EUROPEAN TECHNICAL SAFETY ORGANISATIONS NETWORK</p> <p>SHARE Social sciences and Humanities in ionising radiation REsearch</p>	<p>IAEA International Atomic Energy Agency</p> <p>NEA Nuclear Energy Agency</p>	<p>INSIDER</p> <p>CHANCE Characterization of Conditioned Nuclear Waste for its Safe Disposal in Europe</p> <p>micado</p>	<p>LD SAFE</p> <p>INNO4GRAPH</p> <p>PLEIADES Smarter Plant Decommissioning</p>	<p>TRANSAT TRANSversal Actions for Tritium</p> <p>theramin</p> <p>ROUTES eurad European Joint Programme on Radioactive Waste Management</p>
<p>⑦</p> <p>Environmental remediation and Site Release</p>	<p>③</p> <p>Human resources management</p>	<p>EMPIR</p> <p>EURAMET</p> <p>CLEANDEM</p>	<p>RIMA ROBOTICS FOR INSPECTION AND MAINTENANCE</p>	<p>PREDIS</p>
<p>IAEA International Atomic Energy Agency</p> <p>NEA Nuclear Energy Agency</p>	<p>ELINDER European Learning Initiative for Nuclear Decommissioning and Environmental Restoration</p> <p>enen+</p>	<p>IAEA International Atomic Energy Agency</p> <p>NEA Nuclear Energy Agency</p>	<p>⑤</p> <p>Site preparatory activities</p>	<p>IAEA International Atomic Energy Agency</p> <p>NEA Nuclear Energy Agency</p>
<p>European Union</p> <p>IAEA International Atomic Energy Agency</p> <p>NEA Nuclear Energy Agency</p>	<p>WORLD NUCLEAR ASSOCIATION</p> <p>FORATOM</p> <p>SNETP Sustainable Nuclear Energy Technology Platform</p> <p>NDF</p>	<p>EPRI</p> <p>CANDU Owners Group Inc. COG "Excellence Through Collaboration"</p>		

EVENTS 2021



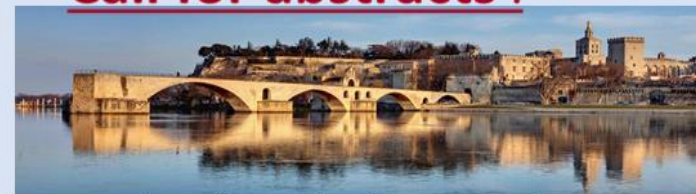
www.sfen-dem2021

DEM 2021,
13-17 September, 2021

Palais des Papes - Avignon, France



Call for abstracts !



<https://www.sfen-dem2021.org/>

2 workshops « SHARE » to be organised in 2021 + more information to be followed through emails and medias:

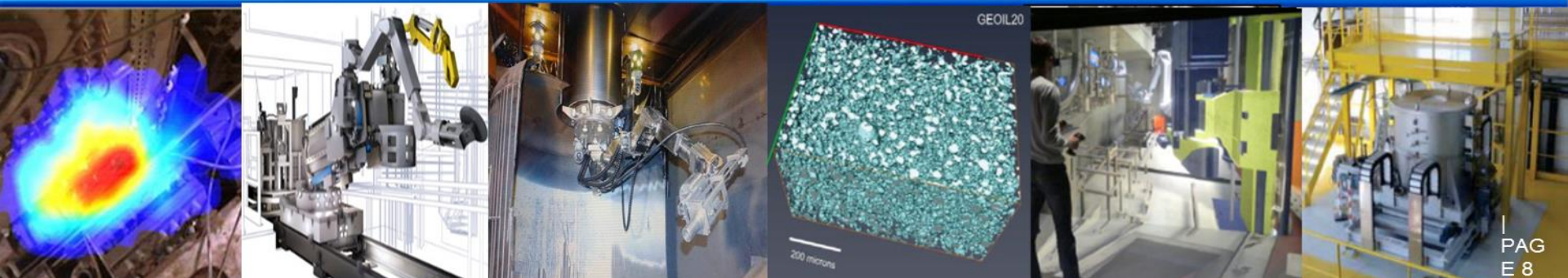
[linkedin/group SHARE Road map for Decommissioning](https://www.linkedin.com/group/SHARE-Road-map-for-Decommissioning)

<https://share-h2020.eu/>

[linkedin.share-h2020-project](https://www.linkedin.com/project/share-h2020-project)

CONCLUSIONS

- Main benefits and contribution of the SHARE project is to collect the opinion of the global stakeholders decommissioning community, in order to know and understand issues and challenges they are facing, their needs and opportunities for enhancement of decommissioning activities.
- In 2021, the SHARE team will be dedicated to analysing all the inputs from stakeholders to conduct a gap analysis and to provide, by the end of 2021, a strategic research agenda and a road map.
- This will support policymakers in their choice of focus areas for investment and for potential future collaborative Research projects: R&D and Innovation, methodologies and even possible standardisation in technical and non-technical areas.
- This will facilitate the establishment of collaborative projects among organizations with common need sets and may lead in the future to better harmonization of technological and non-technological approaches in Decommissioning.





A roadmap for research
in Decommissioning

Thanks for your attention!

