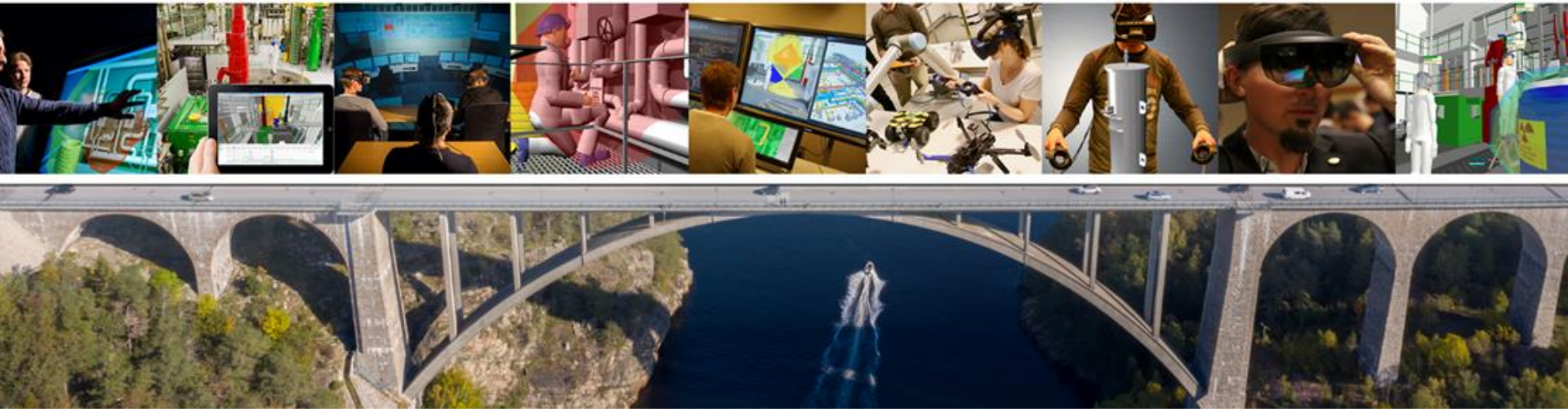
DigiDecom 2021 – DIGITAL

Online international workshop focusing on digital transformation, robotics and other game changing trends in nuclear decommissioning



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A roadmap for research in Decommissioning

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº 847626.

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General presentation of EU-H2020-SHARE Decommissioning

23 March 2021

https://share-h2020.eu/
linkedin.share-h2020-project
linkedin/group SHARE Road map for Decommissioning

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CHALLENGES AND ECONOMICAL STAKES IN DECOMMISSIONING

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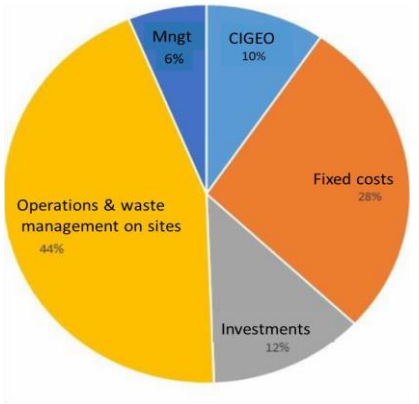
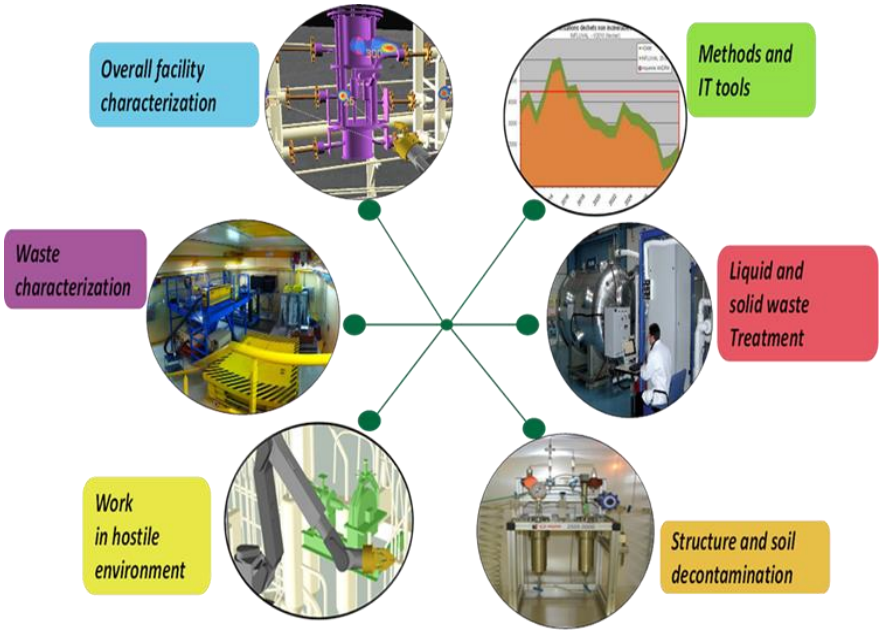
A certain level of industrial maturity for Decommissioning of rather 'standard' nuclear facilities relying mostly upon proven processes and technologies, and with series effect, e.g. for PWR

- **Dissemination, guidance and even standardization + use of advanced technologies for technical and economical optimization (digital tools, laser cutting, waste management solutions, etc.)**



But still technical issues on complex operations, e.g. graphite reactors, fuel cycle back end facilities with associated legacy waste, etc.

- **Research targeted to the actual needs of end users, in a "waste- led approach", e.g qualification of new technologies, new treatment options for non packaged waste, etc.**



Also, non-technological issues,

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

EU ADDED VALUE / RESEARCH FOR DECOMMISSIONING

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Impulse needed to use on sites results of Research and to promote and organize at international level the co-financing of developments and demonstrators

On one hand:

- Increasing difficulties for Individual countries to justify expenditures on new developments that can require more than 10 years to be qualified
- Reluctance on sites to use innovative technologies and search for approved technologies to minimize risks (safety, unknown, failure, etc.)
- 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

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

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June 2019 / November 2021

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

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

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

June 2019 / November 2021

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

POINT OF SITUATION

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Consortium Survey

8 thematic areas
87 Sub- Thematic areas with Research needs

Stakeholders survey

Confirmation and ranking of needs/ importance & urgency

Analysis by type of stakeholder

Influence of weighting factors

SRA

Actions for joint research activities grouped by Key Research Topics and prioritized in time

Review of existing

Review of already applied solutions

Review of Existing international initiatives

Review of Existing instruments for collaborative work

Gap analysis

Investigation of needs: Issues? Challenges? Missing? Opportunities ?

Identify desired state and remaining gap

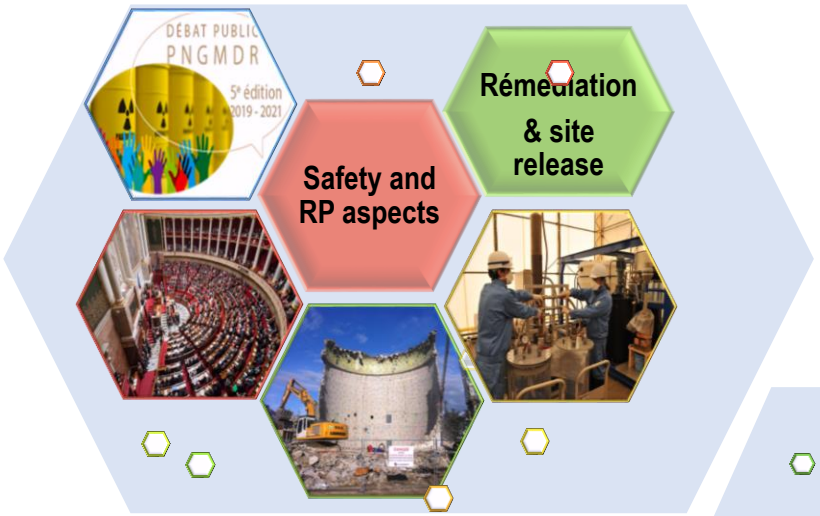
Activities to fill the gaps

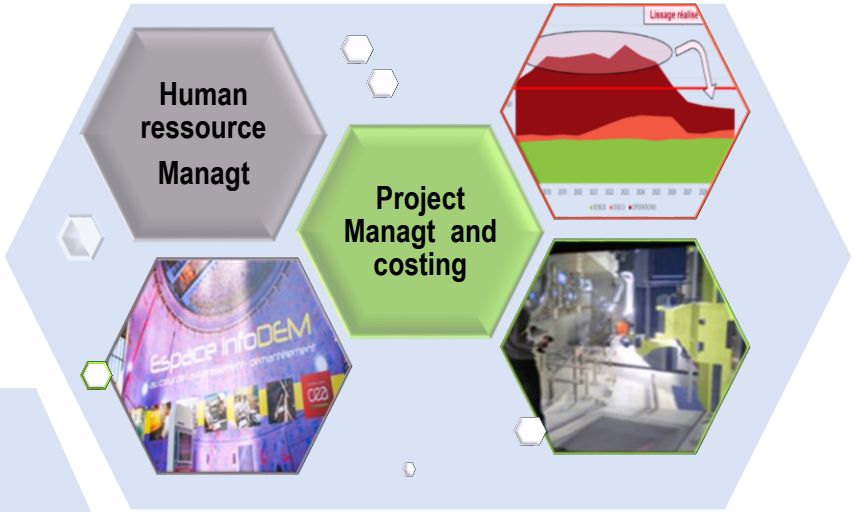
Road Map

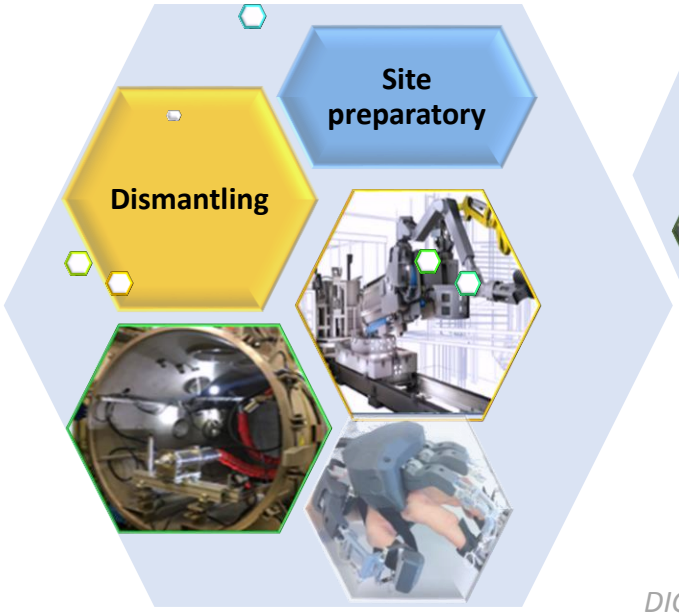
Actions for joint activities in the 10/ 15 years , with instruments for implementation

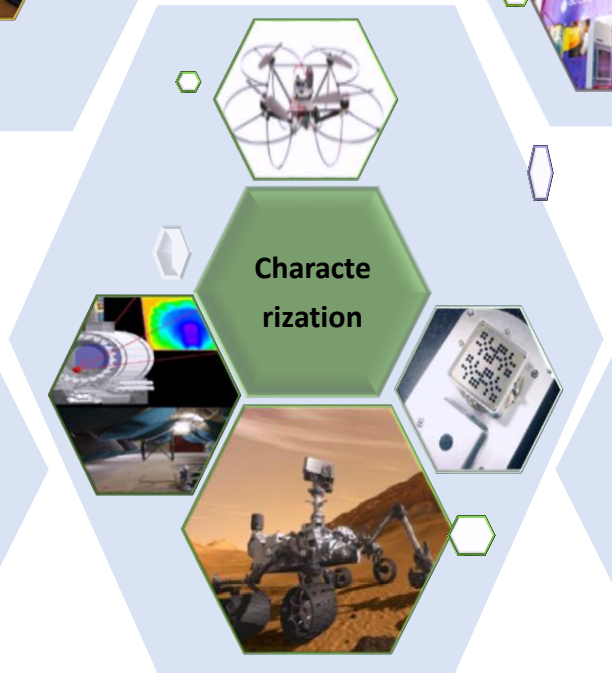
IDENTIFICATION OF 8 THEMATIC AREAS WITH NEEDS

Divided into 71 sub-thematic areas









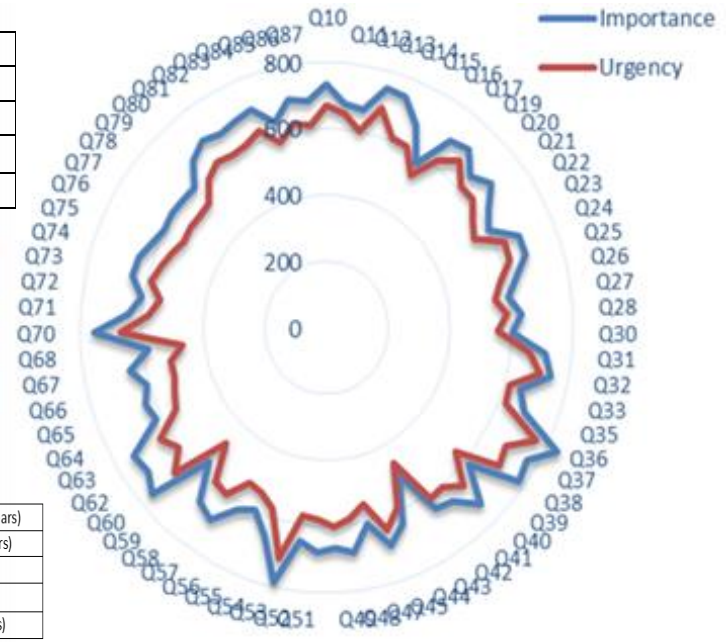
FULL ANSWERS FROM 224 STAKEHOLDERS WORLDWIDE

Next presentation

- 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.

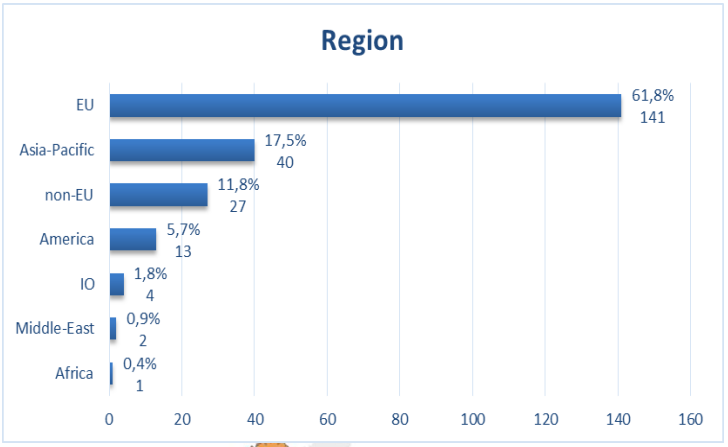
For importance of needs:

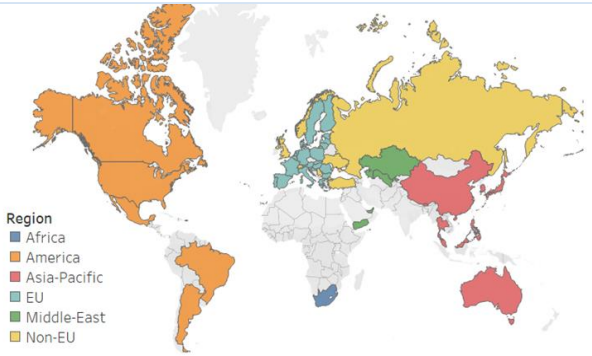
Between 0 (no need) and 1 (very low need)
Between 1 (very low need) and 2 (low need)
Between 2 (low need) and 3 (medium need)
Between 3 (medium need) and 4 (High need)
Between 4 (High need) and 5 (Very High need)



For Urgency of needs

Between 0 (no urgency) and 1 (beyond 15years)
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)





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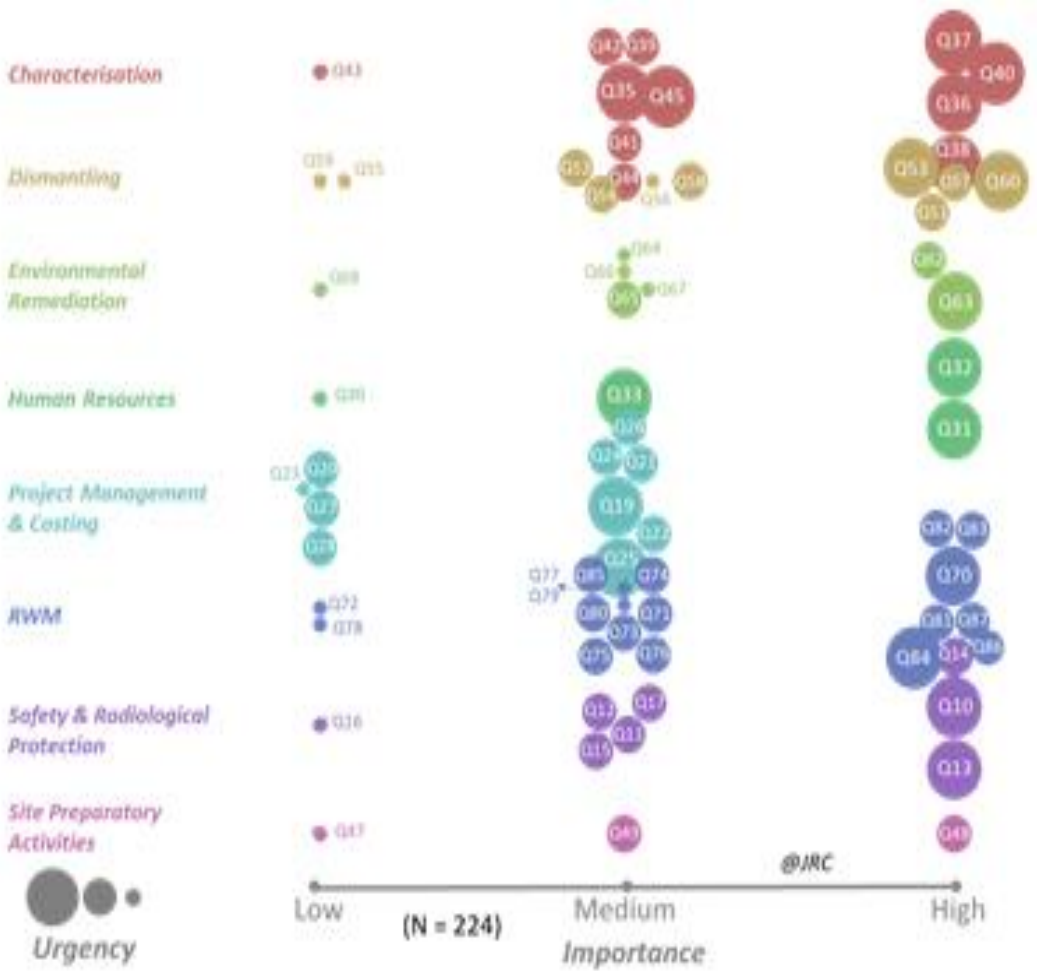
Next presentation

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



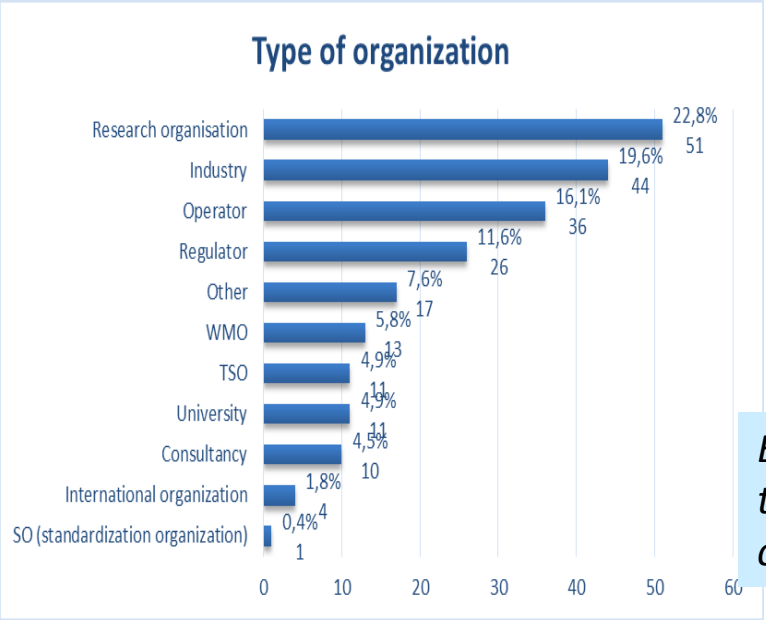
TOP SCORED SUB-THEMATIC AREAS	SCORING
36 - INVENTORY ASSESMENT (RADIOLOGICAL AND NON-RADIO.)	836
53 - IN SITU RADIOACTIVE WASTE CHARACTERIZATION	787
38 - CHARACTERIZATION OF CONCRETE ACTIVATED COMPONENTS	779
37 - CHARACTERIZATION OF METALLIC ACTIVATED COMPONENTS	762
60 - ROBOTS AND REMOTE CONTROL TOOLS 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 SUBURFACE CONTAMINATION	734
40 - TECHNOLOGIES FOR HARD TO ACCESS AREAS	732
62 – CLEARANCE OF SURFACES AND STRUCTURES (INTERIOR AND EXTERIOR)	723

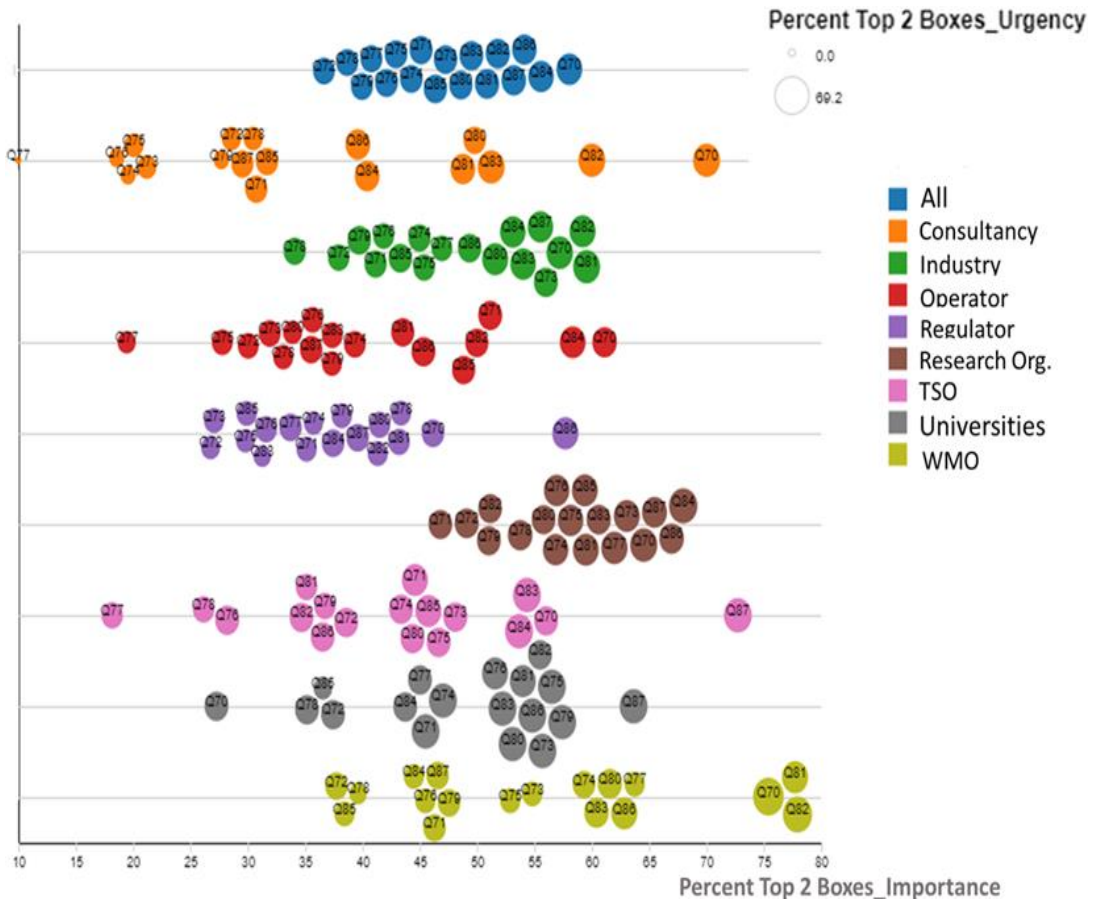
DETAILED ANALYSIS (next presentation)

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.



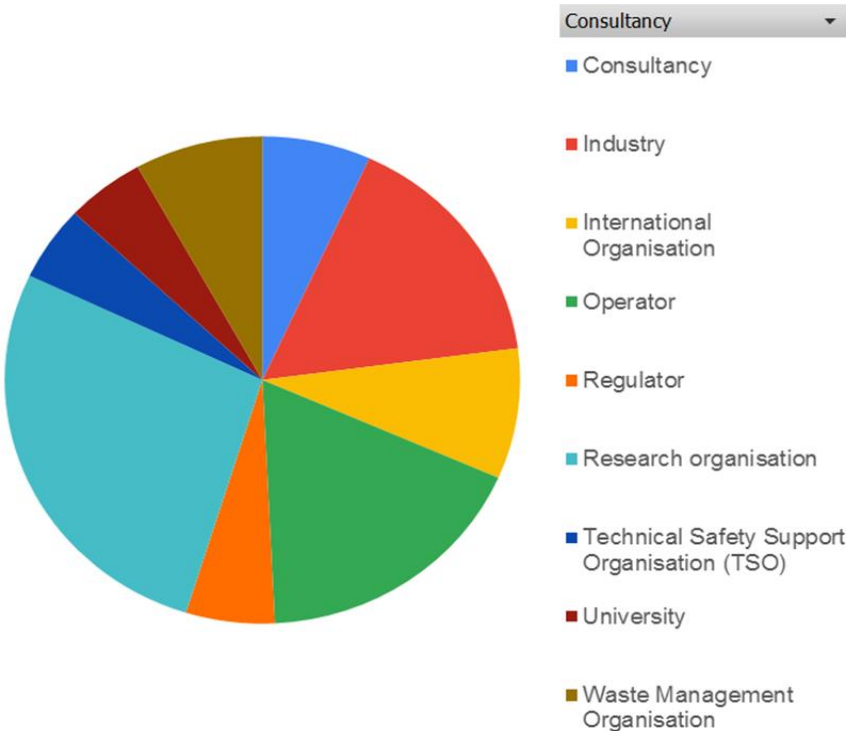


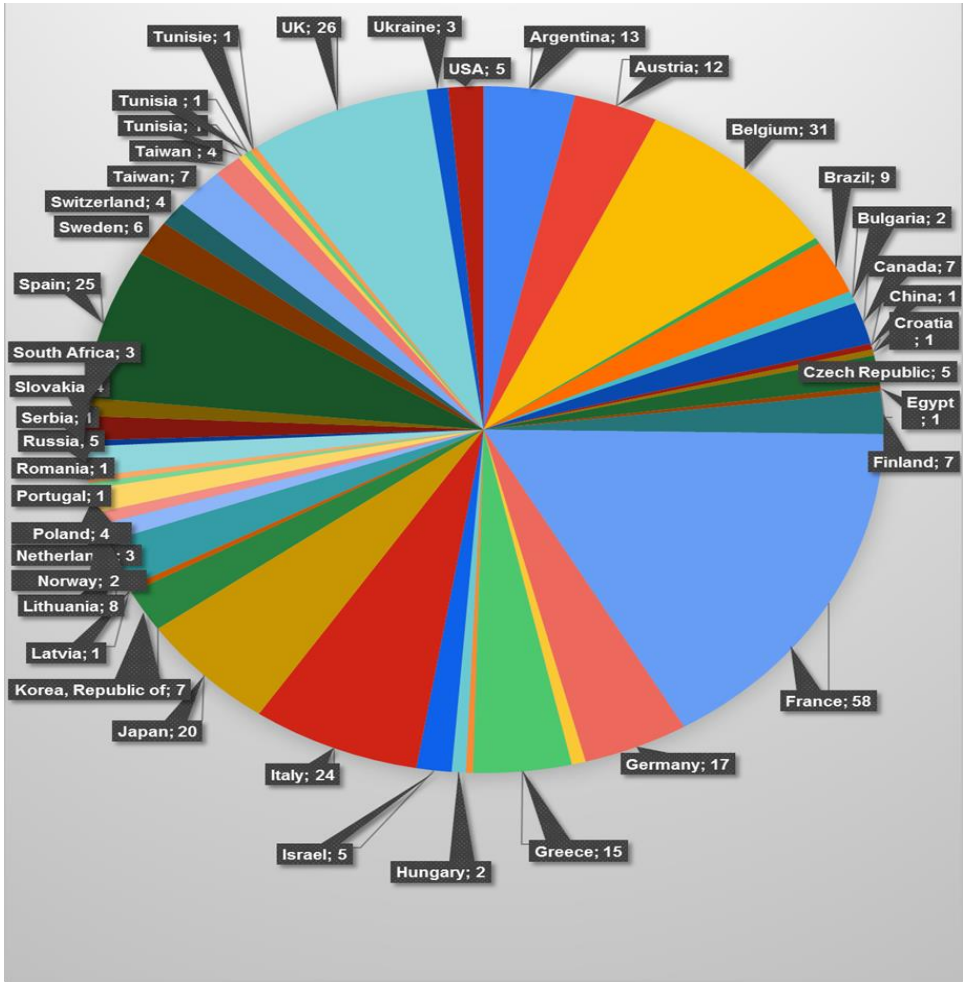
Each circle represents a sub-thematic area and color indicates the stakeholder type. The urgency is given by the size of the colored circles, on same principle.

STAKEHOLDERS INVOLVEMENT

2 public workshops organized end of 2020:

- To share the first results of the project
- To receive feedback from stakeholders
- To hear from other on-going international initiatives and to hear stakeholders' voices

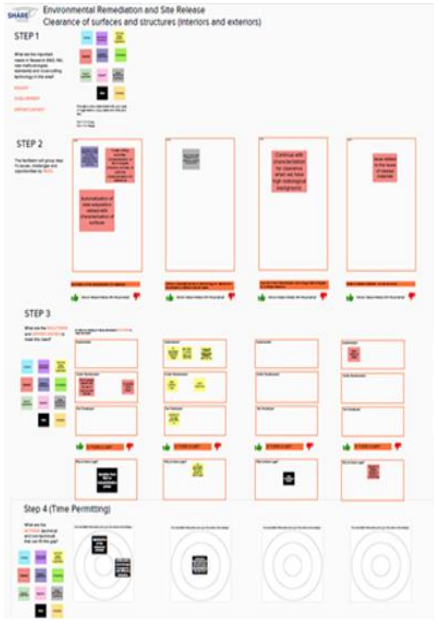




INVESTIGATION WITH STAKEHOLDERS

On issues, challenges and opportunities & existing solutions/on-going developments

- Methodology with on-line brainstorm/virtual post-it sessions,
- Data collected during December 2020 workshop were analysed to complete results of the survey and were used in the gap analysis (see specific presentations).



2 of the 71 Mural sessions

COORDINATION WITH OTHER INTERNATIONAL INITIATIVES

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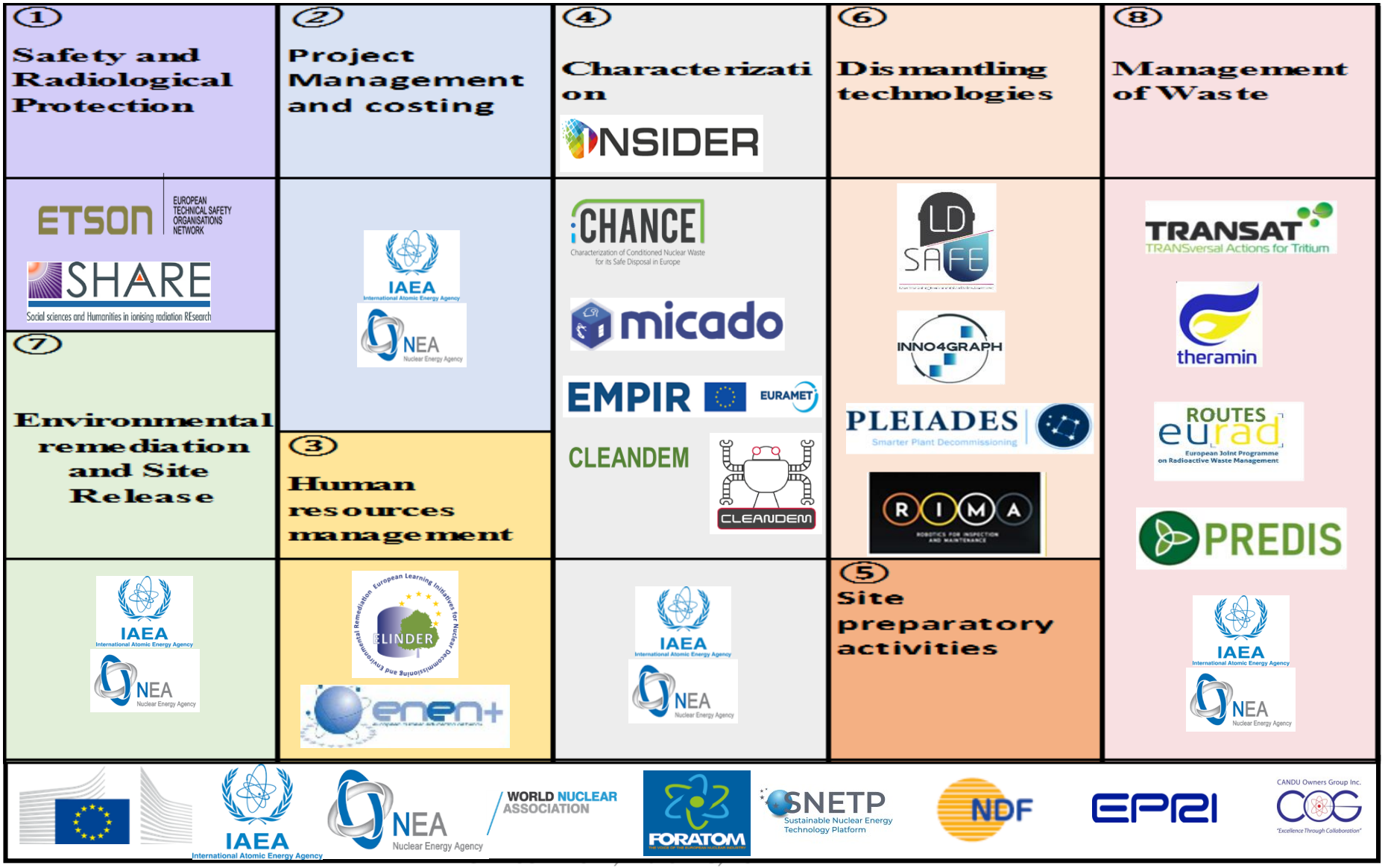
To avoid duplication of work



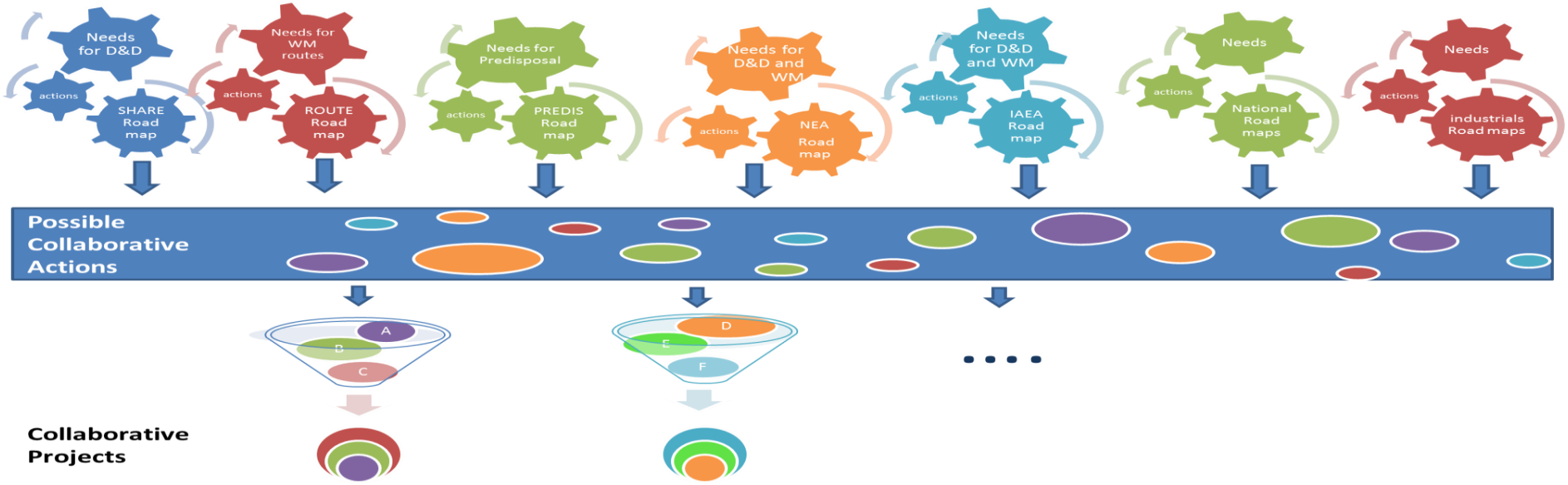
EVENTS 2021

WM SYMPOSIA
EDUCATION & OPPORTUNITY IN RADWASTE MANAGEMENT
A NON-PROFIT ORGANIZATION
Beginning March 8, 2021 – Virtual WM2021

+ more information to be followed through emails and medias:
[linkedin/group SHARE Road map for Decommissioning]
[https://share-h2020.eu/]
[linkedin.share-h2020-project]

CONCLUSIONS

- Main benefits and contribution: opinion of the global stakeholders decommissioning community
- Waiting forwards for your feedback on gap analysis
- By the end of 2021, strategic research agenda and road map to support policymakers in their choice of focus areas for investment
- Towards more collaborative projects and better harmonization of technological and non-technological approaches in Decommissioning.



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Thanks for your attention!

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