

Production of the Programme Document: WP4

Summary for JOPRAD MTW

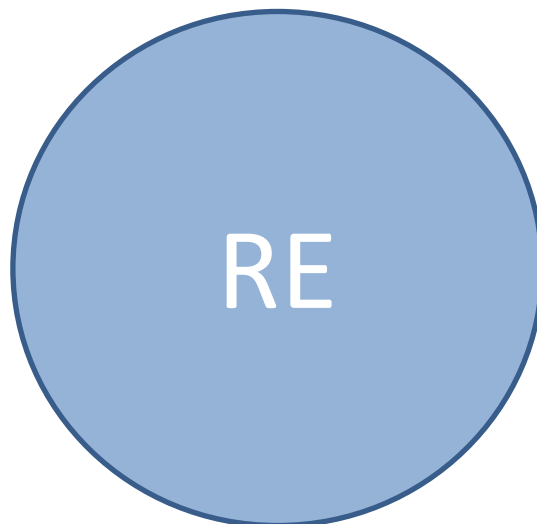
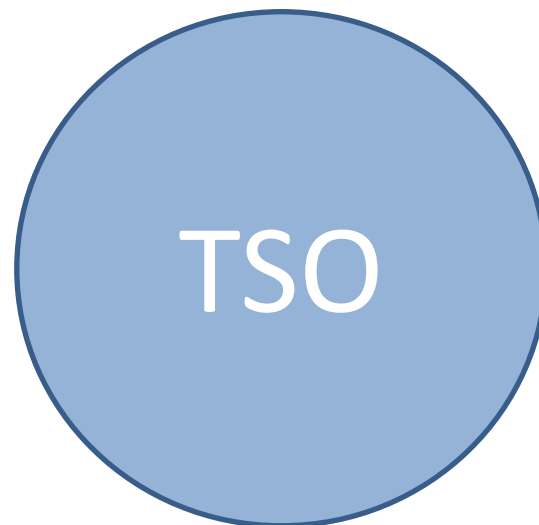
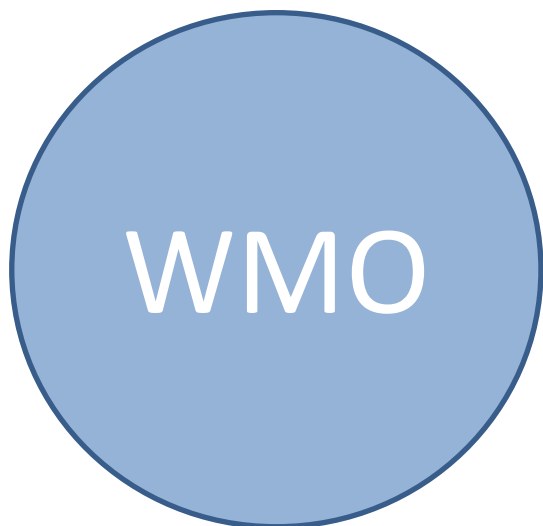
Jon Martin, RWM



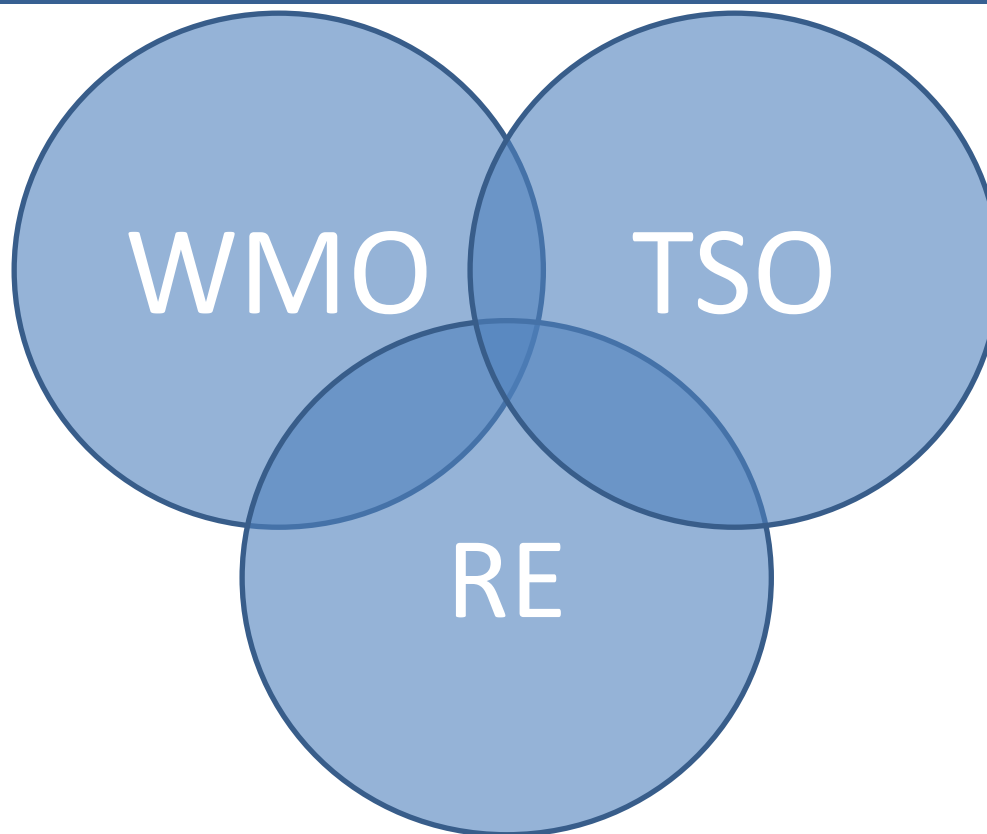
This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement n° 653951



Stage 1 Development of individual SRAs

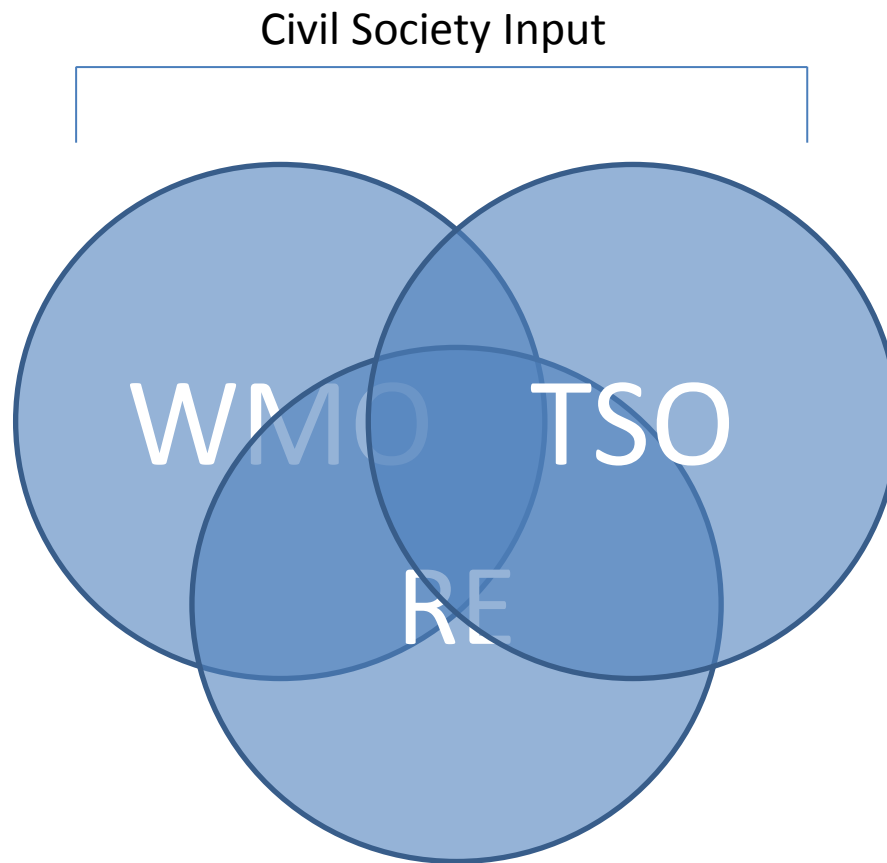


Stage 2 Sharing and Discussion



Vision: A step change in European collaboration towards safe radioactive waste disposal through a credible and sustained science and technology programme fostering mutual understanding and trust

Stage 3 Following Integration



Domains identified for potential EJP

- Waste acceptance criteria (WAC) and waste characterisation;
- Waste treatment, conditioning and associated uncertainties;
- Spent fuel and fissile material;
- Waste form behaviour and container evolution (*interim storage & geological disposal*);
- Understanding of near-field systems;
- Geosphere;
- Radionuclide aqueous pathways;
- Gaseous pathways;
- Process modelling;
- Safety case methodology and communication;
- Total system modelling;
- Operational safety assessment;
- Site characterisation;
- Design optimisation;
- Operational monitoring;
- Knowledge management tools and infrastructure;
- Final operational license (before full commissioning);
- Decision making processes and governance;
- Shared safety culture

RD&D needs for technical domain

Example domain that is predominantly technical and comprise range of RD&D needs identified from WMOs, REs and TSOs

| | | | |
|---|---|---|--|
| 5. Understanding of near-field systems | A | Bentonite and cementitious systems | 3.3 Behaviour of bentonite-waste container interactions. (WMO) |
| | | | 3#1 Heterogeneous behaviour of bentonite components (TSO) |
| | | | 2#3.2 Influence of gas on geochemistry and microbial activity in HR and EBS (TSO) |
| | | | 2#3.3 Gas migration through EDZ and EBS (TSO) |
| | | | 2.4.1 Bentonite barrier properties at 20 - 100°C + cyclic resaturation (RE) |
| | | | 2.4.2 Methods for filling of discontinuities with bentonite (RE) |
| | | | 2.4.3 Bentonite degradation with concrete, rock and metal (RE) |
| | | | 2.4.4 Vertical and horizontal mockup experiment (RE) |
| | | | 3#3 Behaviour of cementitious components (TSO) |
| | | | 2.2.25 Cement systems (RE) |
| | | | 3.4 Development and demonstration of low pH cements (WMO) |
| | | | 2#2 Chemical conditions induced by metallic and/or cement materials and components (TSO) |
| | | | 2.2.36 Fracture fillings: property changes with T, time (RE) |
| | | | Salt systems |

RD&D needs for multi-disciplinary domain

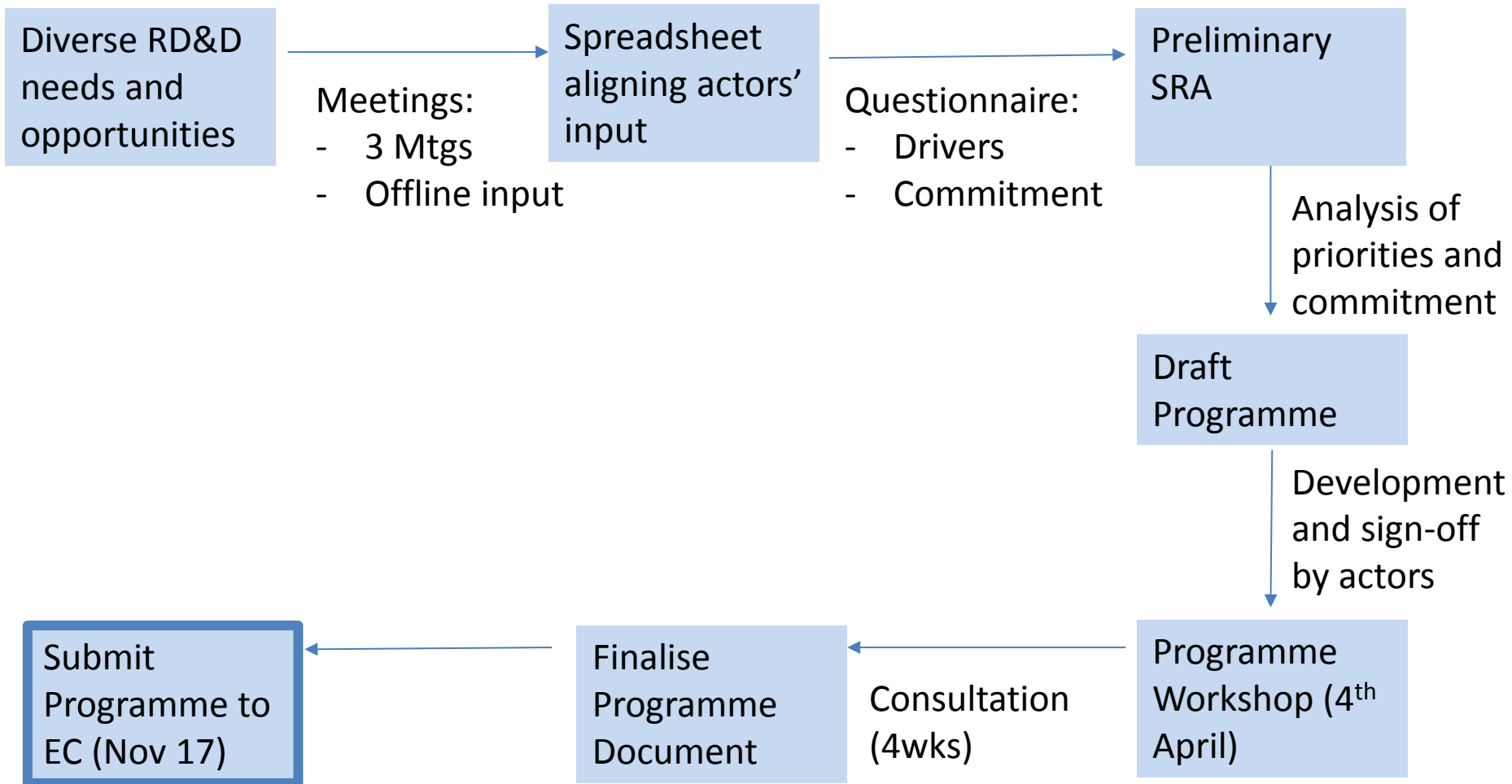
Example domain that is multi-disciplinary and includes integration of civil society issue and comprise range of RD&D needs identified from WMOs, REs and TSOs

| | | | |
|-------------------------|---|---|---|
| 14. Design optimisation | B | Evolving programme boundary conditions during construction and operations | 5#4 Influence on long term safety of pre-closure disturbances (TSO) |
| | | | 2.1.4 Impact of deviations in planned implementation (RE) |
| | | | 2.2.15 Consequences of longer than planned storage (RE) |
| | | | 3.7 Ethics, memory, impact of societal evolutions on disposal implementation...(RE) |
| | | 7#4 Application of the optimization principle (TSOs) | |
| | | 4.1 Adaptation and optimisation of disposal concept before and during the operational phase (WMO) | |
| | | 3.7 Development of alternative HLW/SF container materials (WMO) | |
| | | Research-Framing Topic Proposed for horizontal Think Tank Activities (Joint-TSO-CS WP4 Mtg3 London): | |
| | | - Examining how, in practice, GD alternative options will be evaluated. Optimization of the performance of the disposal system concerning isolation, containment capacities, as well as robustness (sites, design options, construction methods and operational vs after closure period); qualitative and quantitative arguments including the reasons why particular options were accepted/rejected. | |
| | | - Organising and tracing the dialogue between implementer, regulator and other stakeholders. In particular, how to record the decisions taken and the role that optimization had played in making them, considering the management of uncertainties (participatory safety case review) | |
| | | - Examining flexibility in the design to accommodate variation of volume and inventory (boundary conditions) | |
| | | 2#4 Co-disposal of waste: interactions between different types of waste (TSO) | |
| | | Demonstration | 2.2.31 Buffer, Backfill production, storage, handling (RE) |
| | | Reversibility and retrievability | 7#7 Reversibility and Retrievability (TSO) |
| | | | 2.2.28 Retrievability: effect of repository architecture, rock stability (RE) |

Overall WP4 Programme

| Date | Meeting | Desired Progress |
|--|-------------|---|
| May 16 | Prague/M2 | Agree broad Topics and Sub-topics / Structure of Prog. Document |
| June 16 | Off-line | TSOs/WMOs/REs apply Scoring Criteria |
| July 16 | London/M3 | Discuss Scoring of Topics/Agreed to Issue WP4 Questionnaire |
| Aug 16 | Off-line | TSOs/WMOs/REs issue Questionnaire (issue 21/08, responses by 21/09) |
| September 2016 – JOPRAD Mid-term Workshop (& M4) – Summarise High-level Description of SRA Topics/Discuss and Progress Other Sections of the Programme Document not affected by ‘Common Topics’ | | |
| Oct 16 | Off-line | Discuss Programme Doc Drafting, Questionnaire Responses and Prep for M5 |
| Nov 16 | Brussels/M5 | Discuss content of 1 st Draft with wider WP4 participants & Topic Screening |
| Dec 16 | Off-line | Iterate 1 st Draft to address WP4 participants comments |
| Jan 17 | Brussels/M6 | Finalise 1 st Draft with wider WP4 Participants |
| Mar 17 | Off-line | Sign-off of 1 st Draft for 1 st Issue (by WMOs/TSOs/REs approvers – who TBD?) |
| April 2017 – JOPRAD WP4 Workshop on Programme Document / Consultation of 1st Draft with Wider Community | | |
| June 17 | Off-line | Report on Workshop Outcomes – exact format TBD & Update Prog. Doc |
| Nov 17 | Off-line | Final Programme Document ready for Publication |

Production of the Programme Document



Drivers & Priorities: We're asking what's...

- Not Suitable for European Joint Programming?
- Operational RD&D (short/medium term experiment and/or modelling works)?
- Prospective RD&D (long-term experiment and/or modelling works)?
- Maintaining/ increasing competence?
- Exchange on practices, develop common position?
- Knowledge Transfer?
- High interest for 2019-2014
- Interest beyond 2024
- Participate by providing financial contribution / effort in-kind
- Interest in outputs without financial contribution / effort in-kind (i.e. end user)
- Additional info to support preferences