



# **Uncertainty Management multi-Actor Network (UMAN)**

**F. Lemy/Bel V, Berlin, 3-4 December 2018**

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# UMAN - Main Objectives

- ▶ Develop a **common understanding** among the **different** categories of **actors** (WMOs, TSOs, REs & Civil Society) on **uncertainty management** and how it relates to risk & safety
- ▶ In cases where a common understanding is beyond reach, to achieve mutual understanding on **why views** on uncertainties and their management **are different** for various actors
- ▶ **Share knowledge/know-how** and discuss common methodological/strategical **challenging issues**
- ▶ Identify the **contribution of** past & on-going **R&D projects** to the overall management of uncertainties
- ▶ Identify **remaining and emerging issues and needs**



# UMAN - Expected Impacts (1/2)

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- ▶ **Contribute to the vision** statement for Joint Programming on RWMM by:
  - ▶ fostering mutual understanding and trust between actors
  - ▶ enhancing the understanding of the risks and uncertainties
  - ▶ ensuring societal visibility and transparency of RD&D
- ▶ **Target the scope of future programme activities** onto uncertainties that are most significant in terms of their impact on safety cases and implementation
- ▶ **Contribute to the fulfillment of implementation needs**, a.o. by:
  - ▶ compiling, reviewing, comparing and refining uncertainty management strategies, approaches and tools that could be used in a RWV disposal programme
  - ▶ identifying possible options for the management of specific safety-relevant uncertainties at different programme phases
  - ▶ contributing to building mutual trust and understanding between various stakeholders

# UMAN - Expected impacts (2/2)

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- ▶ **Address safety case concerns, a.o. by:**
  - ▶ addressing the identification & characterization of potentially safety-relevant uncertainties that need to be considered in a safety case
  - ▶ fostering a mutual understanding by different actors of key concepts and paradigms underlying uncertainty management and the safety case at different steps of a geological disposal programme
  - ▶ identifying methods for discussing and exchanging on uncertainties and uncertainty management during the development and review of the safety case
- ▶ **Collaborations and synergies with other international initiatives and organizations**

# UMAN Participants

## Organisations

- ✓ **Andra**, France (WMO)
- ✓ **BEL V**, Belgium (TSO)
- ✓ **BGE**, Germany (WMO)
- ✓ **CIEMAT**, Spain (TSO)
- ✓ **CNRS**, France (RE)
  - IMT Atlantique, France
- ✓ **COVRA**, Netherlands (WMO)
- ✓ **ENRESA**, Spain (WMO)
- ✓ **CPST**, Lithuania (TSO)
- ✓ **FZJ**, Germany (RE)
  - HZDR, Germany
- ✓ **GRS**, Germany (TSO)
- ✓ **IRSN**, France (TSO)
  - MUTADIS, France
  - NTW, France
- ✓ **JSI**, Slovenia (TSO)
  - EIMV, Slovenia
- ✓ **KIT**, Germany (RE)
  - TU Clausthal, Germany

## Organisations

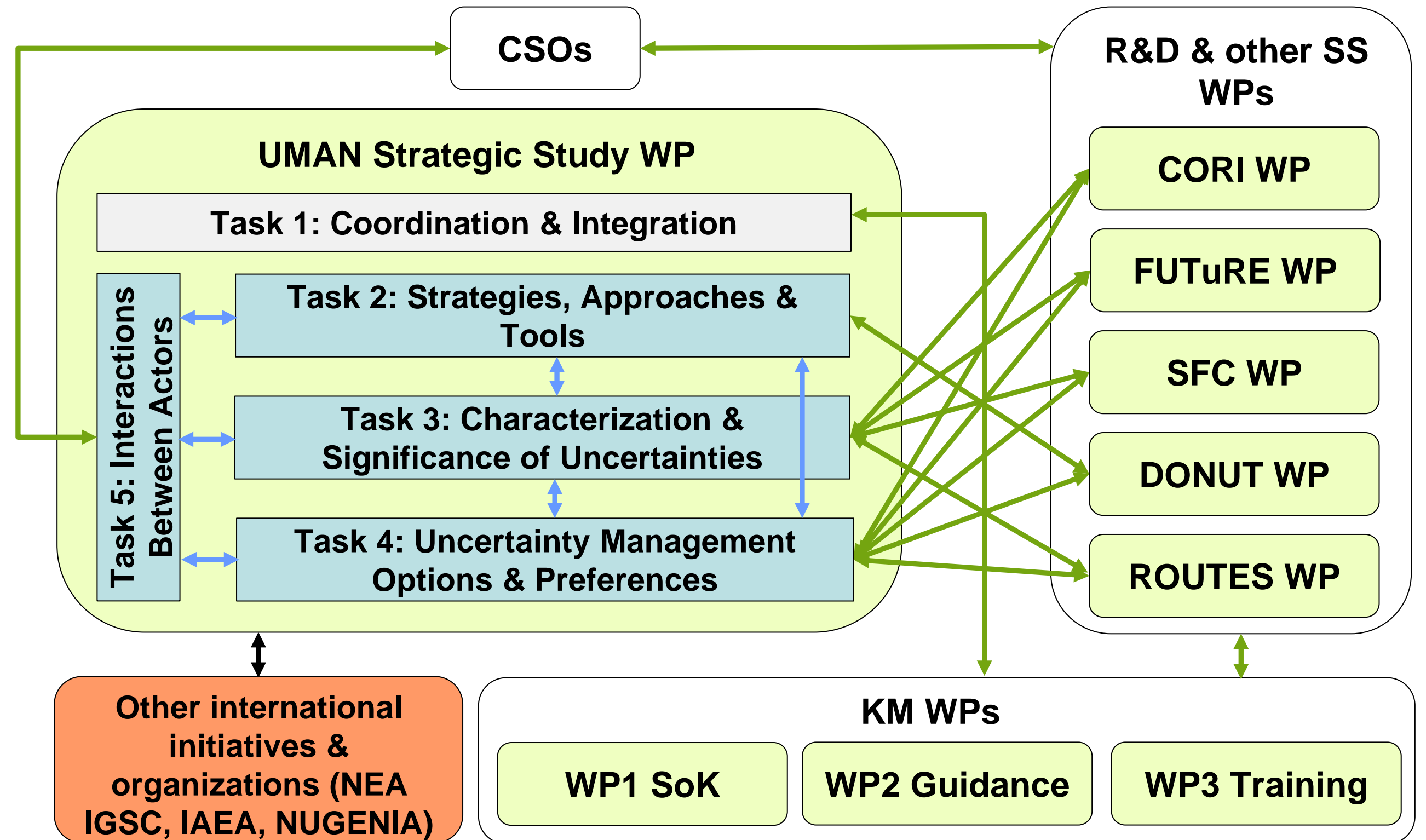
- ✓ **LEI**, Lithuania (RE)
- ✓ **NAGRA**, Switzerland (WMO)
- ✓ **NRG**, Netherlands (TSO)
- ✓ **ONDRAF/NIRAS**, Belgium (WMO)
- ✓ **POSIVA**, Finland (WMO)
  - Envirocase, Finland
- ✓ **PSI**, Switzerland (RE)
- ✓ **RATEN**, Romania (RE)
- ✓ **SURAO**, Czech Republic (WMO)
- ✓ **RWM**, United Kingdom (WMO)
- ✓ **SCK-CEN**, Belgium (RE)
- ✓ **SSTC NRS**, Ukraine (TSO)
- ✓ **STUBA**, Slovakia (RE)
- ✓ **SURO**, Czech Republic (TSO)
- ✓ **TS Enercon**, Hungary (TSO)
- ✓ **TUS**, Bulgaria (RE)
- ✓ **VTT**, Finland (TSO)
  - Galson Sciences, United Kingdom

# UMAN - Task Breakdown and WP Board

**WP leader:** Frank Lemy, Bel V (TSO), BE - [frank.lemmy@belv.be](mailto:frank.lemmy@belv.be)

- ▶ **Task 1 - S/T coordination, interactions with KM WP & integration**
  - ▶ Valéry Detilleux, Bel V, BE
- ▶ **Task 2 - Strategies, approaches and tools**
  - ▶ Dirk-Alexander Becker, GRS, DE
- ▶ **Task 3 - Characterization and significance of uncertainties for different categories of actors**
  - ▶ Daniela Diaconu , RATEN, RO
- ▶ **Task 4 - Uncertainty management options and preferences of different actors across the various programme phases**
  - ▶ Astrid Göbel, BGE, DE
- ▶ **Task 5 - Interactions between all categories of actors including Civil Society**
  - ▶ Stéphane Baudé, MUTADIS, FR

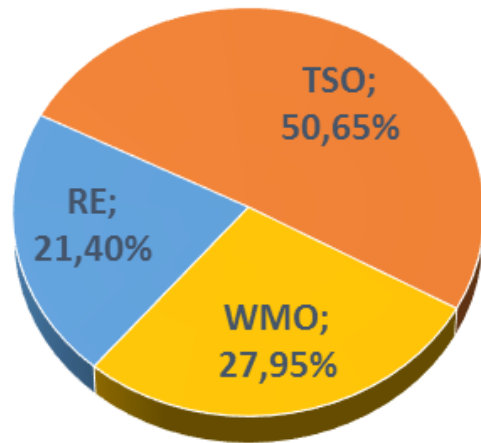
# Interactions





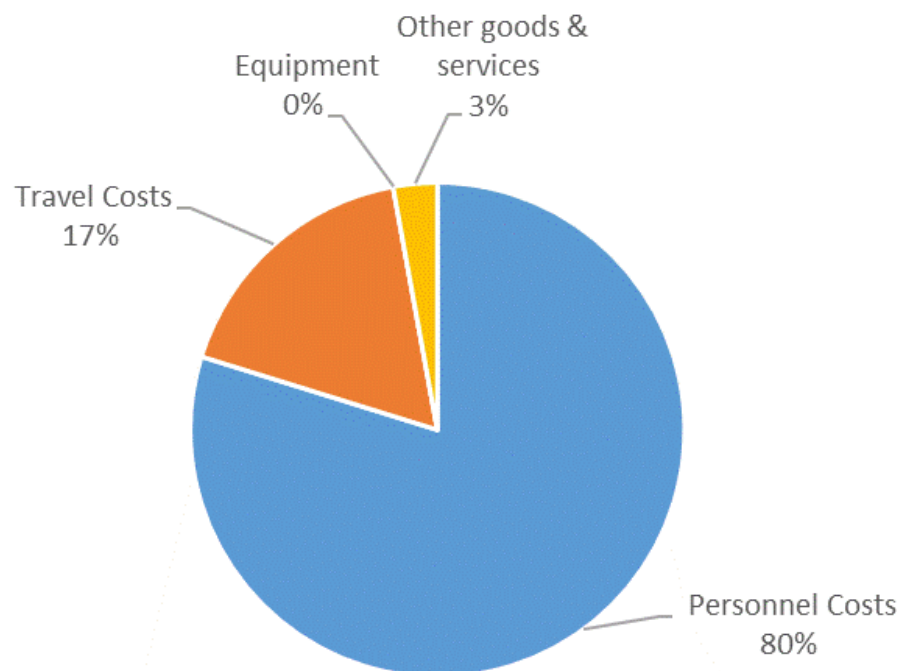
# UMAN – Planned resources

**UMAN WP:**  
Distribution of EC Contribution  
between categories of Actors

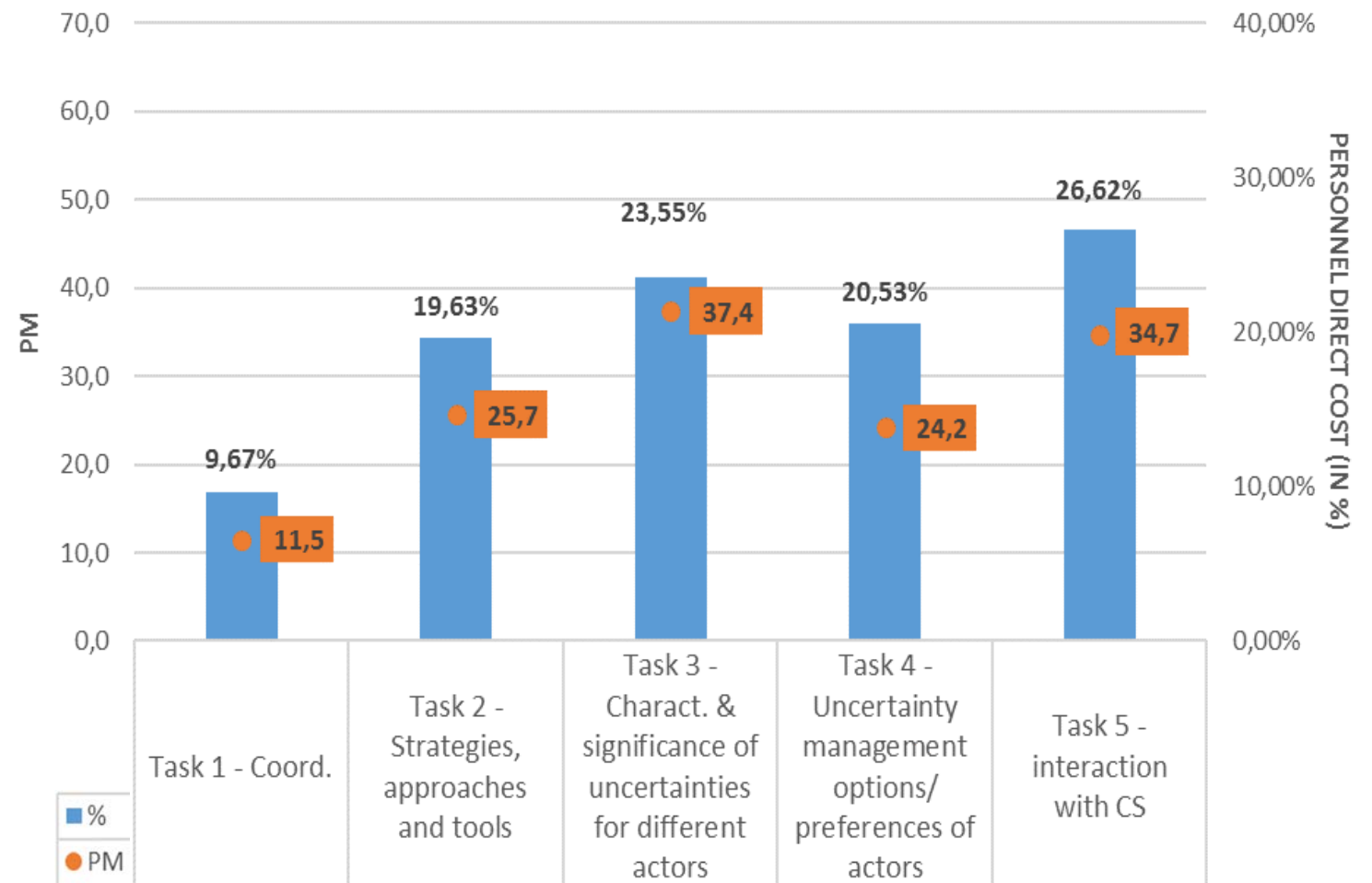


<b>TOTAL BUDGET</b>	1,7M€
<b>EC requested contribution</b>	1,2M€

**UMAN WP - Budget distribution between categories of direct costs**



**UMAN WP:**  
Personnel costs breakdown per task  
(in % and in PM) - Total PM: 133,5



# UMAN Task 1 - S/T Coordination, Interactions with KM WP & Integration

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## ▶ Objectives

- ▶ S/T coordination of the WP
- ▶ Integration of task outcomes
- ▶ Reporting to the Programme Management Office (PMO) on the progresses of the work
- ▶ Developing training materials as an input to KM WP3

## ▶ Main expected outputs:

- ▶ Recommendations for 2<sup>nd</sup> wave of EJP1 (Month 12)
- ▶ Recommendations for EJP2 (Month 46)
- ▶ Training materials (Month 48)

# UMAN Task 2 - Strategies, Approaches & Tools

## ► Objective:

Compile, review, compare and refine strategies, approaches and tools for the management of uncertainties in the safety analysis and the safety case



# UMAN Task 2 - Strategies, Approaches & Tools

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- ▶ **Subtask 2.1 – Generic strategies for managing uncertainties**
  - ▶ Lead organisation: GSL, UK
  - ▶ Main expected output: Month 36
- ▶ **Subtask 2.2 – Uncertainty identification, classification and quantification**
  - ▶ Lead organisation: HZDR, DE
  - ▶ Main expected output: Month 36
- ▶ **Subtask 2.3 – Methodological approaches to uncertainty and sensitivity analysis**
  - ▶ Lead organisation: TU Clausthal, DE
  - ▶ Main expected output: Month 48

# UMAN Task 3 - Characterization & Significance of Uncertainties for Different Categories of Actors

## ► Objective:

Synthesize existing knowledge and views of different kinds of actors on the identification, classification, characterisation and significance of uncertainties associated with specific topics



# UMAN Task 3 - Characterization & Significance of Uncertainties for Different Categories of Actors

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- ▶ **Subtask 3.1 – Types of uncertainties relevant to the safety analysis and the safety case**
  - ▶ Lead organisation: CNRS, FR
  - ▶ Main expected output: Month 36
- ▶ **Subtask 3.2 – Uncertainties on waste inventory and on the impact of predisposal steps**
  - ▶ Lead organisation: SCK-CEN, BE
  - ▶ Main expected output: Month 36
- ▶ **Subtask 3.3 – Site and geosphere related uncertainties**
  - ▶ Lead organisation: RATEN, RO
  - ▶ Main expected output: Month 36

# UMAN Task 3 - Characterization & Significance of Uncertainties for Different Categories of Actors

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- ▶ **Subtask 3.4 – Uncertainties related to human aspects**
  - ▶ Lead organisation: ANDRA, FR
  - ▶ Main expected output: Month 36
- ▶ **Subtask 3.5 – Spent fuel related uncertainties**
  - ▶ Lead organisation: CIEMAT, ES
  - ▶ Main expected output: Month 48

# UMAN Task 4 - Uncertainty Management Options & Preferences of Different Actors

## ► Objective:

Identify, for different phases of a disposal programme and the associated decision-making, a bundle of possible options for:

- treating uncertainties associated with specific topics in the SA
- avoiding, reducing or mitigating uncertainties
- making a safety case robust vis-à-vis uncertainties



- The **views and preferences of the different kinds of actors** on possible options will be identified
- Platform for **networking** on uncertainty management options



# UMAN Task 4 - Uncertainty Management Options & Preferences of Different Actors

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- ▶ **Subtask 4.1 – Identification and characterization of the different actors across the entire RW management process**
  - ▶ Lead organisation: BGE, DE
  - ▶ Main expected output: Month 12
- ▶ **Subtask 4.2 – Compilation and review of available information on possible uncertainty management options**
  - ▶ Lead organisation: NAGRA, CH
  - ▶ Main expected output: Month 42
- ▶ **Subtask 4.3 – Preferences of the different actors on uncertainty management options**
  - ▶ Lead organisation: NRG, NL
  - ▶ Main expected output: Month 48

# UMAN Task 5 - Interactions between all Categories of Actors, Including Civil Society

## ► Objectives:

- Develop a common understanding or an understanding of the different viewpoints among different categories of actors on:
  - uncertainty management and how it relates to risk & safety
  - whether and why a safety case is robust vis-à-vis uncertainties
- Share knowledge/know-how and discuss common methodological/strategical issues on uncertainty management among a broader group of actors
- This task will organise analyses of key outcomes of other WP tasks with **pluralistic stakeholder groups** including CSOs, TSOs, WMOs and REs



# UMAN Task 5 - Interactions between all Categories of Actors, Including Civil Society

- ▶ **Subtask 5.1 – Preparation, support and reporting of pluralistic analyses**
  - ▶ Lead organisation: MUTADIS, FR
  - ▶ Topics:
    1. Meaning for different actors of uncertainty management and of its relationships with risk, safety & the safety case
    2. Uncertainty pictures at different steps of a disposal programme
    3. Uncertainty management options
    4. Methods for a pluralistic assessment of uncertainties and their management along the disposal programme
  - ▶ Main expected output:
    - ▶ Seminars: Months 13, 20, 32 & 44
    - ▶ Deliverables: Months 40 & 48
- ▶ **Subtask 5.2 – Input of civil society experts**
  - ▶ Lead organisation: MUTADIS, FR
  - ▶ Main expected output: Month 48

# UMAN Key Challenges & Objectives for Year 1

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- ▶ Preliminary lists of uncertainties associated to site & geosphere, human aspects & spent fuel (Months 6 & 10)
- ▶ 1<sup>st</sup> overview of the regulatory background and strategies in participating countries (Month 7)
- ▶ 1<sup>st</sup> high-level integrated picture of the various types of uncertainties potentially relevant for safety and of their evolution (Month 7)
- ▶ Identification & characterization of the different actors across the entire radioactive waste management process (Month 12)
- ▶ Recommendations for the 2<sup>nd</sup> wave of EJPI (Month 12)
- ▶ 1<sup>st</sup> overview of existing approaches for the identification, classification & quantification of uncertainties (Month 13)
- ▶ Organisation of the 1<sup>st</sup> seminar gathering a pluralistic stakeholder group dedicated to topic 1 (Month 13)
- ▶ Interactions with KMWP



**Thank you for your  
attention !**