

Project ENSURE

Endlagersicherheit: Ungewissheiten und Regulatorische Aspekte

Current Status

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Structure

- Project Overview
- WP 1 Regulatory Requirements
- WP 2 Methodical Synthesis
- WP 3 Methods and Recommendations
- WP 4 Use-Case for Site Comparison
- WP 5 Evaluation and Synthesis
- WP 6 Qualification, Training and Education

Project Overview (1)

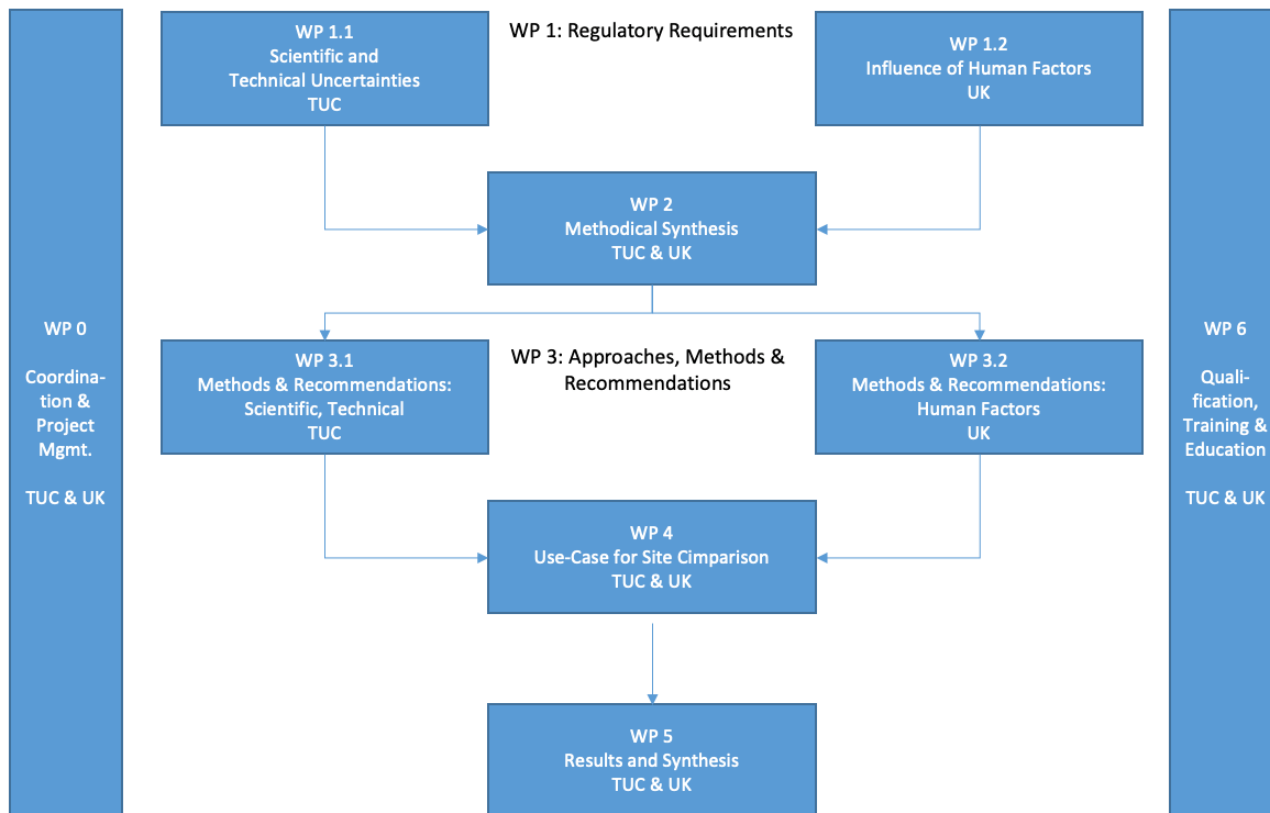
ENSURE: General Information

- Short: „**E**ndlagersicherheit: **U**ngewissheiten und **R**egulatorische Aspekte“ („Repository Safety: Regulatory Aspects of Uncertainty and Robustness“)
- we consider human factors and scientific / technical factors
- human factors → University of Kassel
- natural sciences / technological factors → Clausthal University of Technology

Project Overview (2)

- Analysis of possible influences of psychological aspects on the assessment process
- Improve robustness of assessment processes
- Derive holistic approaches and methodologies for the consideration of human factor uncertainties
- Literature review: Uncertainty management in national and international regulations and recommendations; comparison to state of the art / practice; gap analysis
- Development of guidelines for uncertainty management
- Use case: Uncertainty management during site comparison

ENSURE Structure



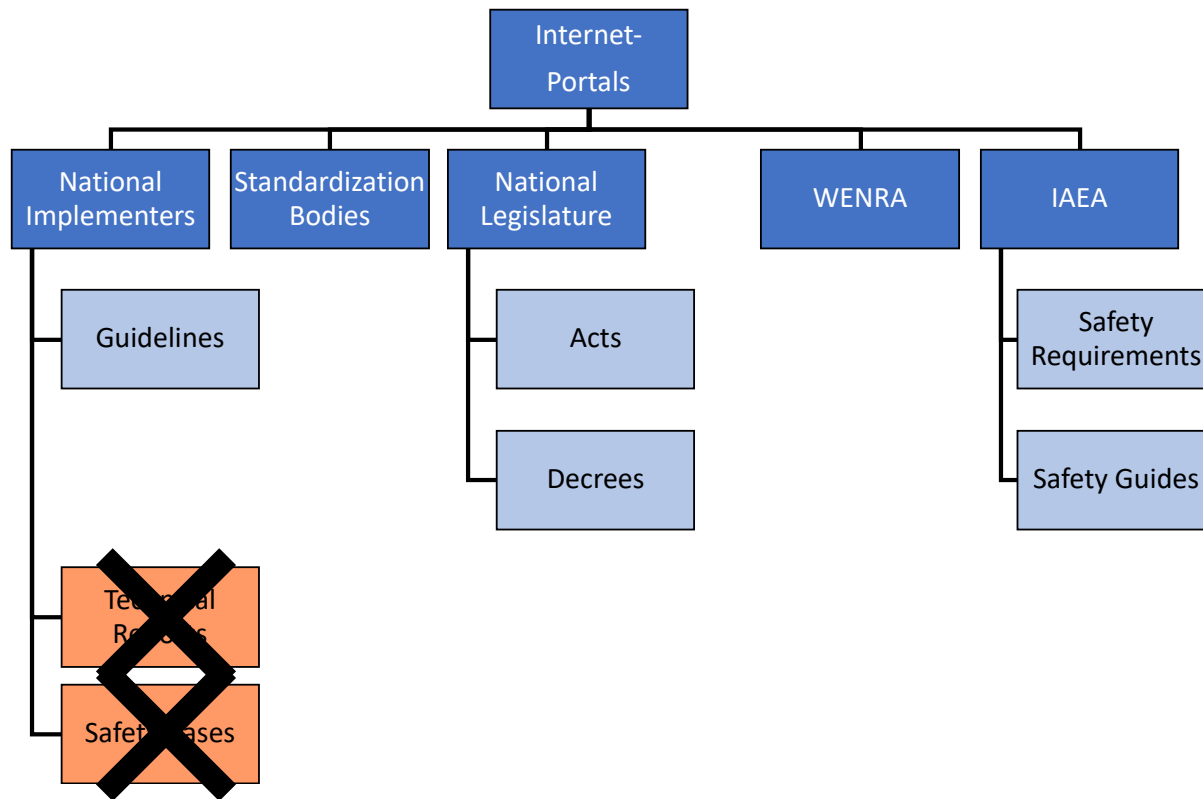
WP 1 Regulatory Requirements

Scientific and Technical Uncertainties (WP 1.1)

- Sources (and source situation)
- Methodology
- Contents
 - Laws
 - Decrees
 - Guidelines & policies
- State of the art & practice
- Gap analysis

Sources (1)

- We tried to gain access to most sources via the Internet
- Portals of implementers, legislative bodies, ...



Source Situation



Paywalls for Standards



Poor discoverability

Incompleteness



Language barriers



Huge amounts of documents

Sources (2)

- ± 100 national documents of 7 countries
- ± 25 documents by WENRA and IAEA
- Still wip
 - Still documents missing
 - 100s of hits ('uncertainties')

Source Situation: Canada



Source Situation: Sweden, France, ...



Methodology

- Selection of considered countries (D, CH, F, SE, UK, CA, FI)
- Screening for relevant laws, decrees, ...
- Collection in citavi (literature mgmt. tool)
 - Texts
 - Relevant quotes / locations
- Categorization according to
 - regulatory level (law, decree, guideline / policy)
 - topic
- Builds the base for the gap-analysis

Thema	Reg. Ebene	Gesetz	Verordnung	Leitlinie/ Richtlinie
Dokumentation			4, 5, 31, 32, 37...	9, 11, ...
Parameter- und Datenungewissheiten				
<u>Szenariungewissheiten</u>				
Modellungswissheiten				
Methodenungewissheiten				
Faktor Mensch				
Standortvergleich				

Laufende Nummer des Citavi-Zitats

- Register von Ungewissheiten
- Systematisch, transparent, nachvollziehbar, begründet
- Quelle der Ungewissheit
- Vorgehen bei Behandlung
- Verknüpfungen mit anderen Ungewissheiten
- Vorgehen bei Quantifizierung
- Quantifizierung noch bestehender Ungewissheiten
- Einfluss auf Sicherheit / Barrierenentwicklung / Gesundheit
- Möglichkeiten zur weiteren Reduktion
- ...

Contents (Laws)

- Very little regulation regarding uncertainties
 - As expected
- Definition of targets, paradigms and responsibilities
- In most countries approx. three laws regarding final repositories:
 - Radiation protection
 - Use of nuclear energy
 - Environment
- Some countries with special laws:
 - StandAG (D), Nuclear Fuel Waste Act (CA), ...

Contents (Decreases)

- Not enacted by parliament, but other bodies, like ministries
- Easier to change than laws
- Nevertheless, usually behind state of the art/practice
- Defines targets and processes but keeps them generic
- Defines usually
 - Limits,
 - Reference values,
 - Methodologies

Contents (Guidelines & Policies)

- Usually legally not binding (there are exceptions!)
- Often hard to find
 - Not openly available via internet portals of legislative bodies
- Usually pretty close to state of the art/practice
- Often still generic regarding uncertainties
 - Exceptions: UK, Dosisabschätzung in D
- Germany is pretty specific in comparison to the other considered countries

WP 1.2 Human Factor

- WP 1.2 covers the human factor
- The state of this work will be covered by Fabian directly after this presentation

WP 2 Methodical Synthesis

- We collected inputs from you
 - PhD workshop in Leipzig
 - questionnaire
 - templates
- These inputs, together with our findings (WP 1.1 (scientific), WP 1.2 (human factor)) will form this synthesis
- UK leads this WP
- Details will be worked out during a workshop with UK and TUC next week

WP 3 Methods and Recommendations

- We have not started this WP yet

WP 4 Use-Case for Site Comparison

- We have not started this WP yet

WP 5 Evaluation and Synthesis

- We have not started this WP yet

WP 6 Qualification, Training and Education

- Our PhD student in this project has unfortunately not been able to return to work yet
- There will be no PhD thesis in the context of this project
- We are currently supervising a Bachelor thesis in the context of regulation of uncertainties and the gap analysis.
 - It's progressing (too) slowly
 - We use it as a quality assurance measure

Thank you for your attention!

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FÜR ENDLAGERUNG**