SUMEX DELIVERABLE D4.1

TECHNICAL SPECIFICATION FOR THE SUMEX TOOLKIT

Summary:

The SUMEX project builds a digital Toolkit for good practice learning, which engages in processes and builds tools to make this knowledge available and provide support for decision-making in public and private sector alike. This report investigates options for technical implementation, the management approach and a first mapping of target groups. It does so by means of desk-research of existing approaches as well as internal and external consultation processes with potential users and participants.

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European Aggregates Association


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1 EXECUTIVE SUMMARY

The management of knowledge is an important driver for enabling the transition towards a sustainable extractive sector in Europe. Formal or explicit knowledge on practices for sustainable development in the extractive sector captured by documents or videos are dispersed and non-contextualised, whereas tacit knowledge is rooted in the experience and cognitive understanding of people and, therefore, difficult to convey.

The SUMEX project responds to these challenges by building a digital Toolkit for good practice learning (henceforth referred to as "Toolkit), which engages in processes and build tools to make available this knowledge and provide support for decision-making in public and private sector alike. The SUMEX Toolkit comprises two components: A knowledge repository of good practice relevant information (repository) and Digital learning & exchange actions (learning actions). This report investigates options for technical implementation, management approach as well as a first mapping of target groups for these two components by means of desk-research of existing approaches as well as internal and external consultation processes with potential users and participants.

For the repository, our research revealed several ways of classifying and structuring good practice relevant information that are user-friendly, easy to understand as well as able to integrate into the learning component. The WUW team, considered the following aspects for technical specifications: differential user needs, filter and classification systems for data items as well as Long-term & post project lifetime. For the learning component, desk-research and consultations provide an overview of key concepts, first design considerations as well as next steps in the implementation. First results indicate an approach using existing Learning Management Systems (LMS) for designing, organising and implementing learning actions. During the next year, the SUMEX consortium will further conceptualise and design the SUMEX toolkit for a first launch of learning actions and the repository by beginning of 2022.

Key words: good practice, e-learning, peer learning, repository, sustainable extractive sector, knowledge management

2 THE SUMEX DIGITAL TOOLKIT FOR GOOD PRACTICE LEARNING

There is a lot of information available on sustainable management and practices, however it is dispersed, and rarely contextualized. Rather solutions are offered by addressing single issues (such as community engagement) without the interdependence of these practices with other practices or issues. Therefore, SUMEX is aiming to provide a holistic and integrated approach to knowledge and information on good practices, focusing on the needs of the practitioners. The process of guiding decision-making, therefore, moves from providing data, to information to more contextualizing this to create knowledge which results from people's experiences of practices.

In knowledge and knowledge management theory, the understanding as well as the management of knowledge varies widely 1. In general terms, the knowledge theory literature (differentiates two dimensions of knowledge: tacit and explicit [1, 2]. Based on experience, action and practice in a specific context, the tacit dimension of knowledge is comprised of both cognitive and technical aspects [1, 3]. The cognitive element refers to an individual's mental models consisting of mental maps, beliefs, paradigms, and view- point and the technical component consists of concrete know-how, crafts, and skills that apply to a specific context: An example of tacit knowledge is knowledge of the best means of approaching a particular situation using, for example, a no-nonsense approach. The explicit dimension of knowledge (henceforth referred to as explicit knowledge) is articulated, codified, and communicated in symbolic form and/or natural language: An example is an owner's manual accompanying the purchase of an electronic product. The manual contains knowledge on the appropriate operation of the product. [3].

Thus, the building blocks of the SUMEX will manage the tacit as well as the explicit dimension to knowledge: SUMEX will focus on both the experience of the people (tacit) who are the intended beneficiaries and users as well as formal and codified information found in documents or other forms such as websites (explicit). Against this background, SUMEX will apply processes and tools (such as peer learning as well as the implementation of a portal of actionable knowledge) in iterative as well as integrated way to collect, organise, internalise, well as contextualise and reassess this knowledge (Figure 1).

[1] Alavi, M. and D. E. Leidner (2001). "Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues." MIS Quarterly **25**(1): 107-136.

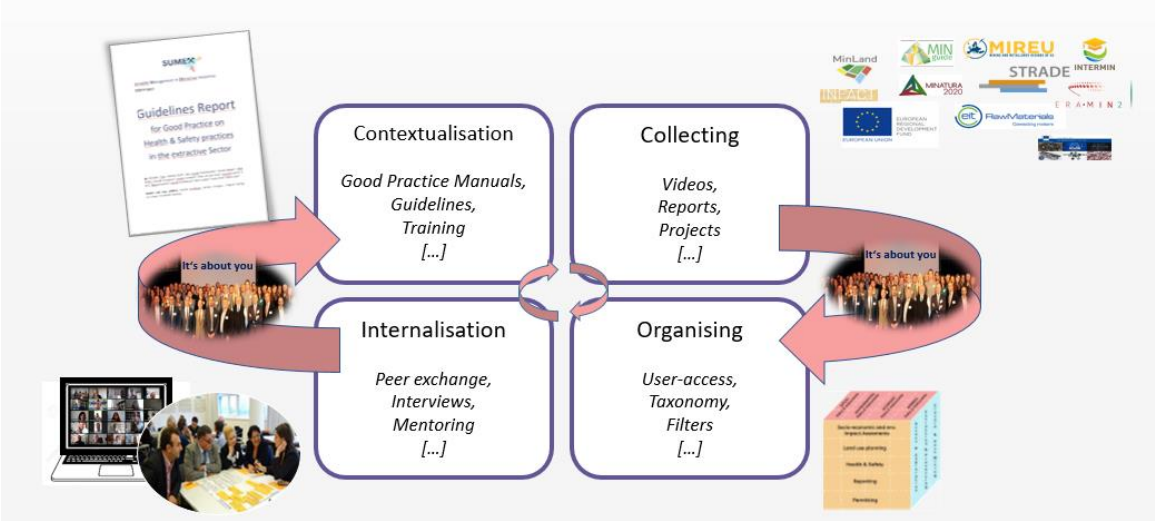


Figure 1: Graphical Concept of the SUMEX process for knowledge management via the Toolkit

Amongst other actions, SUMEX aims provide a tool for knowledge management on the digital level: the SUMEX digital Toolkit for good practice learning (henceforth referred to as the Toolkit). The SUMEX Toolkit comprises two components (see figure 2) that are relevant for good practice & peer learning as well as general synthesis of good practice in the European extractive sector:

Component 1 - A knowledge repository of good practice relevant information: The first part is an open-access online data repository synthesising and contextualising relevant information on industry and policy good practice & training materials in the form of reports, videos and websites (henceforth referred to as the "repository"). The first step is to collect the knowledge that already exists and find the best way of organising this knowledge. Some ideas around this knowledge repository include creating a one-stop-shop that offers a well-structured repository, with user needs centred information access. Another focus is to design guidance materials by 'making sense of good practice' – a how to best present information that makes sense to people and learn from a good practice example . To further supplement these documents, using webinars, storytelling, videos and graphics are considered as a good way to communicate information

Component 2 - Digital learning & exchange actions: The second part of the Toolkit refers to a series of online exchange actions that target SUMEX stakeholders who would like to exchange and learn on SUMEX compiled good practice information in an interactive training and peer-learning format (henceforth referred to as the "learning actions"). Against this background stakeholders central to the

learning actions will **form a group of people and organisations that incentivises and facilitates the formation of a CoP (members represent the Learners and Leaders League), and, therefore, plays a fundamental part in the design and implementation of both the SUMEX Toolkit repository and learning component**.

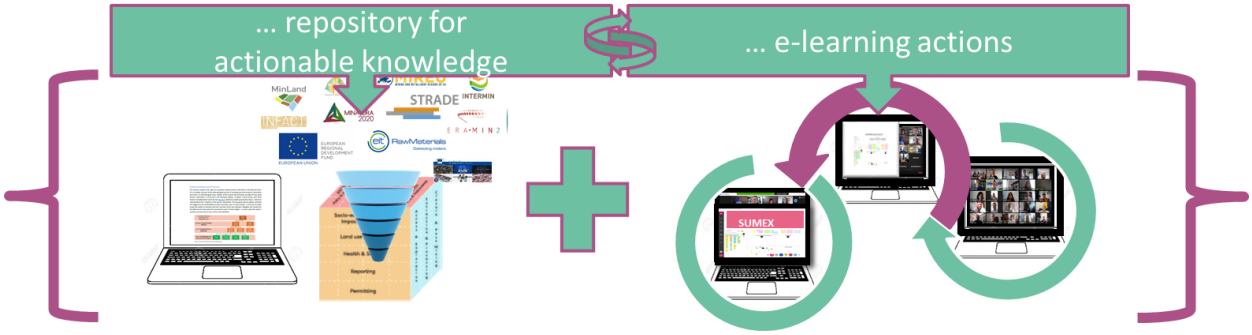


Figure 2: Graphical representation of the SUMEX Toolkit

Overall the Toolkit responds to the SUMEX objective of "Deploy an open access toolkit for capacity building across EU and with all stakeholders" by setting up an open-access data repository of good practice information as well as engaging in digital learning & exchange processes with SUMEX target stakeholder groups.

Against this background, this deliverable ("D4.1 Technical specification for the SUMEX Toolkit") outlines the descriptions of all required functionalities (see section "2.1" and "2.2"), specifications of user groups (see section 3 "Who are its target groups"), as well as the respective management processes for types of interactions and actions (see section 4 "Management approach of the SUMEX Toolkit).

2.1 THE REPOSITORY COMPONENT

As outlined above the SUMEX Toolkit has as overarching objectives of

1) synthesising and contextualising existing good practice relevant information of industry & public policy practices in the European extractive sector, as well as
2) capacity building across the EU and with all stakeholders via information provision and targeted learning actions (repository & learning actions).

For that purpose, the two different components will be highlighted and described separately with regards to their functionality.

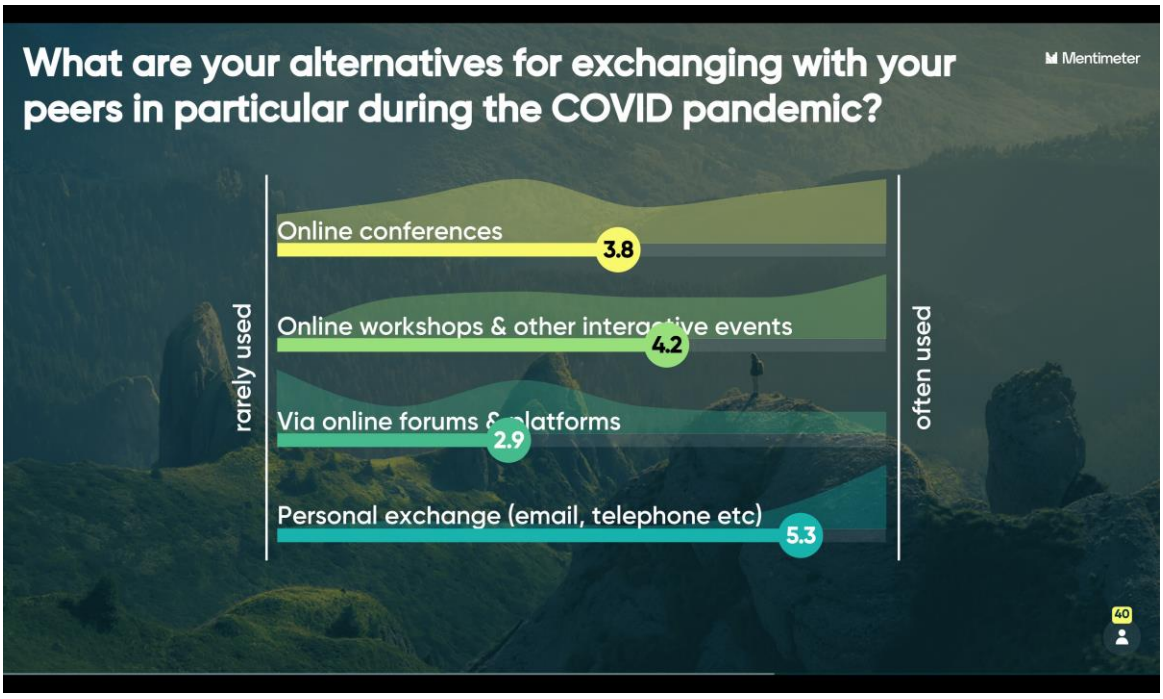
The repository component will comprise information on good practice of external data sources as well as SUMEX produced information material (videos & reports). As a first step in its development, the WU team conducted the following actions that are outlined within this deliverable:

1. Summary of reflections by Expert Panel at the SUMEX Project Launch event (17 Nov, 2020)
2. Liaising with project partner EFG for embedding the repository into the SUMEX project website
3. Desk-research on online repositories with regards to relevant and interesting technical- and user-features
4. Next Steps in the design process

1. Summary of reflections by Expert Panel at the SUMEX Project Launch event and implications for the repository design

At the SUMEX digital kick-off workshop on 17 November 2020, a Panel-discussion and Q&A was dedicated to acquire feedback on functionalities and user-needs with regards to the SUMEX-Toolkit. A more detailed overview of results can be read in the deliverable D5.1 Summary of the kick-off workshop "Europeanising sustainable development in the extractive industries". The main take-aways for further research on the repository component and how they influenced the next steps in the design process are briefly outlined below (see figure 3 below).


What recent topic would you like to discuss with other peers?
Mentimeter
5
11
2
6
14
Company practices on Social-license-to-operate
Mining permitting & licensing
Health and safety
Sustain-able mining operations
Integration of minerals and land use planning policy
38


What are your alternatives for exchanging with your peers in particular during the COVID pandemic?
Mentimeter
rarely used
often used
Online conferences
3.8
Online workshops & other interactive events
4.2
Via online forums & platforms
2.9
Personal exchange (email, telephone etc)
5.3
40

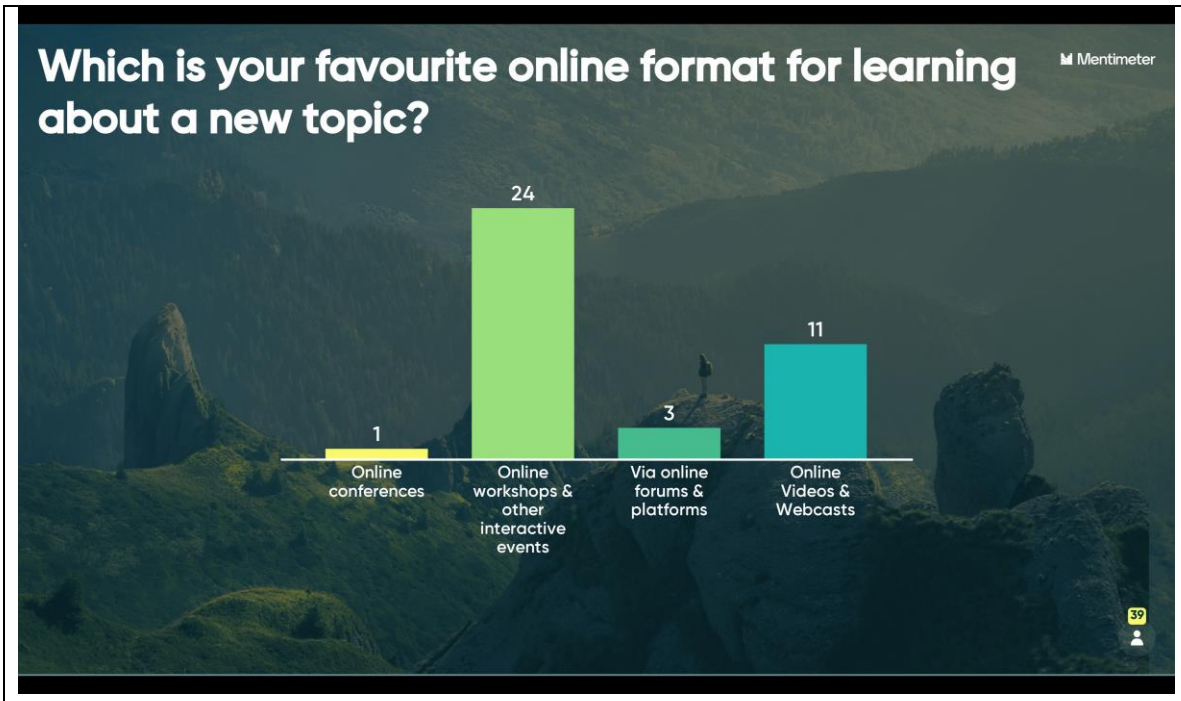


Figure 3: Overview of quick-survey results regarding preferred approaches for digital communications & interaction

- **Quite differential user needs** (industry <-> policy) & **Well-structured & searchable knowledge repository**: The discussion was focused around different user needs of two major target groups in the SUMEX project: industry and public policy stakeholders. Panelists emphasised the importance of identifying the main target of users, rather only focusing on industry needs. Furthermore, the differential user needs were covering aspects such as (1) "**industry** requiring much more **specific and contextual knowledge** with regards to sustainable extractive management practices and operations", (2) "a knowledge repository is of use to **industrial actors** where it provides **site-specific information** or from experts **on a particular subject**" or (3) "an **overview** of where to find **good cases and experts**"[2]. With regards to specific functionalities of a

[2] While industry experts have specific knowledge needs that have been discussed during the workshops, the information of policy makers are quite different according to the academic discourse: For example, according to Hager etl al. {Hanger, 2013 #1110} in climate change policy "too much research results are available and policy-makers feel overwhelmed processing them and usually do not have the necessary time and resources". This would

repository, Panellists mentioned that one of the most important things for practitioners are the visualisation of the tool, that it's easy to use (such as searchability) and the long-term stability of the platform.

Repository design implications:

Filter and classification systems for data items: The particular requirements for industry stakeholders suggest that data item classification on the repository **should account for more differentiation and contextual information (e.g. site specific, topics addressed, commodity type, region etc.) as well as search functions.** This should be reflected in **diverse filter-functions** (e.g. geographic scope, mine-life cycle) as well as **clear-cut topic demarcations** (health and safety, environmental impact assessments etc.).

Long-term & post project lifetime: With regards to the longevity and post project life of the repository, the SUMEX WP 4 team will pro-actively design the repository in a way that it is available after the project end.

- **Digital engagement preferences** (personal > workshop > conference > fora/platforms): Participants and Panellists were generally in favor of more direct and personal exchange for learning on good practice as compared to indirect and non-personalized exchange such as online fora or platforms/knowledge repository.

Repository design implications:

SUMEX acknowledges that a repository cannot replace direct and personal engagement processes (see learning action component). Besides the learning action component, the repository should function as a one-stop shop for information on good practice. Therefore, the **repository acts as a means towards introducing good practice information (SUMEX generated and external sources) into the learning action component:** Reflections gained during the learning

call for an approach following structured compilation of information and processing this information in a way to be easily understood and processable by policy maker. However, as Strachan and Rolands {Rowlands, 1997 #1109} pointed out that information needs are also very dependent on, for example, political culture or degree of decentralization of decision-making . Consequently, this results in a diverse set of information needs among policy makers in different EU MS, which hints at the point that 'One-size-fits-all' solutions cannot effectively grasp the diverse settings in which policy makers operate (I.e. information needs contextualisation).

actions could help to also validate and extend information on existing good practice information that adds to its credibility, validity of information and transferability useful for other stakeholders who were not part of the learning process and could later benefit from this information on the repository component.

- **Quality of data (reliability & validity):** Part of the Panel discussion indicated the need to verify and validate the quality of information put onto a repository. This is particularly relevant for good practice information produced within the SUMEX project as part of the case study elaboration and practice stock-taking and later screening exercise.

Repository design implications:

Editorial process: The repository component and its **classification and visualisation** of data items shall take into consideration the structuring of data according to issues of **data quality & reliability** as well as **verification** by the SUMEX project team. For that purpose, **editorial processes and work-flows with experts from the project team** with regards to the upload of information onto the repository shall safeguard quality of information.

Transparent good practice identification: As regards the identification of good practice, the project team and the repository shall **transparently display information on the methodology of good practice identification and elaboration** (i.e. describing the methodology and indicate implications for the repository).

2. Liaising with project partner EFG for embedding the repository into the SUMEX project website

The repository as a tool for compiling and organising good practice information is an important instrument for communicating project relevant information to a wide audience. Therefore, in liaison with the project coordinator and the partner EFG managing the website, WUW decided to host the repository component of the SUMEX Toolkit on a subdomain of the SUMEX project website (https://www.sumexproject.eu/), e.g. database.sumexproject.eu. The technical implementation and programming of the repository will be conducted by the same programming services used for the website.

Overall, this approach has the following benefits:

- Using the same service provider for programming the website and repository increases cost and time efficiency and avoids misalignment between them.

- The programmer will be able to apply the same style, menus, etc. for the repository such that visitors would not recognize the switch to the subdomain.
- Increased visibility and website trafficking due to the integration of the repository and its data items process such as e-learning actions and physical peer-learning events.
- Easier technical integration of the repository: The website uses WordPress as its CMS which would require a separate plugin to install the repository. In order to avoid known risks of incompatibility between WordPress and CMS of the chosen repository software, the repository will run on a separate subdomain.
- Post-project life-time of the repository easier to extend/maintain due to its domain being subsumed under the project website's main domain.

3. Desk research on repository technical and content features

As regards the repository component, the WUW Team conducted a desk-research on existing repositories in order to identify 1) technical features, 2) filter classification and taxonomy, and 3) interesting user features that inform the development of the SUMEX Toolkit repository component.

The desk-research comprised of a search of internet repositories in the form of resource libraries, data repositories and other online content sharing repositories both in the extractive sector and beyond. The desk research was guided by search terms of "online repository", "resource library", "content repository", "online resources", and "online data base". Web-search resulted into 26 results found for the extractive sector and 35 results for the non-extractive sector repositories. In the initial search, the to be investigated repositories have been narrowed down to 10 repositories for the extractive sector and another 10 repositories for the non-extractive sector for a more detailed analysis of their technical functionalities.

After the first mapping of repositories, SUMEX partners have been invited for feedback on useful repositories that resulted into the uptake of 12 repositories for further analysis of technical features. After identifying relevant repositories, the WU Team conducted an in-depth analysis of both 1) technical features, 2) filter classification and taxonomy, and 3) interesting user features that informed the development and design of the SUMEX repository (more details on the analysis can be found in Annex 1).

Suggestions for structuring data on the repository

Based on the conducted desk-research and SUMEX partner feedback, the following functionalities and filter systems will be taken into consideration for further development of the Repository component of the SUMEX Toolkit:

- **Data items on the repository:** The repository will contain data formats and items of good practice information based on the following: 1. hyperlinks to videos and reports, and 2. uploaded SUMEX documents/PDFs (e.g. training materials, good practice reports, industry case studies, project descriptions etc.).
    - **Filter: good practice learning materials:** differentiating good practice learning materials along different document formats such as company & policy case study reports, handbooks, guidance documents, training materials, Toolkits, courses & training.
    - **Filter: format of data items**: differentiating between videos, repository & resource libraries and toolkits, reports, websites etc.

- **Different filter criteria used for the repository:** The repository will contain filter criteria and taxonomy that is relevant for extractive sector practitioners and make it easier to find relevant information for different user groups. Informed by a first desk-research on filter criteria and classification/taxonomy of data items, the following filter criteria have been identified as relevant for the repository:
    - **Filter: Extractive sector mine life-cycle stage:** The SUMEX project addresses several stages in the life cycle of a underground mine or quarry operation. Furthermore, guidance documents and trainings might be specific for different stages in the mine-life cycle, thus, the repository will differentiate in the taxonomy of the Extractive sector mine life-cycle stage such as i) pre-exploration (land-use planning), ii) exploration, iii) pre-exploitation/ development stage (e.g. feasibility study), iv) exploitation phase, v) post-exploitation phase (i.e. rehabilitation).
    - Geographic coverage: differentiate between data items that address Global, European, national (further differentiating between EU MS and associated or other European countries), regional or local issues.
    - **Filter: Industry / business versus public policy context:** Depending whether the data item comprises information on public policy or private sector actors the repository will differentiate information accordingly.

- **Filter: Relevance for good practice learning and training:** The repository will differentiate data items depending on the added-value for learning and training for practitioners to gain new insights into, for example, business model solutions, policy recommendations and new approaches. The following taxonomy for "Relevance for good practice learning and training" will be used: i) policy briefs, ii) training material, iii) guidance documents, iv) handbooks etc.
- **Filter: "Commodity type & extractive sector":** differentiate between mining & quarrying activities**;** differentiate between battery materials, other mineral raw materials and aggregates.
- **Filter: "SUMEX Focus areas":** The SUMEX Focus areas will be used to thematically structure information: socio-economic and environmental impact assessments, land use planning, health and safety, reporting official statistics, permitting processes / policy integration.

Suggestions for describing and visualising different data items

According to the results of our desk-research the following examples provide ways to visualise data items in order to easily grasp its relevance for the individual user.

As regards the GOXI data repository (see figure 4) the following visualisation options and data item descriptions are relevant:

- Type of data item (i.e. "Publication")
- Title (i.e. "Risky Bet...")
- Short description (i.e. "The global energy transition ...")
- Data of publication (i.e. "February 09...")
- Direct download hyperlink
- Thumbnail Preview of document front page
- Forward & Redirecting hyperlink option

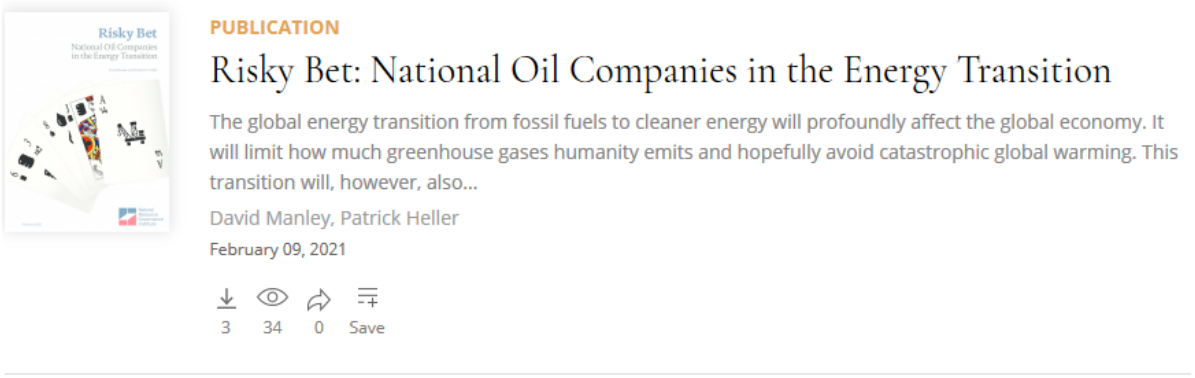


Figure 4: Screenshot of data item visualisation of GOXI data repository

As regards the ICMM (International Council on Mining & Metals) resource library (see figure 5) the following visualisation options and data item descriptions are relevant:

- Type of data item, categorised by focus area (i.e. case study) and topic (i.e. climate change)
- Title (i.e. "Mining with Principles")
- Short description (i.e. "The global energy transition ...")
- Data of publication (i.e. "15th Feb 2021...")
- Clicking on the title loads a new page where the case study is embedded as a video
- Thumbnail Preview of the video

Figure 5: Screenshot of data item visualisation of ICMM resource library

As regards the **Resource Contracts** data repository (see figure 6) the following visualisation options and data item descriptions are relevant:

- Type of data item, (i.e. Mining Contract)
- Title (i.e. "Alcan Holdings Switzerland AG, ⋯")
- Download button (as PDF or Word)

- No description
- Data of publication (2015…")
- Clicking on the title loads a new page where the contract can be read (as pdf)

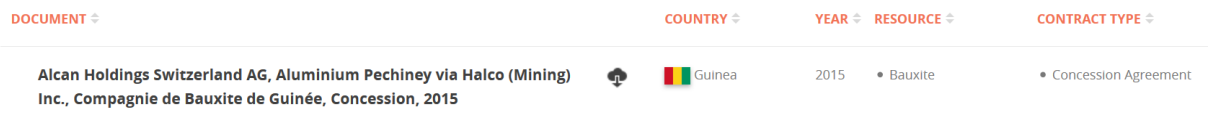


Figure 6: Screenshot of data item visualisation of Resource Contracts data repository

4. Next Steps in the design process

The development and implementation of the SUMEX Toolkit is a continuous process throughout the project's running time until its final deliverable D4.3 in month 36 containing all relevant information and features elaborated in the project. This deliverable is the starting point for a discussion on its first design and technical features to be further explored in the upcoming months.

The planned steps are:

- **Elaboration of Repository filter criteria and taxonomy:** Based on the upcoming work from WP2, WUW will in more detail describe the different levels and terms used for filter criteria.
- **User interviews and needs analysis:** With a more detailed understanding about the to be expected data items and project required filter criteria, WUW will conduct a more detailed analysis of target users and their needs. In particular: WP2 regional and clustering workshops will play a key role in further describing user groups, technical features, understanding of filter criteria, etc.
- **Setup of contract with software developer & partner EFG:** With a more detailed outlook on the amount and quality of data items to be expected from WP2 as well as the requirements for an editorial workflow and respective components of the backend system, WUW will engage with EFG for a more detailed proposal and contract on the programming end. At its current stage the repository will contain: 1) a static data repository (data are 1. hyperlinks of videos and websites, and 2. uploaded documents/PDFs), 2) a CMS for upload of these items, and 3) different tagging or filter systems should allow users to filter information (no commentary function or any user interaction such as "likes" or "comments").
- **Liaising with EC JRC on potential overlaps and synergies with RMIS system**

2.2 THE E-LEARNING COMPONENT – FIRST DESIGN CONSIDERATIONS

As outlined above the SUMEX Toolkit has as the overarching objective of synthesising and contextualising existing good practice relevant information of industry & public policy practices in the European extractive sector as well as capacity building across the EU and with all stakeholders via information provision and targeted learning actions (repository see section 2.1 & e-learning see this section). For that purpose, the two different components will be highlighted and described separately with regards to their functionality.

The main objective of the e-learning component is to enable interactive digital peer learning & training. This part of the Toolkit refers to a series of online exchange actions that target SUMEX stakeholders who would like to exchange and learn on SUMEX compiled good practice information in an interactive training and peer-learning format (henceforth referred to as the "learning actions"). Against this background stakeholders central to the learning actions will form a group of people and organisations that incentivises and facilitates the formation of a CoP (members represent the Learners and Leaders League), and, therefore, plays a fundamental part in the design and implementation of both the SUMEX Toolkit repository and learning component.

The basic concept of the learning action comprises the setup of digital moderation streams or mix of different online engagement tools including inter alia webinars, interactive discussion fora, webcasts stimulating a thread of discussion and engagement of practitioners in a peer learning and training setting over a longer period of time (these actions will be henceforth referred to as "Learners and Leaders League Actions" or "3L Actions"). As a first step in its development, the WU team conducted the following actions that are outlined within this deliverable:

1. An Overview and clarification of key concepts for 3L actions
2. Design considerations for a Learning Management System (LMS) hosting 3L actions
3. Next Steps in the design process

1. An Overview of and clarification of key concepts for Learners and Leaders League 3L actions

The following concepts are essential in the development and implementation of 3L Actions:

Community of Practice & 3L Community: Communities of Practice (CoP) are groups of people and representing organisations that collaborate to find innovative solutions for complex problems such as in the case for sustainable extractive sector practices in the public and private sector. CoPs provide a

learning environment in which professionals are sharing their practise experience, develop and discuss areas of interest and build up a community. These community members "share a concern, a set of problems, or a passion about a topic, and aim at deepening their knowledge of expertise in this area by interacting on an ongoing basis" [4]. Against this background, CoPs are usually developed bottom-up and ideally consist of three basic components: (a) a thematic field that all members are interested in (e.g. conflicting land use & mineral resources in land use planning), (b) a community which is characterised by continuous interaction and relationship building based on mutual respect, trust and a shared vision, (land use planning authorities, municipality public authority representatives, environmental NGOs etc) and (c) a pool of practices, ideas, information and tools that the community members are willing to share and mutually develop (e.g. mineral safeguarding and other land use planning tools for equal and fair assessment of different land use options).

A key measure to establish a working CoP is the presence of organisations and persons that drive an ongoing exchange and learning process. In the SUMEX project, the **3L (Learners and Leaders League)**[3] **will form this group of people and organisations that incentivises and facilitates the formation of a CoP, and, therefore, plays a fundamental part in the design and implementation of both the SUMEX Toolkit repository and learning component**. As a first step a selected group of people will be assigned a role in a 3L, that will be composed of members of the SUMEX Advisory Board, regions represented in the MIREU project and the informal network of mining authorities, project partners and organisations and persons that play a fundamental role in guiding the topic development and guarantee stakeholder outreach. The initial stakeholder mapping in WP6 and consecutive tasks in WP4 will facilitate the setup of a CoP that is fundamental in designing and implementing the repository and learning component of the SUMEX Toolkit. **Composition and recruitment of 3L members** will take into consideration 1) **representatives from each regional cluster**, 2) the integration of actors from **different horizontal (sectors) and vertical (administrative levels**, e.g. competent authorities) levels, 3) **industry representatives** working in various stages of the extractive life cycle, and 4) **gender balance**. Further details on the setup, recruitment, communication, and incentivisation for collaboration with the 3L will be developed via the deliverable "D4.2 Toolkit Learners & Leaders League (3-L) approach".

[3] For the purpose of learning and exchange all members of a Community of Practice are considered as both Learners and Leaders as they are simultaneously engaged in learning activities and lead the change within their organisations.

Online engagement tools: The 3L Actions will comprise of the following forms of online engagement activities:

- Learning Management Systems such as Massive Open Online Courses or open Learning Management Systems such as Moodle will be utilised for engaging CoP members in 3L actions
- Webinars for knowledge co-creating, good practice result-validation and peer learning
- Webcasts and recordings of, for example, webinars and project activities
- Expert-stakeholder video interviews with experts, focusing on different aspects of the project for wider engagement, understanding and accessibility of SUMEX
- Audio-visual story-telling videos for each focus area will constitute a prime vehicle for combining information and graphics to disseminate SUMEX results.
- Online discussion fora will provide opportunities for stakeholders to discuss and exchange information

Against this background, the "Learners and Leaders League Actions" or "3L Actions" will comprise a mix of the abovementioned online engagement tools. The WUW Team currently investigates different options on how to best organise online engagement tools in the context of SUMEX learning actions (see chapter 2.3).

Peer learning: Online exchange among 3L and CoP Members will be organised in different levels of intensity and frequency (e.g. online consultations & surveys, awareness raising and dissemination events, as well as more informal and two-way exchange). Peer learning is commonly defined as a 'two-way reciprocal learning activity' in which learning should be "mutually beneficial and involve the sharing of knowledge, ideas and experience between the participants" [5]. Peers are defined as equals in, for example, position (e.g. national policy makers), or individuals that are brought together by a shared practice (and form a CoP) [6-8]. Peers learn extensively by explaining their ideas to others, working collaboratively with others, giving and receiving feedback, and evaluating their own learning [9-11]. This also goes in line with the definition of case learning as a learner-centred process where interaction and exchange lies at the core of knowledge construction, [12] thus, case learning is often solution-oriented and strives to operationalise success-factors and challenges in order to 'solve' a specific challenge at hand [13].

In SUMEX, peer Learning will be a central engagement approach for both physical as well as digital exchange with 3L and the CoP members. The core of the peer learning approach will form a set of unique, interactive and adaptive moderation formats and techniques for the peer learning workshops,

in which practitioners share knowledge and experiences on good practices and SUMEX use cases. The purpose of the peer learning approach is to develop strong participation and active involvement of participants in the 3L and CoP, which aims to foster peer-to-peer, interpersonal, and open exchange on success factors, challenges, and lessons learned from extractive sector sustainability practices. Thus, as stipulated in the project's grant agreement, the MINLAND peer learning approach supports:

- **Exchange among practitioners and experts** (3L and CoP members) in **private and public sector settings**;
- **Transfer of experience** and exchange of tacit knowledge **on sustainable extractive sector practices** (i.e. repository data items as well as SUMEX use cases) amongst 3L and CoP members;
- **Diffusion of learning back to peers' home organisations** to enable reform practices (transferability and change), as well as;
- **Tools for both physical and online change to enable** all of the above by creating a learning setting for peer practitioners.

2. Design considerations for a Learning Management System

The idea for the SUMEX Toolkit learning component is to use existing Learning Management Systems (LMS) for designing, organising and implementing "Learners and Leaders League Actions" or "3L Actions". The LMS will support the organisation of a mix of the abovementioned online engagement tools.

So far, the following considerations and phases are taken into account for the selection and design of LMS in the context of 3L actions in the SUMEX Toolkit learning component.

Phase 1 „Informal digital peer learning"– five separate 3L actions characterised by

- **Utilising a LMS / MOOC – structure** for organising online exchange via webinars, fora etc
- **Having smaller groups** of practitioners from the 3L community and CoP for more interaction and engagement
- **Facilitating more informal expert exchange & peer learning managed by the SUMEX team**
- **Invitation-only or selective invitation approach** (organisers decide on a limited number of participants to be able to have more informal and two-on-two exchange),
- **Duration over 3-5 months**
- **Utilising material on the SUMEX repository** (pdfs, videos, websites) for learning and exchange formats during the 3L action

Phase 2: „Adaptation for MOOC format" at the end of the project transforms the 5 digital peer learning processes into one stand-alone course.

Phase 3: „Roll-out and promotion of MOOC“ - after SUMEX ended the 3L actions transformed into a standalone course on a MOOC system will be available for participation of MOOC platform users. This has the benefit that no hosting, maintenance costs or organisational effort are necessary after project end to keep the MOOC alive. Another option , discussed by consortium partners is the inclusion of the materials into suitable course in SUMEX partner's university curricula, or Life Long Learning course/training in EFG, TalTech, or at MUL.

Against this background the WUW Team currently investigates different options on how to best organise 3L actions on a LMS. At the current stage the project Team at WUW has identified two possible options for organising 3L actions on an LMS:

a) **More open and "sand-box" oriented LMS (e.g. Moodle) which are favouring more a "pick & choose for yourself" learning experience**
b) **More pre-structured LMS such as** Massive Open Online Courses (MOOCs) with a pre-defined learning path and interaction exercises (webinars, fora, Q&A sessions) which could be transformed into standalone and pre-structured courses and training (e.g, Edx, Coursera)

For that purpose, the WUW Team conducted a desk-research of LMS in order to identify the best possible solution to organise 3L actions and guarantee post project use of learning actions. The team compiled a list of 10 LMS (see Annex 2) which has been identified based on 1) internet search (i.e. based on search terms "Learning Management Systems" and "Massive Open Online Course"), 2) based on professional experience as users, 3) consortium partner inquiries as both hosting institutions and users, and 4) interviews with LMS service providers.

In a next step the WUW Team analysed the compiled LMS according to the functionalities required in the context of 3L actions as well as budgetary constraints of the SUMEX project:

Budgetary constraints:

- analysis aspect "Associated costs within budgetary limits (for services and software provided during the duration of the SUMEX project)" (SUMEX implications: within budgetary limits of the WUW project budget).

Requirements for peer learning approach in 3L actions:

- analysis aspect "invitation-only or selective invitation approach" (SUMEX implications: 3L actions in the context of peer learning require control over who is participating in learning activities),
- analysis aspect "Separate domain space for LMS & post-project life time and longevity" (SUMEX implications: transforming 3L actions into a standalone MOOC after the project ended),

- analysis aspect “options for live interaction with participants”, and “Restrictions to number of participations” (SUMEX implications: peer learning approach to 3L actions)

The consecutive selection process resulted in narrowing down possible options for favourable LMS in the context of the SUMEX project. These options include FutureLearn (MOOC), EDX (MOOC), Moodle LMS (open LMS), Moodle Workplace 3.8 (similar functionalities to a MOOC and interoperable with Moodle LMS). As regards the setup of a more timely organised exchange of practitioners and the benefits of a standalone course or training after the projected ended, at the current stage of development the WUW Team identified a **pre-structured LMS such as FutureLearn and edX[4] (i.e. MOOC) as a more favourable solution for organising 3L actions.**

3. Next Steps in the design process

The development and implementation of the SUMEX Toolkit is a continuous process throughout the project’s running time until its final deliverable in month 36 containing all relevant information and features elaborated in the project. This part is the starting point for a discussion on its first design and technical features to be further explored in the upcoming months.

The consecutive steps are as followed:

1. **Identification of 3L Community and mapping of learning needs informs design and selection:** The CoP and, particularly the 3L Community plays a fundamental part in the design and implementation of both the SUMEX Toolkit repository and learning component. The elaboration of the management approach on the 3L is supported by the initial stakeholder mapping and consecutive work on the e-learning design will facilitate the setup of a CoP and in parallel will support the design and implementation of the learning component of the SUMEX Toolkit.
2. **Final selection of LMS and liaising with LMS provider:** The selection of the LMS will be informed by the requirements of the 3L action as well as the 3L community learning needs . Consequently, the WUW Team together with the project coordinator will decide on the appropriate LMS to

[4] The selection of edX would require a closer collaboration and involvement of one project partner with regards to design, hosting and management. WUW will further inquire about the implications for workload, coordination and post-project life-time and management for a MOOC on edX in collaboration with the SUMEX partner.

implement 3L actions and setup potential collaboration agreements and contracts with LMS platform software providers.

3. **Design of first 3L actions:** Based on learning needs and 3L engagement (and selected LMS functionalities in steps 1 and 2, respectively, the WUW team together with the project coordinator and Oeko Institute will design the 3L learning actions.

3 WHO ARE THE TARGET GROUPS

The SUMEX Toolkit targets people and organisations who are the intended beneficiaries and users of the repository (see section 2.1) as well as participants of the learning component (see section 2). The SUMEX target groups can be grouped into four major "target audiences" relevant for the SUMEX Toolkit (see figure below):

SUMEX Target Audience. The SUMEX target audience describes all people and organisations that will be engaged in communication, dissemination and exploitation activities. Exploitation activities comprise all learning and exchange activities via 3L actions. The SUMEX Target Audience consists of:

- Policy makers, public servants and decision makers such as political representatives from different administrative levels (European, national, provincial regional and local level) and areas (i.e. mining, permitting, land use, environment, health and safety).
- Industry and professionals directly working along the non-energy mineral raw materials extractive sector in the raw materials value chain.
- NGOs, community representatives, civil society representatives and other interest groups.
- Investors or investment groups interested to finance sustainable raw material production activities in Europe.
- Other stakeholders: intermediaries/boundary spanners, and raw materials cluster organisations at different levels such as EIT Raw Materials, ENSQM (European Network for Sustainable Quarrying and Mining), sectoral business organisations (Euromines, IMA, etc.), trade unions, etc.
- Horizon 2020 projects still running and to be integrated in clustering activities with SUMEX, e.g.: RE-SOURCING, MIREU.
- Scientific communities such as researchers, students, developers, suppliers or manufacturers working in the field of sustainable raw materials production.
- General public/society, also with the purpose to increase social acceptance of mining activities.

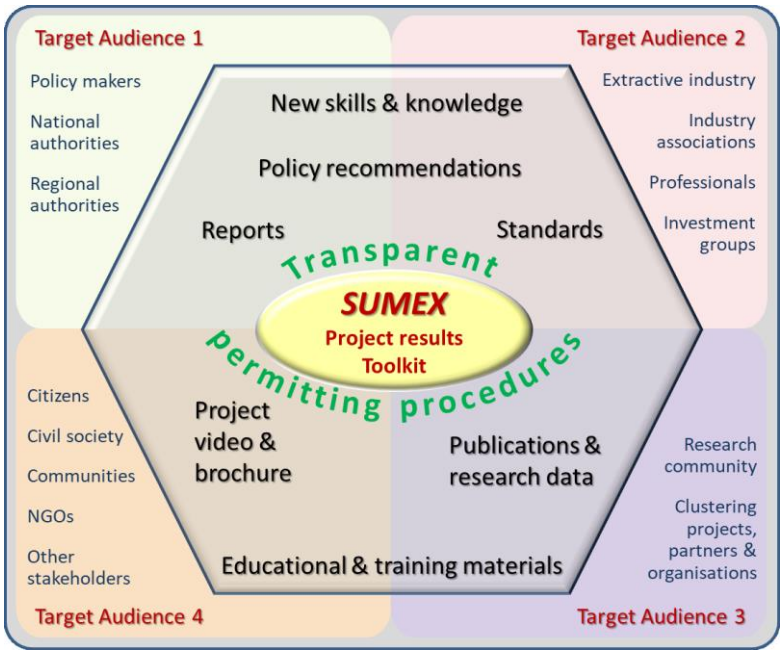


Figure 7: Overview of SUMEX target audiences

While the **repository is benefitting all target audiences** to tap into the potential of learning from the repository of good practices and training materials compiled throughout the project's duration, only a limited number of people and organisations (3L community and CoP members; see section 2.1 for more details and description) will benefit from the learning components. Due to the scope of peer learning formats in 3L actions (i.e. informal exchange in smaller groups with similar organisational background and learning needs), these project activities will be available only for a limited number of people and organisations. However, the outcomes of 3L actions will be transformed and utilised for the elaboration of both educational, learning and training materials in the form of policy briefs, guidance documents as well as a MOOC, and, therefore available publicly and benefitting all target audiences. For the purpose of engaging with people and organisations with similar learning needs and organisational backgrounds as well as thematically narrowing down the focus, SUMEX will engage 3L and CoP members along the 5 topic areas (i.e. 5 topic areas: socio-economic and environmental impact assessments, land use planning, health and safety, reporting official statistics, permitting processes / policy integration).

Community of Practice (CoP) members: Communities of Practice (CoP) are groups of people and representing organisations that collaborate to find innovative solutions for complex problems such as

in the case for sustainable extractive sector practices in the public and private sector. In the context of the SUMEX Toolkit, the **CoP members represent the entirety of people and organisations benefitting from 1) SUMEX 3L actions as well as 2) accompanying educational, learning and training materials**. SUMEX Toolkit actions will target CoP members in various actions throughout the 3L actions

Learners and Leaders League (3L) Members: In the SUMEX project the establishment of a Community of Practice (CoP) is key for the overall success for both the setup and design as well as the involvement of SUMEX Toolkit actions. Against this background, the **3L (Learners and Leaders League) will form a group of people and organisations incentivising and facilitating the formation of a CoP.** They will be instrumental in designing Toolkit features as well as guiding topic development for 3L actions and exchange among practitioners in peer learning settings (i.e. supporting elaboration of use cases in WP4 as well as initiating 3L actions). Further details on the target users of 3L actions will be described in deliverable "D4.2 Toolkit Learners & Leaders League (3-L) approach" outlining setup, recruitment, communication, and incentivisation for collaboration with the 3L and CoP.

4 MANAGEMENT APPROACH OF SUMEX TOOLKIT

The setup of the SUMEX Toolkit – both its repository as well as learning component - is a complex (requiring different project partners' expertise and coordination, involving a wide range of stakeholders in the CoP and 3L, designing and implementing a diverse set of actions) and long-term process (involving several milestones and deliverables building upon each other and stretching the whole project duration). Therefore, the following section provides a more detailed overview of major outputs and milestones, overall time plan of design and implementation, partner responsibilities as well as outlining the next steps in the Toolkit design process.

Overview of major outputs and milestones

The general development path of the Toolkit is broadly covered by three major phases: 1. Structure (first design considerations), 2. Compilation / Processing / Classification, and 3. Integration (see figure 8). Major WP4 milestones for the development of the SUMEX Toolkit will be

1. Development of first **classification criteria for compiling and structuring information** in WP2
2. **"Toolkit Learners & Leaders League (3-L) approach"** and first engagement actions with **3L Members in consecutive meetings**

3. **Technical implementation of the repository** as a subdomain of the SUMEX project website and **launch of repository**
4. **Upload of first good practice data items** on the repository and consecutive d**esign of first 3L actions**
5. **Release of first SUMEX Toolkit version**: Release and online access to the first SUMEX Toolkit version: a) containing information on good practice identified; and **official launch of first launch of first 3L actions**
6. **Update and extension of repository and 3L Actions**
7. **Manual for good practice** outlines features of the final version 4.0 containing good practice and training knowledge repository, general transferability recommendations and 3L action results
8. **Synthesis report of training & peer learning efforts** summarises major outcomes of 3L actions and their impact on training, peer learning and community of practice building efforts.
9. Project end: **Final version of the SUMEX Toolkit repository & MOOC implementation** as suggested at the current stage of development of Toolkit features

Phased time plan for Toolkit design and implementation

During phase 1 "Structure" the WUW team will decide and plan for the major design features of both the repository and learning component. Immediate outcomes of this deliverable D4.1 will inform the collection of good practices (i.e. development of first classification criteria for compiling and structuring information) that will ultimately feed into the repository as organised and classified data items.

During phase 2 "Compilation / Processing / Classification" two major work-streams will inform the development of the SUMEX Toolkit: First, as a consequence of this report, WUW in liaison with the coordinator will engage with WP2 Leader LAY to support the elaboration of more detailed data classification as a follow up of the compilation and later for mapping and screening existing good practice examples. Further data on good practice information will be analysed in WP3 and lead to good practice descriptions that can be classified. This work stream will compile a list of good practice data items that will be further classified and described (according to filter criteria outlined in section 2.1).

Second, in another work stream WUW together with Oeko Institut will be outlining the setup, recruitment, communication, and incentivisation for collaboration of the 3L and CoP in a report. This report will inform thematic development and learning needs for 3L actions as well as user needs and

functionalities of the repository. This workstream will be informed by other WP actions such as the Clustering workshops and mapping of key stakeholders completed. Consequently, this will be the starting point for communication and engagement among members of the 3L within the project, and, more specifically, the 3L actions.

During phase 3 "Integration" the WUW project team together with Oeko-Institut and MUL will a) conduct 3L actions, b) upload data items onto the repository, and c) implement the adaptation of 3L actions into a "MOOC format" transforming the 3L actions into one stand-alone course as well as roll-out and promotion of MOOC.

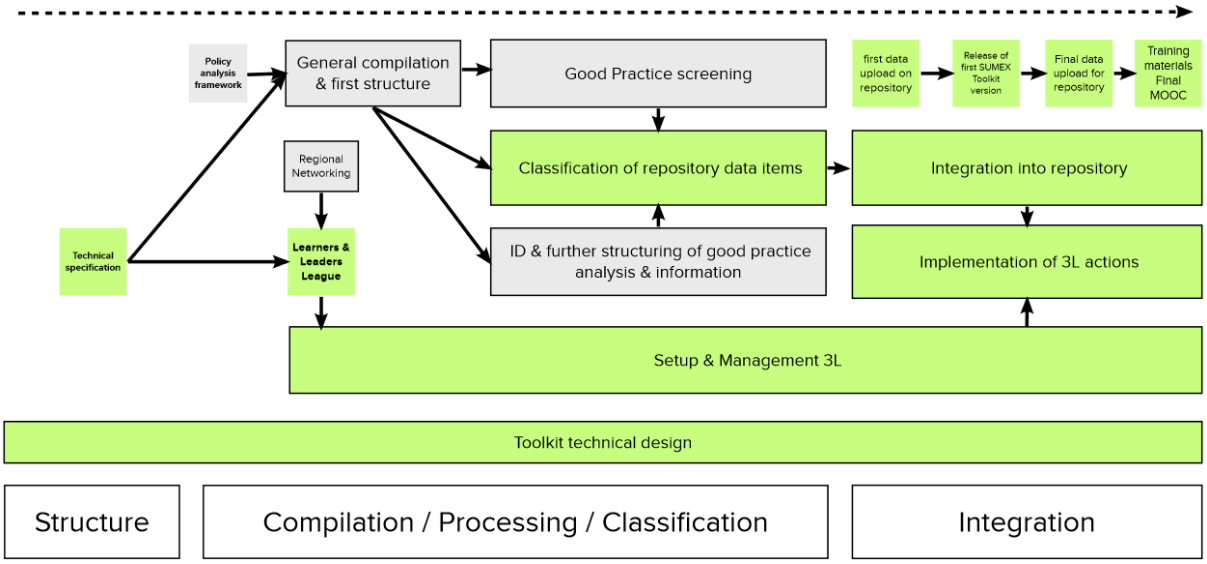


Figure 8: Overview of SUMEX Toolkit design and implementation (SUMEX Toolkit actions and deliverables are highlighted in green)

5 ANNEXES

5.1 ANNEX: DESK RESEARCH RESULTS OF EXISTING REPOSITORIES IN THE EXTRACTIVE SECTOR

Nr	Repository name	Hyperlink	What is it for?	Data formats (How is data stored and managed on repository; 1. hyperlinks to websites of pdfs, videos, etc or 2. directly uploaded information on the repository in the form of pdfs or videos)	Explain data items on the repository	Taxonomy and filter criteria	Interesting technical features (e.g. filter request questions how are data items presented, visualisations, guaranteeing quality of data etc.)
1	GOXI - sharing in governance of extractive industries	https://goxi.org/resources	The Knowledge Repository functions as a searchable online resource library and will remain a living and growing knowledge repository with GOXI users now having the possibility to contribute resources directly. Other new GOXI features include the further customization of content that is accessed based on user preferences on topics of interest and the creation of personalized libraries.	1. hyperlinks to websites of pdfs, videos, etc	Different data items described: Policy briefs, reports, Handbooks, etc.	Differentiation between - **Resource type:** case study, (scientific) publication, report, Guide, Handbook, Book, Toolkit, Study, Policy Brief, presentation, framework, working paper, Assessment etc **- countries & world regions** (South America, global, Germany etc) - categories: scale/size; extractive systems (oil, gas, mining, quarrying, etc.) - data	Comprehensive filter criteria & well-structured - Other new GOXI features include the further **customization of content** that is accessed based on user preferences on topics of interest and the creation of personalized libraries. - popularity filter based on views of individual data items
2	EPRM - Due Diligence Hub (only resource library)	https://europeanpartnership-responsibleminerals.eu/cms/view/53241995/due-diligence-hub	The EPRM is a multi-stakeholder partnership with the objective to increase the proportion of responsibly produced minerals from CAHRAs. It is an accompanying measure to the EU Conflict Minerals Regulation	1. hyperlinks to websites and pdfs, videos, etc	Guidances, company case studies, DD implementation support & outlines	The resource library has the following filters: **supply chain tier:** ASM, LSM, smelter, trader, manufacturer, recycler etc **mineral:** tin, tantalum, tungsten, gold **resource type:** OECD DD steps 1-5, copmany case studies, beyond OECD company case studies are simply listed by name	One centralised resource library with the aforementioned filter criteria, results are presented as a list of links to the relevant section of the website. When navigating through the website the relevant information can also be found
3	Responsible Minerals Initiative	http://www.responsiblemineralsinitiative.org/	The initiative provides companies with tools and resources to make sourcing decisions that improve regulatory compliance and support responsible sourcing of minerals from conflict-affected and high-risk areas.	2. downloadable documents: PDFs, excel sheets for audits	Explanations on how each resource is to be used and ist purpose, for are provided	Four overarching caregories: **minerals due diligence:** resources focusing on 6 minerals, risk management, standard programmes. **assurance process:** resources on responsible minerals assurance process (RMAP). **reporting templates:** conflict mineral reporting template, software to gather information from multiple templates, compliance tools **training & resources:** eLearning academy, webinar recordings	The data is not presented as one centralised database to search for items, but the different categories are presented as headings on the website, these open drop-down options to select the specific subcategory of interest. In the subcategories, a flow text explains what these subcategories are for, with direct links to the relevant materials. There is a smelter databse accesible for members.
4	International Council on Mining and Metals (ICMM)	https://www.icmm.com/	The International Council on Mining and Metals is an international organisation of companies and associations. Members need to adhere to the responsible sourcing principles, the website & resource library are ulitmately outlining the requirements for every focus area with instructions on how to achieve the required level of Due Diligence in the companies' activities	2. videos of case studies,1. hyperlinks to websites of pdfs, videos, etc	A lot of the information is presented as flow text under the different focus areas, the texts are instructions to implement certain practices (see taxonomy and filter criteria for categories), information on the website is structured by: **environmental stewardship**: biodiversity & ecosystems, mine closure, climate change… **Social performance**: managing risks and impacts, human rights… **health & safety** **mining & metals**: responsible production, recycling, impact of mining	The search function has the categories of: **Media releases; events; stories; guidance; research; corporate publications; case studies.** the subtopics for these search critetria are as mentioned in the website structure (on the left)	The visitor selects the focus area of the search first, and then the specific topic can be chosen i.e. searching for 'events' and then the subtopic of 'Water'. Additionally a timeframe can be added for searches, as well as specific keywords to search for

5	The Extractives Hub	https://www.extractiveshub.org/	It is a database / search repository for a variety of resources related to extractives	Information is presented in reports, videos, journal articles etc. The search results are links to external sites where the resources can be accessed	The website provides resources in the form of policy briefs, reports, webinars, interviews, dialogues, journal articles	The search function has the following filters: **resources type:** blogpost, book, journal article, webinar, policy briefs, document, URL, youtube video, book review **topic:** conflict & extractives, environmental managements, mineral policy, and over 25 other topics **countries** **year of publication**	The homepage presents direct links to six resource categories: **topics; webinars, videos, countries, insights, policy briefs.** When accessing the **library** tab, the search functions as described before can be accessed
6	Australian Mining	https://www.australianmining.com.au/	Website all around australian mining, news, products, events etc	2. Information is presented in short texts, like news items	Case studies (probably pdf) and webinars (videos) can be accessed but only after submitting a form with name, organisation, contact details etc	Resources section includes: whitepapers, case studies, webinars, products	The main website has subsections such as oil & gas, investment, safety, when clicking on those visitors are redirected to a subwebsite with the same design that also holds resources for these specific categories
7	Mining data online	https://miningdataonline.com/	Subscription database for mining data	No public access to the data		The search criteria subscribers have access to are: **Mine/Project Overview:** location, office address, development stage, mine type, commodities, life of mine **Ownership; deposit type & geology; reserves & resources; Production; Workforce; Mine Financials; Technical & annual reports; data download**	The search criteria for subcribers are: **Mine Name, Company Name; Miney Type, deposit type; development stage, status; commodity, location**
8	Extractive Industries Transparency Initiative (EITI)	https://eiti.org/publications	Website of the EITI	2. pdfs	Guidance documents, country application documents, fact sheets policy documents	Filter criteria are: **Publication type:** **About the EITI:** Policy document, fact sheets, progress report, conference report **guidance to the EITI standard:** guidance note, glossary **country reporting:** EITI reports, annual progress report, validation, beneficial ownership roadmaps **Research and analysis:** analysis and research done by the EITI **Call for tenders** **Consultations:** open consultations, closed consultations **Board** other filter criteria: **Country; Publisher; timeframe**	Very detailed search criteria
9	Natural Resources Governance Insitute	https://resourcegovernance.org/analysis-tools/publications	The institute provides policy advice and advocacy on resource governance based on research	2. pdfs, videos	Training videos, link to other databases, reports, link to tools such as the World Economic Forum Forecast Tracker	Links to training events by world region/country, publications library with the following criteria: **type:** briefing, report, collection **country** **topic:** list of all topics touched upon by the publications **tools library** with links to tools that are websites with data repositories themselves, these are listed in the rows below	The results of the search are presented as heading of the document, short description, document type, publication date & authors

10	Covering extractives - by Natural Resources Governance Insitute	https://coveringextractives.org/	An online guide to reporting on natural resources related activities	2. pdfs, videos	Links to a plethora of resources such as reports, guidance documents, case studies, databases. They are all 'chapters' of the handbook of the institute, which is a full handbook where all these resources are explained, and then links to the full resources are provided, videos are also embedded in the handbook chapters	search criteria: **chapters of the handbook** **type of resource:** briefing, case study, database, guide, index, report, video **country** **year of publication** **keyword**	The results are presented as nice 'blocks' with referal to the relevant chapter they are in, with the option to go to the section in the handbook where they are described or the option to go directly to the resource e.g. reports as pdf
11	Resource Contracts	https://www.resourcecontracts.org/search/group	A repository for mining contracts worldwide	2. pdfs, videos	The repository contains many mining contracts of different mining companies between companies, companies and state, and environmental and social documents	The main search criteria are: **country; resource; year signed; company name; corporate group; language; document type; contract type; key clauses;**	Basic database with search function
12	Responsible Raw Materials	https://www.responsiblerawmaterials.com/talks/	The website hosts videos from the conference	2. videos	There are individual videos which are recordings of presentations/key notes at the Responsible Raw Materials conference	The criteria are listed by **regions; materials;** as well as **carbon & GHG**, **governance, ASM, frameworks, health & safery**, **learning across sectors** (useful practices from other sectors, multidisciplinary approaches), **infrastructure, investment**	The results of the search are presented as video 'thumbnails' with the title, these can be clicked on to view the video
13	IMPACT	https://impacttransform.org/en/	To support mining communities, make mining more sustainable	2. pdfs	Guides, briefs, reports	The information is presented according to their **projects** and by **country**	When clicking on the countries, all the relevant activites that have been done for this country are presented

5.2 ANNEX: DESK RESEARCH RESULTS OF EXISTING REPOSITORIES IN OTHER SECTORS

Nr	Other sector repositories						
	Repository name	**hyperlink**	**What is it for?**	**data formats**	**explain data items on the repository**	**taxonomy and filter criteria**	**interesting technical features (e.g. filter request questions, visualisations, guaranteeing quality of data etc.)**
1	**Global Value Tool-navigator**	https://global-value.eu/navigator.php	**An online data base for corporate impact measurement & management tools; provides additional information on the tools, their accessibility and their features**	Hyperlinks to websites & pdfs, videos	Expert interviews/webinars, a variety of tools for registered members to acces via a 'tool navigator', tools reports and **showcases explaining the tools** and linking to the original website/document	**Purpose of tools** (e.g. reporting, information & learning); **sustainable development goals issues** (e.g biodiviersity etc)**; scope** (company, production site, supply chain etc)	Filter on SDG consideration of measurement tool. Informaiton is provided on which criteria trhe tools were tested for, and the showcases (i.e. rpeorts of the tools are accesible as pdfs). The showcases ar ein depth reports on the use case of the tools according to several criteria. whereas the idea to present showcases, and the webinars are informative, the structure of the dwebiste and data presentation is not very clear and hard to get a proper overview of all the presented resources
2	**Environmental Justice Atlas**	https://ejatlas.org	**A world-map to show incidence of environmental justice**	Visitors can click on or search for incidences, when selecting an incident an information bar opens up with all the related information of the case (see the different categories on the right), further links to newspaper artcles or other related sources are provided as well	The relevant information is presented directly as flow text after selecting a case, some links are porivded to relevant external sources	In-depth filter criteria: **Basic Data:** Success Level; Population Type (Urban, rural); Country; Region **Category:** Category; Type **Project:** Commodity; level of investment; govt actors; project details **Conflict:** Intensity; reaction; description **Resistance:** env. justice organisation; mobilizing forms **impacts:** environmental; socio-economic; Health **Outcomes:** development of alternatives; project status	The atlas has a very interesting way of cusotmising the search: the user can drag and drop the desired categories (mentioned on the left) into a search box to precisely customise the search. This allows for very detailed search queries
3	**University of Illinois Career Center**	http://library.careercenter.illinois.edu/cgi-bin/koha/opac-search.pl	**a resource library for students**	books, pdfs, websites	The documents in this repository are supporting resources for students looking for jobs after their studies. The 'advanced search' option provides very detailed search criteria that can be useful for other knowledge repositories	users can search for **keywords, titles, comments, authors, ISBN, publishers, subject, curriculum**. A combination of up to three specific words can be searched for, allowing for a very detailed search query if needed. Furthermore, the search allows to filter by **item type:** books; online resources; reference; staff resource. further search criteria inlcude: **publication date range; language; location and availability;** **sorting:** relevance, alphabetical order, newest to oldest and vice versa **audience:** any audience, adolescent, adult, specialized, general **content; format:** large print, braille (accessible options), CD, software, website **additional content type for books/printed materials:** encyclopedias, handbooks, theses, reviews, catalogs, bibliographies	the search results are presented as a list including the title, author, publication date, page length, availabilty in libraries. The search results can be further filtered down by categories, such as availability, authors, holding libraries, items type, series, topics. these further categories are listed on the side of the search results, showing which categories the search results fall under
4	**World Health Organisation**	https://www.who.int/reproductivehealth/publications/evidence/en/	**WHO guidelines on maternal, reproductive and women's health**	pdfs	This resources library contatins a variety of documents with information on questions related to reproductive health, reports, guidance documents, overviews etc. The resources are presented as title of the document and publication date underneath the relevant topics	there are no filter criteria but the resources are presented under the topical headings e.g. **cervical cancer; contraception; pregnancy and nutrition; Childbirth; preventing unsafe abortions; sexually transmitted infections**	

5.3 ANNEX: DESK RESEARCH RESULTS ON LMS PROVIDERS AND PLATFORMS

Name of the LMS	WU verdict	Link	Associated costs within budgetary limits (for services and software provided during the duration of the SUMEX project	Separate domain space for LMS (Where will the courses be hosted/accessed)	invitation-only or selective invitation approach (y/n)	Restrictions to number of participations (Can we restrict the number of participants?)	Options for live interaction with participants (Is there a built-in webinar tool or another way to have live interactions?)	forum/Q&A	Can we message participants directly	Can we survey participants?	Post-project life time and longevity (Can the course stay online and be accessible to everyone)
edX (MOOC)	not within budgetary limits, less flexible, provide structure, good for post-project longevity	https://learning.edx.org/	to be confirmed	edx website (openEDX version: seems to be implementable on SUMEX website)	y	to be inquired (tbi)	not built-in, via conferencing tool link	y	tbi	y	y
FutureLearn (MOOC)	within budgetary limits/ room for negotiation with provider; pro: provides structure, good for post-project longevity	https://www.futurelearn.com/	to be confirmed	futurelearn website	y	y	not built in, separate invitations for conferencing tool link	y	tbi	tbi	tbi
Moodle LMS (open LMS)	within budgetary limits; lower outreach, not so feasible for longevity/ post-project life open source, lower cost, more effort for managing and designing interactive exchange	https://moodle.com/lms/	y	SUMEX or any other domain	y Manual enrollment Courses self-enrollment Cohort and group based enrollment	tbi	y, needs additional integration with additional costs; can integrate with live conferencing	y	y	tbi	tbi
Moodle Workplace 3.8 (interoperable with Moodle LMS)	within budgetary limits; user interface a little old-fashioned	https://moodle.com/workplace/	y	tbi	y	tbi	Built-in videoconferencing	y	y	tbi	tbi
Coursera (MOOC)	not within budgetary limits, less flexible, provide structure, good for post-project longevity	https://de.coursera.org/	n	coursera website	tbi	tbi	tbi	tbi	tbi	tbi	y
articulate (MOOC)	not within budgetary limits	https://articulate.com/	n	tbi	y	y	tbi	tbi	tbi	tbi	tbi
articulate - Rise (open LMS)	not within budgetary limits	https://articulate.com/360/rise	n	tbi	y	tbi	tbi	tbi	tbi	tbi	tbi
articulate - 360 (open LMS)	not within budgetary limits	https://articulate.com/360/storyline	n	tbi	y	y	y	tbi	tbi	tbi	tbi
Totara Learn (MOOC)	not within budgetary limits	https://www.totaralearning.com/products/learning-experience-platform-lxp-totara-engage	n	SUMEX or any other domain	y	tbi	tbi	tbi	tbi	tbi	tbi
Totara Engage (open LMS)	not within budgetary limits	https://www.totaralearning.com/products/learning-experience-platform-lxp-totara-engage	n	tbi	y	y	tbi	tbi	tbi	tbi	tbi

SUMEX PROJECT BACKGROUND

SUMEX is a 36-months project funded by the EC that started on 01.11.2020. The project supports the set-up of a European sustainability framework to improve the permitting procedure along the extractive value chain (prospecting, exploration, extraction, processing, closure, post closure activities), to guarantee timely decisions, a transparent governmental regulatory regime, appealing financial and administrative conditions and sustainable natural environmental and social conditions. The main mission of SUMEX is to assist policymakers and other stakeholders in seizing this opportunity.

To foster more, but sustainable mineral production in the EU, SUMEX (*SUstainable Management in EXtractive industries*) will establish a sustainability framework for the extractive industry in Europe. It does so by considering the Sustainable Development Goals, the European Green Deal, as well as EU Social License to Operate considerations and will involve stakeholders from industry, government, academia and civil society backgrounds from all across the EU.

This framework is then applied across the extractive value chain to analyse the mineral, as well as relevant economic, environmental and social policy frameworks of the EU, member states and selected regions along five focus areas – socio-economic and environmental impact assessments, land use planning, health and safety, reporting official statistics and permitting processes/policy integration-to find, or build, where needed, good practices or tools for an open access toolkit, which will be embedded in a broader Community of Practise (CoP) and which forms the basis for capacity building. This CoP will consider relevant stakeholder groups, with a focus on permitting authorities, across the EU, providing a digital platform and using a series of workshops and webinars. In SUMEX, the experience from other projects builds a powerful foundation for addressing the challenge of how best to implement sustainability considerations into the whole raw materials value chain.

Challenge: No common understanding of sustainable management in extractive industries

SUMEX supports the set-up of a European sustainability framework to improve the permitting procedure along the extractive value chain (prospecting, exploration, extraction, processing, closure, post closure activities), to guarantee timely decisions, a transparent governmental regulatory regime, appealing financial and administrative conditions and sustainable natural environmental and social conditions. The main mission of SUMEX is to assist policymakers and other stakeholders in seizing this opportunity.

Objectives of SUMEX

- Strengthen policy coordination and agenda setting along the mineral extraction value chain;
- Propose a uniform EU sustainable management in extractive industries context;
- Cluster with other projects to identify good practices and good practise principles;
- Identify good practises and principles for policy strategies and strategic approaches, coordination/integration and approaches and property rights regimes for different institutional systems;
- Build a toolkit with good practises, with a focus on access to land, permitting and policy coordination and integration;
- Identify stakeholder learning needs and requirements;
- Deploy an open access toolkit for capacity building across EU and with all stakeholders.

More info on https://www.sumexproject.eu/

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