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SUM4Re

Creating materials banks
from digital urban mining

Dissemination, Exploitation and Communication Plan (DECP)

VERSION 1.0

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SUM4Re

Creating materials banks from digital urban mining

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EXECUTIVE SUMMARY

SUM4Re "Creating materials banks from digital urban mining" is a 42-month long (June 2024–November 2027), European-funded project combining urban mining and automated on-site data acquisition technologies to create material banks from the built environment. It aims to support the transition towards circular construction practices and reduce construction and demolition waste sent to landfills. To achieve this objective, the project will develop a traceability system for building materials, a holistic methodological framework for assessing circular use of construction products, and smart digital solutions to identify construction entities and analyse their properties. The SUM4Re methodology is based on a systemic approach, focusing on identification, analysis, and contribution to circularity. The project will develop software tools and databases based on robust identification assisted by AI and other digital techniques, supported by blockchain solutions. It will improve the Building Information Modelling (BIM) standard to support current circular challenges and ensure interoperability with commercial databases.

SUM4Re is demonstrated in three pilot sites linked to singular construction projects in EU regions (North, Norway; Centre, The Netherlands; South, Spain) to validate the methodology and a strategy for skill development to upskill the workforce in the construction sector. These pilots will showcase practical implementation and replicability of the SUM4Re solutions, while providing the project with feedback on the effectiveness, efficiency and improvements in labour productivity as a result of the techniques and technologies selected.

SUM4Re comprises a multidisciplinary team of 17 partners (and one associated partner) leading this European project, aimed at reducing and recycling construction materials from the pre-demolition phase. UVIGO (University of Vigo) is the SUM4Re project coordinator.

This public report is the Dissemination, Exploitation and Communication Plan (DECP). The purpose of this report is to present the SUM4Re plan for Dissemination, Exploitation, and Communication (DEC), which identifies, organises, and defines the management and promotion of the SUM4Re project objectives and outcomes. The key underpinning concept of the SUM4Re DEC strategy is to target key external stakeholders based on a three-stage process: moving from awareness (i) to understanding (ii) and ultimately to a point where stakeholders are exploiting SUM4Re'sforeground (iii). Key performance indicators (KPIs) related to DEC include stakeholder engagement levels, website traffic, etc. The overarching goal of DEC in SUM4Re is increased awareness of material bank benefits, showcasing adoptable results for sustainable, widespread adoption across European construction sectors.

This DECP strategy is designed to ensure SUM4Re's results achieve both immediate visibility and long-term impact within the European built environment and beyond.

GLOSSARY

Terms, Abbreviations, and Acronyms

B4P	Built4People
BIM	Building Information Modelling
BPIE	Buildings Performance Institute Europe
C&D	Communication and Dissemination
C-BIM	Circular Building Information Modelling
DBL	Digital Building Logbook
DEC	Dissemination, Exploitation, Communication
DIN	Deutsches Institut für Normung e. V.
EC	European Commission
ECCREDI	European Council for Construction Research, Development, and Innovation
ECTP	European Construction Technology Platform
EDA	European Demolition Association
ER	Exploitable Result
ETPs	European Technology Platforms
EU	European Union
GA	Grant Agreement
HLCF	High-Level Construction Forum
IPR	Intellectual Property Rights
KPI	Key Performance Indicator
MOOC	Massive Open Online Course
OA	Open Access
R&D	Research and Development
R&I	Research and Innovation
RREUSE	Reuse and Recycling Network
RTOs	Research and Technology Organisations
SBS	Small Business Standards
TRL	Technology Readiness Level
WA	Work Area
WP	Work Package

CONSORTIUM PARTNERS

AF DECOM AS - AF Gruppen Norge AS

BlockM - BLOCK MATERIALS B.V.

CONC - CONCULAR GMBH

CTH - GEMEENTE DEN HAAG

Eagle - Screening Eagle Technologies AG (associated partner)

EBC - EUROPEAN BUILDERS CONFEDERATION

GSCAN - GSCAN OU

MOYUA - CONSTRUCCIONES MOYUA SL

NORSKE - STORE NORSKE BOLIGER AS

OLAR - OLAR SOLUTIONS UG (HAFTUNGSBESCHRANKT)

RAFER - ESTUDIOS RAFER S.L.

R2M - R2M SOLUTION

SINTEF - SINTEF AS

TECN - FUNDACION TECNALIA RESEARCH & INNOVATION

THUAS - STICHTING HOGER BEROEPSONDERWIJS HAAGLANDEN (The Hague University of Applied Sciences)

UVIGO - UNIVERSIDAD DE VIGO

VTT - TEKNOLOGIAN TUTKIMUSKESKUS VTT OY (Technical Research Centre of Finland)

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1. Introduction

1.1. Aims and objectives

SUM4Re will dedicate significant effort to promote and exploit the project foreground. This public report (D13.1) is a foundational blueprint for SUM4Re dissemination, exploitation, and communication (DEC) activities to raise awareness and support deliberate valorisation.

D13.1 also serves as a process document, the contents of which are to be updated when relevant in periodic reporting. All DEC actions were extracted from the Grant Agreement, and have the distinct purpose of contributing to a long-term SUM4Re vision: summarised as:

Environmental impact: By promoting urban mining and material reuse, the project is expected to significantly reduce construction waste and CO_2 emissions, supporting EU sustainability goals and contributing to climate resilience.

Economic impact: With tools and methodologies for cost-efficient resource management, SUM4Re provides the construction industry with scalable, economically viable solutions that meet emerging sustainability requirements, increasing competitiveness across the EU.

Social and policy impact: Through policy recommendations and support for new regulatory frameworks, SUM4Re aligns with the EU's circular economy objectives and provides policymakers with data-driven insights to facilitate sustainable industry practices.

1.2. Relation to other activities in the Project

DEC planning and execution is conducted under Task 13.1, Task 14.1 and Task 15.1, and will be informed by the work conducted in all other work packages and tasks of the project. The deliverables associated with these tasks provide a structured approach to reporting on DEC activities and performance over specified periods, ensuring that all stakeholders are informed and aligned. Task 13.1 serves as the foundation for the DEC activities and is detailed in deliverable D13.1. Task 14.1: This task builds upon the insights gained from Task 13.1 and focuses on the subsequent reporting phases. Task 15.1: This task continues the reporting cycle, ensuring that all DEC activities are comprehensively documented.

Figure 1. Progression of DEC

The public deliverables associated with DEC activities and performance address the period in question, namely: D13.2 (M18) "Report 1 on achieved DEC activities and performance" reports on DEC activities executed between M6 and M18, D14.1 (M36) "Report 2 on achieved DEC activities and performance" reports on DEC activities executed between M18 and M36, and D15.1 (M42) "Report 3 on achieved DEC activities and performance" reports on DEC activities executed between M36 and M42.

Synergistic confidential exploitation deliverables will ensure there is little to no content overlap, except when necessary for context. Specifically: D13.3 (M18) "Exploitation Plan (version 1)" will provide the first list of SUM4Re Exploitable Results (ERs) and partner-specific exploitation plans, while D14.2 (M36) "Exploitation Plan (version 2)" and D15.2 (M42) "Exploitation Plan (final)" will update the D13.3 content after periodic consultations with all SUM4Re partners to elaborate their ERs and exploitation plans. The DEC timeline, as detailed in Chapter 3 herein, is articulated around the main deliverables and milestones of the project, which materialise important outcomes that are worth disseminating and potentially exploiting whereas the SUM4Re exploitation methodology and baseline definitions are found in Chapter 7 herein.
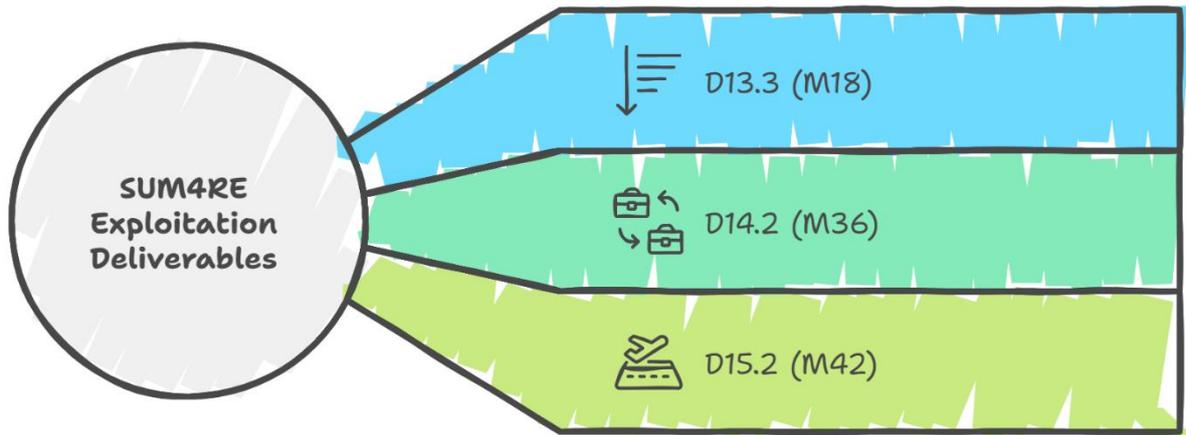
Figure 2. Progression of exploitation reports

1.3. Report structure

Chapter 2 presents the SUM4Re target audiences, mapping their interest and influence in adopting the project results. **Chapter 3** presents the DEC timeline, which corresponds both to the project's work package (WP) structure and the deadlines of public deliverables, as well as the related KPIs and associated measurable objectives. **Chapter 4** outlines the DEC toolkit, the project website and social media strategy, multipliers that will be leveraged to maximise the impact of DEC activities, a preliminary list of relevant journals and events, and key European Commission (EC) services that aim to boost visibility and fortify project foreground. **Chapters 5 and 6** provide brief but important reminders about the validation process to be followed by all project partners before a DEC item goes external, as well as basic rules to be implemented regarding EU funding acknowledgments. **Chapter 7** introduces the exploitation methodology, and **Chapter 8** explores the unique SUM4Re cross-cutting Design Thinking approach to DEC.

1.4. Contribution of partners

All SUM4Re project partners are fully committed to contributing to DEC implementation according to the plan as stated herein, having had sufficient time to review the public deliverable. R2M, as the DEC Manager of the SUM4Re project, is the author of this report

2. Target audiences

Chapter 2 describes the SUM4Re target audiences in terms of their roles, needs, key messaging, and means to reach them (Section 2.1), as well as their interest and influence in exploiting the project's results (Section 2.2). By segmenting these target audiences, SUM4Re's dissemination will become deliberate and precise. The underpinning messages to be communicated by SUM4Re partners to external parties, include the benefits of transforming buildings into material banks, the positive impacts of reducing construction waste and carbon emissions, and most importantly the replicability and scalability of the pilot site demonstrators.

2.1. Roles and needs

Section 2.1 states the roles, needs, and key messages to be communicated to the SUM4Re target audiences. Each of these groups play a crucial role in the ecosystem of the project, contributing to and benefiting from its success in unique ways. Their collaboration ensures SUM4Re objectives are met, and the project foreground can reach its early adopters.

2.1.1. Industry and businesses

Subsection 2.1.1 refers to the "industry and businesses" target audience including energy and technology providers. Specific subsectors of interest are: (i) construction companies (e.g., contractors, material & technology suppliers, workers on construction sites, etc.); (ii) architects and engineers; (iii) eco-industry (e.g., waste managers, recyclers, demolition companies, etc.); and (iv) any other sectors or commercial market actors interested in secondary materials.

Roles: Key implementers of circularity in construction, practitioners who could potentially adopt SUM4Re's foreground (e.g., material tracking and waste reduction technologies).

Needs: Clear guidelines and practical tools to adopt circular construction practices efficiently and effectively, along with digestible training to help them empower a skilled workforce.

Key messages: SUM4Re provides tools and solutions to integrate circular practices in construction, enabling cost-effective waste reduction and resource efficiency. The project offers practical approaches for material traceability and circular use, supporting the industry's transition toward sustainable construction. SUM4Re aligns with industry standards, making it easier to adopt circular practices and meet emerging environmental regulations.

Platforms and channels to reach them: Contact with key stakeholders, SUM4Re multipliers, SUM4Re's consortium community, social media, events, workshops & webinars. The strategy includes industry-specific workshops to showcase SUM4Re's impact on cost efficiency and compliance with emerging sustainability regulations. Technical guidelines and best practices will be shared to assist industry players in integrating SUM4Re technologies.

2.1.2. Research & innovation community

Subsection 2.1.2 delineates the "research & innovation (R&I) community" audience group, which includes academia and research organisations.

Roles: Innovators and developers of new technologies and methodologies that support urban mining, circularity, and digital asset management within the built environment.

Needs: Access to public and open project data, according to the data management requirements stated in deliverable D16.2 (DMP) and collaborative opportunities to advance innovative solutions in urban mining and material tracking.

Key messages: SUM4Re is a platform for testing and refining new technologies in AI, blockchain, and data acquisition for the built environment, and offers a rich source of data and

insights for academic research and end-user behaviours. Results will be disseminated through scientific, academic, and technical publications.

Platforms and channels to reach them: Scientific publications and scientific conferences.

2.1.3. Policy makers

Subsection 2.1.3 delineates the "policy makers" audience group, which includes the EC, national and regional institutions, regulatory and standardisation bodies.

Roles: Enablers who create supportive policies, funding, and regulations to promote sustainable construction practices and circular economy adoption.

Needs: Concrete evidence and successful pilot results to support informed policies, funding, and regulations that promote circular economy goals and reduce construction waste.

Key messages: SUM4Re supports the EU's circular economy goals by addressing construction waste through sustainable, scalable solutions. The project's pilot results provide data to help shape policies promoting circular construction and resource efficiency. SUM4Re aims to offer a model for circular construction that can be aligned with regional and national regulatory frameworks.

Platforms and channels to reach them: policy-related events, contact with Member State policy actors who could benefit from targeted evidence-based updates and policy recommendations, demonstrating SUM4Re's alignment with EU circular economy targets.

2.1.4. General society

Subsection 2.1.4 delineates the "general society" audience group, which includes all citizens, but mainly targets circular construction jobseekers, and students interested in related topics.

Roles: Influencers and indirect beneficiaries of improved urban environments, with an interest in sustainability and waste reduction.

Needs: Clear, relatable information on how SUM4Re's outcomes contribute to environmental sustainability, helping foster community support for sustainable construction practices.

Key messages: By enhancing circularity in construction, SUM4Re helps to lower waste levels and environmental impacts associated with construction. The project supports a sustainable approach to building, promoting long-term benefits for communities and the environment.

Platforms and channels to reach them: social media, workshops, seminars, events.

2.2. Interest and influence

Section 2.2 maps the four SUM4Re's target audiences using an Interest-Influence Matrix (i.e., based on their level of interest in the project outcomes and their influence over adopting the project's results). This Target Audience Matrix provides SUM4Re with a strategic overview of how each target audience group relates to the SUM4Re project, and it helps in prioritising the planned audience engagement and tailoring communication strategies to effectively address the needs and expectations of each group.

2.2.1. Matrix

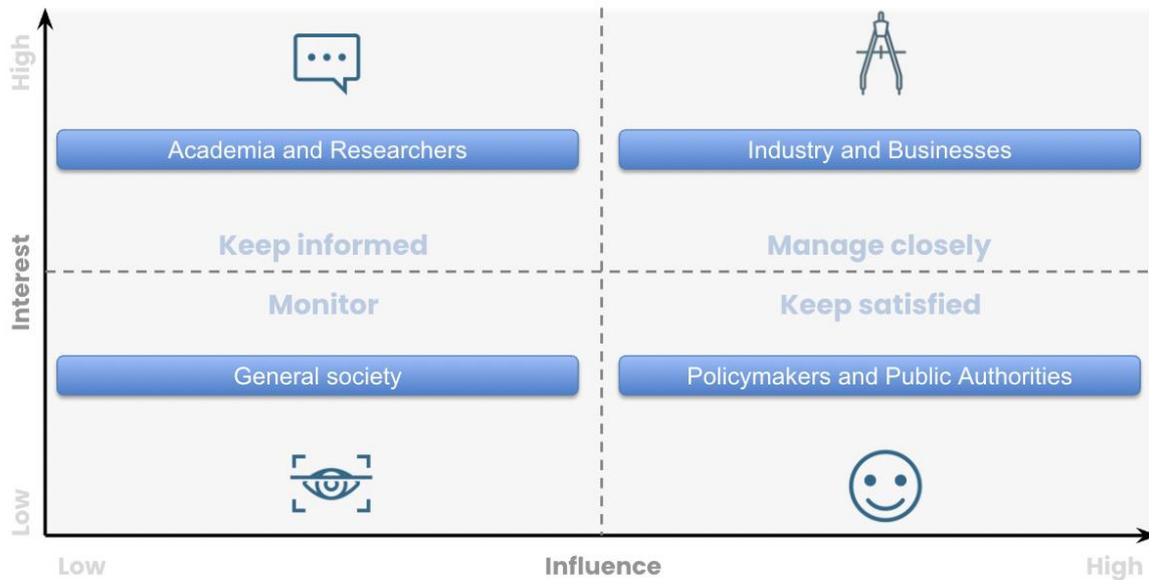Subsection 2.2.1 visualises the SUM4Re Target Audience Matrix (Figure 3).

Figure 3. SUM4Re Target Audience Matrix

This matrix will be utilised in conjunction with the three-phase DEC strategy found in Chapter 3. Deliberate dissemination actions will be taken to move stakeholders with high power further up the "y axis". Ideally, they should become SUM4Re advocates and supporters.

2.2.2. Explanations

Subsection 2.2.2 explains the rationale behind the SUM4Re Target Audience Matrix.

High Influence, High Interest (Manage closely)

Industry and businesses including energy and technology providers have a strong interest in cost-effective, sustainable materials management, aligning with SUM4Re's goals. Industry adoption directly impacts the project's scalability and real-world impact, with substantial capacity to integrate and promote SUM4Re innovations.

High Influence, Low Interest (Keep satisfied)

Policy makers (EC, national and regional institutions, standardisation): are interested in regulatory frameworks that support sustainability, although specific attention to construction waste may vary. Through legislation, funding, and regulatory support, policymakers can significantly impact the adoption and support of SUM4Re's circular economy solutions.

Low Influence, High Interest (Keep informed)

R&I community (academia and research organisations) is keen to explore innovative solutions in urban mining, circularity, and digital advancements that SUM4Re offers. While they provide technical advances, they largely influence SUM4Re through knowledge dissemination and technology development rather than market adoption.

Low Influence, Low Interest (Monitor)

General society (citizens, jobseekers, younger generation, students) is interested in the environmental benefits but may engage less with technical details. While societal support can create sustainability demand, their influence is less direct than industry and policymakers.

3. DEC timeline

Chapter 3 describes the three-phase SUM4Re DEC strategy, illustrated below in Figure 4. The strategy aims to raise wide awareness about project objectives (Phase 1), followed by increasing understanding of results achieved (Phase 2), and finally reaching a point where early adopters become equip and ready to fully adopt aspects of SUM4Re results (Phase 3).
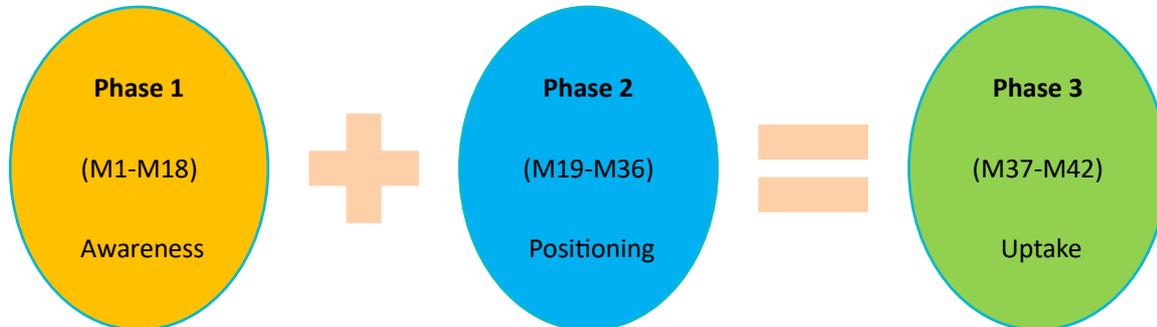

Phase 1

(M1-M18)

Awareness

Phase 2

(M19-M36)

Positioning

Phase 3

(M37-M42)

Uptake

Figure 4. SUM4Re three-stage DEC process from awareness to action

In the first 18 months of SUM4Re (i.e., Phase 1), the purpose of dissemination actions is to generate initial awareness and interest about SUM4Re's aims and objectives to a wide audience, focusing mainly on briefing the project objectives to general society and the R&I community, but not limited to any of the four target audiences. The content will be introducing SUM4Re concepts and early pilot findings via social media campaigns and initial publications.

During the next 18 months of the project (i.e., Phase 2), it is anticipated that project partners continue raising awareness, but as concrete results emerge and milestones are achieved, dissemination aims to create more targeted and focused awareness, using both technical and non-technical language. Mid-project deliverables will highlight case studies and technical advancements, communicated through additional channels such as webinars and workshops.

In the final 5 months of the project (i.e., Phase 3), awareness raising and teaching persists, but focus will now be placed on key stakeholders from the target audiences who can potentially adopt and champion SUM4Re results, by instigating deliberate commercial awareness campaigns to generate external valorisation interest. Final deliverables will be designed to foster adoption, featuring results from pilot projects and guidelines for material bank implementation across sectors. Towards the end of SUM4Re, a closing summit will be organised featuring pilot case studies and policy roundtables, facilitating discussion with key roundtable panel members related to regulatory implications and adoption pathways.

This three-phase timeline will ensure consistency across communication activities and keep all partners aligned with project goals. As a reminder from Chapter 1, this timeline intentionally mirrors the WP structure and is based strictly on information provided in the Grant Agreement.

3.1. Public deliverables

Section 3.1 lists the 44 SUM4Re public deliverables, which materialise important inputs for DEC content creation and will therefore be aligned, when relevant and appropriate (Table 1).

Table 1. SUM4Re Public Deliverables

Phase	N°	Public Deliverable Title	Date	Type
Phase 1	D13.4	Web site & social media accounts	M3	DEC
	D13.1	Dissemination, Exploitation and Communication Plan (DECP)	M6	Report

	D16.2	Data Management Plan (version 1)	M6	DMP
	D1.1	Guidelines for materials	M11	Report
	D1.2	Report on regulatory framework	M11	Report
	D1.3	Workshop Agreement on standardisation and interoperability	M12	Report
	D8.1	Report of scientific challenges	M12	Report
	D1.4	Materials reuse strategy	M15	Report
	D1.5	Schematic architecture of data workflows	M16	Report
	D4.1	Urban mining concept	M16	Report
	D8.2	Market analysis report	M16	Report
	D1.6	Integration scheme	M17	Report
	D2.1	iMMS and RGB data acquisition AR system	M17	Report
	D2.2	AHS methodological framework acquisition	M17	Report
	D2.3	XRF methodological framework acquisition	M17	Report
	D2.4	MFT methodological framework acquisition	M17	Report
	D2.5	Framework GPR-ECT methodological acquisition	M17	Report
	D2.6	FOS methodological framework acquisition	M17	Report
	D6.1	C-BIM design	M17	Other
	D6.2	Economic analysis	M17	Report
	D6.3	Social-Environmental analysis	M17	Report
	D8.3	Report with policy recommendations	M17	Report
	D10.1	Strategic planning and data collection report part 1	M17	Report
	D10.2	Strategic planning and data collection report part 2	M17	Report
	D10.3	Strategic planning and data collection report part 3	M17	Report
	D13.2	Report 1 on achieved DEC activities and performance	M18	Report
	D16.4	Progress Report 1	M18	Report
Phase 2	D7.1	Interface connections CIRDAX- CONCULAR-C-BIM-GENIA	M32	Other
	D5.1	Developed DMP format	M34	Report
	D9.1	Training report	M34	Report

	D9.2	Report of Technical and Digitalising workshops	M35	Report
	D11.1	TRACLINE achievements	M35	Report
	D11.2	3D BIM/GIS and Digital Twin	M35	Other
	D11.3	CDW values	M35	Report
	D14.1	Report 2 on achieved DEC activities and performance	M36	Report
	D17.1	Progress Report 2	M36	Report
Phase 3	D9.3	Guideline for knowledge replication	M41	Report
	D12.1	New solutions for real world building and civil applications	M41	Report
	D12.2	Meeting report	M41	Report
	D12.3	Circularity report	M41	Report
	D15.1	Report 3 on achieved DEC activities and performance	M42	Report
	D15.3	Project video	M42	Report
	D18.1	Progress Report 3	M42	Report
	D18.2	Data Management Plan (final)	M42	DMP

In SUM4Re, most deliverables have a public dissemination level, which signifies its open science principles. For the few confidential deliverables, the lead authors will prepare a publishable summary to be published on the SUM4Re website and shared accordingly.

3.2. Performance monitoring

Section 3.2 lists the measurable communication and dissemination (C&D) objectives – extracted from the Grant Agreement**,** which are critical to the success of DEC in SUM4Re. Specific communication channels and dissemination actions are summarised in Table 2 below, along with their related KPIs.

Table 2. SUM4Re D&C KPIs

KPI	Target
Communication KPIs and targets	
SUM4Re **website**: public information centre ensuring that the objectives, methodologies, activities, and results are easily available. Wide scale dissemination. Promotion of EU dimensions and added value on landing page.	
N° of annual visitors	2500
SUM4Re's **newsletter** gathering news from the technical WPs, promoting the project's results, and announcing dissemination events. First issue by M7 with follow-ups every 6 months. Key publications relayed through SUM4Re partners' institutional newsletters.	

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N° of newsletters	6
N° of subscribers	500
SUM4Re's **social media**: X for high level interactions with influencers (specialized journalists, policy makers, EC related bodies); LinkedIn, for technical contents to professionals; YouTube to promote the videos.	
LinkedIn followers	400
X (Twitter) followers	200
Short **promotional videos:** Short introductory video as a 1-min elevator pitch of SUM4Re.	
N° of videos	1
Dissemination KPIs and targets	
Dissemination of the project's results at **relevant scientific and policy events.**	
N° of events	20
Establishing contact with key dissemination stakeholders: **multipliers** enrolled & actively disseminating SUM4Re outcomes (through their own newsletter, social media, etc.)	
N° of multipliers enrolled	10
Scientific publications.	
N° of open access (OA) publications	12
N° of peer-reviewed conference papers	10
Clustering activities with sister projects and innovation clusters / ecosystems.	
N° of clustering workshop/conferences	3
Dissemination and **training webinars/workshops**, each gathering at least 50 attendees, targeting specific sectorial audience.	
N° of dissemination webinars organised	2
Delivery of public massive online courses (**MOOCs**): courses about the innovative data acquisition and processing technologies of SUM4Re, with a minimum of 50 attendees per country participating in the project (KPI6).	
N° of MOOCs	5
Organisation of a final event in Brussels: At least 100 attendees; round tables organised with representatives of at least 6 stakeholder groups.	
Final event	1

4. Key communication measures and channels

Chapter 4 presents the selected SUM4Re communication channels to reach its Target audiences effectively, including digital channels (e.g., project website, social media, newsletters, videos, webinars, etc.); traditional media (e.g., press releases, articles in local and international media, interviews, etc.); academic and professional channels (e.g., scientific journals, conference presentations, workshops, etc.); and direct engagement (e.g., stakeholder meetings, pilot demonstrations, etc.).

4.1. DEC toolkit

Section 4.1 briefly highlights key aspects of the SUM4Re DEC toolkit, a set of materials to support DEC activity. Specifically, an infographic was created by a subcontractor together with UVIGO (Figure 5), document templates were developed for deliverable reports and presentations (Figure 6). Not presented but also created were other essential marketing collateral comprising the SUM4Re visual identity (e.g., the project logo, leaflet and a roll-up templates, etc.).
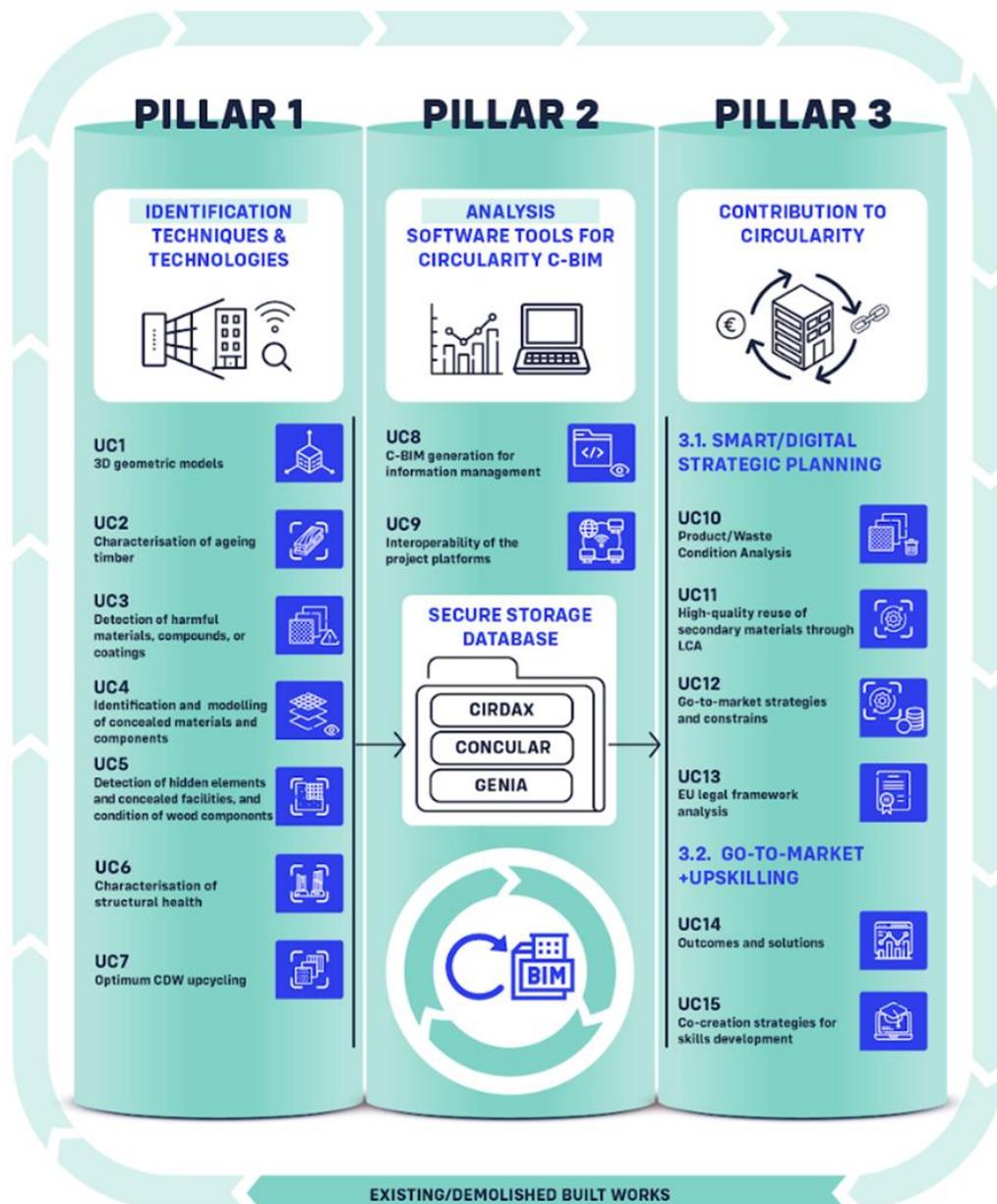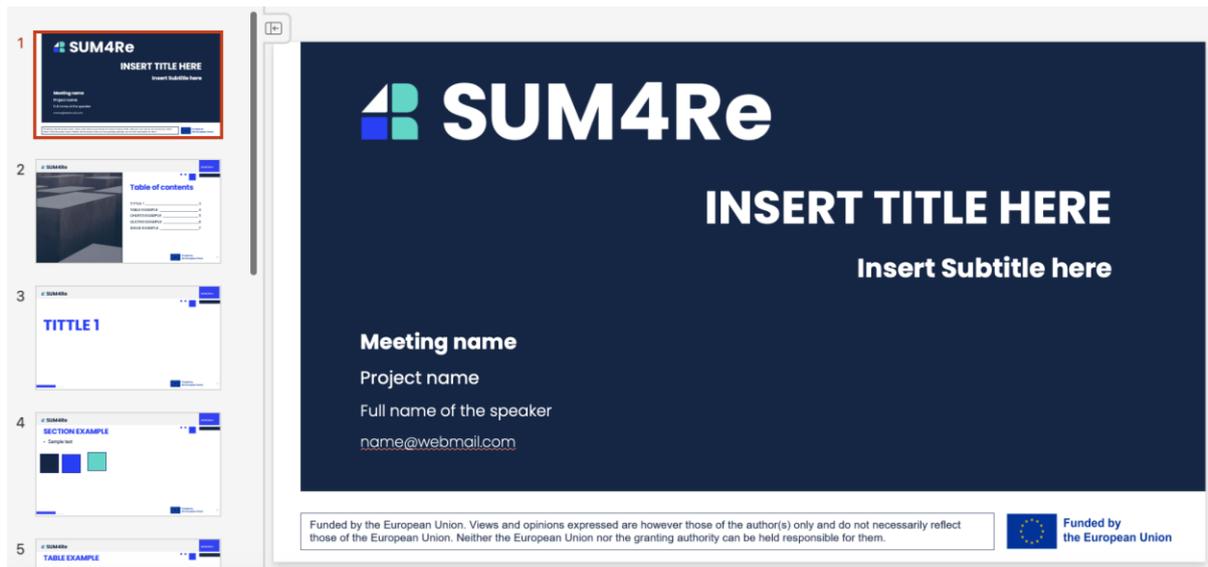

Figure 5. SUM4Re infographic

Figure 6. SUM4Re standard presentation

The DEC toolkit is readily available to all project partners, found on SUM4Re's SharePoint. It is also available on the project's website, facilitating easy access for stakeholders, and supporting consistent dissemination of the project's vision and outputs.

4.2. Project website and social media

Section 4.2 briefs the project website and social media channels, which shall be further detailed in D13.4, a public deliverable aimed at familiarising SUM4Re partners with the tools.

The SUM4Re website (www.sum4re.eu), hosted and managed by R2M, has been launched in Month 3 (Figure 7). It has been updated with information about the project, news, and various resources (press release, scientific articles, brand identity). The project's website has 6 menu items: project information (the project, the consortium, the pilot sites and Horizon Europe), project news and events, downloadable resources (scientific reporting, public deliverables, communication media, the brand identity and the press releases), contact information, newsletter subscription, and social media.

Figure 7. SUM4Re website landing page
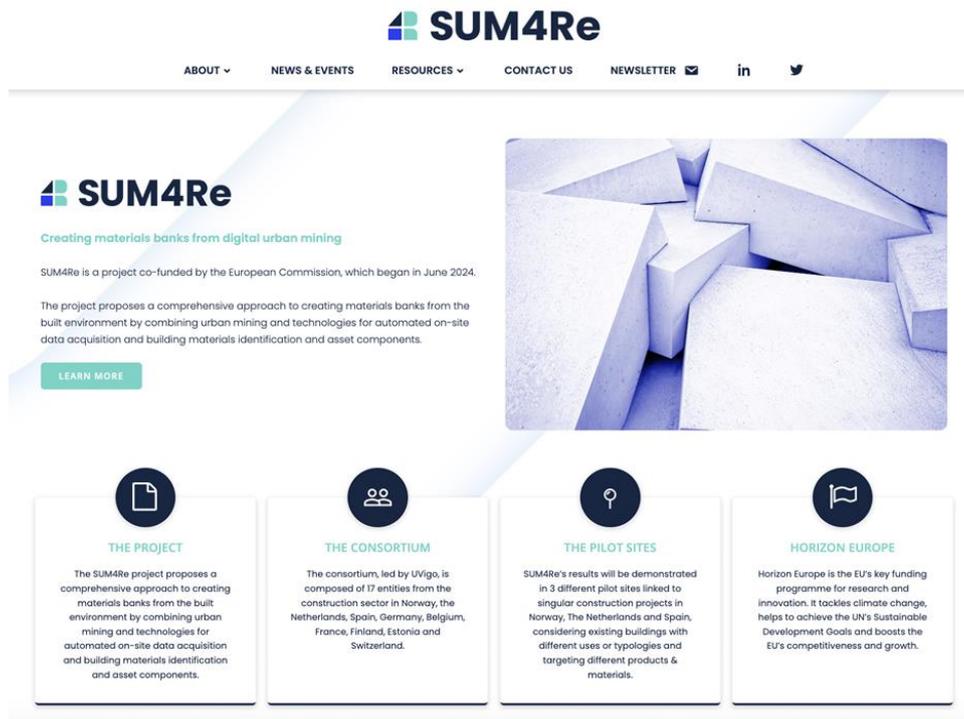
Social media (specifically X & Linkedin) will be utilised throughout SUM4Re, in line with the three-stage dissemination strategy. Social media accounts, hosted and managed by R2M, were launched in M3. Data has already been collected from the partners to feed the first wave of social media content (exemplified in Figure 8 below).
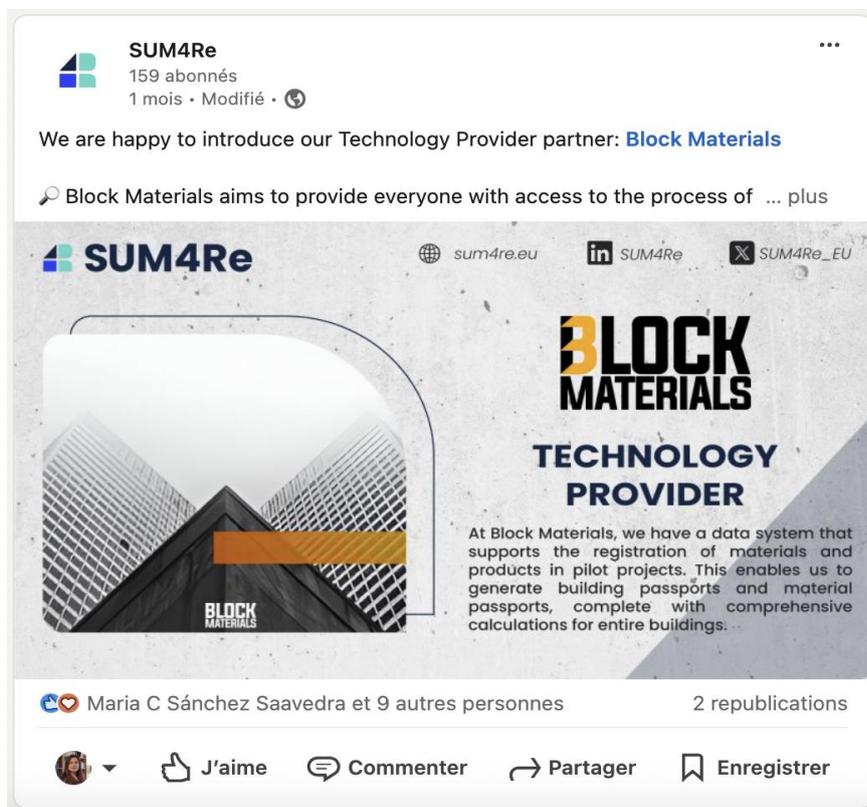

Figure 8. Example of social media post

Social media content will be tailored to the publishing platform, and when relevant it will be mirrored on the [News page of the project website](#) (e.g., the UVIGO presentation on [X](#), [LinkedIn)](#). Content will include educational, action inspiring, visual, and storytelling formats. Engagement measures will involve responding to comments, hosting live sessions, and partnering with influencers and organisations. This content strategy aims to enhance visibility, engage with the target audiences, and promote the ongoing SUM4Re activity.

The SUM4Re social media strategy will leverage hashtags (e.g., #CircularConstruction, #MaterialBanks, etc.) to engage relevant audiences, and will adhere to platform-specific approaches to maximise outreach, For example:

<u>LinkedIn</u>**:** Primary platform for engaging industry professionals and policymakers. Content will include case studies, expert insights, and project updates tailored to technical audiences.
<u>X (formerly Twitter)</u>: Broader outreach to engage the public and stakeholders with accessible content like infographics, pilot updates, and technical developments.

Stakeholder engagement is the overarching goal of all SUM4Re social media activity. Feedback received as a result of DEC will be integrated into technical activities of the project.

4.3. Impact multipliers

When implementing DEC activities, SUM4Re partners will leverage impact multipliers (e.g., clusters or associations where SUM4Re partners are active) to achieve a wider reach.

SUM4Re will engage multipliers by: (i) tagging the relevant multipliers in our social media posts; (ii) asking relevant multipliers to include information about our achievements in their own newsletter circulated to their members; and (iii) asking relevant multipliers to endorse and/or further promote some of our C&D activities to attract a larger audience, etc.

A preliminary list of SUM4Re multipliers (Table 3), was extracted from the Grant Agreement. Partners will be periodically encouraged to revisit and refine this list.

Table 3. SUM4Re Impact Multipliers

Impact multiplier	Scale	Partner(s) involved	Relevance for SUM4Re
European Demolition Association	EU	*UVIGO, TEC, VTT, EBC*	EU association involved in policy making, promoting standards in the sector, disseminating new working methods and training. They signed the LoS and will follow project progress.
EU Circular Stakeholder Platform	Int.	*TECN, EBC, CONC*	Joint initiative (EC and the European Economic and Social Committee) that brings together stakeholders in the circular economy.
Metabuilding Platform	EU	*R2M, TEC*	Open innovation platform focused on supporting SMEs through cross-sectoral and cross-border collaboration. Market collaboration.
RREUSE	EU	*R2M*	International network for social enterprises involved in actions to increase circularity in the C&D while creating social employment.
ECTP	EU	*R2M, TEC, VTT, EBC*	1 of the 38 industry-led European Technology Platforms (ETPs) recognised by the EC as key actors driving innovation, knowledge transfer, European competitiveness for Built Environment.

EU Build UP portal	EU	R2M, TEC, EBC	Thanks to a media partnership with the portal, R2M has direct contact to propose material for dissemination from SUM4Re project.
Construction 21	Int.	R2M, TEC	Social Media Network for sustainable construction professionals. R2M uses this platform for dissemination.
Built4People (B4P) Partnership	EU	EBC	The EC and two leading associations (ECTP and WorldGBC Europe) with a membership base of actors in the built environment. EBC sits in the Board of the Built4People partnership.
B4P Innovation Clusters	EU	R2M, TEC, VTT	A network of Built4People Innovation Clusters (B4PICs) is created (NEBULA project). R2M can disseminate SUM4Re's innovations.
EU Digital Building Logbook (DBL) / EU High Level Construction Forum (HLCF)	EU	THUAS, TEC, EBC	Prof. Rizal Sebastian (THUAS) is a co-initiator of the current technical study assigned by DG GROW and a representative of the Dutch government executive agency (high-level discussions with the C for further development and implementation plans for the EU DBL).
BPIE (Buildings Performance Institute Europe)	EU	EBC, CONC	Umbrella European organisation representing key research institutes on buildings. EBC cooperates with them on a regular basis, notably for exchanges on whole-life carbon emissions and energy efficiency.
ECCREDI European Council for Construction R&D&I	EU	EBC	A platform gathering representatives of contractors, engineering, consultants, architects and designers, product and material producers, building control organisations and research bodies covering buildings, infrastructure and geotechnics. EBC sits among the members.
Small Business Standards (SBS)	EU	EBC (founder and member)	European non-profit association to represent and defend SMEs' interests in the standardisation process. It aims at raising the awareness of SMEs about the benefits of standards and at encouraging them to get involved in the standardisation process.
Building SMART Alliance	Int.	EBC, SINTEF	A neutral, international forum for initiating, developing, creating and adoption of open digital standards for BIM processes. building SMART standards help asset owners and the supply chain work more efficiently and collaboratively through the asset lifecycle.
European Convention for Constructional Steel (ECCS)	EU	VTT	Petr Hradil (VTT) is member of Technical Committee 14 (Sustainability) and coordinating efforts on reuse of constructional steelwork.

European Institute for Innovation and Technology (EIT)	EU	*VTT (founding member EIT Raw Materials)*	The knowledge and innovation community that develops raw materials into a major strength for Europe. VTT has an active role in several activities in innovation and education for circular economy both in EIT Raw Materials and EIT Manufacturing.
Research and Technology Organisations (RTOs)	EU	*VTT*	Non-profit association representing European research and technology organisations (RTOs). EARTO promotes dialogue between decision makers and science heading for a competitive European economy and high quality of life through beneficial cooperation with all stakeholders.
Catenda Hub	Int.	*SINTEF*	An open-standards cloud-based platform supporting construction and infrastructure project management, valuable in D-BIM.
Deutsches Institut für Normung e. V. (DIN)	EU	*CONC*	Leading standardisation institute that can bring results into norms to allow a scaling of the results the industry.

4.4. Journals and events of interest

SUM4Re's scientific and technical results will be published in peer-reviewed, OA journals with the highest possible impact factor. All publications will be collected in a dedicated space within the project website for public download (when possible). Examples of journals focused on SUM4Re related issues include, among others:

- Automation in Construction.
- Waste Management.
- Construction and Building Materials.
- Journal of Building Engineering.
- Journal of Construction Engineering and Management.
- Construction Management and Economics.

Results will also be presented at relevant international conferences, symposia, seminars, workshops, and other events, either through oral or poster presentations. Examples of conferences focused on related topics are, among others:

- ECTP Annual conference.
- EDIH Network Annual Summit.
- World Circular Economy Forum.
- Sustainable Places.
- 3DGeoinfo.
- ICACEH International Conference on Architecture, Construction, Environment and Hydraulics.
- CISBAT International scientific conference on the Built Environment in Transition.

4.5. Clustering and Commission services

Clustering with 'sister' and 'cousin' projects will strengthen SUM4Re's DEC capacity.
One example of an important clustering opportunity is that of the Sustainable Places annual international conference organised by R2M (the SUM4Re C&D leader). Other examples of clustering activities include joint webinars, joint publications, and reciprocal hyperlinking which improves search engine optimisation and drives traffic between the two websites.

SUM4Re will take full advantage of the European Commission's services to the benefit of maximising dissemination efforts to achieve both wide and targeted outreach. For example, [Module A or B of Horizon Results Booster's "Portfolio Dissemination & Exploitation Strategy" service](link). Module A would be if SUM4Re applies alone, in which case the service will find relevant projects to cluster and perform joint dissemination. Module B would be if SUM4Re finds relevant projects to create a Project Group, and in that case the service supports this group to design a joint dissemination plan for the portfolio and to carry out the actual dissemination of the portfolio's results (e.g., with visual identity and a short video). The intent behind this action is (like using impact multipliers), to leverage existing initiatives. Two additional goals of SUM4Re will be to publish its key results in the Horizon Results Platform, and to submit at least one scientific research paper to Open Research Europe.

5. Publication validation process

Chapter 5 sets the internal validation process, applicable to external publications.

Social media content shall be validated by the concerned partner prior to publication. Scientific content shall be validated according to the following Consortium Agreement (CA) extract (Article 8.4.2.1):

"*Prior notice of any planned publication shall be given to the other Parties at least 45 calendar days before the publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement by written notice to the Coordinator and to the Party or Parties proposing the dissemination within 30 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.*

Any objection to a planned dissemination action shall be made in accordance with the Grant Agreement by written notice to the Coordinator and to the Party or Parties proposing the dissemination action within 15 calendar days after receipt of the notice or 5 calendar days after receipt of the material, unless explicitly agreed other deadlines in writing by the concerned Parties. If no objection is made within the time limit stated above, the dissemination action is deemed permitted, in accordance with the notice given."

6. EU funding acknowledgement

Chapter 6 recalls C&D obligations of SUM4Re partners for all external communications, as specified in the Grant Agreement (article 17.2 – Visibility) and highlighted in the D16.1 Project Management Plan (Section 4.1.2.1 Acknowledgment of EU funding). Two specific elements must always be prominently visible on any materials where the project is communicated: (i) the European Union (EU) funding emblem (Figure 9) and (ii) disclaimer.

Figure 9. EU funding emblem and HADEA disclaimer

"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency (HADEA). Neither the European Union nor HADEA as the granting authority can be held responsible for them."

The EU funding emblem must remain distinct and separate and cannot be modified by adding other visual marks, brands or text. No other visual identity or logo may be used to highlight EU support. When displayed with other logos (e.g. of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as other logos. The disclaimer may be translated into local languages, if appropriate. Further guidance is in Articles 17.2 and 17.3 of the Grant Agreement and the EC Download centre for visual elements.

In addition to mandatory acknowledgments, SUM4Re will incorporate additional messaging that emphasises EU funding's role in fostering sustainable innovation, reinforcing the EU's commitment to its circular economy and a sustainable future construction sector.

7. Plan for exploiting results

Chapter 7 describes the exploitation management methodology related to Task 13.3, Task 14.3 and 15.3, for the valorisation oversight of SUM4Re's 15 ERs, listed in the Grant Agreement (Section 2.2.2 of PART B).

7.1. Baseline definitions

Section 7.1 aligns partners on baseline exploitation definitions. ERs are the achieved and/or expected results coming from the project that will have an impact on economy, environment and/or society. According to the Horizon 2020 text, an ER is defined as: *"Any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected, which are generated in the action as well as any attached rights, including intellectual property rights (IPR)"*.

Typically, ERs can be evaluated according to their Technology Readiness Levels (TRLs), to clarify the valorisation pathways. TRLs 4-5 (early stage) signify innovations needing further R&D and should aim to secure continued support for enhancing technical development and market feasibility. TRLs 6-9 (near-market) signify market-ready solutions and should be prioritised for immediate exploitation, such as commercialisation and industry partnerships.

ERs should provide both commercial or social significance and can be exploited as stand-alone products, processes, services, etc. In principle, these ERs might need further R&D, prototyping, engineering, validation after the project ends and before they become commercially exploitable. ERs are not rigid, the following areas are considered: (i) products & applications – items for sale (e.g., hardware or software); (ii) processes – ways to make or do something; (iii) know-how – valuation of "how to"; (iv) services – by offering products, processes, equipment, or knowledge; and (v) other – platforms, publications, patents, etc.

For up to four years post-funding, EU project beneficiaries commit to exploitation efforts, either directly or indirectly by a third party (through transfer or licensing), as specified in Annex 5 of the Grant Agreement. This means that participants must take steps to ensure that the results they own are utilised in the following ways: (i) in further research activities other than those covered by the project concerned, (ii) in developing, creating and marketing products or processes, (iii) in creating and providing services, or (iv) in standardisation activities. Commercial exploitation can be implemented by various means, such as: licensing, assignment, forming a joint venture or spin-off, and franchising. Protection of results will occur if the results are reasonably expected to be commercially or industrially exploited and their protection is possible, reasonable, and justified, participants must ensure adequate protection of the results (see examples in Table 4) for an appropriate period and in a suitable territory.

Table 4. Protection of results, examples

Element	Patent	Utility model	Industrial design	Copyright	Trademark	Confidential information
Invention	X	X				X
Software	X			X		X
Scientific article				X		
Design of a product			X	X	X	
Product / service / project name					X	
Know-how						X
Website			X	X	X	

However, while Intellectual Property (IP) protection is vital for commercialisation, it is not always mandatory. Potential considerations for when deciding not to protect results could be related to: (i) Transfer: If a participant does not intend to protect a result, it is also considered best practice to consider offering its transfer to other consortium partners or third parties better positioned for result exploitation and willing to pursue protection. (ii) No dissemination: If such

transfer does not occur, participants who have received EU funding but do not intend to protect their results capable of industrial or commercial application for reasons other than legal impossibility must refrain from any dissemination activities without prior notification to the EC. This notification is mandatory for up to four years after the project's funding period. (iii) Ownership by the EC: The EC may, with the consent of the participant who owns the result, decide to assume ownership and take necessary protective measures. In this scenario, the EC must formally notify the concerned participant within 45 days of receiving the notification.

Additional guidance is in the Annotated Grant Agreement, Annex 5 "Specific Rules on IPR", and the SUM4Re CA which is a private contract among consortium partners that regulates, among other things, the generated knowledge and IPR management. It addresses aspects such as: which knowledge are we exchanging? under which conditions? who will be the owner of the results? what happens in case of joint ownership? who and how will exploit the results? how are we protecting confidential information? External resources are also made available for SUM4Re partners, such as: (i) The EU guide "*Your Guide to Intellectual Property Management in Horizon Europe*"; (ii) The European IP Helpdesk publication: "*Successful valorisation of knowledge and research results in Horizon Europe : boosting the impact of your project through effective communication, dissemination and exploitation*"; and (iii) The EC webinar "*Dissemination and Exploitation in Horizon Europe*".

7.2. SUM4Re exploitation

Section 7.2 illustrates the SUM4Re methodology for exploitation management (Figure 10).
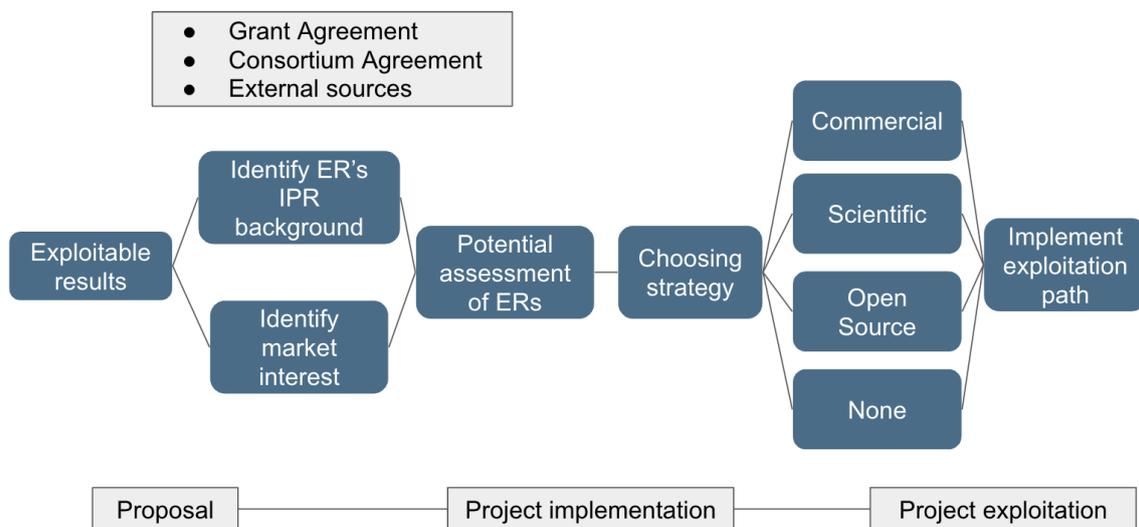

Figure 10. Typical exploitation path for SUM4Re ERs

R2M is responsible for monitoring of ERs, their valorisation pathways, and related IPR. As part of tasks T13.3, T14.3 and T15.3, all SUM4Re partners will develop formal exploitation strategies and action plans, which will be periodically revised and finalised by the project's conclusion. Specific pathways will be determined according to the maturity of foreground and the ambition of foreground adopters.

8. Cross-cutting design thinking support

Chapter 8 provides the rationale of SUM4Re's cross-cutting design thinking support activities to be led by R2M, through the organisation of 3 workshops (section 8.2) to collectively address a joint challenge (to be specified before each workshop). These workshops will be conducted as part of Tasks T14.3 and T15.3. Design Thinking is a way of approaching complex problems with empathy, creativity, and collaboration. It's about putting people first, understanding their needs, and designing user-centric solutions.

8.1. Purpose and approach

Design thinking in SUM4Re will ensure the development of user-centric solutions, fostering empathy, creativity, and collaborative innovation to align project outputs with real-world needs in construction, urban planning, and circular economy fields. Design thinking fosters a shared understanding of challenges and solutions in complex projects, leading to more actionable and sustainable outcomes. Integrating design thinking within the SUM4Re framework offers benefits such as enhanced stakeholder engagement, improved adaptability, and value alignment. Research shows that design thinking can reduce project risks and increase impact by emphasising early and continuous stakeholder involvement. It also enhances SUM4Re solution readiness via continuous validation with end-using stakeholders.

Design thinking workshops can serve as safeguards against solution misalignment, allowing SUM4Re to pivot based on iterative user feedback. By incorporating structured design thinking workshops at key project stages, SUM4Re can harness the collective expertise of its consortium to deliver relevant and impactful solutions for the EU circular economy.

8.2. SUM4Re Design Thinking workshops

SUM4Re will conduct three design thinking workshops throughout the project's lifecycle. A preliminary vision for these workshops is hereby described as follows:

The first workshop will likely define core user needs and validate early assumptions on material bank functionalities using "empathy mapping" and "persona development" exercises.

The mid-project workshop will likely co-design solutions with active input from pilot site representatives using techniques like "rapid prototyping" and "scenario planning".

The final workshop will aim to validate SUM4Re's outcomes and explore exploitation pathways, likely using an exercise called "journey mapping".

These workshops will ensure SUM4Re foreground is relevant and actionable, with feedback loops strengthening final deliverables and exploitation strategies. The workshops will provide valuable insights from stakeholders' perspectives, create a team building experience, and fostering a cooperative atmosphere. For example, co-designing C-BIM will foster a user-friendly collaboration and help the SUM4Re project beneficiaries understand related joint challenges, directly supporting DEC activities both during and after the project.

9. Conclusion

SUM4Re advances the state of the art in the European construction industry through sustainable practices and innovative technologies, focusing on turning buildings into material banks. The project establishes a replicable model for cross-sector collaboration through technical innovations, a design thinking approach, and stakeholder engagement strategies.

The DECP is a comprehensive framework to guide the project's outreach, engagement, and foreground adoption strategies to be implemented by the consortium both during and after the project's lifecycle. SUM4Re ensures that awareness, understanding, and exploitation of project results are achieved progressively, aligning with stakeholder needs and market readiness. The phased DEC approach and content strategy ensure a steady flow of relevant information, from initial project awareness to detailed technical outputs that support industry adoption and policy alignment. This will bolster the impact of SUM4Re's innovations and enable stakeholders to actively participate in and benefit from the transition to a circular economy.

SUM4Re

Creating materials banks
from digital urban mining

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