



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723583



RE⁴ Project

REuse and REcycling of CDW materials and structures in energy efficient pREfabricated elements for building REfurbishment and construction

D9.5 Third Short Interim Management Report

Public summary of deliverable

Author(s) ¹ :	Project Coordinator (CETMA), WP Leaders (CETMA, STAM, ROS, QUB, CBI, ACC, STRESS, FENIX)
Date:	11/10/2019
Work package:	WP9 - Project Management
Distribution ²	This document is a public summary of the confidential deliverable D9.5
Status ³ :	Final
Abstract:	The document reports on the status of activities performed in RE ⁴ Project from M19 (Mar 18) until M24 (Aug 18). It provides a short but meaningful synopsis for each WP in progress, reporting: overview, main obtained results, deliverables produced, activities planned for the next 6 months (M25/Sep 18-M30/Feb 19), deviations and corrective actions (if any).
File Name	RE4_D9.5_Third Short Interim Management Report_Final_V0.1_Public Summary

Version	Date	Description	Written By	Approved by
V0.1	11.10.2019	Public Summary of D9.5	CETMA	PC

¹ Just mention the partner(s) responsible for the Deliverable

² PU: Public, RE: restricted to a group specified by the consortium, CO: Confidential, only for members of the consortium; Commission services always included.

³ Draft, Revised, Final

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Purpose and scope

The **Deliverable D9.5** (*Third short interim management report*) belongs to the *Reporting to the EC Task (T9.4)* of the *Project Management Work Package (WP9)*. In accordance with the art. 20 of the Grant Agreement, the European Commission established 3 Reporting Periods (RPs) of the Project (RP1: from M1 to M18, RP2: from M19 to M30 and RP3: from M31 to M42). In addition, short interim management reports have to be provided (in M6, M12, M24, and M36).

The D9.5 reports on the status of activities performed until M24 (Aug 18).

Summary of the work done in the period (M19-M24)

According to the DoA, in this semester, Tasks 2.4, 2.5, 4.4, 4.5, 5.2, and 7.2 were completed and 8 out of **8 Deliverables** foreseen within M24 were regularly submitted (D2.4 *Classification and sorting by using NIR sensors and robot*, D2.5 *BIM-compatible DSS and tool platform for CDW estimation and Management*, D4.4 *Quality classes and potential applications for recovered CDW derived materials*, D4.5 *Development of alkali activated binder from ceramic CDW*, D5.2 *Prefabricated components development*, D7.2 *Framework for LCA/LCCA/S-LCA* and D9.5 *Third Short Interim Management Report*) and 2 out of **2 Milestones** foreseen within M24 were regularly achieved (MS3 *Robotic NIR sensors based CDW sorting system*; MS6 *Availability of a system of quality classes and potential applications for recovered CDW derived materials*).

No deviations occurred during the reference period with respect to timing and activities progress, and the mid-term targets in M12 were fully met.

Explanation of the work carried out in the period (M19-M24) per WP

WP2 Strategies for innovative sorting of CDW and reuse of structures from dismantled buildings (WP leader STAM)

The main goal of Work Package 2 was to study innovative sorting solutions for the recycling of CDW and strategies for the reuse of structures from dismantled buildings.

During M19-M24 period of the project, in WP2 the Tasks 2.4 was carried out and concluded in M23, while the Tasks 2.1, 2.2 and 2.3 were already ended during the previous periods. In particular, Task 2.4 deals with the development of an innovative sorting system for CDW based on hyperspectral imaging, machine learning logics for real time classification and robotic technologies.

Task 2.5 has developed a Decision Support System (DSS) compatible with BIM (Building Information Modelling) data, able to help the work of different practitioners within the CDW value chain. The tool estimates the CDW amounts and typologies by giving suggestions about their possible treatments.

WP3 Innovative concept for modular/ easy installation and disassembly of eco-friendly prefabricated elements (WP leader ZRS)

Work Package 3 was focused on the development of innovative design concepts for an energy efficient building.

During M19-M24 period of the project, in WP3 the task 3.2, 3.3, and 3.4 were carried out. In particular, task 3.2 deals with the thermal upgrade of the building envelope. In task 3.3 the concept design of a new dismountable and reusable building was developed. Finally, Task 3.4 was focused on

numerical modelling to support the design foreseen in WP3 and to predict the prototype performance taking into account the actual installation constraints foreseen in WP6. The approach, the methodology, the main standards and the input needed to carry out the hydrothermal and the fire modelling of the components/elements to be developed during the project were defined.

WP4 Technical characterisation of CDW-derived materials for the production of building elements (WP leader QUB)

Work Package 4 was mainly focused on establishing the quality of CDW-derived materials and assessing the compliance of each sorted fraction against relevant National and European specifications for the production of buildings elements.

During M19-M24 period of the project, in WP4 the activity focused on task 4.4 and 4.5. Task 4.4 and 4.5 were successfully completed in M20. In task 4.4, a codification of quality classes was defined for identifying the optimal recycling strategy for mineral and lightweight CDW fractions. In task 4.5 the potential of ceramics (bricks & tiles) as a precursor for making alkali activated binder concrete was assessed.

WP5 Development of precast components and elements from CDW (WP leader RISE)

Work Package 5 was focused on the development of robust materials with a high level of incorporation of CDW and prefabricated components and elements from these materials, which can be easily installed and disassembled.

During M19-M24 period of the project, in WP5, task 5.2, 5.3, 5.4 and 5.5 were on-going.

Task 5.2 focused on the development of prefabricated components (e.g. building blocks, recomposed tiles, timber beams and columns, weatherboarding and insulation panels – designed in WP3) using materials with a high level of incorporation of CDW (sorted in WP2 and characterized in WP4), which can be easily installed and disassembled. In task 5.3, prefabricated elements (e.g. insulation panels, concrete and timber façade panels, load bearing precast concrete elements and internal partition walls) were specified in terms of typology, dimensions, total number to be produced for demo building and testing, etc. In task 5.4 (dedicated to provide a first upscaling of the developed concepts from the laboratory to the prefabrication scale), and task 5.5 (for refining the design of the precast concrete and timber elements) tests to be conducted on different elements have been specified in the in terms of types of test to be performed, element specifications, etc.

WP6 Pilot level demonstration of CDW based prefabricated elements (WP leader ACCIONA)

Work Package 6 is focused on demonstration and validation of prefabricated elements designed in WP3 and developed in WP5 for new energy efficient buildings and for refurbishment of existing buildings.

During M19-M24 period of the project, in WP6, research activities have been done in task 6.1 and task 6.3. The involved partners in task 6.1 have started the preliminary set-up of the pilot line and the related manufacturing steps for the prefabricated elements production. In task 6.3, preliminary designs of the UK and the Spanish mock-ups (two-storey) have been developed. The UK mock-up will be made of precast load bearing concrete panels,

while the mock up to be erected in Spain will have a precast concrete skeleton with structural and non-structural prefab panels

WP7 Life-cycle and HSE analysis and certification/standardization strategy definition (WP leader STRESS)

Work Package 7 is focused on all the aspects related to environmental (LCA), social (LCSA), health and safety impacts, cost analysis (LCC) and certification issues connected with the RE4 solutions, with the aim of addressing and evaluating their sustainability, reducing time to market and contributing to improve market and social acceptance.

During M19-M24 period of the project, in WP7, starting research activities have been done in task 7.2, 7.3, 7.4, and 7.5 in terms of goal and scope definition, as first phase of sustainability methodologies, followed by the other phases such as Life Cycle Inventory, Life cycle Impact Assessment and the Conclusion and results interpretation phase and HSE issues analysis.

WP8 Training, dissemination and exploitation (WP leader FENIX)

The main goal of Work Package 8 is to define appropriate measures for managing dissemination and exploitation of the Project results.

WP8 is dealing with dissemination, communication and exploitation activities of the project results. During M19-M24 period of the project, in WP8, activities have been done in task 8.2, 8.3, 8.4, and 8.6. In task 8.2, a preliminary business model CANVAS was defined and preparation of supporting material for the discussion about business model approach with partners within the second exploitation workshop. In task 8.3, the

second exploitation workshop within GA meeting was prepared. In task 8.4, website, social network profiles were continuously updated and maintained together with the monitoring and evaluation of KPIs. Second e-newsletter released and promoted through common communication channels. Project graphical video released. Organization of the event “Circular Economy in Construction Sector”, in Prague, 20th September 2018. Task 8.6 just started in M24, with preliminary planning activities for training.

WP9 Project Management (WP leader CETMA)

The goal of Work Package 9 is to ensure that the Project meets its objectives within the budget and scheduled timescales.

Due to its own nature, WP9, is devoted to run the Project. The Project Coordinator (PC) is responsible for the overall management, communication, and coordination of the entire Project. The PC's tasks include: supervision and approval of reports and technical deliverables, first liaison and communication with the EU Institutions, monitoring of the progress of the Project according to the work-plan, ensuring that the technical objectives of the Project as a whole are met, budget controlling, reporting of the major changes from the agreed work-plan to the PMC (Project Management Committee). The PC is supported by CETMA's technical team.

WP10 Ethics requirements (WP leader CETMA)

Work Package 10 is focused on the “ethics requirements” that the project must comply with.



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During M19-M24 period of the project, in WP10, the project coordinator collected, from all partners, data and information in order to update the deliverable D10.1.

Activities planned in the next period (M25-M30)

Activities planned for the next 6 months (M25-M30) foresee the submission of 4 deliverables (*D3.1 Design concept for renovation, D3.2 Design concept for new construction, D6.1 Production. Conditioning, manufacturing and quality control. Safe production guideline*) and the achievement of two milestones (*MS4 Design development of components for easy installation and disassembly; MS10 Specifications of the conceptual design of the scaled-up processes*).

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