MOBICCON – PRO
MOBILE AND INNOVATIVE CIRCULARITY FOR CONSTRUCTION PRODUCTS

MOBICCON-PRO
MOBile and Innovative Circularity for CONstruction PROducts

List of participants

Participant No. *	Participant organisation name	Country
1 (Coordinator)	Glavbolgarstroy Holding AD (GBS)	Bulgaria
2 (Academy/RTO)	Danish Technological Institute (DTI)	Denmark
3 (Industry)	IDEA Consult (IDEA)	Belgium
4 (Academy/RTO)	University of Architecture, Civil Engineering and Geodesy (UASG)	Bulgaria
5 (Academy)	CY Cergy Paris University (CYU)	France
6 (NGO)	Economic Policy Institute (EPI)	Bulgaria
7 (Industry)	Glavbolgarstroy AD (GBS AD)	Bulgaria
8 (Industry)	GBS Infrastructural Construction AD (GBS IC)	Bulgaria
9 (Non-Profit Association)	Fédération de l'Industrie Européenne de la Construction (FIEC)	Belgium
10 (Public body)	City of Pirot (CP)	Serbia

Funded by the European Union

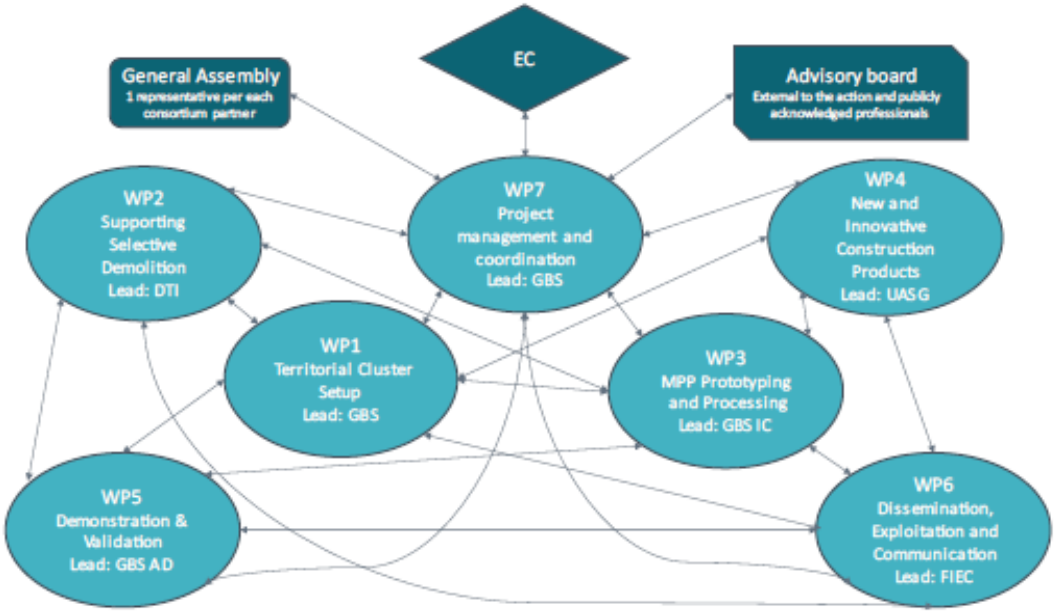
MOBICCON-PRO

MOBile and Innovative Circularity for CONstruction PROducts

It is against this background that, given the pressing need of a new modus operandi to increase the availability of reused and recycled construction products across the EU, the idea of MOBICCON-PRO project has come about. **Its overall objective is to demonstrate and deploy an innovative mobile and territorial solution for CDW management that increases the uptake of recycled construction products in the SEE region.** Given the expertise on the ground of some of the consortium members, a hub for CDW circularity will be established in Sofia (Bulgaria), with a view to replicate the concept in other countries of the Southeast Europe (SEE) region. The rationale of the project is to intensify CDW circularity in order to contribute to a full transition to a circular economy in the SEE region, in line with the Green Deal ambition.

The MOBICCON-PRO
6 specific objectives

- ☒ **Create a Territorial hub for Circularity**
- ☒ Develop and streamline innovative digital technologies to support selective separation and demolition
- ☒ Develop and streamline innovative digital technologies to support selective separation and demolition
- ☒ **Develop, certify and produce innovative construction materials from recycled/recovered CDW**
- ☒ Demonstrate the territorial circular concept for CDW in different locations to prove replicability
- ☒ **Communicate, disseminate and exploit the results of the project during and after its expected duration:**


EC
General Assembly
1 representative per each consortium partner
Advisory board
External to the action and publicly acknowledged professionals
WP2
Supporting Selective Demolition
Lead: DTI
WP7
Project management and coordination
Lead: GBS
WP4
New and Innovative Construction Products
Lead: UASG
WP1
Territorial Cluster Setup
Lead: GBS
WP3
MPP Prototyping and Processing
Lead: GBS IC
WP5
Demonstration & Validation
Lead: GBS AD
WP6
Dissemination, Exploitation and Communication
Lead: FIEC

MOBICCON – PRO

MOBICCON-PRO
MOBile and Innovative Circularity for CONstruction PROducts

WP4 : New and Innovative Construction Products

Kick-off meeting, 17.01.2023

Funded by the European Union

WP4 in a nutshell

- **Objective:** To develop **construction products** from all recycled/recovered CDW materials, with **market potential** and **minimised environmental footprint**.
  - **secondary products** resulting from preparation to reuse activities such as masonry bricks
  - **new products from recycled CDW** such as crushed stone, aggregate and innovative cementitious supplements for alternative binders;
  - **new composite materials with recycled content** such as concrete, mortars and masonry units.

Funded by the European Union

Timeline

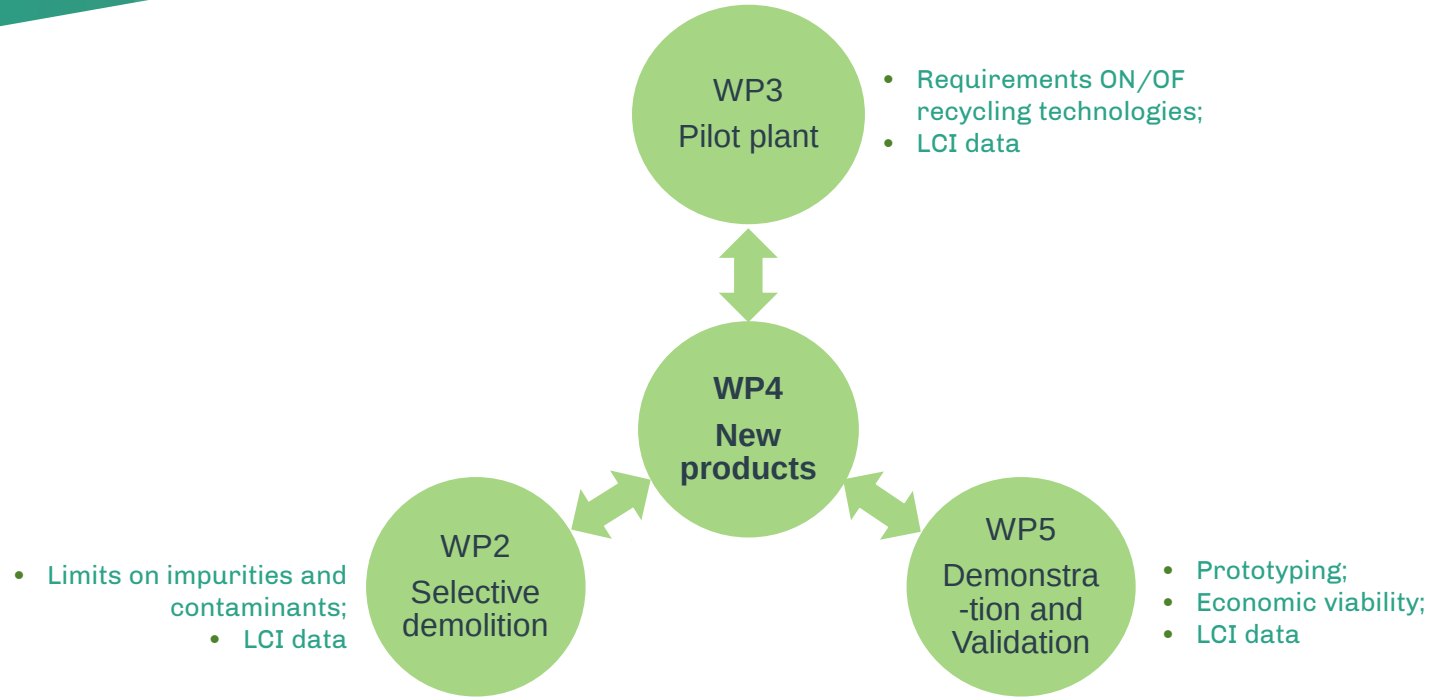
D4.1
Guidelines for reusing of secondary construction products from CDW (M24)

D4.2
Recommendations for using of recycled products from CDW (M48)

D4.3
Conformity assessment documentation of recycled products and new materials (M52)

Co-funded by the European Union

WP4 in a nutshell



Funded by the European Union

WP4 in a nutshell

Work package number	WP4		**Lead beneficiary**		UASG		
Work package title	New and Innovative Construction Products						
Participant number	4	5	1	2	6	3	7
Short name of participant	UASG	CYU	GBS	DTI	GBS AD	IDEA	GBS IC
Person months per participant:	64	44	2	10	2	6	2
Start month	M11		**End month**	M52			

Funded by the European Union

MOBICCON-PRO

MOBile and Innovative Circularity for CONstruction PROducts

Key partners

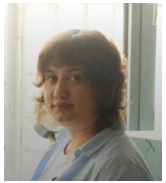
Funded by the European Union

University of Architecture, Civil Engineering and Geodesy

- Department of Building Materials&Insulations
- Research and Design Center
- Accredited Laboratory (USIL)
  - Laboratory testing of various construction products, incl. recycled materials;
  - Elaboration of recommendations for preparation to reuse of CDW;
  - Participation and leadership of research and innovation projects on the development of innovative materials with recycled content
  - Certification of construction products under CPR.

Roumiana Zaharieva, PhD, Assoc. prof., Head of Dept., New products design and optimisation

Boyan Petrov, PhD, Chief assistant prof., Recycled products and new materials



Magdalena Kostadinova, MSc, Assistant prof., PDA, Recycled products and new materials

Dimitar Boshnakov,PhD, Assoc. prof., Certification of products

Kamelia Jordanova, PhD, Assistant prof., Durability studies

Borislav Simonov MSc, Lab. Engineer, Laboratory testing

Funded by the European Union

University of Architecture, Civil Engineering and Geodesy

Project BG05M2OP001-1.002-0019 **Center of competencies "Clean & Circle" Clean technologies for sustainable environment – waters, waste, energy for circular economy** (2018 – ongoing):

- Development of innovative technologies; for CDW recycling;
- Laboratory testing;
- Prototyping
- Development of new building materials

Elaboration of Guidelines and National procedures on CDW recovery and reuse (2018-2020)

Client: Ministry of Regional Development and Public Works (Bulgaria)

Technical expertise within the Project BG161PO003-1.1.05-0270-C0001: Recycling of Textile Waste for Thermal Insulation Products, funded by Ministry of Economy and Energy, Bulgaria (2013-2015)

Client: Habitat for humanity (Bulgarian Branch)

Elaboration of National Amendments to EN standards within within Bulgarian Institute of Standardisation

Technical expertise on Recycling of Reinforced Concrete Sleepers in Bulgaria (2020-2021)

Client: Requesta Ltd

Issuance of a Bulgarian Technical Approval (2021) on a product with recycled content

Client: BG Recycling Ltd

Publications: More than 120

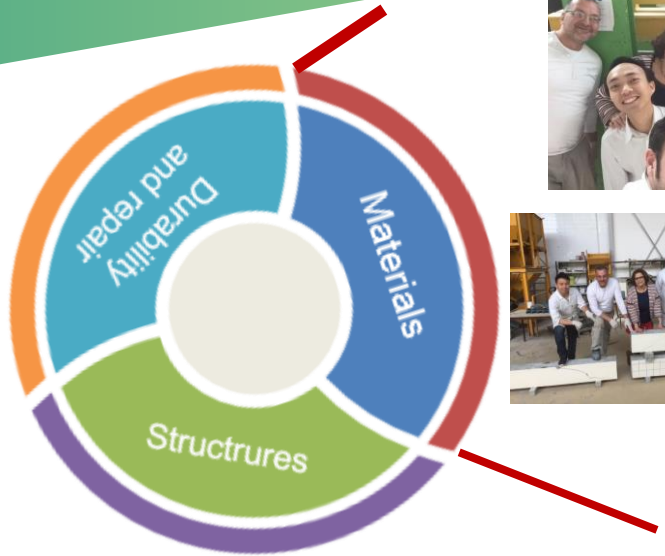
Funded by the European Union

CY Cergy Paris University

MOBICCON-PRO
MOBILE AND INNOVATIVE CIRCULARITY FOR CONSTRUCTION PRODUCTS

CERGY PARIS UNIVERSITÉ

L2MGC
laboratoire de mécanique et matériaux du génie civil



PN RECYBETON 2012-2016

ANR ECOREB 2012-2016

ANR MICRO 2015-2020

MINRESCUE 2020-2023

Funded by the European Union

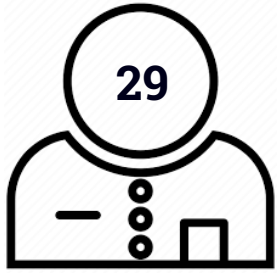
CY Cergy Paris University

Task 4.1. New products technical optimization	31,0 PMs	24 months PhD +7 months permanents	PhD student	24
			Elhem GHORBEL	3
			Lilian CRISTOFOL	2
			Annelise Cousture	1
			George Wardeh	1
Task 4.2. Conformity assessment of recycled products and new materials	4.00 PMs	permanents	George Wardeh	2
			Elhem GHORBEL	2
Task 4.3. Environmental assessment of recycled products and new materials	9,0 PMs	5 months PhD + 4 months permanents	Hanaa FARES	2
			PhD student	5
			Elhem GHORBEL	2

Funded by the European Union

CY Cergy Paris University

MOBICCON-PRO
MOBILE AND INNOVATIVE CIRCULARITY FOR CONSTRUCTION PRODUCTS



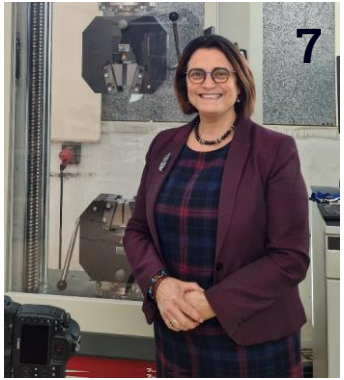
The team

annelise.cousture@cyu.fr
https://www.scopus.com/authid/detail.uri?authorId=35344363500

lilian.cristofol@cyu.fr
https://orcid.org/0000-0002-0839-7087

Hanaa.fares@cyu.fr
https://orcid.org/0000-0002-7469-029X

George.wardeh@cyu.fr
https://www.scopus.com/authid/detail.uri?authorId=12144046900



Elhem.ghorbel@cyu.fr
https://orcid.org/0000-0001-9042-2706

CY Cergy Paris University

Significant Projects related with WP4 (in progress):

- **PHC UTIQUE 2021"Recovery of mixed inert waste in concrete reinforced with composite bars**" (2021-2024**). In France**, it is coordinated and financed by the Ministry of Europe and Foreign Affairs and the Ministry of Higher Education, Research and Innovation. **In Tunisia**, it is implemented and funded by the Ministry of Higher Education and Scientific Research and managed by the Directorate General of Scientific Research.
- **European Project** : Research Fund for Coal and Steel for Coal and Steel – 2019 **RFCS-2019 « Mining Waste to Valuable Resource: New Concepts for a Circular Economy : MINRESCUE»** The core objective of the project is to develop and validate a strategy to upgrade CMWGs as constituents in sustainable construction materials and products. Hence, with significant money saving and environmental footprint reduction, MINRESCUE will significantly contribute to the establishment of a circular economy in coal mining areas.

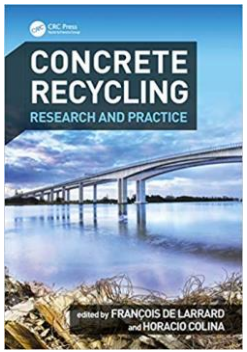
Funded by the European Union

CY Cergy Paris University

MOBICCON-PRO
MOBILE AND INNOVATIVE CIRCULARITY FOR CONSTRUCTION PRODUCTS

- **Significant Projects related with WP4 (completed):**
  - **ANR ECOREB** " Eco-construction with Concrete Recycling (*ECOREB*) " (2012-2016)
  - **PN RECYBETON** 2011-1015

➔ Guidelines and French Recommendations



Funded by the European Union

Danish Technological Institute

- Concrete Center:
  - Certification of construction products manufacturers
  - Tests of concrete and concrete constituents
  - Reuse and recycling of concrete
- Sustainable Construction Center:
  - Circular economy, LCA/LCC/sLCA, sustainable construction practices
  - EPDs: LCA-consultants + program operator (EPD Denmark)

Katja Udbye Christensen, Business Manager, Reuse and recycling of concrete

Stefania Butera, PhD. Senior Specialist for Construction and Demolition Waste, LCA and Circular Economy.

Funded by the European Union

MOBICCON-PRO

MOBile and Innovative Circularity for CONstruction PROducts

WP4 - Tasks

Funded by the European Union

WP4 – Tasks and deliverables

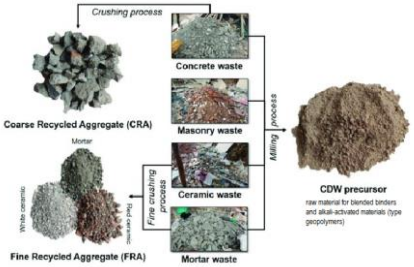
- T4.1: New products technical optimisation (**CYU**, UASG, GBS, GBS AD, GBS IC).
- T4.2: Conformity assessment secondary products, recycled products and new materials (**UASG,** DTI, CYU)
- T4.3: Environmental assessment of recycled products and new materials (**DTI,** UASG, CYU, IDEA)

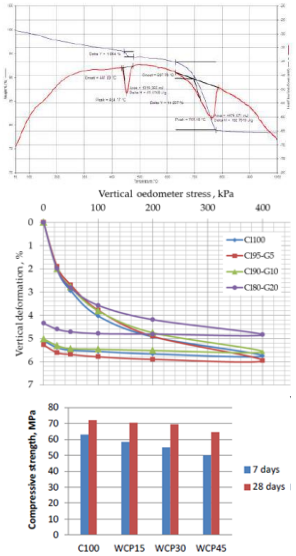
Deliverables:

- D4.1 Guidelines for reusing of secondary construction products from CDW (M24)
- D4.2 Recommendations for using of recycled products from CDW (M48)
- D4.3 Conformity assessment documentation of recycled products and new materials (M52)

Funded by the European Union

T4.1 (CYU) – M11-M52





Task 4.1. New products technical optimisation:

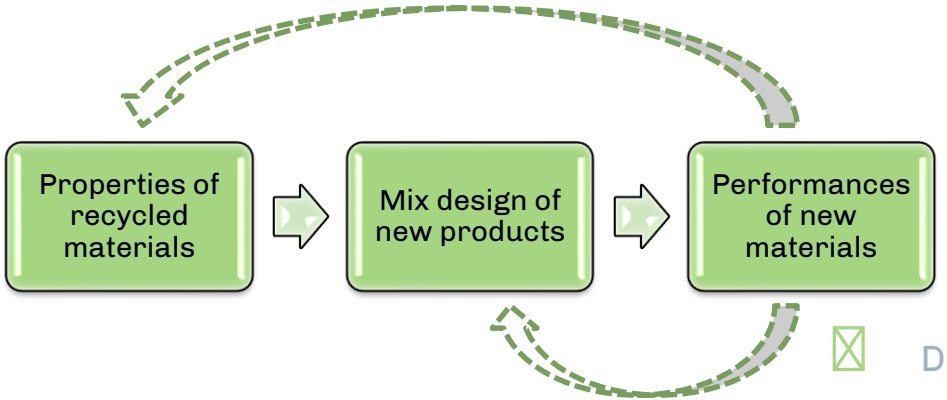
- Two main groups of products
  - **Concrete mixes and mortars with conventional binders and recycled aggregates** for the production of small-sized elements and for structural concrete
    - Concrete with improved properties (reduced bulk density, reduced shrinkage, reduced thermal conductivity, etc.);
    - Use of fine aggregates;
    - Full set of laboratory studies along the chain “composition – structure – properties – performance - applications”
  - **Concrete mixes and mortars based on blended binders** and conventional and/or recycled aggregate.
    - Concrete fines from recycling processes as cementitious supplements;
    - Ceramic fines from recycling as pozzolanic additives for mortars modification;
    - Impact of fines on the hydration kinetics, microstructure, behaviour of both fresh and hardened concrete/mortar and durability aspects.

Funded by the European Union

T4.1 (CYU) – M11-M52

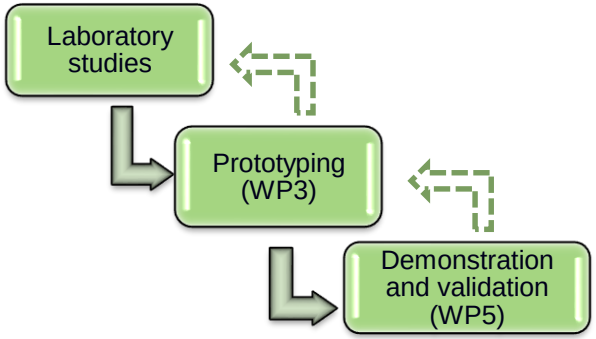
Optimisation process:

Development of new materials



Optimisation process:

Sustainable solutions



D4.2. Recommendations for using of recycled products from CDW (M48)

Funded by the European Union

T4.2 (UASG) – M18-M52

MOBICCON-PRO
MOBILE AND INNOVATIVE CIRCULARITY FOR CONSTRUCTION PRODUCTS

Task 4.2. Conformity assessment secondary products, recycled products and new materials

Three approaches

- **For products where a European standard exists**
  - Conformity assessment will follow standard procedures
  - Certification of the system of production control of CDW processing
- **For products where only national standard or methodology exist**
  - Conformity assessment will follow the specified procedures
  - Amended/Improved procedures/guidelines might be proposed
- **For innovative products**
  - New procedures will be elaborated and sent to approval bodies.

Funded by the European Union

T4.2 (UASG) – M18-M52

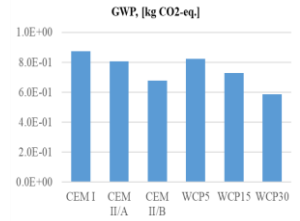
Task 4.2. Conformity assessment secondary products, recycled products and new materials

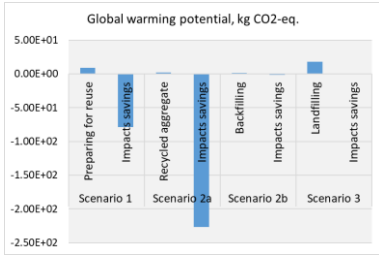
- ☒ D4.1 Guidelines for reusing of secondary construction products from CDW (M24)
- ☒ D.4.3. Conformity assessment documentation of recycled products and new materials (M52)

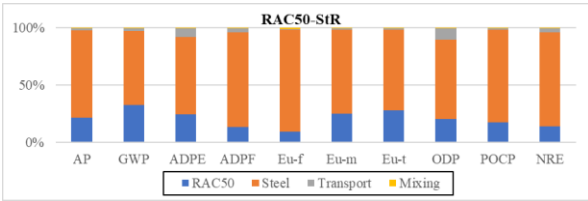
Funded by the European Union

T4.3 (DTI) – M18-M52

- Task 4.3. Environmental assessment of recycled products and new materials
  - Based on LCI data gathered in WP2 (pre-demolition and demolition), WP3 (crushing) and WP5 (demonstration & validation);
  - LCA: based on EPD and PEF methods;
  - LCC: based on SETAC Environmental LCC guidelines;
  - Investigation of the overall environmental performance of the developed reused/recycled products and new materials;
  - Assessment of performance for reused products vs. similar new products.







Funded by the European Union

Mobiccon – PRO

MOBICCON-PRO

MOBile and Innovative Circularity for CONstruction PROducts

Thank you for your attention !

Funded by the European Union