

CirMat - CIRcular aggregates for sustainable road and building MATerials

September 2020

Framework



- Construction sector is responsible for an intensive use of raw materials and energy resources.
- It is one of the sectors that contributes most to waste generation in Europe.
- There is an increasing pressing for the development of processes and materials with less environmental impact, in order to contribute to a *clean green transition*.

Framework



- This project aims to contribute to a radical increase in the sustainability of construction sector through a paradigm shift with the implementation of the principles of circular economy.
- The development of products that incorporate either waste or industrial by-products is the path for a future towards the construction of a more sustainable world.

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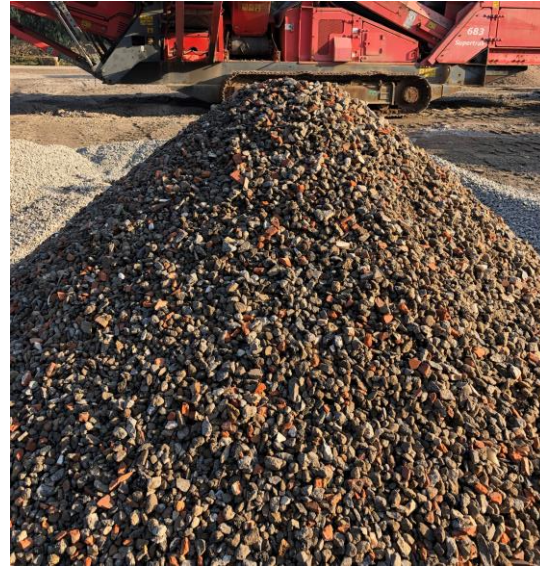
Main goal

Industrial development and promotion of products / materials with a high degree of incorporation of waste from the construction and steel industry sectors, for its application in buildings and in road infrastructures.



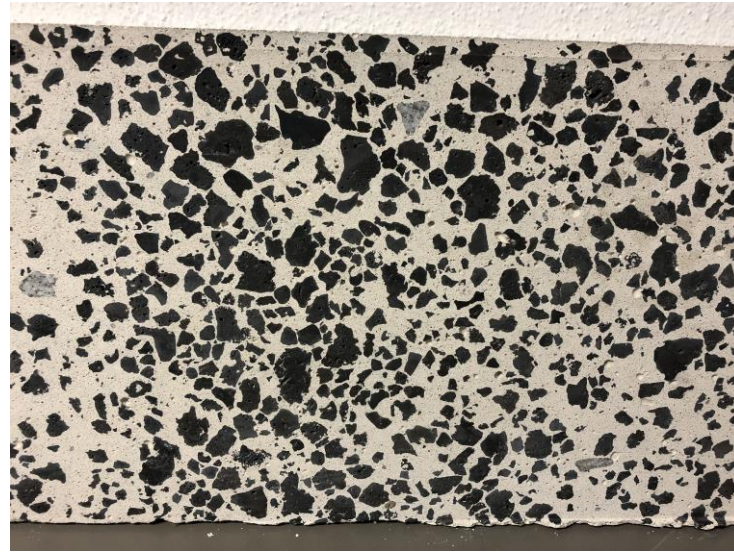
Specific goals

- Contribute to a high degree of recovery of construction demolition waste (CDW), through its incorporation, as recycled aggregates, in structural concrete and bituminous mixtures.



Specific goals

- Contribute to a high degree of incorporation of EAF slag aggregates in structural concrete and bituminous mixtures.



Specific goals

- Application of four innovative solutions in pilot constructions, for each of the four products developed.
- Development of Environmental Product Declaration (EPD).

DAPHabitat System **ENVIRONMENTAL PRODUCT DECLARATION**
www.daphabitat.pt [according to ISO 14025, EN 15804:2012+A1:2013 and EN 15942]

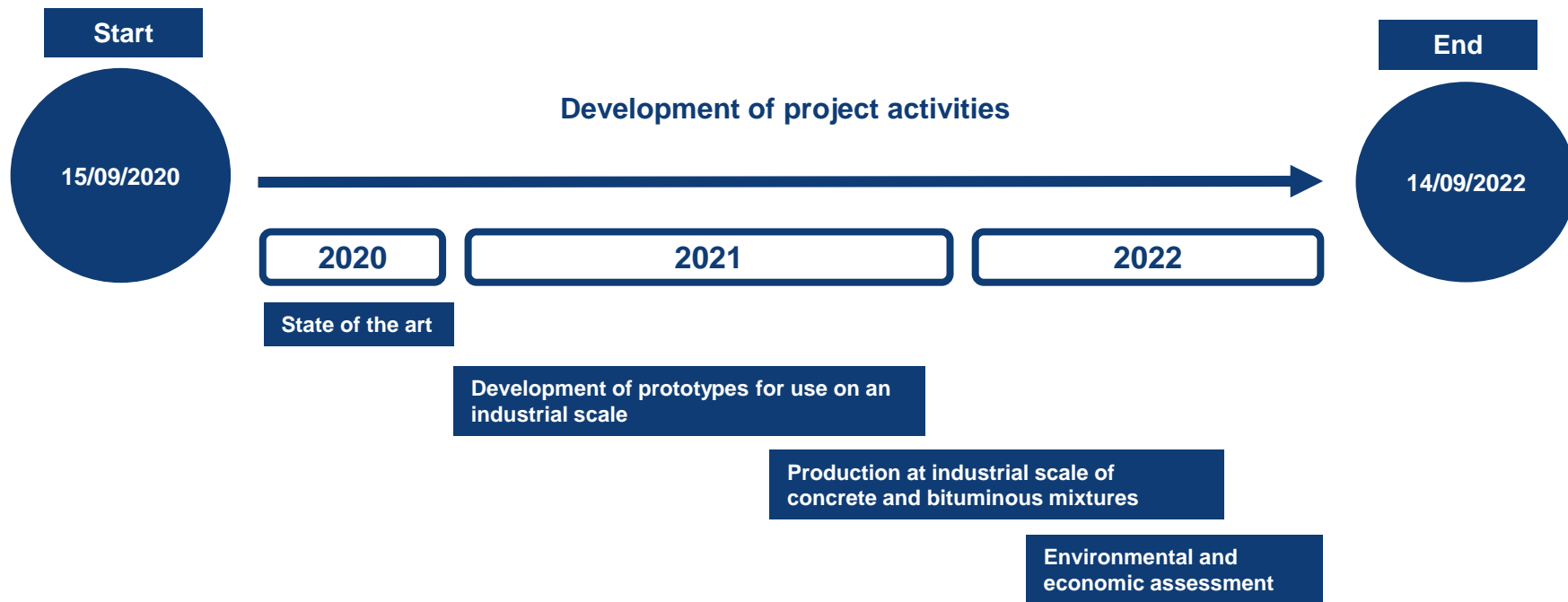
dap habitat **ECO PLATFORM EPD**
DECLARATION NUMBER: EN 15804 VERIFIED

NAME OF THE PRODUCT

ISSUE DATE: VALID UNTIL:



Timeline



Activities



- **State of the art**

State of the art on the technical, environmental and economic performance, including legal requirements and technical specifications.

- **Development and production of prototypes with recycled aggregates and EAF slag aggregates**

Development and characterization of concrete and bituminous mixtures with recycled aggregates from CDW and EAF slag aggregates using a wide range of tests.



Activities



- **Production at industrial scale of concrete and bituminous mixtures with recycled aggregates from CDW and EAF slag aggregates**

Production at industrial scale of prototypes in concrete and bituminous mixtures with recycled aggregates and EAF slag aggregates to demonstrate the feasibility of its application in construction works.



Activities



- **Environmental and economic life cycle assessment of the developed products**

Life cycle assessment of the developed products (recycled aggregates from CDW, concrete and bituminous mixtures with incorporation of recycled aggregates from CDW and with EAF slag aggregates).

Environmental Product Declarations – these documents intent to facilitate the adoption of these products by designers, building owners, construction companies, producers of building materials, and owners of public and private infrastructure and buildings.



Expected Results



- Development and promotion of the use of eco-efficient building materials in buildings and road infrastructures.
- Reduction of CDW amounts sent to landfill.
- Increase of the amount of the use of secondary materials/ by-products with the incorporation of EAF slag aggregates.
- Development of EPD – making new EPD available on the market.



Project team



The **Domingos da Silva Teixeira, S.A.**, a dstgroup company, develops its activity in the engineering and construction sector, being nowadays one of the main players at national level, acting transversely in the areas of civil construction, infrastructure, water, environment and energy.



Universidade do Minho

The **Universidade do Minho**, namely the Instituto para a Sustentabilidade e Inovação em Estruturas de Engenharia (ISISE) is a research unit financed by FCT, with more than € 10M of competitive funding, with an ERC Advanced Grant standing out from the European Research Council.



CERIS : Civil Engineering Research and Innovation for Sustainability

The research center *Civil Engineering Research and Innovation for Sustainability* - CERIS of the **Instituto Superior Técnico da Universidade de Lisboa**, whose mission is to contribute to the development of society and promote quality Higher Education.



The **Norwegian University of Science and Technology**, international reference university with scientific and technological profile.



About EEA Grants

Through the Agreement on the European Economic Area (EEA), Iceland, Liechtenstein and Norway are partners in the internal market with the Member States of the European Union.

In order to promote a continuous and balanced strengthening of economic and trade relations, the parties to the EEA Agreement have established a multi-annual Financial Mechanism, known as the EEA Grants.

The EEA Grants aim to reduce social and economic disparities in Europe and to strengthen bilateral relations between these three countries and the recipient countries.

For the 2014-2021 period, a total contribution of € 2.8 billion has been agreed to 15 beneficiary countries. Portugal will benefit from a budget of € 102.7 million.

Learn more at eeagrants.gov.pt



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