



The Swansea and Grenoble Strategic Partnership - Proposal to develop a working group to explore collaborative opportunities under the broad thematic area of 'Green Construction'

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Background

The green transition and digital transformation are emerging in the global construction sector, with major opportunities on the horizon to position Europe as a technology and industrial leader & disruptor of this transition. This preliminary paper explores an opportunity for Swansea University and Université Grenoble Alpes to jointly develop a programme of research, leading to potential exploitation opportunities and further research collaboration, under the broad thematic area of '**Green Construction**'.

The ambition at this stage is to uncover synergies and areas of complementarity between both Universities that will bring like-minded people together in the form of a working group, that will formulate a number of potential collaborative project opportunities that can be proposed for funding into, in particular, into the Horizon Europe programme for 2022 (we are too late to participate in the 2021 calls which have a deadline of March 2022, see Annexe A for details of the applicable calls). In order to be well positioned in time for a potential submission in 2022, it is sensible to assemble the appropriate research teams at Swansea and Grenoble, and strategically bring onboard the supporting partners (academic & Industrial) as soon as can be arranged.

Focus

Our intention at this stage is to circulate an expression of interest to participate in a virtual workshop whereby several proposed ideas can be developed into tangible project opportunities. The priority areas for consideration are applicable to the calls identified in Annex A below and including in particular:

- Increasing the value of construction waste products,
- Developing new circular construction materials,
- Increasing the recyclability of current construction products,
- New hybrid construction materials,
- Future sustainable design & design for low carbon buildings,
- Social Value & urban design in construction,
- Net Zero construction methods,
- Digital transformation for construction,
- Design for Manufacture and Assembly (DfMA) for construction

Existing Knowledge & Expertise (Swansea, UK)

The Faculty of Science & Engineering (FSE) – Materials Science & Engineering, Civil Engineering, Mechanical Engineering

Materials Research Centre - Photovoltaics and Solar Energy, Structural Materials, Coatings, Corrosion and Electrochemistry, Metallurgy, Advanced Characterisation

Relevant Research Projects – SPECIFIC, SUNRISE, The Active Building Centre

Existing Knowledge & Expertise (Grenoble, Fr)

Ecole Nationale Supérieure d'Architecture de Grenoble (ENSAG)

Laboratoire PACTE

Structure Federative de Recherche "Territoires et reseaux"

Labex Architecture, Environnement et cultures Constructives

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Primary Partners

Swansea University (UK)

Université Grenoble Alpes (Fr)

www.swansea.ac.uk

www.univ-grenoble-alpes.fr

Proposed Supporting Partners (UK)

Tata Steel

Mott Macdonald

Construction Wales Innovation Centre (CWIC)

Advanced Manufacturing Research Centre Cymru

cymru-wales

Constructing Excellence in Wales

The Active Building Centre

www.tatasteeleurope.com

www.mottmac.com

www.cwic.wales

www.amrc.co.uk/facilities/amrc-

www.cewales.org.uk

www.activebuildingcentre.com

Proposed Supporting Partners (Fr)

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ANNEX A

Horizon Europe Work programme 2021-2022

Calls relating to construction and buildings

In the first Horizon Europe work programme 2021-2022 topics relating to construction and buildings are scattered throughout the work programme. Here below is a list of topics relevant to construction and buildings.

➤ **Cluster 2 (Culture, creativity and inclusive society)**

HORIZON-CL2-2022-HERITAGE-01-08: Effects of climate change and natural hazards on **cultural heritage** and remediation

➤ **Cluster 3 (Civil Security for Society)**

HORIZON-CL3-2021-FCT-01-07: Improved **preparedness on attacks to public spaces**

HORIZON-CL3-2022-INFRA-01-01: **Nature-based Solutions** integrated to protect local infrastructure

➤ **Cluster 4 (Digital, Industry & Space)**

HORIZON-CL4-2021-TWIN-TRANSITION-01-10: **Digital permits and compliance checks** for buildings and infrastructure (IA)

HORIZON-CL4-2021-TWIN-TRANSITION-01-11: Automated tools for the valorisation of **construction waste** (RIA)

HORIZON-CL4-2021-TWIN-TRANSITION-01-12: New **breakthrough technologies** for technological sovereignty in construction (IA)

HORIZON-CL4-2022-TWIN-TRANSITION-01-09: Demonstrate the use of **Digital Logbook** for buildings (IA)

HORIZON-CL4-2022-TWIN-TRANSITION-01-10: Circular flows for solid **waste** in urban environment (IA)

HORIZON-CL4-2021-RESILIENCE-01-32: Social and affordable **housing district demonstrator** (IA)

HORIZON-CL4-2022-RESILIENCE-01-16: Building and renovating by exploiting **advanced materials** for energy and resources efficient management (IA)

➤ **Cluster 5 (Climate, Energy & Mobility)**

HORIZON-CL5-2021-D3-02-08: Cost-effective **micro-CHP and hybrid heating systems**

HORIZON-CL5-2022-D3-01-03: Advanced manufacturing of **Integrated PV**

HORIZON-CL5-2022-D3-02-03: Innovative renewable energy carrier production for **heating from renewable energies**

HORIZON-CL5-2021-D4-01-01: Advanced energy performance **assessment and certification**

HORIZON-CL5-2021-D4-01-02: Industrialisation of deep **renovation workflows** for energy-efficient buildings

HORIZON-CL5-2021-D4-01-03: Advanced data-driven **monitoring of building stock energy performance**

HORIZON-CL5-2021-D4-02-01: Demonstrating integrated technology solutions for buildings with **performance guarantees** (Built4People)

HORIZON-CL5-2021-D4-02-02: Cost-effective, sustainable multi-functional and/or **prefabricated holistic renovation packages**, integrating RES and including re-used and recycled materials (Built4People)

HORIZON-CL5-2021-D4-02-03: Strengthening European coordination and exchange for innovation uptake towards sustainability, quality, circularity and social inclusion in the built environment as a **contribution to the new European Bauhaus** (Built4People)

HORIZON-CL5-2022-D4-01-01: Demand response in **energy-efficient residential buildings**

HORIZON-CL5-2022-D4-01-02: Renewable-intensive, **energy positive homes**

HORIZON-CL5-2022-D4-01-03: **Smarter buildings** for better energy performance

HORIZON-CL5-2022-D4-02-01: Designs, materials and solutions to improve resilience, preparedness & responsiveness of the built environment for **climate adaptation** (Built4People)

HORIZON-CL5-2022-D4-02-02: Solutions for the sustainable, resilient, inclusive and accessible regeneration of neighbourhoods enabling **low carbon footprint** lifestyles and businesses (Built4People)

HORIZON-CL5-2022-D4-02-03: Sustainable and resource-efficient solutions for an open, accessible, inclusive, resilient and low-emission **cultural heritage: prevention, monitoring, management, maintenance, and renovation** (Built4People)

HORIZON-CL5-2022-D4-02-04: Smart-grid ready and smart-network ready buildings, acting as **active utility nodes** (Built4People)

HORIZON-CL5-2022-D4-02-05: **More sustainable buildings** with reduced embodied energy / carbon, high life-cycle performance and reduced life-cycle costs (Built4People)

HORIZON-CL5-2022-D6-02-06: Smart and efficient **ways to construct, maintain and decommission** with zero emissions from transport infrastructure

➤ **Cluster 6: Food, Bioeconomy, Natural Resources, Agriculture and Environment**

HORIZON-CL6-2022-CIRCBIO-02-01-two-stage: Integrated solutions for **circularity in buildings and the construction sector**

HORIZON-CL6-2021-ZEROPOLLUTION-01-06: **Increasing the environmental performance of industrial processes** in bio-based sectors: construction, woodworking, textiles, pulp and paper and bio-chemicals

Notes

1. The New European Bauhaus initiative connects the European Green Deal to the EU living spaces. It calls on all Europeans to imagine and build together a sustainable and inclusive future that is beautiful for our eyes, minds, and souls.
2. Following the launch by the EC of 13 new European partnerships in the context of Horizon Europe during the 3rd edition of the European R&I Days in June 2021, the Built4People (B4P) Partnership has started its activities with its 1st Partnership Board on October 5th. As an active contributor to the ambition of making Europe the first climate-neutral economy, the Built4People vision is to enable the development and generalisation in Europe of a high quality, low carbon, energy and resource efficient built environment. Built4People shall drive the transition towards sustainability, stimulate the production and delivery on the market of holistic innovations and enable to meet the long-term goals set by the European Green Deal, while supporting a long-lasting transformation and user-centric behavioural change in the Construction and Built environment communities.

The B4P partnership brings together the whole Construction value chain and aims at developing sector-relevant innovation clusters across the EU. As a strategic partnership with the European Commission, it will in particular contribute to define the research topics for which researchers can apply for funding over the 7 upcoming years (2021-2027) in Horizon Europe. It will also interact with many Member States representatives from the EU27 countries and associated countries considered in Horizon Europe.

The Built4People partnership is coordinated by the European Commission (DG

ENERGY, with support from DG Research and Innovation, and with the overall participation of 12 EC services from 9 DGs and agencies), the ECTP and the European Regional Network of WGBC (Word Green Building Council). It will be co-chaired with the EC until the end of 2024 by Ilari Aho (Uponor), member of the ECTP Steering Committee & Presidium as ECTP Treasurer, backed by Isabel Pinto-Seppä (VTT). The partnership should organise at least once a year (with the first one expected in Spring 2022) a Stakeholders Forum where many actors, including interested ECTP members, will be invited to get a comprehensive knowledge about Buit4People and contribute to its objectives and development.

3. The 2021 calls have opened I
On October 2021 with a submission deadline of March 2022