General Information	
Preliminary title of the European Partnerships	**People-centric sustainable built environment** (Build4People)
Short description of the partnership	The partnership provides a cross-cluster structure, bringing together public and private sectors to create research pathways based on a holistic view of the built environment for sustainability and better living.
Services directly involved	Lead service: ENER.C3 Involved services: GROW, ENV, ENER, CLIMA, CNECT, RTD, SANTE
Context and problem definition	Context: Buildings and infrastructure are pivotal in the socio-economic transition towards achieving a sustainable and climate-neutral economy. People spend most of their lifetime in buildings, which are responsible for approximately 50% of energy consumption on their whole life-cycle, 50% of all extracted materials, 30% of water consumption, and 36% of CO_2 emissions in use phase. Construction and demolition waste is one of the heaviest and most voluminous (25%-30%) waste streams generated in the EU[1]. Building design and indoor air quality are also critical to EU citizens' health and well-being, as we spend the vast majority of our time in buildings. Achieving a low carbon built environment is also key challenge in the context of the strategic long-term vision for a prosperous, modern, competitive and climate-neutral economy by 2050, in line with the Paris Agreement objectives, launched by the Commission in November 2018. Under FP7 and Horizon 2020, energy efficiency in buildings was supported by the EeB PPP[2]. The PPP succeeded in advancing the TRL of a number of solutions for the buildings sector, with a focus on components, materials and technologies, notably for the construction sector. But the PPP did not address the built environment in its full scope, did not address sufficiently non-technological barriers, and fell short in delivering a truly integrated and holistic, people-centric approach to the design, construction and operation of the built environment. Problem definition: 1. **Complexity**. The built environment is a complex and multi-faceted technological system, located at the crossroad of many different sectors. It is linked to various societal challenges and is subject to multiple policy objectives, targets and regulatory frameworks, not necessarily coordinated. This leads to an inherent complexity and to sometimes conflicting, objectives to technology innovation and product development (e.g. between the need for massive renovation and the need to reduce demolition waste). This issue is becoming even more critical with the development of digital technologies, which radically evolves capabilities of buildings and disrupts the traditional value chain. This makes it difficult to address all required aspects (energy efficiency, accessibility, safety, recyclability/reuse, demolition, noise, environmental impact, etc.) in an integrated manner[3]. 2. **Low turnover and limited renovation rates; high construction and renovation costs**. Decarbonising and improving the built environment means in particular ensuring that new buildings are sustainable but – above all – that existing buildings are massively renovated. Current processes and technologies are still insufficient to support affordable and resource-

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[1] http://ec.europa.eu/environment/waste/construction_demolition.htm

[2] "Energy-Efficient Buildings : Multi-annual roadmap for the contractual PPP under Horizon 2020" http://www.ectp.org/fileadmin/user_upload/documents/E2B/0_EeB_PPP_Project-Reviews_Roadmaps/Eeb_cPPP_Roadmap_under_H2020.pdf

[3] https://ec.europa.eu/info/publications/final-report-high-level-panel-european-decarbonisation-pathways-initiative_en

	efficient renovation. 3. **Fragmented value chain**: the lack of integration of the built environment value chain is recognised as a significant barrier[4]. This has two main negative consequences for the EU and its businesses: the lack of an integrated vision and of collective action on R&I for the built environment and a limited uptake of innovation in the sector.
Objectives and expected impacts	**Overall objective linked to the policy objective:** To generate the necessary technology and socio-economic breakthroughs for an improved built environment: • Supporting the socio-economic transition towards sustainability and the achievement of EU 2050 decarbonisation goals, • Supporting the clean energy transition and circular economy, • Ensuring quality of living, health, safety and wellbeing for people, • Creating a supportive ecosystems for new green businesses, • Ensuring consistency and convergence of standardisation and certification initiatives, and the regulatory environment. The partnership focuses on buildings but its scope extends to the whole built environment, including infrastructures. **Specific objectives:** • Creation of national or regional innovation clusters involving the whole value chain from planning and design to procurement, construction, operation and occupation of sustainable, safe and healthy buildings, and including political and economic as well as technology-related actors. • Investigation of holistic approaches to built environment design, construction and integration, allowing for cross-challenge (e.g. energy efficiency, circularity, carbon footprint, safety, indoor air quality) and cross-phase (across the life cycle) thinking based on a common language, integrated tools, and standards. • Investigation and demonstration of out-of-the-box, people-centric approaches to building design, e.g. co-design involving citizens and future users, to ensure an effective consideration of decisive factors for wellbeing in buildings (e.g. safety, indoor air quality) and beyond (e.g. urban biodiversity). • Acceleration of the exploitation and commercialisation of integrated research and innovation solutions by bringing together the commercial and public actors in the supply chain of the built environment sector. • Advancing the consideration of resource, materials and construction products' efficiency, safety, and circularity in design and construction, also reducing environmental and negative health impacts, and linking to city and mobility planning. • Creation of blueprints, guidelines and tools to address competitiveness, business models, services and societal innovation, dissemination of technology, and promotion of Member States cooperation particularly at regional and local level. **Deliverable in 7 years' time:** Demonstration of clusters of front-runner, integrated, close-to-commercial, value chains for en-masse delivery of innovation in the building sector, including participation of all actors of the value chain (supply and demand) based on a societal need for better, safer, affordable, smarter, decarbonised

and sustainable living. These clusters will experiment and demonstrate the outcomes of the partnership's research agenda on a holistic, integrated approach based on a common language and a coherent set of practices, and supported by consistent standards and regulations. A minimum of one cluster per EU Member State, with an additional 1-2 clusters for medium-sized Member States (population over 5 million) and 3-5 clusters for large Member States (pop. over 20 million). These clusters would be expected to focus on cities and regions.

Clear milestone with which the R&I development of the partnership will contribute to our long term policy objective
Demonstrated market responsiveness to a holistic value chain approach based on cost-reduction, reduction in construction waste, reduction in environmental impact and improved living conditions.

Expected impacts
- Improved built environment leading to a better quality of living for people as private persons and economic actors, improved health and productivity in the workplace through improved indoor air quality, and comfort.
- Increased competitiveness of the EU industry and services in the buildings sector, including construction, which accounts for 9% of GDP and has a high share of SMEs.
- Increased capacity of the EU building construction eco-system value chain to absorb innovation.
- Enabling a smarter, more decentralised and flexible energy system while improving well-being and health of building users.
- Support the achievement of longer-term energy, climate and environment EU objectives aiming at, in particular the full decarbonisation of the building stock and bringing buildings into the circular economy, by 2050.
- Enhanced civic engagement, empowerment, participation and co-creation.

Necessity test: rationale for a European Partnership	One major challenge for improving the built environment sector is to address fragmentation of challenges and value chain, which result in uncoordinated innovation and reduced capacity to deliver on a common R&I roadmap. The envisaged co-programmed partnership will build a supportive and encompassing framework to deliver on R&I for built environment sustainability and citizens' better living. The targeted challenge cannot be addressed solely by specialised, stand-alone calls for proposals, but requires an integrated approach, driven by innovation and pulled by demand for clean, safer, affordable, smarter, decarbonised and sustainable built environment. The co-programmed partnership will build on previous initiatives (e.g. EeB cPPP) to address a broader R&I scope, also involving a larger stakeholder community. The active involvement of the public sector (e.g. in relation to public procurements) will be key.
Relevant for the following parts of Horizon Europe	Pillar II 'Global Challenges and European Industrial Competitiveness' ☒ Cluster Health ☒ Cluster Culture, creativity and inclusive society ☐ Cluster Civil Security for Society ☒ Cluster Digital, Industry and Space ☒ Cluster Climate, Energy and Mobility ☒ Cluster Food, Bioeconomy Natural Resources, Agriculture and Environment

	☐ Cross-cluster
	☐ Pillar III 'Innovative Europe'
Currently identified links with other partnership candidates / Union programmes	The partnership will serve as a vehicle to integrate R&I outputs from different parts of Horizon Europe, in particular from Cluster Climate, Energy and Mobility, Cluster Digital, and Industry and Space- Materials – Developing Circular industry. Other relevant clusters include Health, Culture, creativity and inclusive society, and Food, Bioeconomy, Natural Resources, Agriculture and Environment. It will also generate technology and socio-economic breakthroughs, the uptake of which can be supported by other EU programmes, in particular the LIFE programme. The partnership will also support the mission on Climate Neutral and Smart Cities and have connections with other Horizon Europe partnerships, e.g. Carbon Neutral and Circular Industry; Made in Europe; AI, data and robotics; Clean Energy Transition; EIT InnoEnergy.
Does the proposed partnership build on currently active ones?	The proposed partnership can build on the EeB cPPP, which is planned to end with H2020. Other relevant H2020 partnerships include: the Factories of the Future cPPP (e.g. in relation to industrialising renovation and construction processes); the Sustainable Process Industry cPPP; several EIT KICs (e.g. InnoEnergy, Climate, Digital); the EIP on smart cities and communities.
Expected type and composition of partners	The research and innovation partnership will bring together the entire built environment sector value chain, both supply side and demand side: academics (universities, RTOs), architects, construction, system suppliers, material manufacturers, ICT companies, planners, investors, financiers, consumer associations, property federations, facility managers, energy service companies, local authorities, NGOs.
Contributions and commitments expected from partners	The partnership will gather the necessary expertise from different fields and will be the most efficient, flexible and effective approach to ensure the necessary level of commitment of the public and private sectors and the civil society aiming at creating a cross-sectoral momentum and action underpinned by a common strategic vision. The commitment from the stakeholders (both public and private) will first consist of engaging in a continuous dialogue to agree on R&I priorities and effectively implement a common R&I roadmap. In addition, the private sector will endorse the feedback from the partnership to evolve practices, in particular to move towards a holistic approach to design and construction, and contribute to R&I financing (e.g. through adequate co-financing rates).

Currently envisaged implementation mode(s).	☒ Co-programmed European Partnership
	 ☐ Co-funded European Partnership
	 ☐ Institutionalised European Partnership
	    ☐ Article 185
	    ☐ Article 187
	    ☐ EIT-KIC

Justification of the implementation mode	A co-programmed partnership is – for the considered partnership area – the most efficient, flexible and effective approach to ensure the necessary level of commitment of the public and private sectors and the civil society while minimizing the administrative and management burden for the creation and operation of the partnership. At the same time, it creates a comprehensive cross-sectoral and cross-cluster structure gathering the necessary expertise and resources for addressing the challenge in a holistic manner.
Proposed starting year	2021