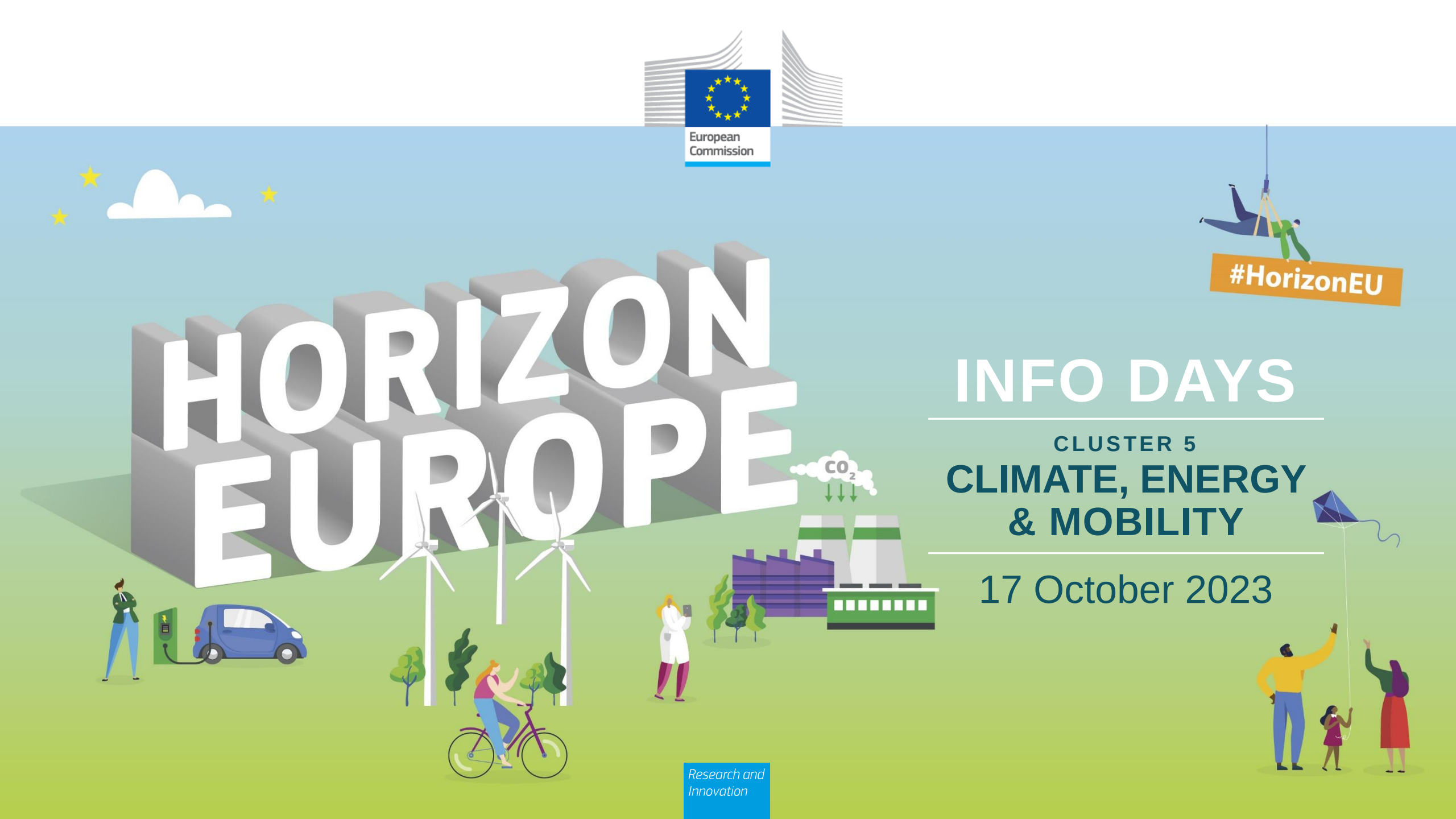
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HORIZON EUROPE
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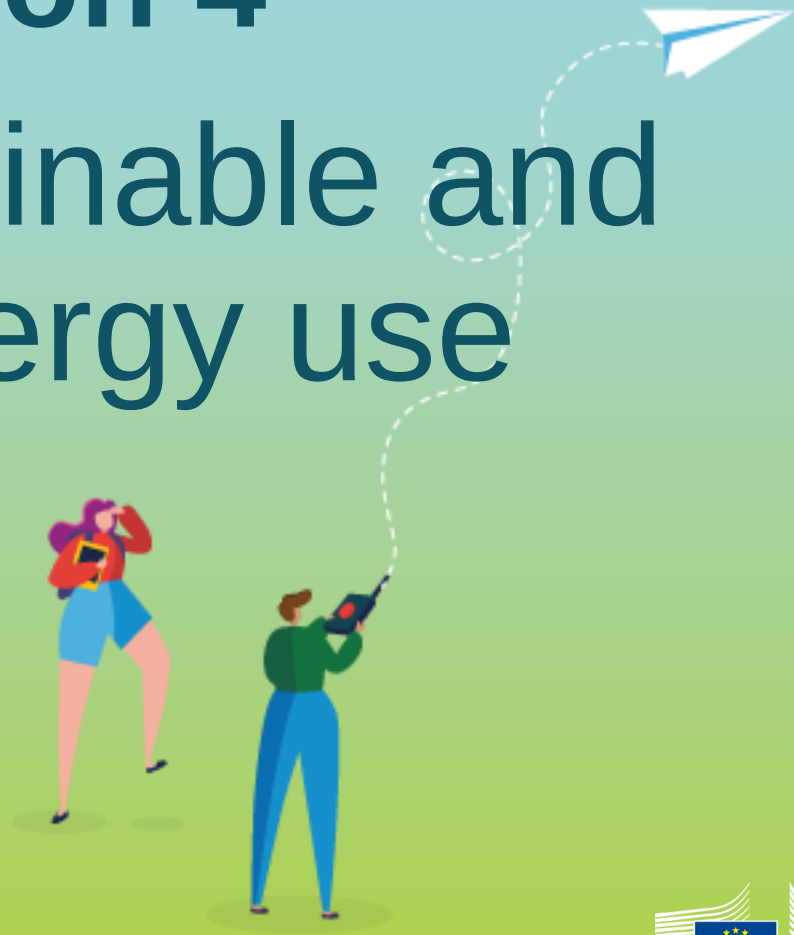
INFO DAYS
CLUSTER 5
CLIMATE, ENERGY & MOBILITY
17 October 2023
CO_2
Research and Innovation

Destination 4

Efficient, sustainable and inclusive energy use



European Commission

Thematic area

Highly energy-efficient and climate neutral European building stock

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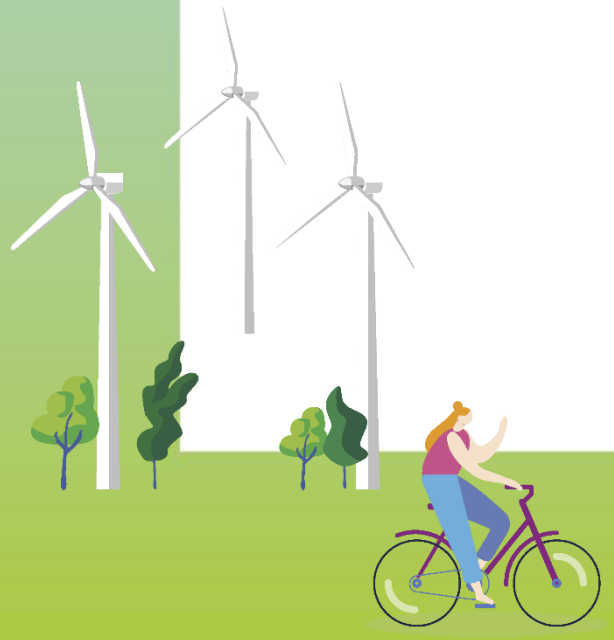
Energy Efficient Buildings

Rebecca KANELLEA - Eleftherios BOURDAKIS

CINEA



European Commission

HORIZON-CL5-2024-D4-01-01
Low-disruptive renovation processes using integration of prefabricated solutions for energy-efficient buildings

SCOPE

- Develop **streamlined processes for deep energy-efficient renovation**: at least NZEB level & using prefabricated modules
- Use relevant **available technologies** to **reduce quality gaps** between off-site manufacturing and on-site deployment of prefabricated modules
- Develop processes for **seamless integration of prefabricated solutions** into a variety of existing constructions
- Ensure the processes **minimize the disturbance** for building owners, tenants and users
- At least **three demonstrations** covering different building categories (residential or tertiary) and various building typologies, such as single or multi-storey, single or multi-use, etc.
- Demonstrate less-disruptive retrofitting processes that are **more attractive and more cost-effective** for building owners, tenants and users

HORIZON-CL5-2024-D4-01-01
Low-disruptive renovation processes using integration of prefabricated solutions for energy-efficient buildings

EXPECTED OUTCOME

- **Reduction of on-site construction activities** to 1-2 days per dwelling/building unit
- **Cost reduction** of at least 25% compared to conventional renovation processes
- Significant **reduction of dust, noise and waste** on the construction site compared to conventional renovation processes
- Significant **reduction in occupant disturbance** during the renovation
- **Improved** levels of **occupancy comfort** (e.g. Indoor Air Quality and Indoor Environmental Quality) after renovation
- **Reduction of negative impacts of renovation** on biodiversity, considering adaptability as well (e.g. to climate change, different use, evolving societal needs, etc.) and resilience of buildings to disruptive events

HORIZON-CL5-2024-D4-01-01
Low-disruptive renovation processes using integration of prefabricated solutions for energy-efficient buildings

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 6 - 8** by the end of the project

EU CONTRIBUTION

- Per project: **5 M€**
- Total: **10 M€**

TIMING

- Call opening: **07 December 2023**
- Call closing: **18 April 2024**

HORIZON-CL5-2024-D4-01-02
Smart grid-ready buildings

SCOPE

- Develop new or upgrade existing **building-to-grid integration solutions** and demonstrate them in **real-life pilots**
- Enhance **interoperability between buildings and grids** for electricity and other energy carriers
- Enhance synergies between **on-site energy storage** (e.g. home batteries, e-vehicles, etc.) and **on-site renewable energy sources**.
- Develop and pilot innovative and competitive **energy balancing, storage and generation services** in buildings

HORIZON-CL5-2024-D4-01-02
Smart grid-ready buildings

EXPECTED OUTCOME

- Improved **integration of buildings with energy carriers** (e.g. electricity grid, district heating networks) and **non-energy services** (e.g. mobility)
- Improved **buildings flexibility** for grid and network management
- Increase in **renewable energy production and storage** at building level
- **Empowerment of end-users** by having increased control over their buildings' energy services and contracts

HORIZON-CL5-2024-D4-01-02
Smart grid-ready buildings

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 6-8** by the end of the project

EU CONTRIBUTION

- Per project: **5 M€**
- Total: **10 M€**

TIMING

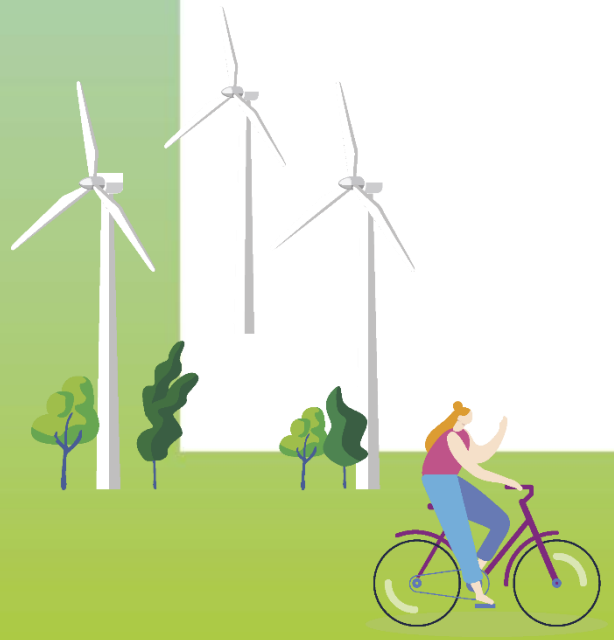
- Call opening: **7 December 2023**
- Call closing: **18 April 2024**

➢ *Active contribution to the BRIDGE initiative*

Thematic area

Industry

Eric LECOMTE
DG ENER



European Commission

HORIZON-CL5-2024-D4-01-03
Alternative heating systems for efficient, flexible and electrified heat generation in industry

SCOPE

- Cost effective and improved designs for **at least two** alternative heat sources technologies
- Integration and demonstration of the system at industrial scale of **at least one** alternative heat source technology in **at least one industrial process**; demonstrate the financial viability and develop a business case
- Make a preliminary estimation of the future equipment cost
- Make an analysis of the potential industrial deployment and related benefits of at least one alternative heat source technology in three industrial sectors, in the EU and (if data are available) in the Associated States and, by extrapolation, at global level

HORIZON-CL5-2024-D4-01-03
Alternative heating systems for efficient, flexible and electrified heat generation in industry

EXPECTED OUTCOME

- Take full advantage of alternative heating systems for electrified, **efficient and precisely focussed heat generation in industry**, that create the possibility for new, decarbonised and flexible processes, reducing fossil fuel imports dependency, maximising primary energy savings and CO2 emission reduction compared to present state-of-the-art, demonstrated by LCA or similar studies (assuming decarbonised electricity use)

- Environmental and technical performances, health protection, safety and economic viability of novel heating technologies demonstrated and validated in industrial processes

- Better awareness of the challenges and benefits of alternative heating systems in the relevant industrial sectors.

HORIZON-CL5-2024-D4-01-03
Alternative heating systems for efficient, flexible and electrified heat generation in industry

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 6-7** by the end of the project

EU CONTRIBUTION

- Per project: **5.3 M€**
- Total: **16 M€**

TIMING

- Call opening: **07 December 2023**
- Call closing: **18 April 2024**

➢ *Link to CL5-2024-D4-01-03 - Alternative heating systems for efficient, flexible and electrified heat generation in industry*

Thematic area

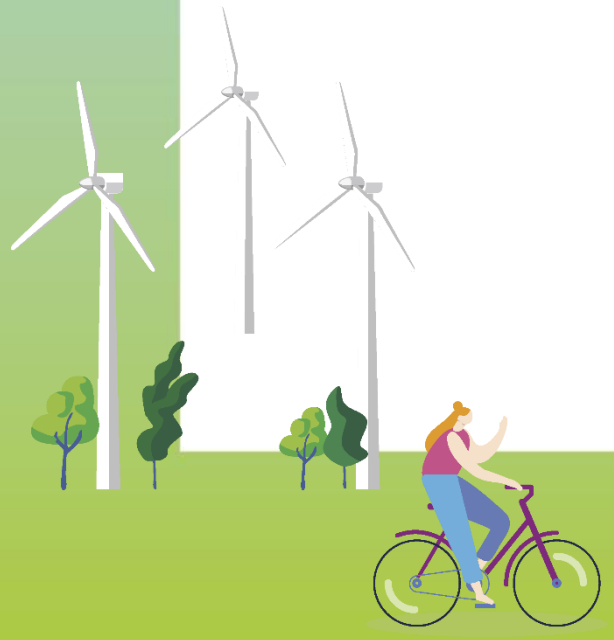
Highly energy-efficient and climate neutral European building stock

–

Built4People Partnership

Rebecca KANELLEA - Eleftherios BOURDAKIS

CINEA



European Commission

HORIZON-CL5-2024-D4-02-01
Industrialisation of sustainable and circular deep renovation workflows (Built4People Partnership)

SCOPE

- Investigate innovative approaches for **industrialised deep circular renovation**, covering the **whole workflow**
- Ensure the proposed approaches aim to achieve the highest level of energy performance (at least NZEB level), ensuring a **high level of indoor environment quality**, keeping costs in an attractive range for owners and investors
- Make use of innovative processes and technologies, such as design based on circularity principles, prefabricated components, and digital tools that allow to **optimise workflows**
- Apply the proposed workflows to **at least three demonstrations**. The demonstrations can be either single buildings or clusters of buildings, and **at least one of the demonstrations has to address residential buildings**

HORIZON-CL5-2024-D4-02-01
Industrialisation of sustainable and circular deep renovation workflows (Built4People Partnership)

EXPECTED OUTCOME

- Streamlining resource-efficient nearly zero-energy performance renovation processes
- Renovations with reduction of at least 30 % waste, 25% cost, and 30% work time (to 1-2 days per dwelling/building unit), compared to current deep renovation processes
- Reduced energy performance gap between as-built and as-designed, higher construction quality
- Innovative, tailored business models for deep renovation, generating economies of scale and contributing to an increased rate of renovation
- Improved comfort, Indoor Air Quality and Indoor Environmental Quality

HORIZON-CL5-2024-D4-02-01
Industrialisation of sustainable and circular deep renovation workflows (Built4People Partnership)

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 6-8** by the end of the project

EU CONTRIBUTION

- Per project: **8 M€**
- Total: **16 M€**

TIMING

- Call opening: **17 September 2024**
- Call closing: **21 January 2025**

➢ *Contribute to the activities of the Built4People partners and to the Built4People network of innovation clusters*

HORIZON-CL5-2024-D4-02-02
Robotics and other automated solutions for construction, renovation and maintenance in a sustainable built environment (Built4People Partnership)

SCOPE

- Investigate the use of **robotic systems** (including those used for 3D printing) and automation for construction and deep renovation
- Develop **robotic and automated design and construction techniques** that increase energy efficiency and reduce greenhouse gas emissions from construction and renovation works on-site
- Investigate the use of **automated technologies** for surveying, inspection and monitoring of the site
- Test and validate the prototyped solutions in **at least three prototypes**. These prototypes should be validated in a lab or another relevant environment. The testing and validation are expected to **address both new construction and renovation**

HORIZON-CL5-2024-D4-02-02
Robotics and other automated solutions for construction, renovation and maintenance in a sustainable built environment (Built4People Partnership)

EXPECTED OUTCOME

- Reduction of construction and renovation time on-site (at least 40% reduction)
- Reduction of errors in construction and renovation works
- Improved resource efficiency
- Reduction of construction and renovation costs
- Reduction of greenhouse gas emissions resulting from, and improved energy efficiency of the works on-site
- Reduced environmental impact of construction works, including pollution, particulate matter and noise, in the immediate vicinity
- Reduction of waste generated from the works on-site

HORIZON-CL5-2024-D4-02-02
Robotics and other automated solutions for construction, renovation and maintenance in a sustainable built environment (Built4People Partnership)

TYPE OF ACTION

- **RIA –** Research & Innovation Action
- Expected **TRL 4-5** by the end of the project

EU CONTRIBUTION

- Per project: **4 M€**
- Total: **8 M€**

TIMING

- Call opening: **17 September 2024**
- Call closing: **21 January 2025**

- ➢ *Contribute to the activities of the Built4People partners and to the Built4People network of innovation clusters*
- ➢ *The Joint Research Centre (JRC) may participate as member of the consortium selected for funding*

HORIZON-CL5-2024-D4-02-03
BIM-based processes and digital twins for facilitating and optimising circular energy renovation (Built4People Partnership)

SCOPE

- Develop and integrate **solutions based on BIM and Digital Twins** to support the whole buildings life cycle from design to deconstruction and reuse, including operation. Ensure that the solutions
  - Support optimal, adaptable and reversible building design
  - Allow to track buildings materials and construction products
  - Integrate buildings operational data into an interoperable Digital Twin for automated, optimised building performance monitoring
- Apply the solutions on **a set of real-life residential and non-residential building construction and renovation projects**

HORIZON-CL5-2024-D4-02-03
BIM-based processes and digital twins for facilitating and optimising circular energy renovation (Built4People Partnership)

EXPECTED OUTCOME

- Reduced buildings construction and renovation **time and costs**
- Increased buildings material **reuse and recycling**
- Improvement of buildings **performance**
- Enhanced, **interoperable and accessible buildings information** across the lifecycle
- Improvement of **interoperability with existing** BIM and Digital Twin solutions

HORIZON-CL5-2024-D4-02-03
BIM-based processes and digital twins for facilitating and optimising circular energy renovation (Built4People Partnership)

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 6-8** by the end of the project

EU CONTRIBUTION

- Per project: **4 M€**
- Total: **8 M€**

Funding rate: 60%!

TIMING

- Call opening: **17 September 2024**
- Call closing: **21 January 2025**

HORIZON-CL5-2024-D4-02-04
Design for adaptability, re-use and deconstruction of buildings, in line with the principles of circular economy (Built4People Partnership)

SCOPE

- **Validate construction and renovation solutions** based on the integration of innovative tools, products, techniques, processes and methods, that facilitate deconstruction and reuse, based on life-cycle approaches across the value chain
- **Validation** of the solutions in a **relevant environment** (real-life or close to real-life) that:
  - Covers residential and non-residential projects, half of which at least should be renovation projects
  - Covers at least two different countries, with diverse climatic conditions
  - Involves local and regional values chains, in particular SMEs
  - Results in clear and, where relevant, quantified and measurable indicators on the improvements due to the use of the solutions
- Deliver **guidance & recommendations** for technology providers, regulatory authorities, certification and standardisation bodies

HORIZON-CL5-2024-D4-02-04
Design for adaptability, re-use and deconstruction of buildings, in line with the principles of circular economy (Built4People Partnership)

EXPECTED OUTCOME

- **Improved adaptability** of buildings and building units to new uses
- Increased **reuse and recycling** of building elements and products
- **Extended service life** of buildings
- **Increased awareness** on best practices for design for adaptability, reuse and deconstruction

HORIZON-CL5-2024-D4-02-04
Design for adaptability, re-use and deconstruction of buildings, in line with the principles of circular economy (Built4People Partnership)

TYPE OF ACTION

- **RIA –** Research and Innovation Action
- Expected **TRL 5-6** by the end of the project

EU CONTRIBUTION

- Per project: **4 M€**
- Total: **8 M€**

TIMING

- Call opening: **17 September 2024**
- Call closing: **21 January 2025**

- ➢ *Report on results to Built4People in support of the monitoring of its KPIs*
- ➢ *The Joint Research Centre (JRC) may participate as member of the consortium selected for funding*

HORIZON-CL5-2024-D4-02-05
Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

SCOPE

- Climate neutrality / resilience
- Complement / build on existing tools / standards
- Engage citizens / end-users / stakeholders in the development process
- Tailored to laypersons incl. vulnerable / minority / disdvantaged groups
- Demonstrate prototypes in three real-life urban development projects

HORIZON-CL5-2024-D4-02-05
Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

EXPECTED OUTCOME

- Greater **engagement of** representative groups of **end users as well as citizens** of the impacted urban context
- Increased **acceptability and uptake of** sustainable **deep renovation solutions**
- Reduced **energy and mobility poverty**
- Increase in **plans for climate neutral and sustainable, aesthetic and inclusive built environments** with enhanced climate adaptation and resilience (e.g. based on naturebased solutions)
- Enhanced **climate change adaptation and resilience** in built environments

HORIZON-CL5-2024-D4-02-05
Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 6-8** by the end of the project

EU CONTRIBUTION

- Per project: **5 M€**
- Total: **10 M€**

TIMING

- Call opening: **17 September 2024**
- Call closing: **21 January 2025**

- ➢ *Contribute to co-programmed European Partnership on 'People-centric sustainable built environment' (Built4People)*
- ➢ *Contribute to New European Bauhaus (NEB) initiative*

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