

### Horizon 2020 - Green Deal call

### Area 4: Energy and resource efficient buildings

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## Topic LC-GD-4-1-2020: Building and renovating in an energy and resource efficient way

Indicative budget:

€60 million

• Indicative EU contribution per proposal:

€10 to 20 million

- Innovation Action (IA)
- Technology Readiness Level: TRL 5/6 to TRL 7/8



European Commission

### Topic LC-GD-4-1-2020: Specific challenge

- Decarbonisation by 2050: role of the buildings sector
- Buildings as zero-emission/zero-pollution, positive energy powerhouses within green neighbourhoods
- Design and construction to reduce embodied emissions and operational energy efficiency
- Transition to energy positive buildings using renewable energy
- Creation of green neighbourhood « living labs »



### Topic LC-GD-4-1-2020: Scope (1)

- Overall objective to test innovations across whole value chain, adapt the value chain to new operation patterns resulting from innovations.
- Set up or use existing innovation clusters to demonstrate, evaluate and replicate innovative solutions across different building types and climatic zones
- Green neighbourhood « living labs » to raise awareness, facilitate social innovation, promote education & training for sustainable living
- Coordination on standards and regulatory aspects to ensure operational efficiency, address design-built performance gap



### Topic LC-GD-4-1-2020: Scope (2)

- At least two (residential and non-residential, new and/or retrofitted) largescale demonstrations in different regions of Europe
- Design of green, positive energy neighbourhoods embedded in sites' context
- Energy and resource efficient construction/renovation workflows for off-site manufacturing, reducing embodied energy and occupant disruption
- Ensure replicability, long-term performance (maintenance, air quality etc.), potential for future adaptation, reuse or deconstruction
- No negative effects on fire and seismic safety



### Topic LC-GD-4-1-2020: Scope (3)

- Post-construction monitoring of energy performance and component durability.
- Sustainable, energy efficient building design adapted to local conditions
- Active-passive solutions
- Digital and EGNSS based methods of design, construction, monitoring, tracking of processes
- Innovative and more energy efficient Building Integrated Photovoltaics



### Topic LC-GD-4-1-2020: Scope (4)

- Innovative, cost and energy efficient renewable energy generation in buildings combined with urban service facilities & HVAC technologies
- Energy storage systems with bidirectional charging that don't limit use of living space
- Energy efficient building operation at reduced maintenance costs and longterm performance with digital technologies to optimise energy at neighbourhood scale
- Digital technologies to ensure comfortable & healthy living environment: dynamic matching, demand response; smart home services, advanced controls; etc.



### Topic LC-GD-4-1-2020: Impacts (1)

- Primary energy savings triggered by the project (GWh/year);
- Investments in sustainable energy triggered by the project (million Euro);
- High energy performance buildings (NZEB for retrofitted; positive energy for new)
- Reduction of GHG emissions towards zero (tCO2-eq/year) for total life cycle
- - 50% embodied energy in buildings
- Reduction of air pollutants towards zero (kg/year) for total life cycle



### Topic LC-GD-4-1-2020: Impacts (2)

- Demonstration of high replicability potential using new or existing innovation clusters incorporating the whole value chain
- - 30% construction/retrofitting time and cost
- 30% dust and noise during retrofit works leading to higher user satisfaction
- + 30% improved indoor environment quality
- Proposals should state relevant indicators & metrics with baselines





# Horizon 2020 – ongoing work and achievements

Selected highlights for Area 4

## H2020 and EU policy support – the example of the Energy Performance of Buildings Directive (EPBD)





### Building renovation – market uptake

- 7 projects removing market barriers to deep renovation
- Example: transition-zero.eu
- Introduced the Dutch « Energiesprong » to UK & FR, also IT & DE, and improved in NL
- Focus on social housing.
- Consumer-focused standard product with performance guarantee, emphasis on desirability and non-energy benefits





### R&I on industrialising renovation processes

- 11 innovation projects on industrialising building renovation processes
- Example: <u>www.more-connect.eu</u>
- 5 pilot demonstrations of renovation using prefabrication, digital tools & robots in CZ, DK, EE, LV, NL
- Guide for prefabricated retrofit packages





### **Energy Performance Certification**

- revalue-project.eu led to new RICS guidance to surveyors to account for energy efficiency in valuations, based on study of 120,000 properties
- 7 new projects on next generation EPCs, aiming at strengthening implementation: convergence, smart readiness indicator, combining operational and asset ratings





#### **BUILD UP Skills initiative**

- 73 projects since 2011, upskilling the construction workforce for high energy performance
- Expanded from blue collar to include professionals, new digital tools, address demand for skills
- Skills gap analysis (3 million workers); training & qualification schemes; recognition
- <u>https://ec.europa.eu/easme/en/secti</u> <u>on/horizon-2020-energy-</u> <u>efficiency/build-skills</u>





## Building-integrated photovoltaics: supporting the transition towards NZEB

- 8 projects demonstrating different photovoltaic technologies in buildings:
- PV elements become a construction material.
- Example: <u>www.pvsites.eu</u>: seven demonstration buildings in Europe.
- Project outputs already commercialized in the international market.



## Building-integrated photovoltaics: supporting the transition towards NZEB

- 3 projects addressing the whole BIPV value chain: from the architectural design to advanced manufacturing, installation and operation & maintenance
- Drastic cost reduction in the medium and long term complying with the SET Plan
- Examples: <u>www.bipvboost.eu</u>, <u>www.besmartproject.eu</u>, <u>www.pvadapt.com</u>





### Information sources

Green Deal Call

https://ec.europa.eu/info/research-and-innovation/strategy/european-greendeal/call\_en

• Funding & tenders portal

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home

• EASME

https://ec.europa.eu/easme/en/section/horizon-2020-energy-efficiency

• INEA

https://ec.europa.eu/inea

• BUILD UP





## Thank you



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