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Holistic Energy and Architectural Retrofit Toolkit



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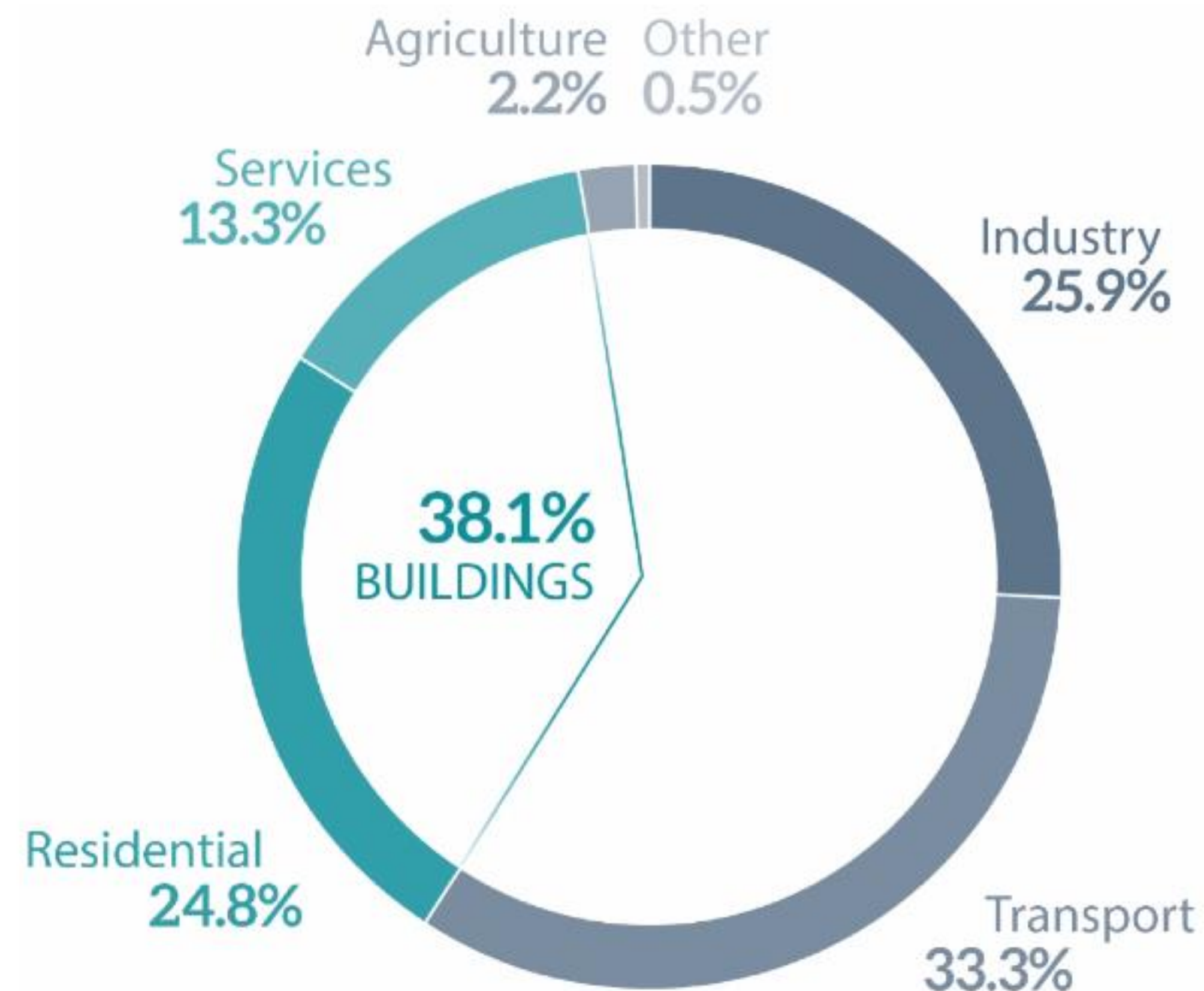
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The energy demand of building sector

Buildings are responsible for **approximately 40% of overall energy consumption and 36% of CO₂ in the European Union.**

Cutting the energy consumption of buildings has a key role for reaching energy and climate objectives of overall energy efficiency and GHG reduction.

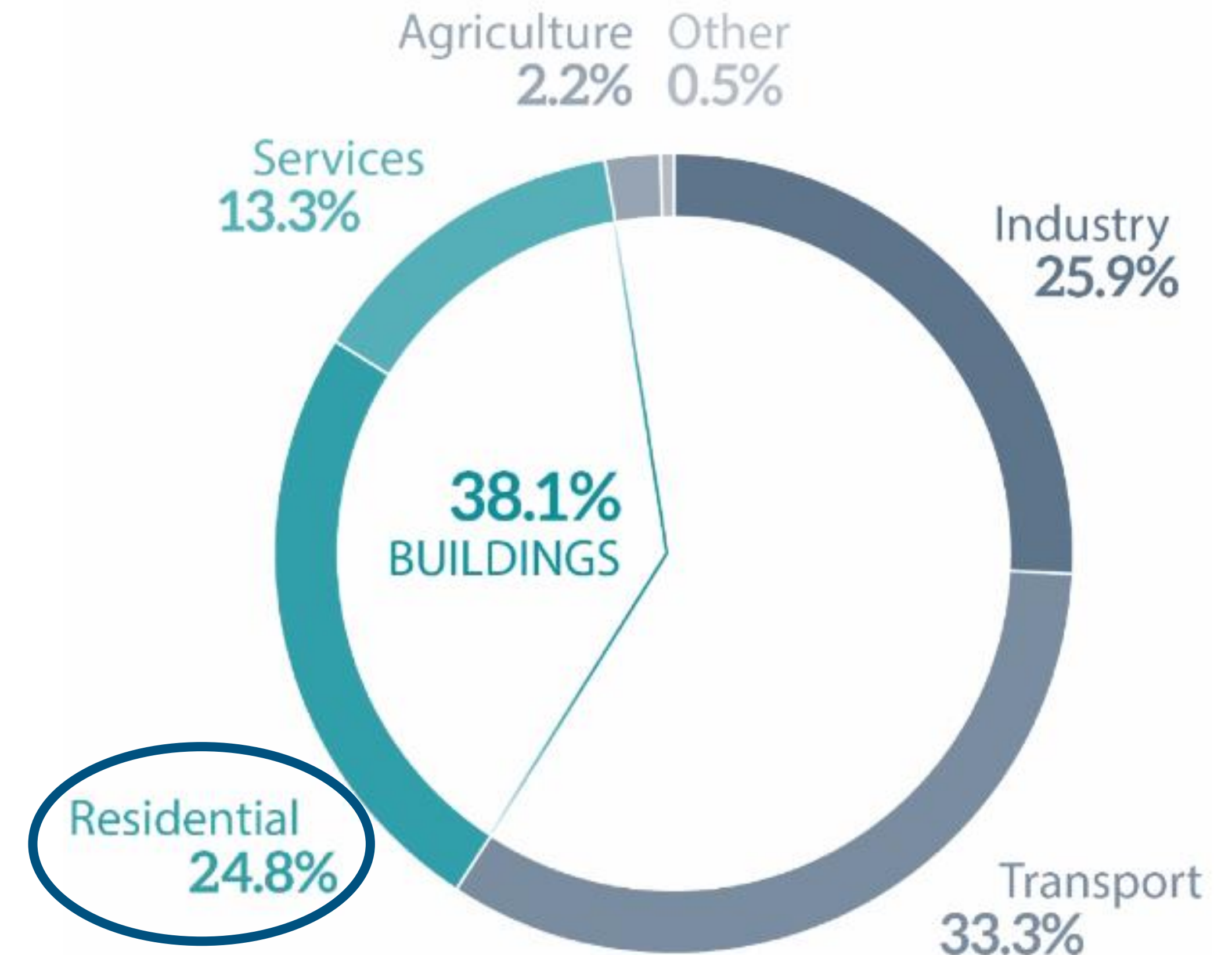


The energy demand of building sector

The biggest opportunity for reducing energy consumption in existing buildings is in the area of **heating, cooling and hot water**, which account for more than 60% of their energy consumption.

Deep renovation could reduce energy demand for heating by 70% or more. It could **cut the overall energy needed in buildings by half by 2050 compared to 2012**, despite the estimated 45% growth of the overall building stock.

EU H2020 projects aim at reducing consumptions in **social-housing buildings**, creating and promoting retrofit toolkit easy to use and effective in reducing energy consumptions.



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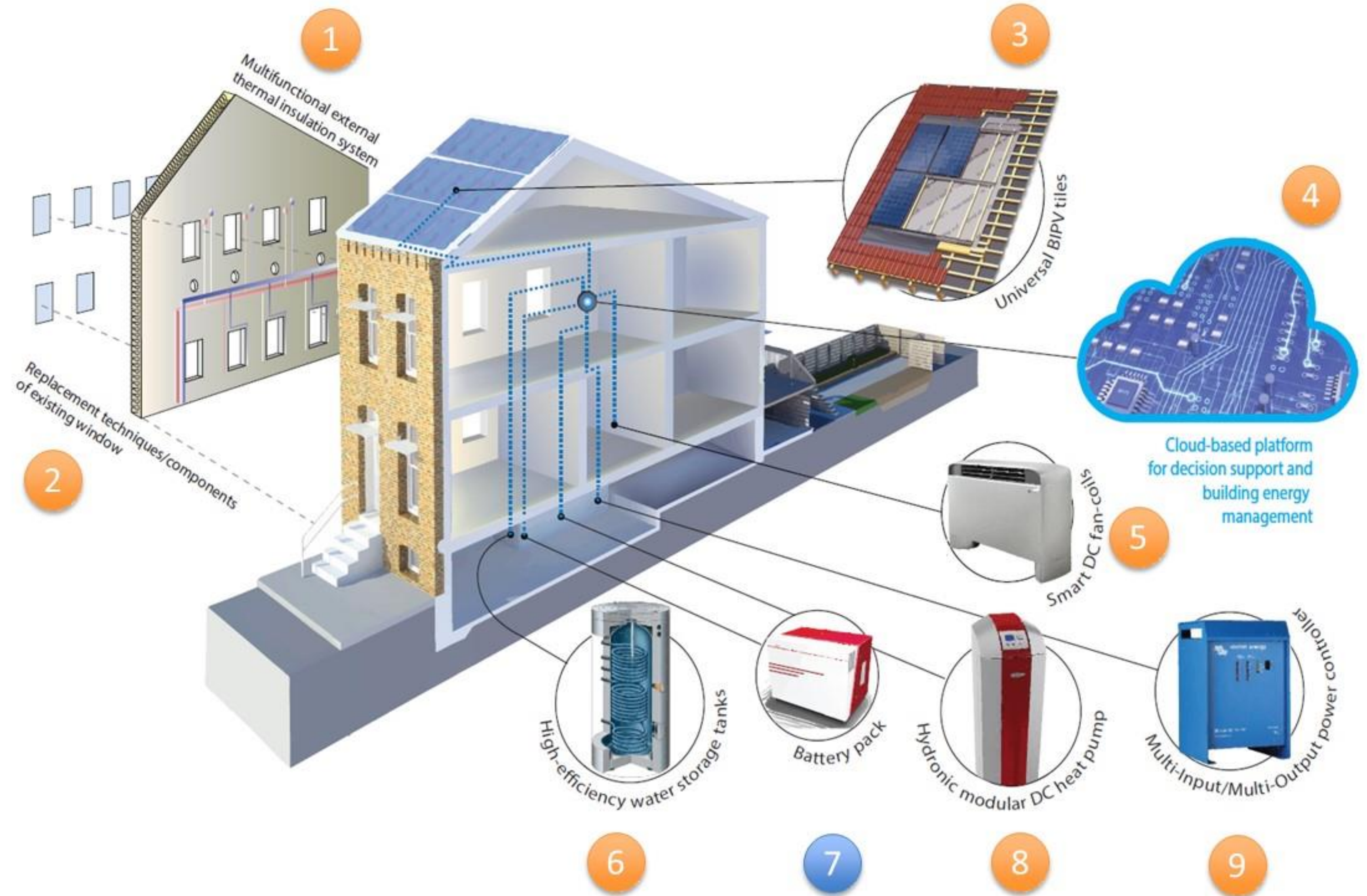
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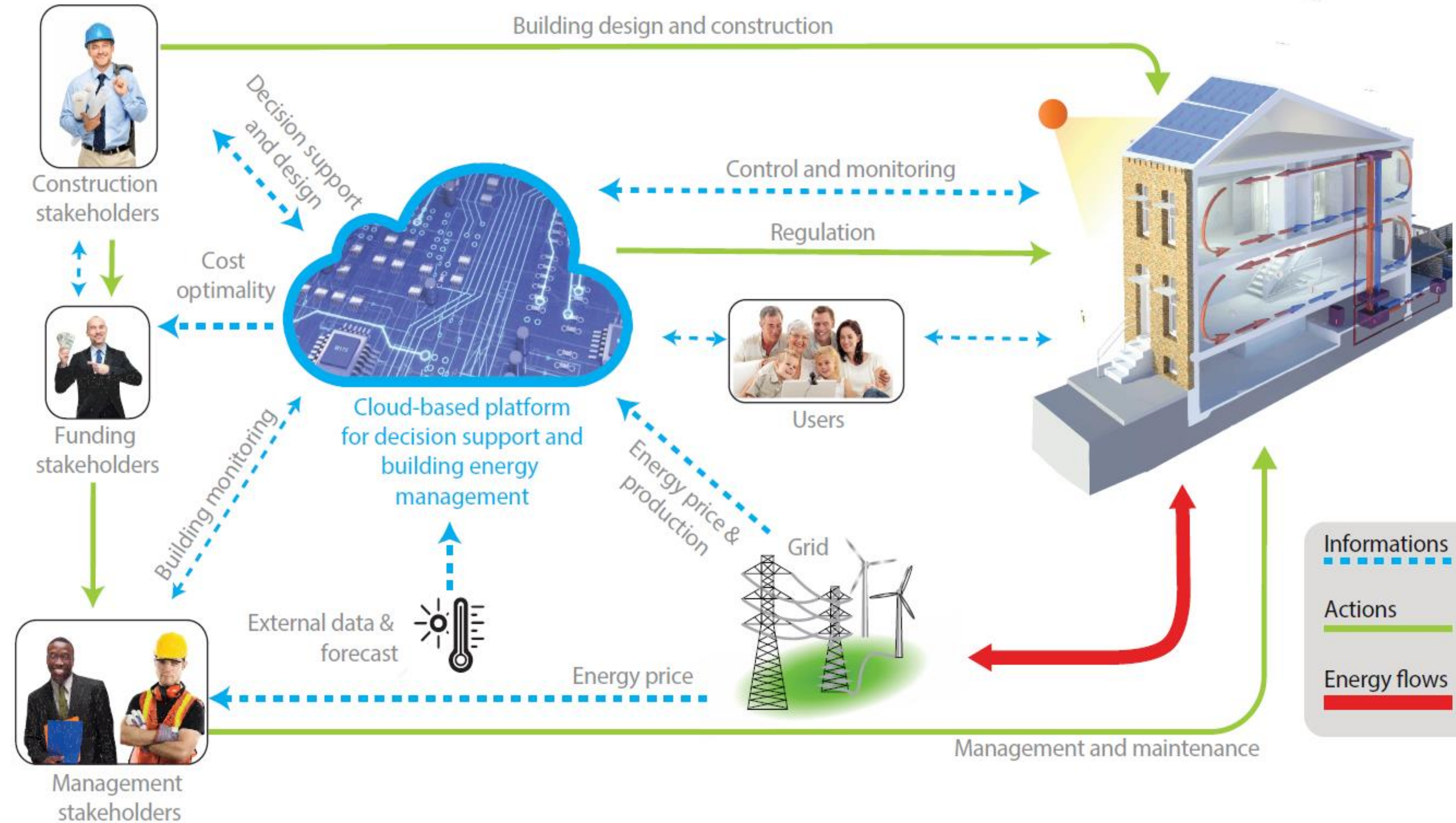
Toolkit

- 1) Multifunctional external thermal insulation
- 2) Retrofit components/techniques for existing windows
- 3) Universal PV tiles
- 4) Cloud-platform
- 5) DC Smart fan coils
- 6) Thermal storage
- 7) Battery pack
- 8) DC heat pump
- 9) Multi-Input/Multi-Output converter (MIMO)



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Objectives

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- 2) To develop systemic and cost-optimal solutions for energy retrofit, **decreasing installation time by 30% and ensuring payback periods lower than 15 years**, and fostering building smart learning about behaviours

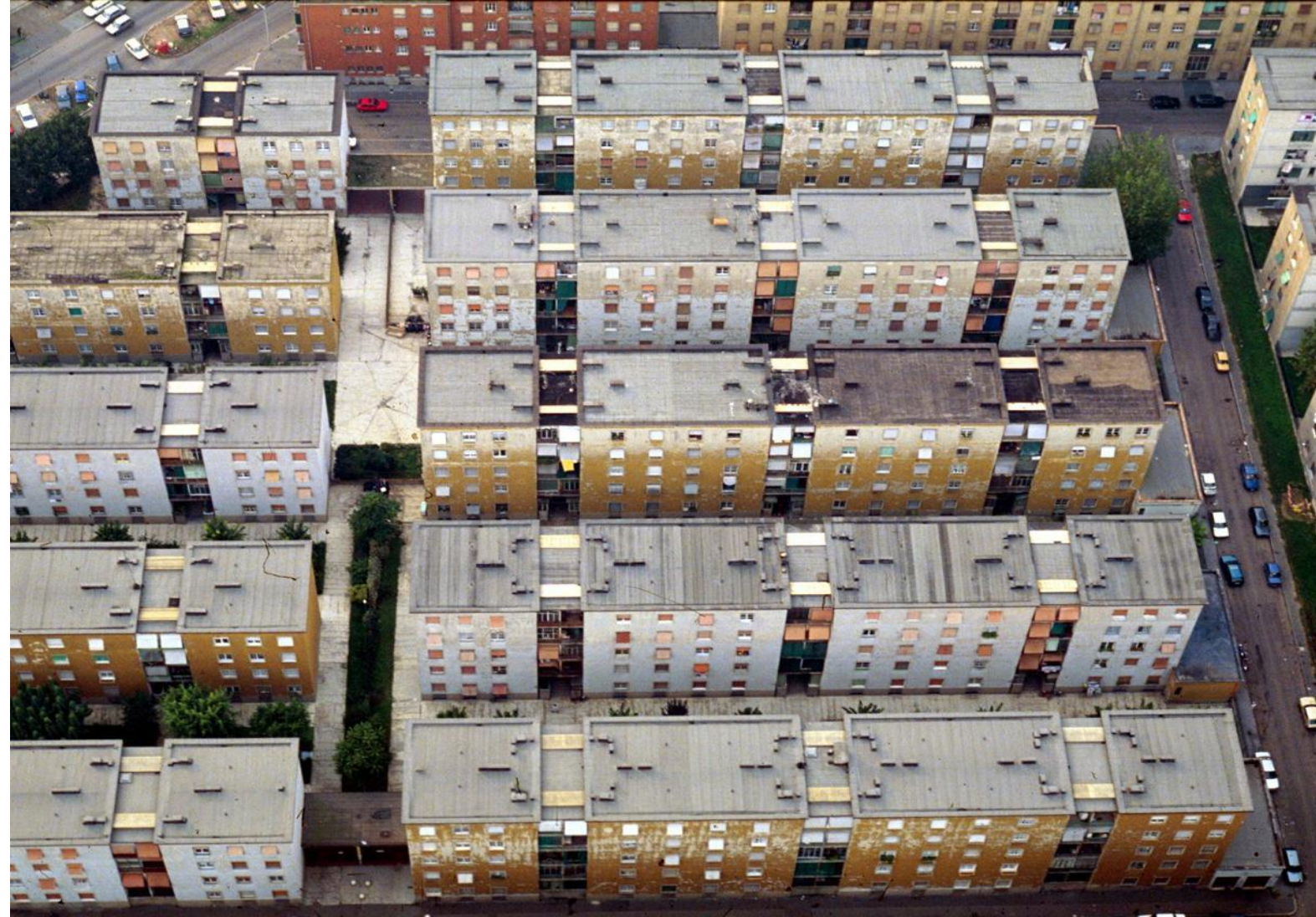


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- 2) To develop systemic and cost-optimal solutions for energy retrofit, **decreasing installation time by 30% and ensuring payback periods lower than 15 years**, and fostering building smart learning about behaviours
- 3) To promote energy efficient financing, developing **business models** that consider **private investments and public incentives**



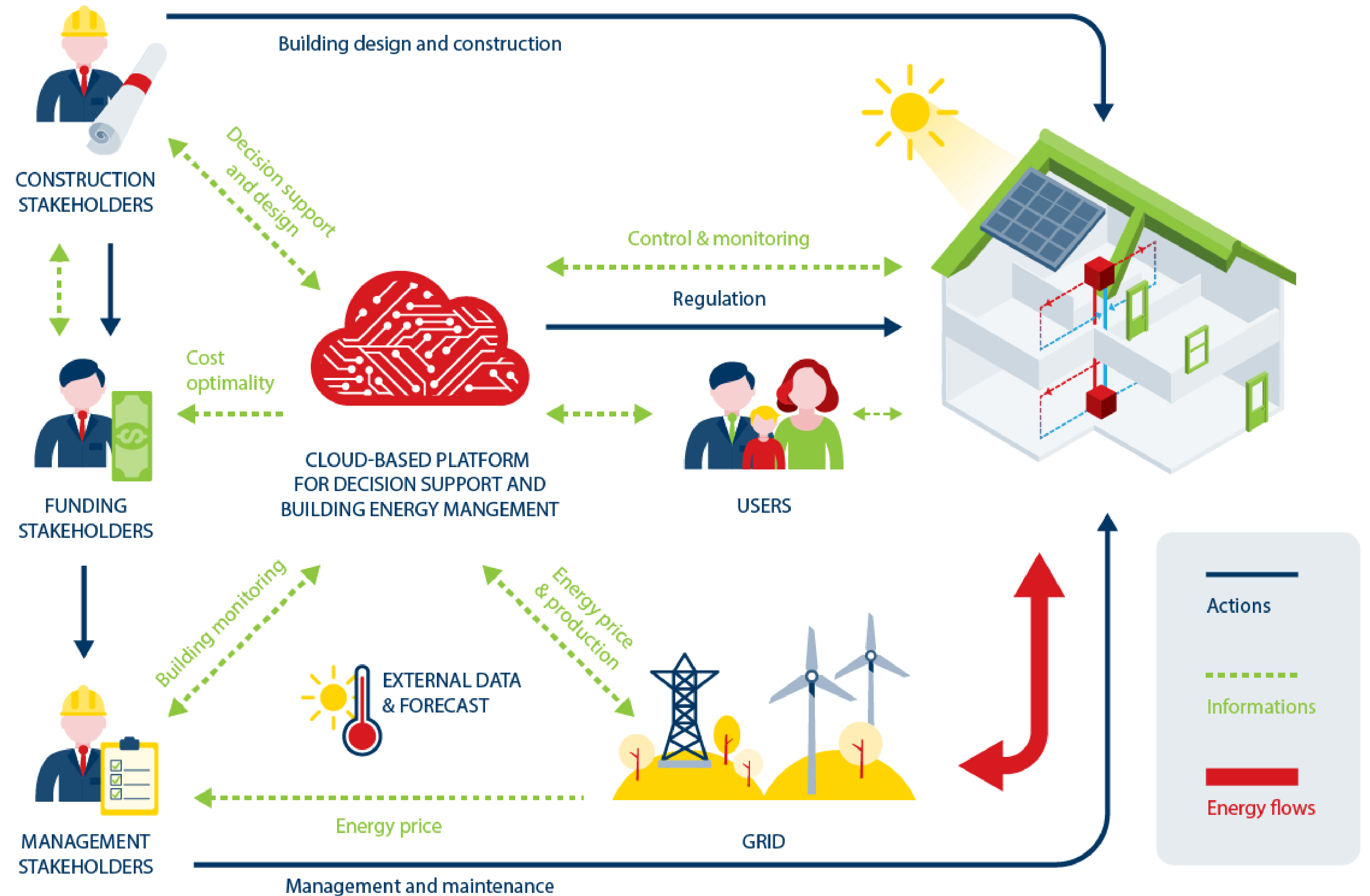
Application



Multi-storey residential buildings of the second half of the last century, linear condominium buildings with 4-5 floors. The two case studies are situated in Lyon (FR) and Bagnolo (IT).



Application



The application of the retrofit toolkit is accompanied by a strong work on the identification of stakeholder and household needs.



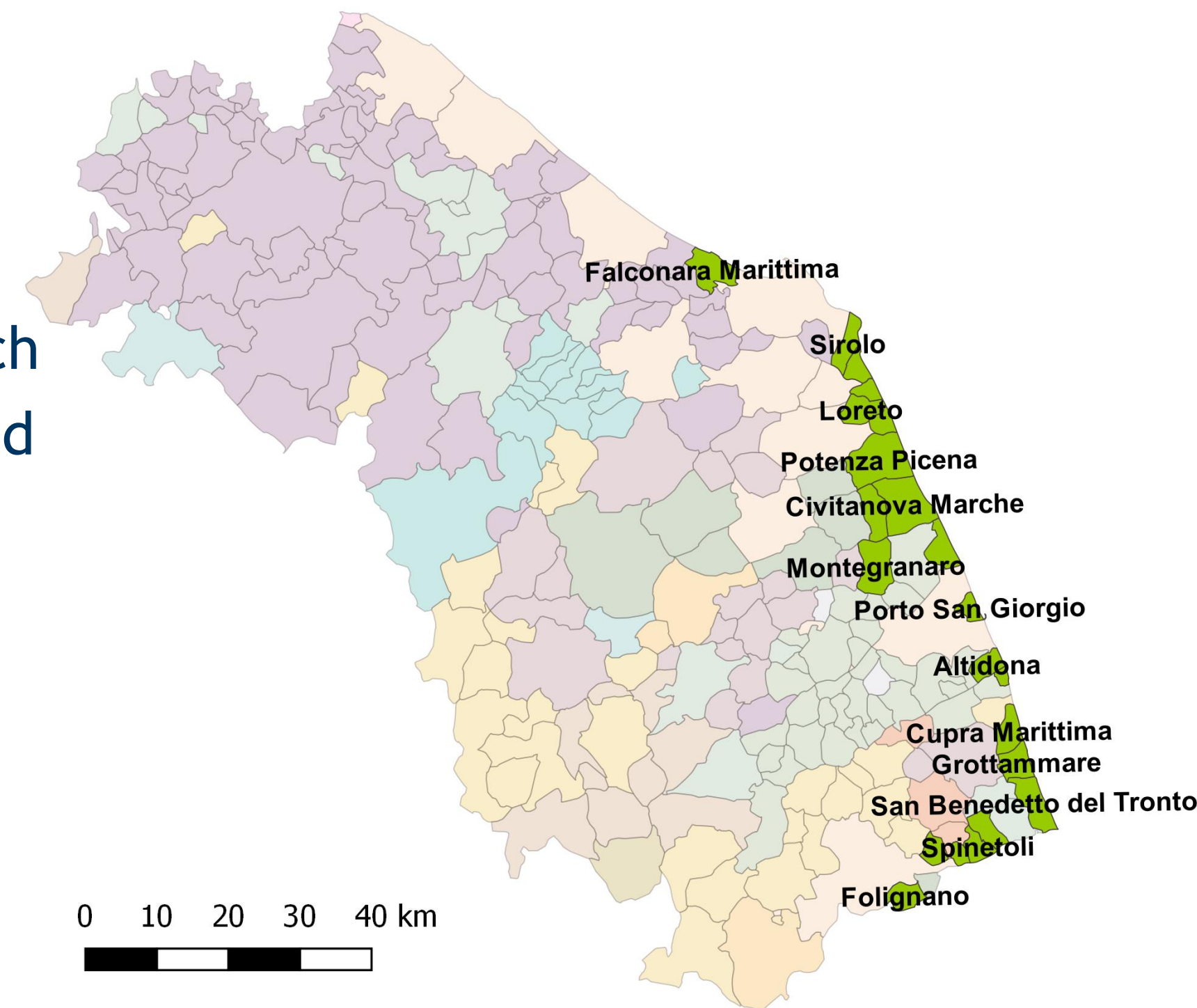
Sustainable Energy and Climate Action Plans

- Building capacities in technical and social areas
- Local population can be resources for plan implementation and each local population has its own features, also in terms of acceptance of energy efficiency or renewable energy interventions
- Local population should be engaged



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- Local population should be engaged
- Recommendations such as municipalities in which a sustainable tourism sector can be accepted and promoted by economic sector
- Recommendations such as inclusion of biogas plants because they are more accepted by inhabitants than others



Legend

Regione Marche

- Gruppo 1
- Gruppo 2
- Gruppo 3
- Gruppo 4
- Gruppo 5
- Gruppo 6
- Gruppo 7
- Gruppo 8
- Gruppo 9
- Gruppo 10
- Gruppo 11
- Gruppo 12
- Gruppo 13
- Gruppo 14
- Gruppo 15
- Gruppo 16



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Newest information



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Newsletter



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