

Reconnecting Communities: Cesena's Collaborative Vision for Climate-Neutral Urban Regeneration

From participatory greening interventions to digital twin innovation, the Cesena team shares how WeGenerate is helping shape a more connected, inclusive, and climate-resilient city.

The Cesena Demo brings together **local authorities, universities, researchers, and community organisations** to rethink how urban regeneration and ecological transition can go hand in hand.

Focused on reconnecting the Railway Station area with the Vigne neighbourhood, the initiative combines **participatory planning, temporary greening actions, digital innovation, and sustainable mobility solutions** to create a more inclusive and climate-neutral urban environment.

We spoke with members of the **Cesena WeGenerate Local Circle** to learn how collaboration, community engagement, and data-driven planning are helping shape the city's long-term vision for sustainable urban development.



What were the main challenges in reconnecting the Railway Station area with the Vigne neighbourhood, and how is the team overcoming them?

That connection is one of the main objectives of the Cesena Demo-site action plan. Among the various actions introduced, the temporary greening intervention is the one that most concretely aims to lay the groundwork for re-

*establishing a relationship between these two parts of the city, **adjacent but physically separated by the railway line.***

*The process of activating the local community—engaging citizens, residents, and students from different school levels—has been a **crucial component** in understanding key issues, fostering new awareness of the area's potential, and informing the temporary transformation project.*

*The installation, which will be self-built in June 2026 by a group of students from the Department of Architecture under the guidance of experts, will be situated at the north entrance to the station (Vigne side). It will act as a **hub for a network** of public spaces, green areas and local facilities within the demonstration area, with the aim of improving*



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accessibility and testing new uses with a view to potential permanent developments. Over the summer, a programme of activities will be launched in collaboration with various local organisations and groups, with the aim of fostering an active relationship within the neighbourhood and the city.

The project places strong emphasis on community involvement. How have local residents and associations responded to the participatory activities so far?

We adopted a **multiple-stakeholder engagement approach**, supported by the facilitation of the cultural association **Aidoru** and implemented through dedicated activities (workshops, labs, events, interviews, questionnaires, etc.), with specific objectives for each action while also addressing the needs of the different communities that live in and use the area (young people/students from the Department of Architecture of the University of Bologna; one high school, one secondary school and one primary school; residents, citizens, shopkeepers and associations—the so-called “site-based circle”; and commuters who pass

through the area in relation to their daily or weekly journeys and activities).

The response was very positive, particularly in terms of participation in the workshop organised with the site-based circle in September 2025, aimed at collecting ideas for possible new uses of the public space that will host the temporary greening installation. Other valuable contributions came from the school workshops held between October 2025 and March 2026: the young participants explored the area, developed critical reflections, and imagined creative visions to enhance its potential.

Across all consultations, a strong demand emerged for regenerating public spaces as cultural and inclusive places, safer and better maintained, with shared activities and participatory management involving citizens and associations.

Can you explain how the Digital Twin technology is being used in the renovation planning of the INA-Casa housing block, and what outcomes you expect from this innovation?

The INA-Casa Le Vigne housing block in Cesena, a 1960s social housing neighbourhood, is used as a **living laboratory to test an Urban Digital Twin (UDT) workflow** for climate-neutral renovation at district scale. This UDT builds City Geography Markup Language-based 3D models of the Le Vigne blocks and links them to geospatial, energy, and socio-economic data stored in a 3DCity database, enabling consistent data management and advanced querying. The workflow constructs Geographic Information System (GIS)-based 3D models of INA-Casa blocks according to the CityGML standard, enabling semantically rich representations and interoperability with IoT



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(Internet of Things) and BIM (Building Information Modelling) domains, including geometry, land-use characterisation, and energy performance data from Energy Performance Certificates (EPCs).

It integrates open data, local datasets, automated attribute mapping (supported by Large Language Models), and Free and Open Source Software tools (3DCityDB, QGIS, Blender) to prepare input for Urban Building Energy Modelling of retrofit scenarios, including envelope upgrades, Heating, Ventilation, and Air Conditioning (HVAC) electrification, passive measures, and on-site renewables.



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Therefore, the output Key Performance Indicators describe the impact of each implementation scenario, since benchmarks derive from the adoption of specific packages of renovation measures (PMs) namely Energy in Built Environment (EBE) solutions (passive, active and Renewable Energy Sources production solutions) for the calculations of suitable indicators such as energy performance, environmental impact and economic feasibility.

The digitalisation of urban environment and the creation of a UDT platform aim to support the analysis of potential strategies and the assessment of the impacts of Climate Neutral Positive Energy Districts (PEDs) in the Cesena demo. Renovation scenarios are then visualised in the 3D scene via conditional styling and the UDT is expected to support PED-oriented planning, improve evidence-based decision-making, and streamline communication among local authorities, utilities, and residents. The work was presented during the “Digital Twin” workshop with citizens in November 2025.

With multiple ongoing urban initiatives in Cesena, how are you ensuring coordination and synergy across different projects?

*Cesena ensures coordination across its urban regeneration initiatives through **internal municipal mechanisms** that align EU funding, local plans and strategies, and municipal budgets, while fostering strong partnerships with external actors, such as local associations, universities and research institutes.*

This integrated approach positions the Vigne-Railway Station area as a flagship pilot for climate neutrality, where diverse projects, funding streams, and stakeholders converge to deliver coherent energy transition and urban regeneration actions. Within this area, multiple initiatives operate in synergy: the URBACT project KAIROS has reimagined the station area as a “City Gateway”, the National Recovery and Resilience Plan has supported key infrastructural interventions to anchor the new Mobility Hub, the Horizon Europe project WeGenerate extends regeneration efforts to the Vigne residential district through community engagement and greening actions, and the EU-IA project Energy2Act drives the



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local energy transition through buildings renovation and renewables deployment. Coordination and cross-learning are ensured through regular technical meetings, participatory roundtables, and international exchanges. This structured collaboration fosters the development of scalable models, positioning the Vigne-Railway Station area as a reference for integrated regeneration approaches.

Looking ahead, what long-term changes do you hope this demo will spark in Cesena's approach to sustainable urban development and ecological transition?

Building on the coordinated, multi-project approach, the Cesena Demo is expected to trigger long-term institutional, spatial, and cultural shifts in how the city approaches sustainable urban development and ecological transition.

*In the medium term (3-5 years), the WeGenerate actions represent a **first step toward a structured transformation** of the Vigne-Railway Station area, linking physical interventions, programmatic actions, and key stakeholders within a shared strategic*

*framework. This includes advancing decarbonisation through an integrated approach, promoting multimodal mobility centred on the new Mobility Hub (e.g. bike station service and Park&Ride system), and testing innovative solutions for greening and climate adaptation, such as self-construction pilots and microclimatic monitoring. At the same time, the Demo contributes to a **broader long-term vision** by redefining the northern railway area as a complementary urban centrality, strengthening the railway front as a connector, and enhancing public spaces and green corridors to support climate resilience and livability. Scenario analysis on building renovation—supported by digital tools such as a digital twin and participatory platforms—will inform and possibly trigger future large-scale interventions.*



Giulia Turci - Architect, Project Manager at Environment Department, Municipality of Cesena

*Crucially, the process fosters a governance shift toward more integrated, data-informed, and participatory planning, with **local communities actively engaged in co-creation**. This is expected to influence future urban policies, encourage more sustainable mobility and energy behaviours, and provide a replicable model to guide Cesena's transition toward climate neutrality by 2050.*