



RAIL4CITIES

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Abbreviations and acronyms

Abbreviations / acronyms	Description
AI	Artificial intelligence
EV	Electric vehicle
KPI	Key Performance Indicator
LL	Living Lab
MCA	Multi Criteria Analysis
NBS	Nature-Based Solutions
PV	Photovoltaic
SCP	Sustainable city promoters
S-ROI	Sustainable return of Investment
TGV	High-speed trains
TOC	Theory of Change
TOD	Transit Oriented Development
UGI	Urban Green Infrastructure





1 Executive summary

This report presents a comprehensive, evidence-based framework for the **sustainable transformation of railway stations**, offering actionable recommendations for their redevelopment and adaptation to future urban needs. The focus is on integrating the **Sustainable City Promoters (SCP) model** into urban transport infrastructure, ensuring that proposed solutions are **economically viable, socially inclusive, and environmentally sustainable**. Through a holistic approach, the report addresses both the **spatial** and **functional** aspects of station design, while also outlining innovative **business models** tailored to the unique context of each station. These models aim to create long-term value for stakeholders, aligning with both local needs and broader sustainability goals.

A key objective of the report is to demonstrate how these transformations can be applied at railway stations across Europe, contributing to the development of **smart transport hubs** that promote **sustainable urban mobility**. By proposing adaptable and scalable solutions, the report establishes a solid foundation for future urban development projects that can be replicated across different cities and contexts, maximizing their long-term impact on environmental, social, and economic sustainability.

The concepts explored in this report have been rigorously tested and demonstrated in four Living Labs, each with distinct objectives and tailored solutions, reflecting the diversity of challenges and opportunities across European cities:

- 1) **Milano Rogoredo**: The station is being developed as a **circular economy hub** and **energy hub**, integrating sustainable energy production, recycling, and waste management solutions. This approach seeks to reduce the environmental footprint of the station while creating a self-sustaining, low-carbon transport hub that can serve as a model for similar stations across Europe.
- 2) **Toulouse Matabiau**: The vision for this station is to create a **green hub** that blends **inclusive mobility** and **energy solutions**, enhancing the station's role in connecting traditional railway transport with emerging mobility technologies, such as electric vehicles, bike-sharing, and public transport networks. This integration will not only reduce the carbon footprint but also promote accessibility for diverse user groups, fostering a more inclusive transportation ecosystem.
- 3) **Ottignies Station**: This station is being envisioned as a hub for **socially inclusive services**, aiming to bridge the gap between urban and rural communities by providing a wide range of public services. The focus is on enhancing **station-city integration**, with an emphasis on creating spaces that support local businesses, community activities, and social welfare services, contributing to social cohesion and urban regeneration.
- 4) **Tomaszów Mazowiecki**: At this station, the concept of a **"greening engine"** is central to its development. The goal is to transform the station into an environmental focal point for the city, incorporating green infrastructure such as urban gardens, green roofs, and sustainable water management systems. By emphasizing environmental sustainability and social inclusiveness, the station will not only contribute to the city's broader ecological goals but also create a welcoming, accessible space for all members of the community. It will foster a deeper connection between urban spaces and nature, encouraging social interaction, well-being, and equal access to green spaces for residents and visitors alike.



By analyzing these Living Labs, this report provides valuable insights into the application of the SCP model in real-world scenarios. Each station case demonstrates the practical potential of integrating circular economy principles, renewable energy solutions, social inclusivity, and environmental sustainability into railway station design. Furthermore, the report highlights the economic benefits of such transformations, showcasing how business models can be tailored to ensure financial sustainability while supporting broader urban development goals.

In conclusion, this report offers a strategic roadmap for the **sustainable transformation** of railway stations into **smart, resilient transport hubs** that serve as catalysts for urban innovation. It provides both **conceptual and practical** guidelines for future station developments, with a strong emphasis on scalability and replicability across Europe. By prioritizing environmental stewardship, social inclusivity, and economic viability, these transformations promise to contribute significantly to the long-term sustainability of Europe's urban transport infrastructure.

We have made significant progress in our field, and we are eager to showcase these developments to interested parties. However, due to the proprietary nature of this information, we are unable to disclose the details publicly at this time.

We invite you to contact us directly if you would like to learn more about our advancements. We would be happy to discuss how these innovations might be beneficial to you or your organization.

Please let us know your thoughts at your earliest convenience.