

PLANNING GREEN INFRASTRUCTURES FOR INDUSTRIAL CITIES: INTERNATIONAL PERSPECTIVES FROM PRACTITIONERS AND RESEARCHERS



Organized by Fabiana Fabri, chair holder of UsinoVerT - Factories & Territories, in collaboration with Loïc Sauvée, head of research unit InTerACT Institut polytechnique UniLaSalle, Rouen, France.

SCIENTIFIC POSITIONING

Green infrastructure (GI) has been defined as “a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range ecosystem services, while also enhancing biodiversity. Such services include, for example, water purification, improving air quality, providing space for recreation, as well as helping with climate mitigation and adaptation” (EU).

The interests of GI associated with the city in sustainability transitions are numerous, including urban areas with strong industrial and postindustrial heritages, which are the specific focus of this seminar. The greening of these areas is of crucial importance all over the world, as it is an essential lever for forging a new era in the transformation of industrial cities that combines social inclusion, economic competitiveness and environmental responsibility. At the same time the continual growth (and transformation) of urban agglomerations is leading to high densification, the disappearance of green areas and pressure on resources, resulting in a deterioration in the quality of urban life. In the specific case of highly industrialized cities, we can add the problem of city-industry cohabitation, which increases the tendency for human exposure to various environmental impacts caused by industrial activities (past and present) and lead to difficulties of social acceptance and possible territorial fragmentation. On the other hand, these territories can be considered strategic from an urban renewal point of view, in terms of employment, of unused or under-used urban spaces such as industrial wastelands and areas undergoing industrial reconversion.

This seminar is focused on international experiences, which provides numerous examples of living laboratories in sustainable industrial cities in the making. Indeed, the context of industrialized cities at international level provides a unique opportunity to better understand this topic of the planning of green infrastructures in different (post) industrialized cities, with different institutional and sociocultural contexts, as well as contrasted geo histories. One of the major trends observed at international level and proposed in this seminar is the development of integrated and innovative green infrastructures at

territorial (city or metropolis) scale, with the creation of solutions which combine environmental, social and nature-based innovations.

More specifically this international seminar will focus on two issues:

- (i) International testimonies of industrial territories transformation through integration in social and environmental projects
- (ii) Designing green infrastructure at territorial level: innovative methodologies to mitigate environmental issues and foster social acceptability

To this end, this international seminar combines and articulates the points of view of researchers, experts and more generally practitioners involved in the designing, definition and implementation of green infrastructures applied to the context of industrial and post-industrial cities.

This seminar benefits from supports from The UsinoVerT Chair and Rouen Normandie Métropole. The presentations of the seminar will be published in a book in 2026.

Website of the UsinoVerT Chair:



PROGRAM DAY 1: 27 NOVEMBER 2025

**9H AM – 9H15 AM BR
& 1H PM – 1H 15 PM FR:**

Coffee reception

**9H15 AM - 9H30 AM BR
& 1H15 PM – 1H30 PM FR**

Presentation of the UsinoVerT chair and of seminar program. Fabiana Fabri & Loïc Sauvée

Introduction: The Research on Green Infrastructures in Industrial Cities

Fabiana Fabri & Loïc Sauvée (InTerACT Research Unit, Institut polytechnique UniLaSalle, Rouen, France)

**9H30 AM– 12H30 PM BR
& 1H30 PM – 4H30 PM FR**

SESSION 1 International testimonies of industrial territories transformation through integration in social and environmental projects

**9H30 AM – 10H AM BR
& 1H30 PM – 2H PM FR**

Industrial Ecology as a Lever for Greening Industrial Territories: The Case of Dunkirk

Blandine Laperche & Sophie Boutillier (Université du Littoral Côte d'Opale – ULCO, Centre for Research on Innovation and Industrial Strategies – ISI / Lab.RII, Dunkerque, France)

**10H AM – 10H30 AM BR
& 2H PM – 2H30 PM FR**

Environmental Justice as a Baseline for Planning and Design of Post-Industrial Urban Spaces

Jennifer Foster (Faculty of Environmental & Urban Change, York University, Toronto, Canada)

**10H30 AM – 11H AM BR
& 2H30 PM – 3H PM FR**

The Urban Oasis Proposal and the Preservation of Industrial Heritage in Southern Brazil

Marcos Antonio Leite Frandoloso & Sulâni Kurtz (Universidade de Passo Fundo, Passo Fundo, Brazil)

**11H AM – 11H30 AM BR
& 3H PM – 3H30 PM FR**

Circular Landscapes – Rising from Ruins

Luís Loures (Full Professor & Rector, School of Biosciences, Portalegre Polytechnic University, Portalegre, Portugal)

**11H30 AM – 12H AM BR
& 3H30 PM – 4H PM FR**

Culture, Ecology and Co-Creation in Inclusive Urban Transformation: The Case of Turin

Evinç Doğan (Department of Tourism Administration, Bogazici University, Istanbul, Turkey); Luca Battisti & Federico Cuomo (Department of Cultures, Politics and Society, University of Turin, Turin, Italy)

**12H AM – 12H30 AM BR
& 4H PM – 4H30 PM FR**

Greening Away the Rust: Planning Green Infrastructure for Industrial Cities in Canada and the United States

Christopher De Sousa (Professor, School of Urban and Regional Planning, Toronto Metropolitan University, Toronto, Canada)

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PROGRAM DAY 2: 28 NOVEMBER 2025

**9H AM – 9H15 AM BR
& 1H PM – 1H 15 PM FR:**

Coffee reception

**9H15 AM– 11H45 PM BR
& 1H15 PM – 3H45 PM FR**

SESSION 2 Designing green infrastructure at territorial level: innovative methodologies to mitigate environmental issues and foster social acceptability

**9H15 AM - 9H45 AM BR
& 1H15 PM – 1H45 PM FR**

Greening the Grey: Unlocking the Potential of Industrial Landscapes

Varuni Jayasooriya (School of Environment and Sustainability, University of Saskatchewan, Saskatoon, Canada)

**9H45 AM – 10H15 AM BR
& 1H45 PM – 2H15PM FR**

Balancing Green Spaces and Industrial Development in Metropolitan Areas: Insights from a Contingent Valuation Approach

Maureen Pin, Marie-Asma Ben Othmen & Patrice Lepelletier (InTerACT research unit, Institut polytechnique UniLaSalle, Rouen, France)

**10H15 AM – 10H45 AM BR
& 2H15 PM – 2H45 PM FR**

A Framework for Upgrading Contaminated Urban Land and Soil by Nature-Based Solutions: Possibilities and Challenges

Shaswati Chowdhury (Agricultural Landscape Systems, Leibniz Centre for Agricultural Landscape Research – ZALF, Leibniz, Germany)

**10H45 AM – 11H15 AM BR &
2H45 PM – 3H15 PM FR**

Evidence-Based Public Management for Circular and Sustainable Transitions in Small and Medium-Sized Industrial Cities

Thaís Helena Zero de Oliveira Pereira & Vivian Lara dos Santos Silva (Faculdade de Zootecnia e Engenharia de Alimentos, University of São Paulo, Pirassununga, Brazil)

**11H15 AM – 11H45 AM BR
& 3H15 PM – 3H45 PM FR**

Differential Needs and Strategies for Green Infrastructure in Urban and Rural Japan

Sadahisa Kato (Associate Professor, Faculty of Environmental Studies, Tottori University of Environmental Studies, Tottori, Japan)

**11H45 AM – 12H AM BR
& 3H45 PM – 4H PM FR**

Conclusion: The Many Sustainable Ways to Green Industrial Cities — Future Research Perspectives

Fabiana Fabri & Loïc Sauvée (InTerACT Research Unit, Institut polytechnique UniLaSalle, Rouen, France)



ABSTRACTS

The Research on Green Infrastructures in Industrial Cities

Fabiana Fabri & Loïc Sauvée (InTerACT Research Unit, Institut polytechnique UniLaSalle, Rouen, France)

Green infrastructure (GI) represents a fundamental tool for rethinking the future of industrial and post-industrial cities. This introduction situates GI within a broader set of sustainability transitions, where environmental regeneration, technological innovation, and social inclusion converge. The concept is examined through five interconnected pillars: eco-industrial parks, brownfield conversion, stormwater management, technological applications, and integrated regeneration strategies. Eco-industrial parks embody the principle of industrial symbiosis, where energy, water, and material flows are reused across firms, thereby reducing waste, cutting emissions, and strengthening resilience. Yet, brownfield regeneration remains uneven: while Germany and Chicago have pioneered ecological retrofits with clear microclimatic benefits, places such as Poland continue to witness unchecked expansion and loss of green cover. In parallel, stormwater management has been revolutionized by sponge-city concepts that integrate permeable surfaces, rain gardens, and green roofs. These reduce flooding, lower treatment costs, and mitigate urban heat, especially when paired with real-time data from sensors.

Technological innovation also plays a transformative role. Digital twins, parametric modeling, IoT monitoring, and smart irrigation enable adaptive, data-driven GI planning. Social dimensions, however, are equally pressing. Environmental justice frameworks highlight risks of exclusion and green gentrification, underlining the necessity of citizen participation and equitable access. Evidence from international case studies demonstrates that well-designed GI produces not only environmental gains but also economic co-benefits, including higher property values, reduced operational costs, and improved social cohesion. Key trends include multifunctionality, optimization through big data, and financial mechanisms such as green bonds and regulatory mandates. Despite this progress, significant gaps remain in evaluating long-term performance and scaling brownfield-to-GI conversion. The introduction concludes that the path forward must integrate eco-industrial systems with socially just, technologically advanced, and financially viable GI solutions—paving the way for climate-resilient and inclusive industrial cities.

Industrial Ecology as a Lever for Greening Industrial Territories: The Case of Dunkirk

Blandine Laperche & Sophie Boutillier (Université du Littoral Côte d'Opale – ULCO, Centre for Research on Innovation and Industrial Strategies – ISI / Lab.RII, Dunkerque, France)

The decarbonization of industrial economies has become both an environmental and political imperative. Within this context, industrial ecology offers powerful tools for transforming territories by promoting resource sharing, collective governance, and local resilience. This presentation examines the case of Dunkirk, France, where industrial ecology initiatives have gradually evolved into a central strategy for territorial greening. Dunkirk's trajectory began in the 1980s with bilateral synergies, such as energy and material exchanges between neighboring industries. Over time, these initiatives expanded, supported by national and European programs, into more structured networks of cooperation. By the early 2020s, the city had become a focal point for ambitious decarbonization and reindustrialization policies, attracting significant financial support for projects ranging from district heating systems to battery manufacturing and nuclear energy development.

These efforts demonstrate the potential of industrial ecology to position a territory as a “common,” where resources are managed collectively for shared benefit. Yet challenges remain. Governance structures struggle to achieve genuine inclusivity, path dependencies limit flexibility, and policy shifts create uncertainty. Technological controversies, such as debates over carbon capture and storage (CCS) or nuclear

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energy, further complicate consensus building. Using the Multi-Level Perspective (MLP) framework, the presentation situates Dunkirk at the intersection of global pressures, entrenched industrial regimes, and emerging innovation niches—showing both the promise and the tensions of industrial ecology as a lever for sustainability.

Environmental Justice as a Baseline for Planning and Design of Post-Industrial Urban Spaces

Jennifer Foster (Faculty of Environmental & Urban Change, York University, Toronto, Canada)

Sustainability in post-industrial urban spaces cannot be fully realized without addressing the social dimension. This presentation emphasizes environmental justice (EJ) as a foundational principle for planning and designing the redevelopment of former industrial sites. By centering EJ, redevelopment projects can simultaneously advance ecological repair and community well-being. Former industrial landscapes often leave behind legacies of pollution, economic dislocation, and social inequities. Residents in these areas are typically among the most vulnerable populations, facing health risks, unemployment, and limited access to quality public spaces. Incorporating EJ ensures that redevelopment does not perpetuate inequalities but instead creates opportunities for empowerment, civic participation, and inclusive growth.

Practical applications of EJ involve prioritizing the voices of local residents—those most directly affected by redevelopment—through participatory planning and co-design processes. Projects that integrate local leadership are more likely to reflect community needs, improve quality of life, and foster long-term stewardship. Benefits extend beyond ecological restoration to include employment opportunities, enhanced recreation, cultural recognition, and improved health outcomes. Examples from North America demonstrate how integrating EJ principles has led to successful transformations. These projects highlight innovative designs that not only remediate contaminated sites but also create spaces of cultural and social value, blending aesthetics with ecological function. EJ reframes urban sustainability as a holistic pursuit—requiring projects that address inequality, promote inclusiveness, and ensure equitable access to benefits.

The Urban Oasis Proposal and the Preservation of Industrial Heritage in Southern Brazil

Marcos Antonio Leite Frandoloso & Sulâni Kurtz (Universidade de Passo Fundo, Passo Fundo, Brazil)

Abandoned industrial spaces often represent both a liability and an opportunity. This study explores the potential of such sites to act as catalysts for sustainable urban transformation, focusing on the proposed “Urban Oasis” in Passo Fundo, Rio Grande do Sul, Brazil. The project illustrates how derelict industrial structures can be reimaged to balance environmental restoration, social inclusion, and cultural heritage. The chosen site was the silo complex of the Companhia de Silos e Armazéns (CESA), long abandoned and symbolizing regional industrial decline. The Urban Oasis proposal envisioned repurposing this area into a multifunctional park that integrates biodiversity regeneration, educational initiatives, and cultural activities. The design incorporated existing industrial structures, blending them with green infrastructure to create a space for research, recreation, and community gathering.

The initiative highlighted the potential for such projects to restore local fauna and flora, provide inclusive public amenities, and support sustainable urban growth. It also underscored the importance of heritage preservation, as industrial buildings embody collective memory and economic history. However, the subsequent demolition of the silo revealed deep institutional and economic barriers to heritage protection in southern Brazil. By examining the case of Passo Fundo, the study situates local experiences within global debates on adaptive reuse of industrial spaces and calls for rethinking industrial ruins not as obsolete remnants but as valuable starting points for inclusive and regenerative urban planning.

Circular Landscapes - Rising from Ruins

Luís Loures (Full Professor & Rector, School of Biosciences, Portalegre Polytechnic University, Portalegre, Portugal)

Landscapes are dynamic systems shaped by cycles of use, abandonment, and regeneration. This presentation frames every landscape as inherently “circular,” since each phase of decline contains the potential for recovery. The critical issue is not whether regeneration is possible, but how it is carried out, and how new interventions ensure resilience and adaptability in the face of social, environmental, and technological change. Over the last decade, the concept of the circular economy has emerged as a response to unsustainable patterns of production and consumption. Applied to landscapes, circularity extends beyond recycling and reuse, emphasizing transformation of abandoned or degraded spaces into renewed systems that deliver ecological, cultural, and economic value.

This presentation critiques existing models of circular cities for often overlooking the role of landscapes. While many urban initiatives highlight zero-waste systems or closed material loops, few directly address the recovery of degraded land. Yet abandoned industrial sites and derelict urban zones represent both pressing challenges and unique opportunities. If approached creatively, these “ruins” can become platforms for innovation, resilience, and cultural vitality. Examples from southern Europe demonstrate how circular planning can reprogram obsolete infrastructures, integrate ecosystem services, and re-establish connections between people and place. The concept of “rising from ruins” reframes recovery as transformation rather than mere remediation, proposing circular landscapes as vital tools for building adaptive, resilient, and sustainable futures.

Culture, Ecology and Co-Creation in Inclusive Urban Transformation: The Case of Turin

Evinç Doğan (Department of Tourism Administration, Bogazici University, Istanbul, Turkey); Luca Battisti & Federico Cuomo (Department of Cultures, Politics and Society, University of Turin, Turin, Italy)

Redeveloping post-industrial brownfields into green infrastructure (GI) presents opportunities to reconfigure cities in socially inclusive and ecologically resilient ways. This presentation examines Turin, Italy, as a case study of how culture, ecology, and co-creation intersect in urban transformation. The city has implemented Urban Living Labs (ULLs) as platforms for experimentation, where nature-based solutions (NbS) are tested in real-world settings to guide policy and design. The Mirafiori Sud district exemplifies this process. Once dominated by the FIAT automotive complex, the area has suffered decline, underuse, and social marginalization. Through ULLs and NbS, Mirafiori is being reimagined as a vibrant neighborhood that values ecological restoration and community engagement.

Projects such as “Orti Generali,” a large community gardening initiative, enable residents to rent or share allotments, fostering food production, social interaction, and cultural continuity. Additional interventions include modular container gardens, green walls, and roofs, which enhance biodiversity while providing visible, low-maintenance green features. The district’s natural assets, such as the Sangone River, have also been integrated into ecological restoration strategies, combining urban forestry, soil regeneration, and pedestrian accessibility improvements. The process has relied on inclusive participation, engaging institutions, NGOs, citizens, and former factory workers—reducing tensions, rebuilding trust, and reclaiming cultural heritage linked to Turin’s industrial past. Aligned with the EU Green Deal and New European Bauhaus, Turin demonstrates how co-creation frameworks can inform adaptive, replicable strategies for sustainable post-industrial urban regeneration.

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Greening Away the Rust: Planning Green Infrastructure for Industrial Cities in Canada and the United States

Christopher De Sousa (Professor, School of Urban and Regional Planning, Toronto Metropolitan University, Toronto, Canada)

In the last three decades, green infrastructure (GI) has moved from a novel idea to a mainstream planning tool in post-industrial cities. This shift is particularly visible in North America, where waterfronts and riverfronts have become focal points for ecological repair and urban renewal. This presentation highlights the evolution of GI projects across Canada and the United States, emphasizing their role in reconnecting communities with nature while promoting economic and social revitalization. The discussion begins by surveying a broad range of initiatives that have integrated GI into industrial city redevelopment. These include projects that transform degraded riverbanks, restore wetlands, and integrate green corridors into transportation and housing developments. Such interventions not only enhance environmental quality but also strengthen urban economies by attracting investment, tourism, and new forms of employment.

Two in-depth case studies are presented. The first explores Toronto's waterfront, where visions from the early 1990s laid the foundation for long-term, mixed-use redevelopment. Here, GI was central to reimagining a heavily industrialized shoreline into a vibrant urban space with ecological, recreational, and cultural functions. The second case examines Milwaukee's Menomonee River Valley, where GI became integral to a rare process of re-industrialization. Instead of abandoning its industrial character, the Valley was redeveloped into a modern employment hub that integrates ecological restoration, community access, and industrial productivity. Together, these cases demonstrate that GI can serve both restorative and transformative purposes when backed by long-term vision and community involvement.

Greening the Grey: Unlocking the Potential of Industrial Landscapes

Varuni Jayasooriya (School of Environment and Sustainability, University of Saskatchewan, Saskatoon, Canada)

Industrial landscapes are often perceived as sterile, grey, and ecologically barren, yet they hold vast potential for transformation through green infrastructure (GI). This presentation argues that industrial areas should not be viewed as environmental burdens but as opportunities to generate social, ecological, and economic value. By strategically integrating GI, industrial zones can reduce stormwater runoff, capture pollutants, and provide healthier and more sustainable work and living environments.

The discussion is grounded in a pilot study conducted in Melbourne's industrial zone. The project evaluated the capacity of GI interventions—such as green roofs, bioswales, and interconnected networks of green space—to deliver tangible ecosystem services. These included reducing runoff volumes, filtering pollutants, improving microclimates, and creating spaces that promote well-being. Economic analysis revealed potential cost savings by lowering stormwater treatment requirements and mitigating flood risks. Crucially, the study highlighted the importance of context-sensitive design. Industrial sites are constrained by limited space, competing land-use priorities, and maintenance challenges. Effective GI requires selecting elements that balance ecological function with practical feasibility, ensuring durability under industrial conditions.

Stakeholder engagement emerged as a cornerstone of success. Bringing together business owners, workers, local governments, and community representatives enabled identification of shared priorities and co-design of long-term maintenance strategies. Combining quantitative performance data with qualitative community insights allowed a more holistic assessment of GI value. The pilot confirms that greening industrial landscapes is not only possible but also highly beneficial. Beyond environmental resilience, GI enhances workplace quality, strengthens community ties, and positions industrial cities as leaders in sustainability transitions. The Melbourne experience provides actionable strategies and frameworks that policymakers, industries, and communities worldwide can adapt to unlock the hidden potential of industrial environments.

Balancing Green Spaces and Industrial Development in Metropolitan Areas: Insights from a Contingent Valuation Approach

Maureen Pin, Marie-Asma Ben Othmen & Patrice Lepelletier (InTerACT research unit, Institut polytechnique UniLaSalle, Rouen, France)

Urban regions often face a delicate challenge: how to foster economic development while preserving or expanding green spaces. This study investigates this tension in three major French metropolitan areas—Le Havre, Lyon, and Rouen—using a contingent valuation approach to capture residents' preferences, willingness to pay (WTP), and willingness to accept (WTA) trade-offs. A survey of 940 residents provided empirical insights into attitudes toward green infrastructure (GI) and industrial expansion. Respondents were asked about their willingness to finance enhanced green spaces through higher taxes, as well as the conditions under which they would accept new industrial development in their vicinity. Compensation mechanisms, such as ecological restoration projects or tax reductions, were also tested. Statistical analyses—including clustering and discriminant modeling—helped explain the diversity of preferences across metropolitan regions.

Results revealed significant heterogeneity. In Lyon, residents were more reluctant to accept increased taxation, suggesting financial constraints and political resistance to public funding for GI. In contrast, respondents in Le Havre and Rouen displayed stronger support for ecological compensation mechanisms, particularly those framed as benefiting future generations. Across all regions, the most cited motivation for green investment was safeguarding environmental quality for descendants, demonstrating the importance of intergenerational justice in urban planning debates. The findings underscore that public acceptance of industrial projects is contingent on tangible environmental improvements and visible fairness in the distribution of costs and benefits. Policymakers can use these insights to design more responsive urban planning strategies that align industrial expansion with public expectations for ecological well-being. Ultimately, the study highlights the value of quantitative preference modeling for integrating citizen perspectives into sustainable metropolitan development.

A Framework for Upgrading Contaminated Urban Land and Soil by Nature-Based Solutions: Possibilities and Challenges

Shaswati Chowdhury (Agricultural Landscape Systems, Leibniz Centre for Agricultural Landscape Research – ZALF, Leibniz, Germany)

Soil contamination presents a profound challenge for sustainable urban development, threatening ecosystem services, human health, and biodiversity. This study proposes a comprehensive framework that employs nature-based solutions (NBS), specifically gentle remediation options (GROs), to recycle contaminated urban land into functional green infrastructure. GROs rely on plants, fungi, bacteria, and soil amendments to rehabilitate degraded soils while mitigating risks to people and the environment. The framework emphasizes that contaminated soils are valuable resources that can be transformed into urban green spaces (UGS) rather than discarded. By integrating GROs, brownfields can be progressively reintroduced into urban ecological and social systems, generating benefits during redevelopment phases and increasing surrounding property values.

A case study application demonstrated how such methods can foster access to ecosystem services, improve soil functioning, and stimulate long-term regeneration. Stakeholder consultations revealed both enthusiasm and barriers. Financial concerns—including cost estimation, long-term planning difficulties, and valuation of ecosystem services—limit uptake. Institutional inertia and limited knowledge about GROs often lead developers to default to conventional remediation or late-stage soil investigation. Furthermore, shifting ownership patterns of sites create uncertainty about responsibilities and investments. To address these challenges, stakeholders called for additional tools: predictive models for remediation timelines, methods to monetize non-market benefits like ecosystem services, and databases for selecting plant-soil combinations

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tailored to specific contaminants. With the right financial mechanisms, knowledge dissemination, and participatory planning, cities can move toward circularity by recycling soil and land resources in ways that contribute to healthier and more sustainable urban landscapes.

Evidence-Based Public Management for Circular and Sustainable Transitions in Small and Medium-Sized Industrial Cities

Thaís Helena Zero de Oliveira Pereira & Vivian Lara dos Santos Silva (Faculdade de Zootecnia e Engenharia de Alimentos, University of São Paulo, Pirassununga, Brazil)

While metropolitan regions often pioneer green infrastructure (GI) and circular economy policies, small and medium-sized industrial cities face unique governance and resource constraints. This presentation explores how such municipalities can still embrace sustainability transitions by adopting evidence-based public management. The case of Pirassununga, a medium-sized industrial city in São Paulo State, provides a concrete illustration. Pirassununga is undergoing gradual governmental transformation, aligning urban policies with the United Nations 2030 Agenda, smart city frameworks, and circular economy principles. The municipality has begun to incorporate evidence-based approaches, using indicators, monitoring tools, and participatory mechanisms to guide decision-making. These efforts aim to overcome legacies of industrial dependency, limited infrastructure, and fiscal constraints.

Key initiatives include the development of green public infrastructure, enhancement of waste management systems, and collaboration with universities and research networks such as All4Food. By integrating scientific expertise into local governance, the city is experimenting with circularity assessments, participatory urban labs, and cross-sectoral partnerships that bring together public institutions, private firms, and civil society. The early results show both opportunities and challenges. On one hand, evidence-based approaches strengthen policy legitimacy, improve transparency, and align local strategies with broader sustainability goals. On the other, institutional inertia, limited administrative capacity, and resource scarcity slow implementation. The case demonstrates that even smaller industrial cities can become laboratories for sustainable transitions when circularity, participation, and evidence are embedded in governance.

Differential Needs and Strategies for Green Infrastructure in Urban and Rural Japan

Sadahisa Kato (Associate Professor, Faculty of Environmental Studies, Tottori University of Environmental Studies, Tottori, Japan)

Green infrastructure (GI) plays an essential role in providing ecosystem services such as flood mitigation, temperature regulation, biodiversity support, and cultural amenities. However, the demands, constraints, and strategies for GI differ significantly between urban and rural contexts. This study develops a comparative framework to address these contrasts and propose tailored interventions. In Japanese cities, urbanization has led to dense populations, extensive impervious surfaces, and limited available land. Under such conditions, the quantity of GI per capita is restricted, but investments tend to prioritize quality, multifunctionality, and hybrid green-grey solutions. Examples include green roofs, rain gardens, permeable pavements, and stormwater systems that deliver multiple benefits. Stronger institutional capacity, technical expertise, and financial resources typically make urban GI projects more robust and innovative.

By contrast, rural Satoyama landscapes—secondary forests, plantations, rice paddies, ponds, and agricultural fields—are characterized by abundant green cover but face acute labor shortages, fiscal constraints, and widespread land abandonment. The ecological quality of these landscapes is uneven, with poorly maintained forests and neglected farmlands undermining resilience. Despite large GI quantities, the effectiveness of services is compromised by socio-economic decline. To address these disparities, the study proposes differentiated strategies. Urban areas should prioritize multifunctional retrofits, integrating GI with

grey infrastructure to maximize efficiency within spatial constraints. Rural areas, meanwhile, should focus on restoration through mixed-species afforestation, community stewardship initiatives, ecotourism, and smart agriculture that enhances productivity while conserving biodiversity. By aligning interventions with local social and institutional realities, Japan can strengthen resilience, mitigate climate risks, and preserve cultural landscapes through adaptive GI strategies.

The Many Sustainable Ways to Green Industrial Cities – Future Research Perspectives

Fabiana Fabri & Loïc Sauvée (InTerACT Research Unit, Institut polytechnique UniLaSalle, Rouen, France)

Industrial cities have long been engines of economic development but also major contributors to environmental degradation. As climate change accelerates, research must focus on strategies that transform these cities into sustainable and resilient spaces. This concluding presentation outlines three interrelated pathways: green infrastructure (GI), renewable energy integration, and circular economy practices. GI interventions such as urban forests, permeable pavements, and green roofs provide immediate benefits by reducing urban heat islands, improving air and water quality, and increasing recreational opportunities. Future studies should emphasize scalability, financial feasibility, and socio-economic impacts, particularly in dense industrial areas where environmental burdens are greatest.

Renewable energy offers another pillar for transition. Installing solar panels on industrial facilities, expanding district heating through bioenergy, and electrifying transport systems can drastically reduce emissions. Research challenges include energy storage, integration into existing grids, and the development of tailored incentives for industrial contexts. Circular economy principles further support sustainable transformation by minimizing waste, reusing materials, and fostering industrial symbiosis—where the waste of one factory becomes the resource of another. Digital technologies such as AI and IoT can optimize these exchanges, but research must address economic models, governance, and equitable access. Equity remains a cross-cutting concern: participatory planning and environmental justice are essential to ensure fair distribution of benefits. By advancing knowledge on GI, renewables, and circular models—while prioritizing equity—scholars and practitioners can guide industrial urbanism toward a climate-resilient and socially just future.

PRACTICAL INFORMATION

27 NOVEMBER 2025

9H AM-12H30 AM in PIRACICABA, BRAZIL
1H PM-4H30 PM in ROUEN, FRANCE

28 NOVEMBER 2025

9H AM-12H AM in PIRACICABA, BRAZIL
1H PM-4H PM in ROUEN, FRANCE

VIRTUAL 12 AM-3H30 OR 3PM GMT, SAME DATES

PARTICIPATION

Participation in the seminar is free of charge, but registration is required (both for on-site presence and videoconferencing). For in-person participation, the number of places is limited and registration is subject to availability (first come, first served).

Deadline for registration: 14 November 2025

VENUE

IN BRAZIL

ESALQ (Escola Superior de Agricultura Luiz de Queiroz da Universidade de São Paulo)
Room 230 - Ruy Miller (41L)
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