URBAN TRANSFORMATION IN A NEW GEOPOLITICAL ERA? NEXUS THINKING IN ENERGY, FOOD, ECOLOGICAL AND MOBILITY TRANSITION

Book of Abstracts from the
Urban Europe Research Alliance (UERA) Conference 2026

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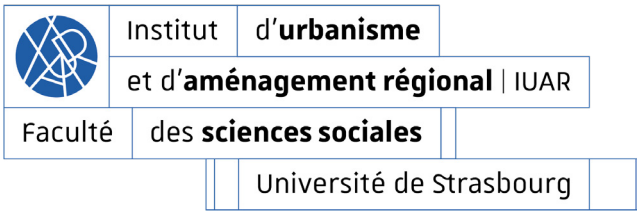
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Urban Transformation in a New Geopolitical Era? Nexus Thinking in Energy, Food, Ecological and Mobility Transition

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WELCOME NOTE

We warmly welcome all participants to the UERA 2026 Conference in Strasbourg! It is a pleasure to bring together researchers from across Europe and beyond to share ideas, experiences, and ongoing work on urban transformations.

The conference offers an opportunity not only to present research, but also to engage in dialogue, exchange perspectives, and explore connections across disciplines and empirical contexts. We hope that the discussions initiated during the sessions, as well as the many informal encounters throughout the conference, will inspire reflection, critical debate, and future collaboration.

We wish you a stimulating and rewarding conference and hope that your time in Strasbourg will be both intellectually enriching and personally enjoyable.

Aalborg & Strasbourg, January 2026
Enza Lissandrello, Aalborg University, Denmark

ACKNOWLEDGEMENTS

We would like to thank all the authors, reviewers, and colleagues who contributed to the preparation of this Book of Abstracts and to the organisation of the UERA 2026 Conference. We extend our special thanks to the members of the Scientific and Organisational Committees for their careful and dedicated engagement in the abstract evaluation process.

We are sincerely grateful to the University of Strasbourg for hosting the conference, and in particular to the Interdisciplinary Thematic Institute *Making European Society* (ITI MAKErS), the SAGE research unit (*Societies, Actors, Government in Europe*, UMR 7363), and the Institute for Urbanism and Regional Development (IUAR) for their administrative and financial contributions. We also warmly acknowledge the BETA research unit (*Bureau of Theoretical and Applied Economics*, UMR 7522) and the UNESCO Chair in Journalism and Media Practices for their organisational support.

We further thank the colleagues who assisted with proofreading the abstracts included in this volume for their careful reading and valuable contributions. In particular, we are grateful to Sarah Joubaire, Asmae Lerch Aqzzouz, Jérémy Picot, Thierry Ramadier, Patrick Rondé, and Patricia Zander (University of Strasbourg, France) for their time and commitment.

Aalborg & Strasbourg, January 2026
Enza Lissandrello, Aalborg University, Denmark
Aude Dziebowski & Philippe Hamman, University of Strasbourg, France

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FOREWORD

The 2026 Conference marks another important milestone in the ongoing trajectory of the Urban Europe Research Alliance (UERA), building on the momentum of the recent conferences in Karlsruhe (2024) and Rome (2025). Once again, the conference convenes a diverse and engaged scholarly community committed to advancing critical inquiry into urban transformations under conditions of rapid social, environmental, and technological change. This Book of Abstracts reflects both the breadth and intellectual vitality of the contributions presented at the conference, as well as UERA's continued role as a key long-term European platform for sustained scholarly exchange across disciplines, institutions, and national contexts.

Beyond the presentation of individual research contributions, the conference articulates a broader ambition that has long characterised UERA's activities: to provide continuity, reflexive dialogue, and cumulative learning beyond the temporal boundaries of individual research projects. While European urban research is frequently structured around finite funding cycles, UERA constitutes a durable relational infrastructure within which concepts, methods, and critical debates can be developed, revisited, and rearticulated over time. In this respect, the conference functions not merely as a venue for disseminating project-based results, but as a forum for sustaining scholarly relationships and enabling the gradual consolidation of shared research agendas on urban transformation.

This long-term orientation is particularly relevant in light of emerging efforts within European urban research to strengthen cross-project learning and knowledge consolidation, including through instruments such as the DUT Knowledge Hubs. In this evolving landscape, UERA has the potential to act as a connective reference point—linking project-based research, thematic hubs, and scholarly communities—while providing continuity beyond individual funding frameworks. By offering a stable arena for dialogue and reflection, UERA can contribute to anchoring such initiatives within a broader, cumulative research conversation on urban transformations.

The thematic focus of the 2026 Conference reflects this ambition by foregrounding nexus thinking across energy, food, mobility, and ecological transitions. Rather than approaching these domains as discrete policy fields or analytical categories, the conference invites contributions that interrogate their interdependencies, tensions, and governance implications. Such an approach responds to an increasing recognition within urban studies and sustainability research that contemporary transformations demand integrated, multi-scalar, and reflexive modes of inquiry capable of engaging with complexity, uncertainty, and contestation.

The contributions assembled in this volume illustrate the diversity of empirical contexts, theoretical perspectives, and methodological approaches that characterise the UERA community. The abstracts testify not only to the richness of ongoing research, but also to the value of sustained scholarly exchange across disciplinary boundaries and career stages. As such, this Book of Abstracts should be read not simply as a snapshot of current research projects, but as part of an ongoing collective conversation—one that UERA is well positioned to continue nurturing through future conferences, collaborations, and shared research trajectories.

Aalborg & Strasbourg, January 2026
Enza Lissandrello, Aalborg University, Denmark

INTRODUCTION

Energy, food, mobility, and ecological system transitions are increasingly shaped by shared climate, social, and geopolitical challenges. In the context of the Anthropocene—where human activity has become a defining geological force—urban regions are confronted with overlapping crises related to greenhouse gas emissions, fossil fuel dependence, social inequality, democratic tensions, and resource security. While calls for climate action have intensified among policy-makers, economic actors, civil society organisations, and citizens, addressing these challenges requires analytical and governance approaches that move beyond linear models of change and sector-specific interventions. Within this context, the UERA 2026 Conference focuses on urban systemic transformations in Europe, with particular attention to the interdependencies between energy, food, mobility, and ecological transitions. Rather than conceiving sustainable urban transition as a shift from a problematic present to a predefined desirable future, the conference approaches transformation as an ongoing, contested, and place-specific process. Emphasis is placed on the capacities and capabilities required to engage with socio-spatial environments in ways that acknowledge uncertainty, conflict, and uneven power relations. A key analytical lens guiding the conference is the recognition that systemic transformations unfold across multiple temporalities. These include project-related temporalities linked to planning, implementation, and evaluation; political temporalities shaped by policy frameworks and electoral cycles; and social temporalities reflecting local contexts, everyday practices, and dynamics of appropriation and contestation. Understanding how these temporal dimensions interact is essential for analysing urban transformations as processes in the making.

The move toward nexus thinking is therefore central to the conference's agenda. By examining the intersections between energy, food, mobility, and ecological systems, contributions explore how urban and territorial transitions are embedded in multi-scalar governance arrangements linking local, regional, national, and European levels. This perspective also foregrounds the relational connections between cities, their peripheries, and rural areas, highlighting how sustainable urban transitions are co-produced across spatial and institutional boundaries. The conference provides a pluri- and transdisciplinary platform for scholars and researchers interested in developing systemic perspectives on urban transformation. Contributions engage with themes such as governance and participation, urban-rural interdependencies, sustainable food systems, mobility and accessibility, energy transitions, and environmental communication. Together, they reflect the diversity of methodological approaches, theoretical perspectives, and empirical contexts that characterise contemporary European urban research.

This Book of Abstracts brings together the contributions presented at the UERA 2026 Conference and offers insight into current debates and emerging research directions in the study of urban transformations. It is intended both as a record of the conference and as a resource for continued scholarly dialogue on sustainable, inclusive, and just urban and territorial futures.

Strasbourg, January 2026
Aude Dziebowski & Philippe Hamman, University of Strasbourg, France
Enza Lissandrello, Aalborg University, Denmark

LIST OF SESSIONS

KEY NOTES

SYSTEMIC PERSPECTIVES ON URBAN TRANSFORMATION

The keynote lectures of the UERA 2026 Conference bring together three complementary perspectives on urban transformation, addressing systemic change through distinct yet interrelated analytical lenses. The keynotes set the intellectual horizon of the conference by linking mission-oriented governance, critical socio-ecological analysis, and long-term modelling of complex urban systems.

The first keynote situates urban transformation within the evolving European research, policy, and innovation landscape. Drawing on the experience of the Driving Urban Transitions (DUT) Partnership, it reflects on the shift from strategic coordination to mission-oriented approaches aimed at delivering systemic change at scale. Particular attention is given to how nexus thinking across energy, mobility, and circular urban economies is operationalised through multi-level partnerships involving cities, researchers, industry, and civil society.

The second keynote offers a critical examination of nexus thinking by analysing how climate change reorganises urban space through the interconnected infrastructures of housing, energy, and water. Grounded in urban political economy and urban political ecology, it foregrounds questions of financialisation, inequality, and justice, while also highlighting the political tensions and possibilities that emerge as socio-ecological relations are renegotiated in the context of climate transition.

The third keynote provides a long-term analytical perspective on urban and mobility systems through a retrospective examination of the multi-agent model METROPOLIS. By retracing several decades of methodological development in transport economics and urban modelling, it highlights the challenges of representing dynamic, large-scale urban systems and the importance of integrated modelling approaches for analysing policy interventions, environmental impacts, and long-term trajectories of change.

The keynote lectures frame the conference's engagement with urban transformation as a process that unfolds across multiple scales, temporalities, and domains. Underscoring the need to combine strategic action, critical reflection, and robust analytical tools, the keynotes frame discussion to better understand, govern, and shape systemic urban transitions in Europe and beyond.

DRIVING URBAN TRANSITIONS: FROM RESEARCH TO SYSTEMIC IMPACT IN EUROPEAN CITIES

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ABSTRACT

The *Driving Urban Transitions (DUT) Partnership* builds on over a decade of European cooperation in urban transformation, evolving from strategic coordination under JPI Urban Europe to mission-oriented, systemic delivery at scale. Since 2022, DUT has operationalised this legacy through annual challenge-driven calls, establishing itself as Europe's leading intergovernmental platform for urban transition research, innovation, and implementation.

DUT's vision is a *climate-neutral, resilient urban future for all*. Its mission is to fund transformative research and innovation that builds capacities among cities, industry, academia, and civil society, enabling them to jointly drive urban transitions in Europe and beyond. This mission is implemented through three interconnected *Transition Pathways* reflecting Europe's core urban priorities:

- *15-Minute City (15mC)*: sustainable mobility, proximity, and liveable neighbourhoods;
- *Circular Urban Economies (CUE)*: regenerative urban development and resource circularity;
- *Positive Energy Districts (PED)*: climate-neutral, resilient, and socially just energy systems.

Since its launch under Horizon Europe, DUT has funded over 140 projects, engaging 261 cities and more than 500 organisations across research, industry, and civil society. DUT acts both as a *delivery platform and experimental lab*, mobilising 70 funders and policy partners from over 30 countries to align national, regional, and European strategies. It is also a core contributor to the *EU Mission on Climate-Neutral and Smart Cities* and co-leads the *Urban Transitions Mission (UTM)* under Mission Innovation, translating European approaches into global cooperation and peer learning.

This keynote will highlight how DUT operationalises *nexus thinking* – linking energy, mobility, and circular economies – through its pathways and multi-level partnerships. It will showcase practical examples from ongoing projects, the engagement of SMEs and local actors, and strategies for scaling innovation from pilots to systemic impact. Against the backdrop of a rapidly changing geopolitical and environmental landscape, the talk will reflect on how partnerships like DUT can accelerate urban transitions, strengthen resilience, and foster mission-driven, equitable change in cities across Europe and beyond.

By sharing lessons learned and emerging challenges, the presentation aims to inform the broader discussion on *urban transformation*, demonstrating the potential of mission-oriented, evidence-driven partnerships to deliver *sustainable, integrated, and systemic urban change*.

UNDERSTANDING CLIMATE-CHANGED CITIES: EXPLORING THE HOUSING-ENERGY-WATER NEXUS

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ABSTRACT

In this presentation, I examine how climate change is reorganising urban space through the interconnected infrastructures of housing, energy and water. I suggest that these domains now function as key terrains through which climate-transition agendas legitimise an economic and spatial restructuring that intensifies uneven development. Drawing on the traditions of urban political economy and urban political ecology, and building particularly on insights into the production of nature, I conceptualise the housing-energy-water nexus as a site where financialised logics of urban development reorganise socio-ecological relations while simultaneously deepening socio-spatial inequalities. Climate impacts accelerate these dynamics, from the widening of rent gaps through green regeneration and energy-retrofitting agendas to emergent forms of revanchist urbanism, that displace or marginalise those least able to absorb rising energy and water costs. At the same time, these pressures expose the limits of existing governance mechanisms and create openings for the collective negotiation of social infrastructures, where residents, municipalities and public agencies alike, confront the contradictions of market-driven urbanism. By bringing these literatures into conversation, I argue that the housing-energy-water nexus not only reveals new modalities of exclusion but also sheds light on the political possibilities for reworking urban socio-ecological relations and advancing social, climate and energy justice.

METROPOLIS: THE HISTORY OF A MULTI-AGENT MODEL

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ABSTRACT

Some questions, seemingly simple at first glance, may take several decades to be satisfactorily resolved. This is often the case in transport economics and urban modelling, where economists, urban planners and geographers traditionally develop models following a well-established framework: demand, supply, and equilibrium and/or optimum.

When dealing with complex systems such as mobility or urban dynamics, it is often fruitful to begin with deliberately simple models. In transport analysis, this initially took the form of one- or two-link models, later extended to large-scale networks by Beckmann, McGuire, Winsten as early as 1956, before becoming operational several decades later. By contrast, dynamic models have long been — and are sometimes still — regarded as difficult to implement, as they significantly increase the complexity of analysis and computation.

This lecture retraces the construction of demand modelling through two major stages, separated by several decades and by substantial interdisciplinary barriers. Supply modelling will also be discussed, drawing on the respective approaches of traffic engineers and economists, which were initially developed separately before being progressively integrated. The extension to large-scale networks will be presented as a major conceptual challenge, comparable to climbing a steep mountain where even minor missteps can have significant consequences.

Within this framework, the development of the multi-agent model METROPOLIS will be presented. Several applications will be discussed, including low-emission zones (LEZs), local and global air pollution, speed reduction policies, and induced demand. The lecture will conclude with a discussion of calibration issues and the integration of long-term perspectives, offering insights into the challenges of the years ahead.

SESSION 1

GOVERNANCE AND PARTICIPATION

Session 1 brings together contributions that examine governance and participation as central arenas for urban transformation, with particular attention to how systemic change is conceptualised, enacted, and contested in practice. Rather than treating governance as a stable institutional framework, the session approaches it as a dynamic and relational process shaped by practices, power relations, and capacities for collective action across multiple scales.

A first set of contributions develops systemic and practice-oriented perspectives on transformation governance. These papers challenge linear or regime-shift models of transition by foregrounding the role of everyday practices, experimental interventions, and distributed processes of change. By mobilising frameworks such as Social Practice Theory, systems thinking, and reflexive governance, they explore how policy mixes, urban experiments, and planning tools can be designed to engage with existing socio-institutional contexts while enabling incremental yet cumulative transformation.

A second group of papers focuses on participation, inclusion, and transdisciplinarity, critically interrogating who is able to participate in urban decision-making and under what conditions. Contributions highlight the limits of conventional participatory formats and propose alternative approaches—such as art-based methods, participatory action research, and collaborative training settings—to amplify marginalised voices, bridge disciplinary divides, and foster more inclusive forms of deliberation and knowledge production.

Across the session, nexus thinking emerges as a unifying analytical lens, linking governance and participation to broader interdependencies between energy, food, mobility, ecology, health, and social justice. Several contributions engage explicitly with questions of urban-rural relations, multiscalar governance, and the tension between technocratic resilience frameworks and emancipatory, justice-oriented approaches. The papers in section 1 illustrate how governance and participation are not merely supporting dimensions of urban transition, but constitutive elements through which sustainability, equity, and transformation are negotiated in practice.

TRANSFORMING URBAN SYSTEMS OF PRACTICES TOWARDS SUSTAINABILITY: A NEW INTERVENTION FRAMEWORK

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Keywords: Transformation Governance; Urban Experimenting; Social Practices Theory; Urban Mobility Transformation; The Netherlands

ABSTRACT

Climate change and other sustainability pressures are challenges for urban areas and require fundamental and multiple adjustments to urban practices, infrastructures, competences, business models and policy incentives. While urban transformations can occur – and have occurred – spontaneously, inducing and steering (i.e. 'organizing') urban transformations is a significant challenge. Studies on sustainability transitions have offered comprehensive perspectives on fundamental societal change towards sustainability, especially through socio-technical perspectives (strategic niche management and transition management, both based on a multi-level perspective), and socio-ecological perspectives (adaptive governance). While socio-ecological perspectives have remained generally too abstract for urban policymakers and planners to apply in practice, the two socio-technical approaches have focused more on niche internal dynamics and future visions, respectively. However, these socio-technical approaches neglect constraints within the present socio-institutional context, which limits their potential.

Governance of and policy for transformation is all about anticipating the actual autonomy of sub-systems with the need for coherence between them – a coherence required to manage the interdependencies that do exist between sub-systems. While most previous transition policy studies adopted a multi-level perspective, this paper develops a system of practices perspective, which has potential to deliver a new type of policy & governance insights. Social Practice Theory (SPT) is particularly good at recording and categorizing the (actual and required) links between practices and policies in different domains (e.g. retail policies, housing policies, health policies, transport policies, etc.) as the effectiveness of the latter is strongly shaped by the former.

Our paper develops a *transition intervention approach* based on four elements:

- A System of practices – diagram highlighting current policy mix impacts
- A (new) SPT-based theory of change (based on Watson et al's change points approach)
- Defining a portfolio of proto-practices experiments
- A Reflection, Learning & Adaptation Cycle

Accordingly, it combines policy mix analysis with (urban) experimental approaches, addressing intervention through SPT elements like meanings, competences, and materialities.

As an *illustrative case study*, we elaborate urban mobility transformations in Maastricht (The Netherlands, 2010–2030), including its entanglements with other relevant domains and practices like housing, shopping and urban planning. Our case study combines a retrospective analysis of car constraining policies with promoting car alternatives, with a prospective discussion on how to make policies more transitional.

The merit of this approach is that it goes beyond the mainstream transition (governance) concept of a simple regime shift from A to B through 'upscaling niches'. Instead, it is a more context-sensitive concept of 'distributed upscaling' of multiple adapted elements within reconfiguring practices. This can help to develop more locally-tailored interventions to accelerate sustainability transitions for specific locations.

ENSURING INCLUSIVITY IN PARTICIPATORY PROCESSES: EMPOWERING THE VOICELESS THROUGH ART-BASED METHODS

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Keywords: Participation; Inequalities; Art; Based Methods; Participatory Action Research

ABSTRACT

In urban governance, participatory institutions and processes are intended to enable citizens to engage in local governmental decision-making. However, while these processes are designed to empower citizens, they often reinforce exclusion by being tailored to the capabilities and resources of a narrow demographic group, primarily the well-educated middle class. To ensure the involvement of marginalised groups, different participatory methods should be developed and customised to meet the needs of these vulnerable citizens. The use of art-based methods can create more inclusive participatory spaces that shift power dynamics. Using photos and drawings can help build capacity among marginalised groups that may not usually participate in these processes. In this presentation, we introduce a participatory action research project that focuses on the needs of citizens in social housing. The aim of this PAR using art-based methods is to empower and make capable residents to form their needs, inform the decision-makers and start a discussion and build a forum for deliberation, including residents and other stakeholders (decision-makers) to create common visions about the future of that specific rented house owned by the city of Budapest. By applying the photovoice method, we aimed to identify issues that matter to members of this community. Our participatory research team collaborated with public actors, specifically the homeless service provider of Budapest Municipality, practitioners from the Sociodrama Working Group of the Hungarian Psychodrama Association, and researchers. Based on the outcomes of this research, the paper seeks to answer how art-based methods can amplify the voices of marginalized groups in participatory decision-making. We will explore how these methods can foster discussions among policymakers and citizens with varying levels of democratic capabilities, ensuring that unheard voices are represented. Our results reveal that participatory research requires a diverse group of researchers, including social workers, artistic experts, and academic researchers, to effectively support the needs of the residents.

THE PLANETARY CITY: URBAN FUTURES IN AN ERA OF OFF-WORLD THINKING

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Keywords: Planetary Urbanism; Urban Nexus; Speculative Futures; Space Systems Thinking; Sustainability Transitions; Foresight and Ethics

ABSTRACT

As humanity prepares for life beyond Earth, the design principles developed for space habitats, closed ecological systems, regenerative resource cycles, and autonomous infrastructures are beginning to influence how we imagine cities here at home. This paper introduces the concept of the Planetary City, exploring how ideas born in space research can inspire new approaches to the urban nexus of energy, food, ecology, and mobility in a world shaped by climate pressure, geopolitical uncertainty, and accelerating technological change.

Urban transition studies have long examined the interdependence of energy, mobility, and ecological systems, yet their models often assume stable terrestrial conditions. In contrast, space exploration has produced frameworks for survival under extreme constraints: life-support systems that recycle air and water, modular habitats that adapt to scarce resources, and governance structures designed for isolation and risk. Projects such as ESA’s MELiSSA initiative, the HI-SEAS Mars simulation in Hawaii, and the Biosphere 2 experiment each represent a step toward understanding how complex systems sustain life within closed environments. Translated back to Earth, they offer a way to think of cities as experimental ecosystems within a shared planetary context rather than as isolated machines of production and consumption.

Using methods from foresight research and speculative design, this study examines how off-world models can inform the next phase of urban transformation. It identifies several transferable principles: circular autonomy as a foundation for resilience; feedback intelligence as a mode of adaptive governance; and redundancy as an essential design feature in volatile geopolitical conditions. These insights suggest that the logic of extraterrestrial habitation, self-sufficiency, anticipation, and ethical restraint will become increasingly relevant for terrestrial cities facing resource scarcity and systemic disruption.

The idea of the Planetary City extends sustainability toward a broader ethical and planetary awareness. It reframes the urban nexus as part of Earth’s life-support network, positioning cities as active participants in planetary stewardship. By combining speculative imagination with systemic analysis, this perspective responds to UERA’s call for integrated thinking across the nexus of energy, food, ecology, and mobility. Ultimately, the planetary view reminds us that every city, from Strasbourg to potential lunar settlements, belongs to a single experiment in coexistence—learning how to live well within the limits of one fragile world.

REFRAMING URBAN TRANSFORMATION IN ISTANBUL: FROM PARCEL-BASED INTERVENTIONS TO STRUCTURAL SOLUTIONS

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Keywords: Sustainable Urban Transformation; Metropolitan Inequality; Urban Resilience

ABSTRACT

The sustainable urban transition of large metropolitan cities in Europe as envisioned through Sustainable Development Goals and EU Regional and Urban Policy requires at first a critical assessment of the contemporary social and spatial structures that has been articulated through various subsequent policy periods and episodes of development and conflict. In the case of Istanbul, Türkiye, the metropolitan area has been shaped by decades-long dynamics of both European and OECD policies as well as recent conflicts in Eastern Europe, The Middle East and Central Asia. Being an important bridgehead for immigrants to the West, and being the final destination for most local immigrants as the most important gateway for international trade, the city has grown as an amalgamation of spaces created through post 1950s import subsidy period, post 1980s neo liberal period and post 2000s EU Accession period among with various conflicts in the surrounding region. Our survey, supported by the Greater Municipality of Istanbul on Quality of life and living costs and retrospective study on previous studies in the city reveals that the inner periphery which developed during post 1950s require immediate transformative interventions due to high vulnerabilities and decreasing quality of life, similar to some other OECD metropolitan areas such as Sydney. The city overall suffers decreasing quality of life similar to Southern European metropolitan areas since almost a decade, while the accumulation of immigrant populations at its exteriors increase the burden on budget and capacity which restrict efforts for transformation to a sustainable and resilient metropolitan settlement. The extraordinary vulnerability of the city to earthquakes and international economic fluctuations necessitate integrated strategy development taking into different structural problems and priorities on historic-core areas, inner periphery and outer periphery, and distancing from ongoing parcel-based and speculative rebuilding efforts which, have been labeled as `urban transformation` but offers no solution to structural problems, introduce no new capabilities and no clear directions for a sustainable urban transformation. We suggest that specialized urban transformation policies are required for different components of the metropolitan areas addressing specialized interventions that allow for better instrumental efficiency of both national and EU programs that are relevant.

BRIDGING THE TRANSFORMATIVE GAP BETWEEN RESEARCHER TRAINING AND REAL-WORLD CHALLENGES

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Keywords: Biology; Geography; Researcher Training; Resilience; Sustainability; Transdisciplinarity; Transitional Change

ABSTRACT

Transformative solutions to address contemporary challenges in sustainability and resilience science, are often envisaged primarily as questions of transdisciplinarity and the fostering of collaboration between researchers and stakeholders. This has led to requirements to involve stakeholders in co-creation processes from the inception of the planning of proposals; thus, there is top-down pressure on researchers to incorporate transdisciplinarity into their research plans. However, researcher training curricula at the institutional level and Early-Stage Researcher (ESR) funding, generally focus on encouraging a high degree of specialization. The transformative switch from doing specialized research to the preparation of proposals addressing wicked problems and driving transformational change, can be bewildering for young researchers. In this study, we invited ESRs from the fields of geography and biology to participate in a workshop on transdisciplinarity and resilience. After introductory presentations, the participants worked in small groups to explore the context of their research from the perspectives of resilience and sustainability. The participants were further invited to suggest research strategies for addressing contemporary challenges and advancing transformative change. We will present perceived problems associated with transformative change and transdisciplinarity expressed by young researchers. Finally, we propose a framework for the development of training to prepare young researchers to conduct research for transformative change, while keeping their strong specialization within their discipline.

REGIONAL VEGETARIAN SUPPLY CHAINS FOR CANTEENS AND RETAIL: AN INTERREG PROJECT WITH ACTION RESEARCH ON SMES AND SUSTAINABLE FOOD

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Keywords: Sustainable Food; Organic and Local Products; Supply Chains; Canteens; Retail; Upper Rhine Region; Transdisciplinarity

ABSTRACT

Rationale

Linked to the challenge of sustainable food and the increasing constraints faced by food actors in the context of climate change and globalization, this research project, funded by the Interreg 6 Upper Rhine program (a cross-border area between France, Germany and Switzerland) aims to explore and support the role of local companies, in particular small and medium-sized enterprises (SMEs, from production to distribution). Although local food policies are gaining momentum in Europe and promoting more sustainable practices, economic and social food actors remain dependent on food imports and subject to volatile demand patterns shaped by a productivist, globalized agri-food model. Starting from this apparent paradox, we aim to address the ecological transition very concretely in the context of organic, local, and sustainable food through fieldwork that is both territorialized and comparative (i.e., sufficiently detailed and broad in scope), enabling by a cross-comparison of the French, German and Swiss parts of the Upper Rhine region.

Methodology

The Sustainable Food project (https://sustainable-food.unistra.fr/fr/) combines both interdisciplinary and transdisciplinary aspects across national and regional borders, which makes it unique and ensures its scientific and practical scopes.

On the interdisciplinary side, the project brings together the Universities of Strasbourg, Haute-Alsace, Freiburg, Karlsruhe, RPTU Landau, and FHNW (Fachhochschule Nordwestschweiz), with a team of researchers in economics, management sciences, and sociology, enabling us to combine qualitative (observations, interviews, on-site experiments, etc.) and quantitative methods (experimental economics).

On the transdisciplinary side, the project brings together 13 regional practitioners from the food sector: Solibio, Terre Alter Est, Biocoop Neudorf, Rhénamap, Sécurité sociale de l'alimentation, Bio en Grand Est, Beckesepp, Öhlmühle Brändle, Studierendenwerk Freiburg, Vita-Biomarkt, Gutes Gemüse, Badischer Landwirtschaftlicher Hauptverband, Lebensmittelnetzwerk; and 10 public support institutions: Collectivité européenne d'Alsace, Eurométropole de Strasbourg, Mulhouse Alsace Agglomération, DRAAF, Stadt Freiburg, Biomusterregion Freiburg, Biomusterregion Mittelbaden+, Ernährungsrat Südpfalz, Kanton Basel Stadt, Fondation interjurassienne.

Case studies

Empirically, we focus on sustainable regional/cross-border food chains developed to offer vegetarian meals: on the one hand, through comparisons in Institutional catering, where the proportion of regional and organic food varies; and, on the other hand, at the level of retail outlets specializing in organic products: for example, Biocoop on the French side, Beckesepp and bioProjekt/Vita

Biomarkt on the German side, etc. Canteens and retail outlets occupy an important intermediate position between consumers and SMEs upstream in the supply chain.

First key findings
In addition to organizational challenges and trajectories that differ in part depending on national and regional contexts, as revealed by the F/D/CH review, our sustainability analysis highlights six key issues:

- The issue of costs and fair price (depending on practices: there is no unique dualism between vegetarian and meat-based diets; it may in fact be cheaper to switch to local and organic products if they are processed on site, rather than buying finished products)

- The issue of waste and wastefulness – linked to the social issue: e.g., for middle schools, first ensuring that low-income students have a meal at lunchtime

- The issue of quantities with regards to the emphasis on local-small suppliers (being able to supply according to the volumes requested by the distributor)

- The issue of religious beliefs, and not just vegetarian conversion

- The role of intermediaries (which is a challenge for the professionalization of the sector) and of commitment and creative solutions on sustainable food: chef-trainers, intermediaries between producers and schools (TerraAlterEst hub…), purchasing groups.

- Ongoing practical transactions/hybridizations on the definition of “local”/“regional” and the challenge of providing food that is both organic and local, which is not a given.

TRANSFORMING LOCAL FOOD SYSTEMS TOWARDS SUSTAINABILITY BY BUILDING NETWORKS AND ECOSYSTEMS OF CHANGE

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Keywords: Food; Governance; Transdisciplinary Research

ABSTRACT

Achieving sustainability in local food systems is largely about empowering communities and fostering collaborative innovation ecosystems in which a variety of stakeholders can contribute meaningfully. This presentation shares insights from activities within the framework of the international Belmont Forum project "Co-Creation of Sustainable Food Supply Chains through Cooperative Business Models and Governance (CO-SFSC)" https://www.sustainablefood-sc.org/ and its Karlsruhe hub in Germany, which explores how to create enabling conditions for local governance rooted in community engagement and shared responsibility within regional short food supply chains including new cooperative business models.

The project's goal is to lay the groundwork that will empower administrations and civil society to actively develop and shape sustainable local food networks and systems. A key part of this approach involves building trusting connections and nurturing relationships through participatory methods, culminating in the organisation of events such as a Food Summit and the Bioregional Fair. These platforms bring together local producers, consumers, policymakers and innovators to facilitate open dialogue, networking and collaborative development. By focusing on community empowerment and collaborative network-building, this transdisciplinary case study demonstrates how local food systems can become dynamic ecosystems of change, cultivated through shared learning, mutual support and collective action.

TRANSFORMATIVE CAPACITIES IN LANDSCAPE AND OPEN SPACE PLANNING: THE USE OF PARTICIPATORY GEODATA BETWEEN ECOLOGY, HEALTH, AND GOVERNANCE

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Keywords: Urban Planning; Open Space Planning; PPGIS; Participatory Planning; Recreational Mobility; Behavioral and Preference Data; Participatory Planning

ABSTRACT

Urban growth and climate change are expected to significantly reshape the structure and quality of Swiss settlements, with potentially negative implications for public health and well-being. While densification zones have been incorporated into urban planning strategies, the needs of residents – particularly regarding access to green and open spaces – remain insufficiently addressed.

This research project aims to bridge this gap through a twofold approach: first, by exploring how spatially located user surveys using Public Participation Geographic Information Systems (PPGIS) can better align open space planning with residents' preferences and behaviors; and second, by examining the integration of such tools into existing planning processes to support participatory, climate-adaptive planning in small and medium-sized municipalities.

The study presents the results of the first case study in the Greater Geneva area. In collaboration with the canton and city of Geneva, a PPGIS survey amongst residents was conducted to collect both behavioral and preference data. The survey focused on where, when, and how people use open spaces and recreational areas in the city and suburban areas of the Greater Geneva region. It also provides insights into mobility and movement patterns, landscape perception, and the influence of socio-demographic factors. In the analysis, particular attention was given to multifunctional spaces such as the re-natured Vallon de l'Aire, where competing spatial demands on recreation, agriculture, and nature conservation create conflicts of use.

The results show differentiated patterns of green space use in urban and suburban settlement areas and highlight correlations between living conditions, household composition, access to private outdoor areas, and self-assessed levels of health. By integrating empirically derived user data into planning, the project advances health- and climate-conscious approaches to landscape and open space development in densely populated regions like the greater Geneva area. The presentation will discuss key findings, methodological insights, and practical implications, inviting dialogue on integrating participatory geospatial tools into urban planning frameworks.

THE URBAN SUSTAINABILITY COMPASS: REFLEXIVE GOVERNANCE FOR NEXUS TRANSITIONS IN THE MAKING

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Keywords: Urban Transformation; Reflexive Governance; Nexus Transitions; Phronetic Planning; Aalborg; Sustainability in the Making

ABSTRACT

As cities confront overlapping crises of climate disruption, resource scarcity, and geopolitical instability, the governance of sustainability transitions requires frameworks that integrate energy, mobility, and ecological nexuses while remaining adaptive and justice-oriented. This paper presents the *Urban Sustainability Compass*, a heuristic framework designed to analyse and navigate the governance dynamics of urban transformation in context. Developed through a longitudinal study of Aalborg (Denmark) – a paradigmatic case of post-industrial regeneration and sustainability governance – the Compass re-conceptualises urban sustainability as a recursive and contested process rather than a fixed policy goal.

The framework identifies four interpretive logics – Urgency, Legitimation, Implementation, and Experimentation – that interact across institutional, spatial, and narrative dimensions of change. By bringing together insights from *Urban Political Ecology, Just Sustainability, Phronetic Planning*, and *Urban Sustainability Governance*, it offers a transdisciplinary approach to understanding how sustainability is reasoned through crises, legitimised through participation, materialised through planning tools, and revised through iterative learning.

Methodologically, the study combines document analysis, ethnographic observation, and collaborative workshops with municipal planners and stakeholders. These interpretive strategies reveal how Aalborg's governance evolution – from industrial decline to a climate-adaptive and inclusive city – unfolds through recursive cycles that link ecological urgency to institutional adaptation. Governance instruments such as the Aalborg Charter (1994), Aalborg Commitments (2004), and Aalborg Conditions (2024) serve as *institutional anchors* that embed learning, legitimacy, and experimentation within multi-level policy architectures.

The analysis shows that Aalborg's initiatives in waterfront redevelopment, green infrastructure, and sustainable mobility operate as governance nexuses where energy, ecological, and social transitions intersect. These projects and processes demonstrate that effective urban transformation depends not solely on technological solutions or administrative reform but on cultivating *reflexive governance capacities* understood as the ability of institutions and actors to learn from conflict, negotiate values, and co-produce new meanings of sustainability in practice.

The *Urban Sustainability Compass* thus contributes to ongoing debates on governance for nexus transitions by providing both an *analytical framework* and a *dialogic tool* for tracing and steering the co-evolution of power, knowledge, and practice in urban sustainability.

"URBAN NEXUS" TO ENHANCE COLLECTIVE ACTIONS FOR URBAN SYSTEMS

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Keywords: Urban Nexus; Collective Action; Urban Systems; Collective Research

ABSTRACT

Our society is facing major challenges stemming from multiple factors, including energy crises, climate change, and ecological degradation. To address this complex issue, multifaceted collaboration and an integrated vision are required among the stakeholders involved – specialized in different urban systems and components (infrastructures and technical systems, land, built environments, natural spaces, etc.) – which are all interconnected, correlated, and interdependent. However, due to institutional fragmentation and strong sectoral divisions, collective urban action struggles to build this integrated vision, as it lacks conceptual and theoretical tools as well as operational and methodological frameworks that would enable it to move toward the design and implementation of collective actions activating synergies among different urban systems.

Recently, a growing number of studies have explored and mobilized the concept of the "nexus", emphasizing that this concept invites us to (re)focus on the relationship between sectors and disciplines.

This paper presents the initial results of ongoing collective work conducted by a group of researchers belonging to Axis 3 of Lab'Urba (Urban Systems – Functioning and Environmental Transitions). For the past two years, several sessions of the axis seminar have been dedicated to exploring the concept of the "urban nexus" through the specific lens of collective urban action around sociotechnical and ecological urban systems. On the hypothesis that the nexus concept could be useful for conceptualizing and operationalizing an integrated and multifaceted approach to climate and environmental challenges, this collective of researchers raises the following questions: What is the "urban nexus"? Through which disciplines is it conceptualized? What theoretical frameworks, approaches, and methods have been developed by these studies? What applications of this concept have been tested, in what contexts, and with what results?

To answer these questions, several research actions have been undertaken:

- *Seminar sessions* invited external researchers to the laboratory who have worked with the nexus or related concepts in the large frame of urban studies (Olivier Coutard, Jochen Monstadt, Gilles Debizet, Sabine Barles, among others). Members of the axis also presented their own research revisited in the light of the nexus. About thirty presentations were thus given, providing an initial understanding of the defining elements and ways of mobilizing this concept.

- *A literature review* was conducted to establish a state of the art on the urban nexus. Documentary research was carried out in the Web of Science and Scopus databases, identifying publications in which the terms "nexus" and "urban" appear within a maximum range of 10 words. The research, conducted in July 2024, targeted titles, abstracts, and keywords, ex-

cluding irrelevant fields (medical sciences, chemistry, etc.), and led to the identification of 914 publications. A group of four researchers from the axis analyzed all abstracts to select 40 particularly relevant articles based on multiple criteria (number of citations, diversity of topics, urban approach, etc.). The entire Axis 3 team then conducted a full reading of the selected publications, analyzing them using a collectively designed structured framework to identify defining elements, scales, methods, case studies, and operational implications for urban planning. The database consisting of 914 publications was also analysed, using statistical approaches.

- At the conference, we will present the results of this literature review in conjunction with reflections arising from the seminar presentations. This collective work will highlight both the richness and certain limitations of the urban nexus concept from the perspective of articulating and facilitating dialogue between the knowledge and approaches of the various actors involved in urban transformation.

URBAN RESILIENCE FOR WHOM? EMANCIPATORY URBAN INNOVATION, OR PERMANENT URBAN CRISIS?

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Keywords: Resilience; Innovation; Urban Crisis; Technology; Control

ABSTRACT

In the face of escalating urban crises, resilience has emerged as a dominant framework in transformation governance for cities. Yet, resilience policies often remain technocratic and top-down, prioritizing efficiency and risk management over democratic engagement and social transformation. This paper argues for a critical reorientation of resilience discourse by integrating it with emancipatory urban research from social science that is grounded in a normative vision of social justice, collective agency, and grassroots innovation.

Drawing on interdisciplinary insights from urban anthropology, technology assessment, and science and technology studies, the paper conceptualizes both *urban resilience* and *urban emancipation* as boundary concepts that enable cross-sectoral dialogue. While resilience has evolved from notions of technical robustness ("bouncing back") to socially adaptive strategies ("bouncing forward"), urban emancipation has evolved in a dialogue between critical social science urban research, global social movements for urban solidarity as well as NGO discourses and policies for just and equitable cities.

The paper critiques how dominant resilience discourses increasingly invoke a logic of "permanent crisis," legitimizing anticipatory governance that risks undermining democratic deliberation by foregrounding urgency, epistemic uncertainty, and crises. It warns against the depoliticization of urban life, the rise of neoliberal individualism, and the transformation of citizens into socio-technical subjects getting "bounced around" by new mechanisms of power and governance through behavioral nudging and control technologies.

An ethnographic case study of *Bâtiment 7*, a self-managed community hub in Montréal, illustrates how grassroots initiatives can enact resilience through diversity, adaptability, and local knowledge—without relying on technocratic framings. The center's practices both complement and challenge Montréal's official Resilient City Strategy, revealing tensions between institutional planning and bottom-up social innovation.

To bridge these approaches, the paper proposes a framework for embedding the right to the city within resilience policy, emphasizing five dimensions: (1) Local adaptation, (2) Pluralism and diversity, (3) Planning enriched by lived experience, (4) Redefinition of critical urban services, and (5) Critical reflection on power and control.

This framework calls for sustained investment in social infrastructure and inclusive governance, moving beyond efficiency-driven smart city models toward emancipatory urban innovation.

Finally, the paper explores how this integrated approach can inform energy transitions and urban microgrid design, advocating for socio-geographically tailored systems that combine technical resilience with energy democracy.

By linking resilience to emancipatory social innovation, the paper contributes to a more reflexive and transformative urban agenda – one that reimagines resilience not as a managerial tool, but as a democratic possibility rooted in collective urban futures.

SESSION 2

URBAN TRANSFORMATION TOWARDS SUSTAINABLE CITIES

Session 2 brings together contributions that examine urban transformation through the combined lenses of evidence-based planning, socio-technical change, and policy evaluation. Across diverse empirical contexts, the session foregrounds the need for integrated approaches capable of linking urban form, infrastructures, and governance arrangements with long-term climate and sustainability objectives. Rather than treating decarbonisation, digitalisation, and resilience as separate agendas, the papers explore how these dynamics co-evolve within complex territorial systems—and how they may be rendered legible for decision-making.

A first cluster of contributions develops integrated modelling and assessment frameworks to support strategic urban and territorial decarbonisation. By coupling land-use and transport interactions with building-level emissions, and by advancing multidimensional evaluation matrices for local clean energy actions, these papers address a central challenge of sustainability transitions: how to produce robust knowledge that captures cross-sectoral synergies and trade-offs over time, while remaining operational for policy design and implementation—particularly in contexts marked by uneven local capacities.

A second set of papers engages with knowledge infrastructures and data-driven transformations, interrogating how digital technologies are enrolled in societal change and how "data" is constructed, mobilised, and governed. Contributions critically examine digitalisation not as a standalone solution, but as a component of broader socio-spatial reconfigurations—raising questions of accessibility, territorial differentiation, and the politics of datafication across urban and rural contexts.

A third strand highlights experimentation, living labs, and cross-sectoral governance as mechanisms through which integrated transition pathways can be tested under real-world conditions. Living lab approaches in peri-urban regions illustrate how multi-level collaboration and iterative learning can support climate-neutrality strategies that cut across mobility, energy, industry, and governance. Complementing this, contributions addressing biocides, water systems, and the health legacies of industrial and port-city development extend the session's scope toward the environment-health nexus and the uneven burdens of ecological transition.

Contributions of Session 2 offers a multi-perspective view of urban transformation "towards sustainable cities" as an ongoing process of integration: across sectors (transport, buildings, energy, water), across methods (modelling, evaluation, qualitative inquiry, experimentation), and across scales (municipal, peri-urban, regional). The papers underscore that sustainable urban transformation depends not only on technological and spatial interventions, but also on the capacity to produce and govern knowledge infrastructures that enable reflexive, context-sensitive, and just pathways of change.

BUILDING EMISSIONS OVER LIFE CYCLE

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Keywords: Building Emissions; Luti Model; Urban Development; Long-Term Simulation

ABSTRACT

The EUrbanSim project aims to develop an integrated territorial and environmental modeling platform capable of simulating the interactions between transport policies, land-use planning, housing, and energy systems. Initially designed as a LUTI (Land Use and Transport Interactions) model for the Île-de-France region, EUrbanSim is now evolving toward a more comprehensive framework that links land-use dynamics with building-level emission performance.

This evolution responds to a growing need to couple spatial planning and the real energy performance of the building stock in order to evaluate the territorial impact of renovation, densification, and decarbonization strategies. Integrating a Building Emission Module within the LUTI architecture thus represents a critical step toward supporting regional carbon neutrality pathways through evidence-based urban modeling.

The Building Emission Module was empirically developed using a harmonized administrative dataset of over 1.8 million residential apartments from the French Diagnostic de Performance Énergétique (DPE) database (post-2021 methodology). It quantifies both actual and potential emissions according to each building's technical, energetic, and geographical characteristics. Three complementary indicators are modeled:

- DPE and GES labels (A–G) via ordered probit models;
- energy consumption and GHG emissions (continuous outcomes) using robust linear regressions (OLS); and
- territorial effects, incorporating fixed effects by department, climatic zone, and construction period to isolate structural and contextual determinants.

Results confirm that construction period and fuel type are dominant drivers of building-related emissions. Dwellings constructed after 2013 emit on average 1.3 tons of CO2e less per year than those built before 1945. Fossil-based fuels, especially fuel oil, coal, and natural gas, remain the most carbon-intensive vectors, while electricity from renewable sources and modern wood heating perform substantially better. Larger, more compact dwellings show improved per-square-meter performance, and spatial disparities persist, with Paris displaying higher average emissions than other Île-de-France departments.

These findings validate the robustness of the emission model and provide the foundation for its dynamic integration within EUrbanSim. The enhanced framework enables simultaneous simulation of transport and building-sector emissions, offering policymakers a tool to analyze long-term policy impacts. By coupling the LUTI model's behavioral and locational components with the

emission module, EUrbanSim can assess synergies and trade-offs between transport investments, residential choices, and decarbonization measures.

A next validation phase will apply the coupled model to case studies such as the Grand Paris Express and SERM projects in the Grand Est region, assessing the combined effects of improved transport accessibility and building retrofitting on regional GHG emissions. The results are expected to guide multi-sectoral strategies for low-carbon urban development and provide reproducible indicators for territorial monitoring.

The Building Emission Module extends EUrbanSim into a next-generation decision-support platform, linking urban form, energy systems, and climate objectives. It contributes directly to the conference theme on integrated modeling for sustainable mobility and territorial decarbonization, illustrating how cross-domain data integration can foster operational, science-based pathways toward carbon neutrality.

KNOWLEDGE INFRASTRUCTURES FOR SOCIETAL TRANSFORMATION. WHAT UNDERSTANDING OF DATA DO WE NEED IN ORDER TO INTEGRATE DIGITAL TECHNOLOGIES MEANINGFULLY INTO SOCIETAL CHANGE?

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Keywords: Vision Assessment; Sustainability Development; Digitalization; Visions of Digitalization; Knowledge Infrastructure

ABSTRACT

Currently, governmental as well as non-governmental organizations point out that in order to achieve sustainability goals, social change must occur and, in that context, urban spaces are receiving increasing attention. Modern technologies such as digitalization are proposed as a solution to existing problems. However, they should actually be seen as part of a solution rather than the solution itself.

To achieve societal change the values that underlie the culture must be re-examined. In my presentation, I will explore the question of what relationship between humans and nature in the city can we derive from the spatial design of cities and ask if digital technologies can contribute to societal change, using water management in the city as an example. The observation shows that social life in cities is highly fragmented. The entanglement is missed, which is reflected in the spatial design of water management. Furthermore, urban areas are in a sense disconnected from rural areas, even though there are dependencies between them. How does that fit together? This all affects people in cities by enabling but also limiting their actions. The question is if through changes in spatial design, supplemented by new possibilities offered by digital technologies, the limitation caused by can be improved. How does our understanding of what is data must change to meet the requirement?

Using the vision assessment methodology (Lösch et al. 2023; Dobroć et al. 2023), I reflect on the current visions of the city and further on the shortcomings that can be identified in the spatial design of water management in cities and how they can be overcome by reorganizing spaces. I also ask, if digital technologies are changing the practices and perceptions of city residents and what understanding of data we need in order for digital technologies to become part of a sustainable transformation.

SMART LIVING AS NEW STATE-SPACES IN POLAND: BUILDINGS, HOUSING, AND RETAIL

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Keywords: Smart Living; Retail Accessibility And Connectivity; Data Nexus; Urban-Rural Interdependencies; Housing Finance; Retail Dispersion; Spatial Autocorrelation; Poland; Governance; Datafication

ABSTRACT

This paper approaches Poland as a geographical unit of analysis and asks how smart living has been materially produced since the mid-2010s, not as a slogan of metropolitan futurism, but as a dispersed and concrete reordering of space. The analysis herein is based on the production of space and the rescaling of statehood literature and conceptualizes post-2015 Poland's built environment through three nationwide layers: Microsoft ML building footprints that register the extension of the built fabric, powiat level housing prices from 2010 to 2023 that trace value formation and its gradients, and the locations of major electronics retailers, specifically Media Expert and MediaMarkt, as a proxy for household digital infrastructures. The underlying logic is that if the smart living condition is real, it will be legible where finance, construction, and everyday consumption cross on the ground.

Two spatial logics, at once entwined and contradictory, emerge from this synthesis. Housing prices and built area coverage conform to a centripetal hierarchy that is visible in dense metropolitan cores and peri-urban belts along the A2 and A4 corridors, with statistically significant positive spatial autocorrelation. Electronics retail, by contrast, displays a centrifugal dispersion that lifts accessibility in secondary cities and rural hinterlands, even where primate centers continue to command value. In short, value clusters while access spreads. This opposition is not epiphenomenal. It is the mechanism through which Poland's contemporary state-space is being made. Housing functions as a spatial fix, a sink for surplus capital and an apparatus for middle class consolidation, while the saturation of digital retail extends the infrastructures of everyday datafication into ordinary places and lowers the activation costs of the connected home beyond the big metros.

Read through the lens of sustainable urban transition, the dual movement operates as a practical grammar of a smart living state-space. The state promotes real estate valorization through credit, permitting, and corridor infrastructure, while tacitly underwriting the diffusion of consumption and logistics. Because dispersed retail access functions as an enabler of data nexus at the household scale, while concentrated housing values stratify capacity through savings, credit, and renovation, the resulting geography is one in which access can outpace wealth in non-core territories. That asymmetry turns accessibility and connectivity into transition infrastructures in their own right and opens a concrete horizon for governance. If dispersed retail has already lowered activation costs, then the next wave of smart living logistics should disperse in a similar fashion and further consolidate a corridor like territoriality that links secondary centers to rural belts.

SUPER LIVING LABS FOR INTEGRATED PERI-URBAN AREAS IN THE TRANSITION TOWARDS CLIMATE NEUTRALITY: EPIRUS-IOANNINA CASE

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Keywords: Periurban Areas; Transition Super Living Labs; Epirus Ioannina Region; Sustainable Mobility; Cross Sectoral Governance; Climate Neutrality

ABSTRACT

Peri-urban areas face a series of complex challenges that hinder their transition towards climate neutrality. One of the primary obstacles is the strong dependence on city-led strategies, which are often shaped by current administrative structures, budgetary constraints, and fluctuating political agendas. Through a multi-level governance, the Transition Super Living Lab (TSLL) approach is implemented in five peri-urban areas in Antwerp-Rotterdam, Milan metropolitan region, Alicante- Elche Functional Area, Epirus-Ioannina region and Lisbon metropolitan region, providing a new cross sectorial model to support them on achieving the change towards climate neutrality through innovation and digitalisation.

Building on the conceptual framework of TSLL that applies living lab methodologies in an ecosystem to co-create solutions that aim to accelerate the transformation towards climate neutrality on a regional scale, the TSLLs follow a new cross sectorial model to support peri- urban areas on the change towards climate neutrality achievement through innovation and cross-sectoral synergies. By engaging stakeholders to work under new collaborative governance schemes that go beyond cities and regions, a portfolio of cross sectorial innovative interventions addressing four key innovation axes (sustainable mobility, decarbonized energy systems, zero-pollution industry, and cross-sectoral governance) is implemented contributing to the integrated transformation of urban- peri-urban areas.

The current paper focuses on the Epirus-Ioannina case in Greece presenting the implementation of the TSLL approach in the region. To support the systemic transformation in Epirus-Ioannina region, a set of cutting-edge and data-driven innovations (innovation toolkit) such as AI driven and CO2 led traffic corridors management system, real time demand management system, Energy Community EV sharing platform, Demand-Response energy management system for industry and peri-urban PT decision support tool is implemented. These data-driven solutions will optimize transportation networks, decarbonize energy grids, enhance governance structures, and improve industrial sustainability of the peri-urban area, positioning it as a key driver of systemic change in Europe's climate-neutral future. The implementation of the interventions that spill over into different sectors within the TSLL ensures the promotion of Local Green Deals (LGDs) according to the city Climate Action Plan.

The TSLL model will provide unique added value in the peri-urban transition of Epirus-Ioannina region compared to traditional governance models. It strengthens multi-level governance by aligning EU-wide missions and national plans with local action, bridging gaps between top-down directives and bottom-up initiatives. By fostering cross-sectoral integration, addressing the interdependencies between transport, energy, industry, and governance, the TSLL enables exper-

imentation under real conditions, allowing rapid feedback loops that accelerate the refinement and deployment of solutions.

The insights generated from the TSLL in Epirus-Ioannina region will not only inform local and regional policy but also support the broader goal of achieving climate neutrality by providing scalable, replicable solutions that can be adopted across Europe's peri-urban areas.

ASSESSING CLEAN ENERGY TRANSITIONS: A MULTI-DIMENSIONAL FRAMEWORK FOR IMPACT EVALUATION IN SMALL MUNICIPALITIES

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Keywords: Impact Evaluation; Multi-dimensional Analysis; Clean Energy Transition; Small Municipalities; Local GoGreen Project

ABSTRACT

In Europe, 75% of people live in cities and buildings account for 40% of energy consumption, according to 2023 Eurostat energy balances. Thus, local and regional authorities are central to achieving the EU's 2030 climate and energy goals and implementing the REPowerEU plan started in 2022. Municipalities are key actors in advancing the green transition by promoting energy efficiency, clean mobility, and waste management initiatives. However, many small and rural municipalities face capacity and resource constraints that hinder progress. Strengthening local governance, aligning financial incentives, and supporting capacity building are therefore essential to accelerate the Clean Energy Transition and meet the EU's decarbonisation objectives.

Recent studies on local climate and energy governance have shown that the effectiveness of local policies depends not only on measurable outcomes such as CO_2 reductions or energy savings but also on the credibility of the plans, their ability to be integrated into governance processes, and the degree of equity in the distribution of benefits. The heterogeneity of municipalities — in terms of size, administrative capacity, available resources, and territorial context — calls for a rigorous and comparable assessment framework to validate the effectiveness of implemented measures and assess their contribution to local and regional planning targets.

Building on this premise, the paper aims to present a standardised and replicable methodology for assessing the environmental, socio-economic, and governance impacts of local Clean Energy Transition actions in small municipalities. The proposed framework combines quantitative and qualitative approaches within a unified Evaluation Matrix to capture the multidimensional outcomes of local transition policies, moving beyond simple numerical indicators. Quantitative assessment is based on the EURO-LCP indicator system, while qualitative analysis draws on the Adaptation Policy Credibility (APC) approach, focusing on decision-making quality and stakeholder inclusion. The methodology includes both ex-ante and ex-post evaluations, ensuring transparency and objectivity of the analysis. The ex-ante evaluation, based on a scoring system, cluster analysis and SWOT matrices, allows identifying similarities among municipalities, addressing strengths and weaknesses in terms of governance, financial and planning capacity and providing indications for corrective actions and remodulation of policies and recommendations. The ex-post evaluation is aimed at evaluating the impacts of ongoing actions on short/medium term and identifying the most promising projects for implementation.

The methodology has been developed and tested within the LOCAL GoGREEN (LGG) project, which supports six small municipalities in accelerating their clean energy transition. The framework is applied to five priority areas: sustainable transport and e-mobility (TRA), energy efficiency of buildings (EEB), renewable energy generation (RES), land use for carbon sequestration (LUC), and waste-to-energy (WTE). The Evaluation Matrix enables systematic and comparable assessment across heterogeneous territorial contexts — characterized by differing administrative capacities, resources, and socio-economic context — and supports knowledge transfer within the project's transnational network.

By bridging quantitative performance indicators with qualitative governance and equity dimensions, the proposed framework advances the methodological debate on local climate policy evaluation. It provides a scalable and transferable tool for monitoring and evaluating small-scale actions, fostering cross-municipal comparability and transferability to other European contexts.

TOWARDS A PROACTIVE CITY WITHOUT BIOCIDES? THE EUROPEAN INTERREG VI UPPER RHINE PROJECT "REACTIVECITY"

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Keywords: Biocides and Groundwater; Knowledge and Perception of Risks; Global Health; Eco Toxicological Impact; Permeable Cities; Alternatives to Biocides

ABSTRACT

Rationale

This project, funded by the Interreg 6 Upper Rhine program (a cross-border area between France, Germany, and Switzerland), examines the issue of "global health" through the issue of more permeable cities promoting infiltration but also increased reuse of rainwater and treated wastewater for adaptation to climate change, whereas currently wastewater treatment plants only partially retain polluting molecules, which can have a significant ecotoxicological impact.

To this end, the sociological dimension of the project, which is the subject of this presentation, aims to characterize the chains of actors involved in the production and use of biocides and their rationales, thanks to the example of the Eurometropolis of Strasbourg and, more broadly, Freiburg and Landau, with a view to achieving zero biocides and the conditions for its success. Whereas a previous project, called Navebgo (https://www.navegbo.uni-freiburg.de/fr), focused on biocides in facade paints, a frequently overlooked aspect of the issue of urban biocides, we are focusing on their use in early childhood and childhood in the context of hygiene in schools and childcare, by questioning the main actors involved in the use of these biocides, their level of awareness of their impact, particularly on health and water, and the barriers to the use of alternatives.

Methodology and case study

ReactiveCity is a transdisciplinary partnership involving three cities in the Upper Rhine region (Strasbourg, Landau, and Freiburg), two wastewater management organizations (SDEA and Abwasserzweckverband Breisgauer Buch), two competitiveness clusters dedicated to water (Hydreos) and sustainable construction (Fibre EnergiVie), and APRONA (monitoring of groundwater quantity and quality in Alsace).

Empirically, on the sociological side, we are currently conducting a qualitative survey through interviews (ten already carried out in the summer of 2025) and observations within the Eurometropolis of Strasbourg on biocides in the early childhood and childhood sector and the co-construction of alternatives to their use. The field study focuses on the chain of actors and concerns maintenance staff, procurement services, the city's children's services, and also suppliers of maintenance products.

First key findings
Two major findings stand out and will be refined over the coming months in preparation for our presentation:

On the one hand, with regard to the social representations of cleaning and products, cleanliness and hygiene are prominently displayed in establishments that welcome children, which tends to produce a primary focus on effectiveness, the perception of which can delegitimize alternatives to biocides such as eco-certified products. The results describe the different types of justifications used by actors in the use of products containing biocides, as well as their level of knowledge and perception of the risks associated with biocides. As for risk perception, biocides are invisible risks and the absence of public discourse on this risk accentuates the difficulties to perceive their effects on groundwater.

On the other hand, organizational and institutional logic cannot be ignored when it comes to understanding cleaning product practices: we are dealing with shared responsibilities (for example, between the local authority and its service provider for school hygiene, etc.) and, overall, there is a clear sense of trust in the production and distribution system for cleaning products. Finally, the results examine how the actors (institutional, technical, maintenance staff) situate their practices in a relationship with the water cycle.

HEALTH AND ENVIRONMENTAL JUSTICE IN DEINDUSTRIALIZING PORT CITIES

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Keywords: Public Health; Pollution; Oil Industry; Energy Transition

ABSTRACT

Port cities have long been strategic locations for trade and the establishment of industrial activities. However, this also led to multiple types of land use on a limited space, and shifting borders between different activities, as well as conflictual uses. Many areas within port cities have undergone a transformation from industrial sites to residential areas without prior decontamination of the soil or water, resulting in significant environmental and public health challenges today. With the historical and contemporary trend of delocalization and deindustrialization in Europe and beyond, combined with a prolonged lack of enforcement of safety rules and low socio-economic factors, the polluted legacy of industrial sites significantly affects urban planning and public health strategies in industrial port cities. For example, pollution linked to oil-related industries can lead to increased cancer rates and can also adversely affect the liver, blood, or kidneys. Additionally, the presence of underground water networks facilitates the spread and persistence of pollutants through their interaction with the entire ecosystem. An example of how industrial activities might have long-lasting legacy effects is the oil industry. Dunkirk, a port city in northern France and a case study for this presentation, exemplifies this trend, with oil refineries establishing a presence in the city in the early 1860s.

To date, limited research has been conducted on the nexus of socio-economic status, (historical) industrial activities, and long-term public health. This can be attributed to the extent and impact of external factors that obscure the relationship between industrial pollution and low public health indicators. For example, industrial port cities are rarely dedicated to a single industrial activity. In the case of Dunkirk, the oil industry shared the space with, among others, petrochemical and agro-industrial companies, shipbuilding workshops, and the steel industry. Thus, in relation to UERA's theme "Interdependencies and tensions between the energy transition and the ecological transition of cities and regions" this paper has three objectives: first, to highlight the need for comprehensive, interdisciplinary research around industrial pollution; second, to explore the link between historical industrial activities, and contemporary socio-economic factors and cancer mortality rates, using Dunkirk and Rotterdam as a case studies; and third, to identify measures to improve public health in industrial port cities. Using archival maps and documents, in combination with geographic software, economic and epidemiological data, this paper aims to demonstrate the importance and necessity of interdisciplinarity when considering the consequences of the energy and ecological transitions. The goal is to present the need for holistic approaches to understanding poor public health indicators in many industrial port cities.

SESSION 3

MOBILITY, TRANSITION, ACCESSIBILITY AND CONNECTIVITY

Session 3 brings together contributions that examine mobility transitions as socio-spatial and institutional processes shaped by uneven accessibility, differentiated capacities, and contested governance arrangements. Rather than treating mobility as a technical transport question, the session approaches it as a field in which climate mitigation, adaptation, social inclusion, and territorial cohesion intersect—often revealing tensions between policy aspirations and the lived realities of everyday movement.

A first set of contributions foregrounds justice- and resilience-oriented perspectives, focusing on how vulnerabilities and adaptive capacities are produced at the intersection of mobility, ageing, safety, and socio-spatial inequality. By mobilising nexus thinking and participatory approaches, these papers highlight how climate impacts and demographic change reshape accessibility to services, emergency response, and care infrastructures—particularly in peri-urban and rural contexts. They also illustrate how digital decision-support tools, serious games, and co-creation formats can support scenario-based learning and more inclusive forms of climate adaptation governance.

A second strand addresses mobility transitions as relational and multi-actor processes, emphasising the role of governance, experimentation, and institutional coordination across administrative boundaries. Contributions on interurban commuting and peri-urban mobility experiments illustrate how fragmented jurisdictions, emerging governance arenas, and new actor constellations—including employers and platform providers—shape the possibilities for decarbonising everyday mobility. Several papers develop transdisciplinary learning and monitoring approaches to urban experimentation, drawing attention to how mobility practices evolve through situated experience while remaining constrained by car dependence and socio-institutional norms.

A third cluster focuses on methods for analysing and reconfiguring mobility systems, ranging from systematic reviews of integrated infrastructures to modelling approaches that capture household decision-making and intra-household dynamics. By examining the coupling of active mobility with blue-green infrastructure, or by modelling car ownership and mode choice within couples, these contributions extend mobility research beyond individual choice models and single-sector interventions, foregrounding interdependencies, co-benefits, and distributional implications.

Contributions in Session 3 underscore that mobility transitions unfold across multiple scales and temporalities, linking infrastructural change with governance arrangements, social practices, and questions of justice. The papers demonstrate that advancing accessibility and connectivity within climate-neutral pathways requires not only technical solutions, but also reflexive, context-sensitive approaches attentive to vulnerability, agency, and the uneven geographies of transition.

INCLUSIVE CLIMATE RESILIENCE IN THE ŽILINA REGION: A NEXUS OF MOBILITY, AGEING, AND ADAPTATION

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ABSTRACT

The accelerating impacts of climate change are magnifying social inequalities and exposing structural vulnerabilities in European regions. In particular, ageing populations, mobility challenges, and rural-urban divides have emerged as critical dimensions of climate resilience and just transitions. This paper presents the Žilina Region (Slovakia) demonstration case from the Horizon Europe JUSTSAFE project, which explores inclusive and equitable pathways to resilience in peri-urban and rural contexts. The focus is on elderly residents with mobility disabilities-one of the most vulnerable groups to heatwaves, flooding, and constrained accessibility to public services and emergency response systems.

Grounded in nexus thinking, the study situates the Žilina case at the intersection of mobility, ageing, and ecological transition, examining how social and infrastructural systems interact to shape vulnerability and adaptive capacity. The methodological framework combines Matrix-Based Interaction Analysis with Living Lab co-creation processes, engaging the Žilina Self-Governing Region, municipal authorities, healthcare providers, and senior citizens' associations. These participatory processes enable a collaborative mapping of risks, the identification of interdependencies among transport, healthcare, and environmental systems, and the co-design of adaptive measures that enhance community preparedness.

To support these processes, the project employs digital decision-support tools (DSS) and the SPRITE serious game to facilitate scenario-based learning and collective awareness. This participatory framework allows diverse actors-public agencies, NGOs, and citizens-to jointly interpret data, simulate potential interventions, and reflect on trade-offs between accessibility, safety, and ecological adaptation.

While the research is ongoing, early collaborative insights indicate that social care networks, mobility systems, and local governance structures play a pivotal role in enabling just climate adaptation. By integrating these domains through participatory and data-driven approaches, the Žilina case aims to provide a replicable model for inclusive adaptation that strengthens governance capacity and social cohesion.

The Žilina Region experience contributes to a broader European dialogue on just resilience, reframing adaptation as a socially co-produced process rather than a purely technical or infrastructural response. The case demonstrates how ageing, accessibility, and environmental justice intersect within the urban-rural nexus, offering transferable insights for regions seeking to operationalize equitable climate governance under conditions of demographic transition and spatial diversity.

OPERATIONALIZING SOCIO-SPATIAL JUSTICE AS A DRIVER FOR URBAN TRANSFORMATION IN EUROPE'S SMALL AND PERI-URBAN CITIES

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Keywords: Socio-Spatial Justice; Mobility Transition; Gender and Mobility; Rural and Periurban Areas; Co-Creation; Participatory Design; Ecological Transition; Lived Experiences; Visibility; Power Relations; 15-Minute City; Driving Urban Transitions (DUT)

ABSTRACT

Drawing on the analytical perspective that mobility is a lived and mediated experience shaped by power relations and visibility, this contribution situates communication, co-creation, and representation as integral to socio-spatial transformation.

The *Fair Mobility* project (F-DUT-2022-0184), part of the *Driving Urban Transitions (DUT)* 15-Minute City (15mC) Transition Pathway, tackles a key challenge in Europe's mobility and sustainability nexus: how to design and implement equitable, low-carbon mobility solutions in small cities, rural, and peri-urban areas where accessibility gaps reinforce gender, social, and economic inequalities. The project demonstrates that centering the empowerment and co-creation of mobility solutions with women and minoritized groups is fundamental to achieving both socio-spatial justice and climate goals.

At the *UERA Conference 2025*, the *Fair Mobility* consortium—represented by the *Technologie Center for Energy (TZE)* and *Urbasofia*—introduced the project's conceptual framework and comparative policy analysis. Building on that foundation, this year's contribution to *UERA 2026*, co-led by *TZE* and *Wonderland Architecture*, shifts focus from theoretical groundwork to implementation and public engagement. The presentation showcases how *Fair Mobility* has operationalized its principles through participatory methodologies, pilot actions, and creative dissemination, translating systemic justice concepts into tangible transformations of both space and narrative.

In *Ebensee (Austria)*, pilot actions addressed car-centric planning while making local inequalities visible. The "Main Street Experiment: Reclaiming the Street" employed temporary spatial interventions to reimagine a traffic corridor as a people-centered community space, demonstrating how design-led revitalization can foster active mobility, support local economies, and strengthen ecological and social resilience. Complementary initiatives such as the *"Salzkammerqueer"* meetups tackled safety and connectivity challenges for LGBTQI+ residents, reinforcing regional cohesion and reducing high-carbon travel.

To illustrate methodological diversity, the presentation would also present insights on *Creil (France)*, a peri-urban pilot site where our French partners used a gender-sensitive participatory approach to explore women's perceptions of insecurity and avoidance in public space. These early findings confirm that mobility transitions in small-city and rural contexts must be co-cre-

ated, intersectional, and context-specific, integrating governance structures, participatory engagement, and spatial design.

Finally as part of its communication strategy, *Fair Mobility* further amplifies these field experiences through films, podcasts, and webinars to make gender-aware mobility narratives accessible to both expert and public audiences. This mediated layer complements the project's spatial pilots, extending co-creation into storytelling and public discourse. Speakers will briefly connect these dissemination activities and an analytical lens on representation, coercion, and mobility visibility—to the project's broader goal: to position socio-spatial justice as a driver for sustainable transformation in Europe's diverse urban-rural landscapes.

MOBILITY AND TRANSITION OF YOUNG ADULTS IN FRANCE: SOCIO-DEMOGRAPHIC DYNAMICS AND DEGREES OF URBANISATION

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Keywords: Mobility; Life Transition; Urbanisation; Urban/Rural Areas; Survey Analyses

ABSTRACT

Human mobility within geographical space is a fundamental dimension of individual life courses, enabling access to new opportunities, experiences, and resources. The spatial concentration of employment and housing opportunities in urban centers acts as a primary driver of rural-to-urban migration, particularly in contexts of economic restructuring and regional disparities.

In recent decades, France and especially its formerly industrialized regions, which were historically centered on metallurgy and steel production, has experienced a profound economic crisis characterized by rising unemployment and industrial decline. This situation has been further exacerbated by the ongoing transition toward emerging industries that are increasingly oriented toward sustainable development priorities.

Within this context, the Grand Est region stands out as a critical case study: despite hosting strategic urban hubs such as Strasbourg, it records the lowest population growth in France. Many of its economically fragile areas face a persistent exodus of young, active populations, accelerating demographic aging and undermining regional vitality. The capacity of a region to retain or attract young and skilled individuals is thus a pivotal determinant of its long-term socioeconomic resilience.

This paper proposes an in-depth analysis of residential trajectories and professional integration among young adults in France. By adopting a territorial approach and degree of urbanisation, the study will investigate local demographic dynamics and their influence on spatial mobility patterns. The research will specifically examine residential and occupational mobility, while systematically considering the role of sociodemographic characteristics and geographical origins in shaping these processes.

Methods

The data used are those of the permanent demographic sample (EDP) and the population census, which are very rich and precise. They provide information on the evolution of individual lives, taking into account socio-demographic characteristics, places of residence, work, housing, family and professional careers. Our objective is to examine the impact of sociological and geographical factors on life-course decisions, using statistical probability and trajectory analysis.

This study explores how young people's use of space evolves during their transition to adulthood from 2011 to 2019. The goal is to analyse the sustainability and transformation of spaces through their demographic and spatial trajectories.

The primary mobility patterns examined include arrivals, departures, immobility, intra-regional mobility, and return migration. Explanatory variables encompass sex, parental status, marital status, age, employment trajectory, and the degree of urbanization of the residence.

The methodology integrates sequence and clustering analyses to identify trajectory patterns, multivariate and logistic regression analyses to profile individuals, and territorial classifications based on life course outcomes. A qualitative approach using semi-structured interviews further enriches the analysis.

Key findings

Our findings indicate that geographical origin, specifically region and degree of urbanisation, significantly influences individuals' migration trajectories, despite the predominant trend of mobility toward highly dense urban areas. Life course trajectories also reveal notable gender differences: women are more likely to undertake long-distance migration and pursue extended studies in new regions without returning to their region of origin, while men tend to either remain in place or return to their region of origin after periods of higher education mobility.

RELATIONSHIPS AND EFFECTS OF INTEGRATING ACTIVE MOBILITY AND BLUE-GREEN INFRASTRUCTURE: A SYSTEMATIC LITERATURE REVIEW

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Keywords: Active Mobility; Blue-Green Infrastructure; Infrastructures Integration; Systems Thinking; Systematic Literature Review

ABSTRACT

Coordinated, cross-sectoral action is called for by the European Commission's 2050 climate-neutrality target to reduce greenhouse gas emissions from transport and re-nature urban spaces for biodiversity.

Integrating active mobility networks (e.g., walking and cycling) with Blue-Green Infrastructure (BGI) provides a cost-effective pathway to achieve these targets by combining mitigation and adaptation strategies, thereby fostering sustainable and climate-resilient cities.

However, research on integration is scarce, leaving gaps in understanding how these infrastructures interact, their mechanisms, and their long-term social, environmental, and economic impacts, hindering effective adoption.

This study seeks to address these challenges by providing a comprehensive understanding of the factors and cause-and-effect dynamics that shape the relationship between active mobility and BGI, as well as their impacts on users and the surrounding environment. It also reviews the methods and tools used to evaluate their combined effects across various sustainability dimensions.

Grounded in systems thinking in conjunction with the three sustainability pillar approach, the research employs a systematic literature review of peer-reviewed articles. Following the PRISMA guidelines, 40 articles were included in the study to extract systems' variables and relationships, which were logically and visually organised using Causal Loop Diagrams. These diagrams reveal key impacts, recurring themes, and strategic leverage points for integrating the two infrastructural systems.

Findings show that coupling active mobility with strategically planned BGI offers significant co-benefits, enhancing health and well-being through increased physical activity, reduced exposure to traffic-related risks and hazards, and improved biodiversity and ecological connectivity. The benefits, however, are context-dependent. If poorly implemented, unintended outcomes such as decreased perceived safety and exacerbation of street-level environmental hazards may deter active mobility and BGI access and adoption, acting as co-benefit trade-offs. This duality highlights the need for further research on both co-benefits and co-disadvantages.

Research specifically addressing blue or blue-green infrastructure remains limited compared to studies focused solely on green infrastructure. Little is known about how blue elements in urban green spaces affect pedestrians, cyclists, and the surrounding environment. More empirical studies are needed to clarify impacts and establish robust causal relationships.

Finally, the analysis of impact indicators, assessment methods and tools reveals substantial heterogeneity in study designs, estimation techniques, and outcome measures, which complicates synthesis and hinders applicability in practice.

Aligned with the conference themes, the research takes an interdisciplinary perspective, linking mobility transitions to nature- and human-centred urban strategies for climate neutrality. Thinking in terms of system interconnections reveals synergies and leverage points for integration, advancing academic understanding and supporting the move from isolated projects toward systemic, city-wide transformations.

INTERURBAN COMMUTING IN FRANCE: A GROWING CHALLENGE FOR MOBILITY GOVERNANCE? THE CASE OF THE NOUVELLE-AQUITAINE REGION

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Keywords: Commuting; Governance; Public Policies; France; Nouvelle Aquitaine Region

ABSTRACT

Within the framework of the national Low-Carbon Strategy (SNBC), decarbonizing commuting trips became a key priority for transport public authorities in France. While commuting-related greenhouse gas emissions vary significantly across geographical areas, interurban daily mobility in France — commuting between distinct urban areas — involves over 3 million people, representing around 10% of the working population. Despite its growing impact (+50% since the 1990s) and strong car dependence with over 90% of trips (Aguiléra et al., 2024), interurban daily mobility remains largely overlooked, except for some quantitative analyses. Yet, interurban commuting could be a key lever for promoting more sustainable mobility practices, representing nearly 30% of all commuting-related greenhouse gas emissions, excluding Paris (Conti, 2018).

This study focuses on interurban mobility in the Nouvelle-Aquitaine region, specifically within the neighbouring urban systems (Berroir et al., 2017) of Île de Ré, La Rochelle, Rochefort, and Niort. The research draws on policy analysis and 27 interviews with regional and local transport authorities, major employers, and carpooling providers. The aim is to better understand the stakeholders, governance issues, and potential strategies in a context where administrative boundaries complicate coherent mobility planning.

Three main findings emerge from the study. First, while interurban commuting is not yet a priority for regional or local authorities, its impact, particularly in terms of congestion, parking pressure, and recruitment challenges, is becoming a growing concern. Additionally, interurban flows remain poorly documented, and the existing regulatory framework often limits local action beyond jurisdictional borders. Nonetheless, new collaborative approaches such as shared travel surveys and cross-boundary dialogue are beginning to emerge.

Second, new governance arenas are emerging aiming to facilitate cross-jurisdictional coordination. Although often lacking formal administrative or legal recognition, these arenas promote mostly technical cooperation between region and local authorities. Another important outcome of this research is the emergence of a new actor in arenas previously dominated by public authorities: the employers. Many of them now promote alternative mobility options and collaborate with local authorities to improve employee commuting conditions.

Third, experimental mobility solutions are emerging as transitional decision-making tools to address interurban challenges without requiring major financial investments in comparison with rail solutions. Examples include subsidized carpooling platforms like BlaBlaCar Daily and the express interurban bus (Line 140E) connecting La Rochelle and Niort. These initiatives are co-financed by local and regional authorities and remain subject to future assessment.

In conclusion, interurban mobility in France is characterized by fragmented responsibilities and limited coordination across administrative levels. Despite encouraging pilot projects and emerging dialogue, sustainable long-term solutions remain uncertain. Key questions around funding, political leadership, and governance responsibilities — especially beyond municipal boundaries — continue to shape the future of decarbonized commuting.

LEARNING TO TRANSFORM: A NEW TRANSDISCIPLINARY 'LEARNING MONITORING' APPROACH FOR MULTI-ACTOR EXPERIMENTS – AN EXAMPLE FROM PERI-URBAN E-BIKE COMMUTING

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Keywords: Urban Experimenting; Transformation; Periurban Mobility; E-bike; Commuting; The Netherlands

ABSTRACT

Studies on sustainability transitions have called for experiments as a source of learning, because learning processes have the potential to influence, accelerate or reorient transitions. However, research on learning in sustainability transitions is still poor in conceptual clarity and empirical evidence. This paper develops a transdisciplinary approach to monitor learning processes through a case study of an electric-bike commuting experiment (in Maastricht, The Netherlands), based on a social practice perspective. The key instrument to monitor learning is a jointly formulated learning agenda – a set of learning questions – while the answers are derived from interviews with participants reflecting on what they learned during the experiment. We contribute to the literature by offering and exemplifying a new approach to improve the monitoring of learning from urban experiments. This concerns both the nature of the experimental practice (E-cycling) and the ways in which related practices constrain or drive its further expansion. The learnings gained from the transdisciplinary monitoring approach inform the identification of distinct mobility capacities within the specific peri-urban context of the experiment.

Urban mobility represents a central domain in the sustainability transition, as reflected in concepts such as the 15-minute city. Since these approaches predominantly target densified urban areas, there is a need to better understand low-carbon mobility capacities in small and medium-sized cities (SMCs), where unsustainable transport patterns persist. Through our e-cycling experiment, we learn about commuters' capacities and the structural conditions that shape the adoption of e-biking in SMCs.

Over the past two decades, the e-bike has evolved in many countries from a niche transport mode to a widely used alternative for short-distance trips of up to 15 km. Yet, the constraining and decarbonisation of private car use remains a major challenge, even in cycling-oriented countries such as the Netherlands. In regions like South Limburg, there is still a significant gap between car use and the actual need to drive, particularly for trips of 7.5 to 15 km – distances well suited to e-biking.

The lessons and insights that this new transdisciplinary 'learning monitoring' approach provides regarding the drivers and constraints on emerging practices, offer a stronger basis for strategising how sustainability transformations can be further accelerated. Based on the e-bike commuting experiment with employees who normally drive to work, this study identifies four mobility types that reflect the intersection of socio-spatial and (travel) policy conditions that influence citizens' engagement with e-bike use in peri-urban contexts. It discusses the structural reasons why different mobility types embody distinct travel practices, as well as how the experimental

approach has stimulated behavioural change across the identified types. In general, participants developed confidence in alternative mobility practices while retaining a persistent attachment to car ownership, due to perceived constraints despite actual capacities for e-biking. Together, these insights drive low-carbon mobility transitions in urban planning, in particular as they illustrate how transdisciplinary 'learning monitoring' of an urban experiment both enables and is enabled by *in situ* and embodied learnings.

URBAN MOBILITY TRANSITIONS: LINKING INDIVIDUAL BEHAVIOURS AND LOCAL POLICY IN LYON, FRANCE

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Keywords: Daily Mobility; Individual Trajectory; Urban Mobility Transitions

ABSTRACT

Over the past two decades, a series of transformations have taken place in the field of mobility, both in terms of public policies and everyday practices. Particularly driven by the Covid-19 crisis and the ecological transition, these changes have contributed to the transformation of socio-spatial environments, in favour of a more sustainable, inclusive and locally oriented mobility.

Our research focuses on the evolution of individual mobility behaviours, drawing on the literature on Mobility Biographies Research and Travel Socialization Studies. These Anglo-Saxon approaches analyse, at a micro-scale, how mobility practices are constructed and evolve throughout the life course (Cacciari, 2020), under the influence of biographical events. However, while this perspective emphasises individual dimensions, recent studies (Hosotte, 2022) have also highlighted the role of socio-spatial transformations in behavioural adjustments. Yet, the literature remains limited in terms of analysing, at a meso-scale, the impact of local sustainable mobility policies implemented over the past twenty years, particularly in the French context, which has been marked by the promotion of alternatives to private car use.

This study aims to examine a potential causal relationship between observed changes in individual behaviours and the recent development of urban mobility provision. Our objective is to identify, contextualise and measure these changes over time by analysing individual mobility trajectories (Cailly et al., 2020) among people who have reported a recent change in their practices.

The Lyon metropolitan region was chosen as the case study, due to the major expansion of its public transport system and heavy cycling infrastructures over the past five years, within a geographically diverse context of accessibility.

The data used to investigate the influence of this urban transformation on the population come from a longitudinal quantitative survey led by the Lyon Metropolis and CEREMA, focusing on the evolution of mobility behaviours in Lyon between 2022 and 2025, based on a sample of 15,000 respondents.

Our approach consists of conducting a cross-analysis of the different factors identified as influencing behavioural change. The expected results should enable the establishment of detailed socio-demographic profiles of individuals who have recently modified their mobility practices, including their motivations and types of change, which will subsequently be enriched through qualitative investigation.

Ultimately, our research aims to translate the complexity of individual mobility trajectories into actionable insights to effectively support the ecological transition in sustainable mobility policy.

YOU CANNOT DRIVE MY CAR WITHOUT ME: CAR OWNERSHIP AND MODE CHOICE WITHIN COUPLES

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Keywords: Mode Choice; Car Ownership; Stackelberg Decision Model; Couples

ABSTRACT

Research question

Mobility has shaped civilization, enabling labor division and urban development. It relies on infrastructure, policies, individual needs, and chosen modes. This study controls for workplace and residential locations (see Picard et al. 2012) and examines medium-term (vehicle acquisition) and short-term (mode choice) mobility decisions. Two common oversimplifications traditionally cause estimation biases: ignoring vehicle ownership in mode choice analysis and isolating individual decisions without considering family members, especially in family pooling, where such assumptions are unrealistic.

Traditional models assume a household leader controls car ownership and use, but this unitary model is outdated. Instead of a single decision-maker or a Pareto-optimal process (Picard et al. 2018), we adopt here a Stackelberg approach, where one partner leads and the other follows in decision-making.

We develop a Stackelberg-based model of couple mode choice and compare it to the cooperative model from Picard et al. (2018) using Paris region census data. Bargaining power depends on factors like age, nationality, job type, tenure, and children. To address car ownership endogeneity, we model its joint choice with commuting modes. We also estimate individual Values of Time for various commuting scenarios and analyze policy implications.

Modeling approach

Four individual modes are considered: *B* stands for any type of transit (bus, subway, light train, etc), *CA* (Car Alone) = solo-driving, *CD* = Car Driver and *CP* = Car Passenger.

If there are two cars in the household, the joint choice set of the couple contains six options: (*B,B*) if both spouses commute by bus; (*CA, B*) if the woman drives alone, while the man commutes by bus; (*B, CA*) if the man drives alone, while the woman commutes by bus; (*CD, CP*) if spouses commute by car together and the woman drives; (*CP , CD*) if spouses commute by car together and the man drives; (*CA, CA*) if each spouse drives alone by car. The last option is not available in households with only one car.

Leader-Follower Decision Process The analysis is based on the assumption that the leader has a perfect knowledge of the follower's preferences. The leader may avoid announcing her first- or second-best option if she anticipates the follower to reject it. The decision process can be described in three steps, depending on the number of cars in the household (n = 1, 2), which determines the follower's choice set.

- In a two-car household, both the leader and the follower get at least their third-best option, as they always have access to the B (Bus) and CA (Car Alone) options.

- In a one-car household, the leader gets at least her third-best option, but the follower may be denied any option involving the car (CA, CD, and CP), and may end up with his fourth-best option, B (Bus).

Empirical approach

We use the French census data in the Paris region. We observe the number of cars in the household and the usual commuting mode of each spouse. We use METROPOLIS to compute the travel time by each mode, including the detour when the man drops the woman in her workplace one on his way between their joint residence and the man's workplace, or vice versa. We further assume that the Value of Time is mode-specific and depends on individual socioeconomic characteristics, and compute the utility of commuting by each mode. We jointly estimate the probability that each spouse is the leader, and the probability of joint mode choice given the leader.

Like in Picard et al (2018), preliminary results suggest significant bias in the estimation of preferences and bargaining power when the number of cars in the household is exogenous. We thus endogenize car ownership.

SESSION 4

NEXUS THINKING IN ENERGY TRANSITION

Session 4 brings together contributions that mobilise nexus thinking to examine the energy transition as a multi-scalar and contested process embedded in territorial development, agricultural change, industrial restructuring, and geopolitical dependencies. Rather than treating renewable energy expansion as a primarily technical pathway to decarbonisation, the session foregrounds how energy transitions are shaped by interdependencies between sectors (energy-food-land use-mobility), by institutional and market reconfigurations, and by uneven spatial distributions of benefits, burdens, and risks.

A first cluster of papers focuses on bioenergy and agricultural anaerobic digestion, highlighting the tensions that emerge when energy transition objectives intersect with ecological transition priorities and rural development trajectories. Contributions examine social acceptability and controversy, the role of public subsidies and regulatory frameworks, and the position of farmers within an evolving sector that may shift from small-scale on-farm installations toward larger and more industrialised configurations. These analyses frame anaerobic digestion as a boundary object through which competing values and sectoral priorities are negotiated across European, national, and local contexts.

A second strand examines sectoral and institutional dynamics in the reconfiguration of energy-related industries. By analysing innovation systems and "catching up" processes within the biogas manufacturing sector, contributions show how institutional change—such as shifts in regulation, market design, and grid integration—can restructure technological trajectories, reshape competitive hierarchies, and open windows of opportunity for specific actor constellations. Here, nexus thinking supports a move beyond static sectoral descriptions toward process-oriented accounts of how transitions are governed through evolving institutional arrangements.

A third set of contributions addresses the energy transition through the lens of large-scale infrastructures and territorial conflict, including gigafactories and wind power deployment. These papers illuminate how infrastructures presented as solutions to climate and decarbonisation goals simultaneously generate new dependencies, spatial disputes, and distributional tensions. Gigafactories are analysed as critical "nexus infrastructures" situated at the intersection of energy, mobility, industrial strategy, and geopolitical supply chains, while wind power expansion is examined as a spatio-temporal process that raises questions of planning, agglomeration, and just transition—particularly in rural regions that host production while benefits may accrue elsewhere.

Session 4 positions energy transition as an arena where sustainability goals are continuously redefined through cross-sector interdependencies, institutional transformation, and territorial politics. The contributions underscore that nexus thinking is not only an analytical approach, but also a means of making visible the trade-offs, conflicts, and governance challenges through which energy transitions are enacted in practice.

IS THERE A "EUROPEAN MODEL" FOR AGRICULTURAL ANAEROBIC DIGESTION? A STATE OF THE ART BASED ON THE INTERNATIONAL SOCIAL SCIENCE LITERATURE

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Keywords: Europe; Agricultural Biogas Supply Chain; Sustainability; Energy vs. Ecological Transition; Local Rural Development; Territorial Justice; Energy Crops and Controversies; Public Policies and Subsidies

ABSTRACT

Based on a review of the international social science literature, this paper asks the question of whether there is such a thing as a "European model" for agricultural anaerobic digestion. The corpus, compiled between February and March 2024, initially included 113 papers written in English and French, selected among the 28,973 results from 13 databases (Cairn, Érudit, Gallica, HAL, Jstor, OpenEdition, Persée, Sage, ScienceDirect, SocIndex, SpringerLink, WebOfScience, Wiley). An advanced keyword research (using the keyword "méthanisation agricole" for French-language databases and "agricultural biogas" or "agricultural anaerobic digestion" for English-language databases) was used to find the most relevant papers dealing with on-farm anaerobic digestion in Europe from a social science perspective. After reading them, we selected 38 papers in English and 35 papers in French and studied them using a detailed thematic analysis grid, from which six main research questions emerged, which we will explore in this paper.

To look beyond the general expressions of support for renewable energies in European public opinion, it is interesting to explore first: (i) the social acceptability of agricultural biogas plants, which depends on the diverse interests of the stakeholders involved and their divergent internalized perceptions and values. The acceptability of biogas plants needs to be studied first in relation to localised issues and interconnected social and spatial factors. (ii) On the other hand, controversies have especially arisen over the production of energy crops (instead of food crops?), reflecting the priority given to the energy transition over the ecological transition.

Given that most anaerobic digestion plants are small-scale on-farm installations, it is crucial to pay attention to the farms' territorial location and to the interactions between the stakeholders involved. Two main issues thus need to be studied: (iii) the position of farmers in the face of industrial developments in the biogas sector, and (iv) the relation between on-farm anaerobic digestion and local rural development.

These first two series of questions invite reflection on a third point: the development of agricultural anaerobic digestion is part of ongoing processes, showing that these technologies are embedded in society and dependent on political and economic regulations (v) which can act either as levers or barriers (see the role of public subsidies and the (poor?) economic performance of anaerobic digestion for farmers).

This will lead us to conclude by addressing (vi) the sustainability issues related to anaerobic digestion, which have not been considered to the same degree in future studies, from which no clear blueprint can thus be derived.

Agricultural anaerobic digestion thus appears to be a boundary object, situated at different – global/local, European/national/regional – levels of understanding and action, and involving different players and sectors (energy, food, farming, local development…) working together to face sustainability challenges.

CATCHING UP THROUGH INSTITUTIONAL CHANGE: SECTORAL INNOVATION DYNAMICS IN THE FRENCH BIOGAS INDUSTRY

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Keywords: Sectoral Innovation Systems; Institutional change; Biogas industry; Technological catching up

ABSTRACT

This study uses the Sectoral Innovation Systems (SIS) framework developed by Lee & Malerba (2017) to analyze the ongoing reconfiguration of the biogas plant manufacturing sector in France. This framework articulates four key dimensions — knowledge and technology regimes, demand conditions, actors and networks, and the institutional framework — to shed light, from an evolutionary perspective, on how biogas plant manufacturers reposition themselves during technological and regulatory changes. While the literature on SIS mainly focuses on supply and technology producers, this article emphasizes the under-analyzed role of demand (farmers, energy producers, institutions) in the structuring and evolution of the innovation system.

Using the SIS analytical framework focused on first-comers and latecomers in a market, this article examines how biogas plant manufacturers from different national innovation systems compete, learn, and adapt over time. The objective is to analyze the strategic positioning of these manufacturers in France and the evolution of their market shares between the early 2010s and 2023. We show that institutional transformations, particularly changes in legislation regarding biogas injection into the natural gas grid, have profoundly altered the technological and organizational structure of the sector. The spread of biogas injection led to a shift from a market dominated by small-scale agricultural cogeneration to one focused on large-scale collective energy units. This shift opened a window of opportunity for French biogas plant manufacturers in a market that had previously been dominated by German firms.

The empirical analysis is based on an original database combining administrative information from the ministry on biogas plants, the SINOE database, and company data from FARE. The approach combines quantitative analyses (changes in market share and cumulative installed capacity, by nationality and size segment) and qualitative analyses (interviews with industrial and institutional players).

The results highlight a two-phase sectoral dynamic. The first phase is marked by the dominance of German manufacturers in the small-scale agricultural segment. The second phase, triggered by the institutional shift towards biogas injection, corresponds to the emergence of large-scale units and the rise of French manufacturing players. The latter, such as Naskeo and Prodeval, were able to exploit this institutional opportunity thanks to their adaptability, technical expertise (particularly in purification), and diversified supplier networks. This catching up by latecomers illustrates how institutional specificity and learning capabilities can transform sectoral hierarchies.

GIGAFACTORIES IN EUROPE: URBAN TRANSFORMATION, ENERGY TRANSITION, AND GEOPOLITICAL DEPENDENCIES

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Keywords: Energy Transition; Gigafactories; Critical Infrastructures; Territorial Planning; Geopolitical Dependencies

ABSTRACT

The rapid expansion of gigafactory projects across Europe is one of the most visible and contested manifestations of the energy transition. By 2030, more than forty large-scale plants are planned or under construction, promoted by the European Union and national governments as key infrastructures for decarbonising mobility, securing industrial sovereignty, and ensuring urban sustainability. Yet, behind this narrative of technological progress lies a set of unresolved contradictions: how can gigafactories simultaneously serve as engines of ecological transition, drivers of territorial development, and symbols of geopolitical independence, while remaining embedded in global supply chains largely dominated by external actors?

Understanding gigafactories as infrastructures of transition requires attention to three interrelated dimensions. First, gigafactories have become strategic infrastructures in Europe's response to climate change, directly shaping mobility policies and urban energy systems. Second, they illustrate geopolitical reconfigurations, revealing new dependencies on critical raw materials (lithium, cobalt, nickel) and on Chinese technological leadership in the battery sector. Third, they are catalysts of urban and regional transformation, reconfiguring land use, industrial zones, labour markets, and local governance practices. As such, they epitomise the tensions at the heart of sustainable urban transition: the promise of decarbonisation coupled with the risks of reproducing ecological costs and asymmetrical dependencies.

Methodologically, this paper adopts a multi-scalar and comparative approach. It combines analysis of European policy and national industrial guidelines documents, with corporate announcements and local planning strategies. Open-source data on trade flows and supply chains are used to assess the persistence of material dependencies. The spatial analysis of three case studies in France, Germany, and Hungary highlights the territorial inscription of gigafactories. Particular attention is paid to governance mechanisms: how local and regional authorities negotiate the integration of these infrastructures, how civil society actors engage with or contest them, and how European-level objectives are translated into local realities.

The results of this analysis identify three key dynamics and challenges of the gigafactories as critical infrastructure:

1) They function as levers of urban and regional restructuring, generating new opportunities for employment and technological upgrading but also producing conflicts over land allocation, energy supply, and environmental externalities.

2) They expose the paradox of Europe's energy transition: while presented as a means of achieving strategic autonomy, gigafactories are structurally dependent on external supply chains and technologies, particularly from China, thereby embedding geopolitical vulnerabilities within local infrastructures.

3) They reveal the multi-scalar contradictions of sustainability, whereby infrastructures promoted as solutions to climate challenges may, in practice, shift ecological pressures elsewhere and reproduce uneven territorial development.

By framing gigafactories as nexus infrastructures, situated at the intersection of energy, mobility, ecology, and geopolitics, this contribution offers a systemic perspective on the contemporary urban transition. It shows that sustainable transition cannot be reduced to technological fixes but must be understood as a deeply political and territorial process.

WINDS BLOWING STRONG: UNDERSTANDING WIND POWER EXPANSION IN RURAL EUROPE

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Keywords: Wind Energy; Agglomeration Effects; Spatial Planning; Just Transition

ABSTRACT

The deployment of renewable energies is one of the necessary components to achieve the energy transition (Ah-Voun et al., 2024; European Commission, 2022). We are witnessing a global increase in the use of these types of energy sources, with wind energy being the main source of renewable energy production. Understanding the process of renewable energy installation from a territorial perspective is one of the current academic and societal challenges given the economic, environmental and political repercussions that their development generates within territories.The general field of energy geography (Calvert, 2016; Pasqualetti & Brown, 2014), explores how energy systems are shaped in the territory and redefine new energy spaces linked to the old ones. Wind energy produces both positive and negative externalities in the territories where it is deployed.

Aragon, a primarily rural region in Northeastern Spain, southern Europe, has become a leading region in wind energy production in Europe, experiencing rapid and unplanned expansion in the last decades. This accelerated process has resulted in important expectations and conflicts in the hosting territories. This paper examines the historical evolution of wind energy in Aragon, identifying key factors driving its growth and the territorial conflicts arising from the lack of land-use planning. Using spatial techniques (georeferenced spatial analysis) and energy balance analysis, the study highlights the region's role as a net electricity exporter and the persistent spatial agglomeration of wind farms. Understanding wind energy deployment as a spatio-temporal process is essential for developing just energy transition policies that balance renewable expansion with territorial sustainability. Insights from Aragon can also be informative for other regions that are currently experiencing or may experience growing renewable energy development in the future and interdependencies between more rural and urban areas within and across regions.

SESSION 5

LIGHTNING SESSION

The Lightning Session brings together a diverse set of concise and exploratory contributions that foreground emerging questions, methodological experimentation, and innovative conceptual lenses relevant to contemporary urban and territorial transitions. Designed to stimulate focused discussion rather than comprehensive coverage, this session captures early-stage insights and cross-cutting reflections that resonate strongly with the conference's broader concern for systemic change, justice, and governance under conditions of uncertainty.

Several contributions interrogate dominant transition narratives and policy assumptions, notably in relation to transport decarbonisation, economic growth, and the Environmental Kuznets Curve. By revisiting long-standing economic-environmental relationships through updated empirical analyses, these papers question linear assumptions about growth and emissions reduction, highlighting the need for more nuanced, context-sensitive understandings of sustainable mobility pathways in Europe.

Other contributions experiment with new analytical and modelling approaches to urban resilience and transformation. By proposing concepts such as absorptive capacity envelopes, functional clustering, and resilience return on investment, these papers seek to operationalise "positive" or "bounce-forward" transitions. They illustrate how computational simulations, abstraction hierarchies, and system-level metrics can support proactive governance and strategic prioritisation under uncertainty.

A further set of lightning papers addresses equity, accessibility, and spatial justice within widely circulating planning models such as the 15-minute city. Through spatial analysis, visualisation tools, and refined accessibility metrics, these contributions expose uneven distributions of services and mobility opportunities across socio-demographic groups, territories, and abilities. In doing so, they underscore the importance of moving beyond generic proximity metrics toward differentiated, inclusive, and context-aware planning instruments.

The session also highlights novel governance objects and spaces, including urban wastelands and local energy communities, which challenge conventional planning categories. These contributions frame informality, experimentation, and citizen engagement not as residual or marginal phenomena, but as integral to resilience-building and just transitions. Interactive tools, gamified simulations, and participatory indices are presented as means to democratise complex systems, render trade-offs visible, and foster collective learning.

Overall, Session 5 exemplifies the Lightning Session's role as an intellectual laboratory within the conference. By juxtaposing empirical analyses, conceptual innovation, and methodological experimentation, it opens space for reflexive dialogue on how urban transitions can be understood, measured, and governed in more inclusive, systemic, and forward-looking ways.

DECARBONIZATION OF TRANSPORT AND ECONOMIC GROWTH IN EUROPE: REVISITING THE ENVIRONMENTAL KUZNETS CURVE

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Keywords: Decarbonization of Transport; Economic Growth; Renewable Energy; Ardl Panel; Europe

ABSTRACT

The decarbonization of the transport sector has become a critical challenge in the fight against climate change. It presents a unique opportunity to contribute meaningfully to the goal of achieving net-zero emissions by mid-century. As one of the leading sources of greenhouse gas emissions, transport plays a pivotal role in shaping climate action strategies. Addressing emissions in this sector is essential for enabling a transition toward a low-carbon and resilient development model for the transportation sector.

This study explores the relationship between transport decarbonization and economic growth by providing an empirical analysis aimed at understanding the underlying concepts, associated challenges and opportunities, and future prospects. Specifically, it investigates how CO2 emissions from the transport sector in European countries interact with economic growth and the use of renewable energy, assessing both their impact and implications for sustainable mobility.

Our research aims to empirically study the impact of economic growth, energy consumption in the transport sector, renewable energy usage, and urbanization on CO2 emissions from the transport sector for the case of 22 European countries from 2000 to 2022. To do so, we employ the Panel ARDL (Autoregressive Distributed Lag) model, an econometric model that accounts for temporal dynamics in the analysis of the relationship between variables.

EXPERIMENTING WITH POSITIVE TRANSITIONS: EXPANDING THE ABSORPTIVE CAPACITY ENVELOPE THROUGH FUNCTIONAL CLUSTERING IN URBAN SYSTEMS

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Keywords: Urban Resilience; Urban System Abstraction Hierarchy; System Stability Envelope; Bounce Forward; Functional Clustering; Urban Transitions; Return on Resilience Investment

ABSTRACT

Research Context and Objectives

Recent urban resilience research increasingly emphasizes the need to move beyond reactive "bounce back" models toward proactive, transformative "bounce forward" strategies that enable cities to adapt and improve functionally after shocks (Meerow et al., 2016; McEvoy et al., 2012; Lowe et al., 2024). However, current methodologies tend to focus disproportionately on vulnerability and recovery, offering limited guidance on how deliberate interventions, such as scaling green infrastructure or fostering policy synergies, can proactively enhance systemic capacities. To fill this gap, our research conceptualizes resilience as a dynamic "absorptive capacity envelope", a quantifiable boundary modulated by functional interdependencies that defines the range within which urban systems absorb shocks without systemic failure. We advance a clustering methodology to optimize urban subsystems into functionally coherent groups, providing experimental pathways for envelope expansion via computational simulations aligned with sustainable urban objectives. The overarching aim is to develop and validate a methodology that empirically measures the expansion of this envelope, demonstrating the systemic value of positive policy actions necessary for sustainable urban transitions and "bounce forward" capacity (Folke et al., 2010; Elmqvist et al., 2019; Grinberger et al., 2014).

Methodology and Model

Our framework builds on the Urban Resilience and Sustainability Alliance (URSA) project, utilizing a graph-based model of urban interdependencies derived from a multi-tier Urban System Abstraction Hierarchy. Rather than organizing indicators strictly by governance or sectoral domains, we group them into functional clusters reflecting key urban subsystems such as energy, mobility, and food systems, focusing on critical leverage points for resilience-building (Wagenaar & Wilkinson, 2015).

- Baseline Mapping: We apply randomized bounded stressors to simulate the current absorptive capacity envelope, defining the system's baseline shock boundary.
- Policy Simulation: Targeted, empirically justified interventions are simulated within high-centrality functional clusters, assessing how these deliberate enhancements expand the envelope under identical stress sequences.
- Quantifying Expansion: The differential expansion of the absorptive capacity envelope pre- and post-intervention is operationalized as a measurable "systemic resilience gain" and quantified via a Resilience Return on Investment (RROI) metric.

Validation and Key Findings:
Applied to the Vancouver urban indicator network, this approach enables a novel form of virtual experimentation where cities can test and prioritize policy investments not solely by isolated outcomes but by their capacity to improve systemic stability under uncertainty. Our early findings reveal that investments in functionally central clusters, with high connectivity and betweenness, not only increase direct absorptive capacity but generate cascading, cross-domain resilience benefits. This prescriptive and defensible framework supports transparent decision-making for adaptive governance, facilitating the planning of just, green, and sustainable urban transitions by identifying interventions that yield the most robust systemic returns.

FOR WHOM IS THE 15-MINUTE CITY? VISUALIZING DISPARITIES IN ACCESS TO LOCAL SERVICES IN HEXAGONAL FRANCE

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Keywords: 15min City; Proximity of Services; Local Accessibility; Spatial Analysis

ABSTRACT

As the concept of 15-minute cities both grows in popularity and has recently appeared at the centre of some conspiracy theories, a scientific input is needed to put the model in perspective. Notably, concerns regarding its applicability to medium-sized cities and its capacity to account for population diversity should be addressed. In a particularly dense metropolitan city centre such as Paris, on which the concept was theorized, accessibility to services might be quantified with travel times and visualized with isochrones only, as is often the case in related interactive web applications. Considering more peripheral, lower-density zones, however, raises questions of socio-spatial inequalities and prioritization in planning for the 15-minute city. The Sustainable Cities and Innovative Buildings Information System (SIVDBI) is therefore developing an accessibility analysis tool focused on medium-sized French cities to try and better accommodate for a diversity of urban forms and demographics.

This web application written in R with the r5r routing engine at its core uses open governmental and OpenStreetMap data to compute travel times to education, health services and shops from any point in a given city, which are combined with population data to create a density-weighted accessibility indicator. The results are displayed as interactive maps using the tmap and shiny libraries, offering a way to quickly identify neighbourhoods lacking in local services, or potential zones to densify, given a good service offer relative to their population density. The user may select several sociodemographic variables relating to age and income and compare them to this bivariate measure of accessibility and population density, with dynamic plotting and statistical test results to identify potential inequalities in accessibility. Beyond overall access to services, this tool also supports specific analyses such as access to education for children and healthcare for the infants and elderly.

While tendencies may vary depending on city size and land use, case studies for a selection of medium-sized French cities tend to show high-density and low-accessibility zones house a lower-income and younger population, and low-density low-accessibility zones house the oldest and richest part of the local population. These first results align with our hypothesis that focusing on travel times alone is insufficient in the context of medium-sized cities, as very different situations would appear bundled together.

However, this web application and such analyses are limited, as planning for the 15-minute city should not be a disembodied top-down approach and requires engaging with the specificities of the local context. Its aim is to provide city officials and researchers with a broad picture before initializing on-site studies and projects, as an exploratory analysis. Further versions should add a walk-unfriendly cost to paths based on sidewalks, crossings and lighting to better represent a realistic path taking. They should also accommodate different categories of population with varying travel times, consider more types of services such as green spaces, and use a refined accessibility indicator.

GOVERNING UNCERTAINTY: URBAN WASTELANDS IN AN ERA OF URBAN RESILIENCE

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Keywords: Urban Wasteland; Resilience; Urban Planning; Transition; Urban Nature; Informality

ABSTRACT

For decades, urban wasteland was perceived as land reserves for densification. Over the past ten years, however, these unbuilt, spontaneously vegetated sites — located within cities or on their outskirts — have been reframed as ordinary urban nature. Their ecological, social, and landscape values, as well as their capacity to sustain attachments and informal practices have been highlighted and are now well documented by scholars (Gandy, 2013; Bonthoux et al., 2014; Di Pietro & Robert, 2021).

This change in the understanding of urban wastelands has gradually gained traction within the field of spatial planning. In France, the shift is evident in the establishment of specialized units within local governments and the creation of observatories within local governments, and the expansion of collaborations between local authorities and university research teams focusing on urban wastelands.

Drawing on qualitative research in Marseille — interviews, GIS mapping, and analysis of gray literature — this contribution situates this governance turn within the urban-resilience imaginary, which regards uncertainty, complexity, and the unexpected as constitutive of territorial formation (Chandler et al., 2020).

Recognizing urban wasteland as ecological and social resources signals a capacity to integrate unplanned dynamics into governance (informal uses; spontaneous nature), to broaden residents' agency, and to strengthen local forms of resilience. In some cases, these spaces support bottom-up urban regeneration and collective appropriations with limited public investment. This perspective reframes urban transformation in light of the imperatives of ecological transitions.

Yet this integration remains ambivalent. Urban wastelands are subject to competing claims (densification; temporary urbanism), and their recasting as "green infrastructure" turns them into platforms for measurable ecosystem services and social benefits — a framing that risks the technification and standardization of nature.

GRIDLY: A FAIRNESS-ORIENTED INTERACTIVE TOOL TO EXPLORE THE DYNAMICS OF LOCAL ENERGY COMMUNITIES

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Keywords: Local Energy Communities (LEC); Local Energy Markets (LEM); Energy Transition; Interactive Simulation; Energy Justice; Fairness Algorithm; Demand Side Management (DSM)

ABSTRACT

The transition to decentralized, renewable energy systems requires not only technical innovation but also the active involvement of citizens and stakeholders. Local Energy Communities (LECs) and Local Energy Markets (LEMs) are emerging as key enablers of this transformation, fostering local electricity sharing and increasing energy resilience, affordability, and sustainability. However, the complexity of these systems often poses a barrier to public understanding and stakeholder engagement. To address this gap, we developed *Gridly*, an interactive, gamified simulation tool that empowers users to explore the dynamics, benefits, and fairness of participating in a local energy market.

Gridly was developed within the framework of the Swiss SWEET LANTERN project and is tailored to the Swiss regulatory context. It simulates LEMs formed through associations for self-consumption (ZEVs) and virtual ZEVs (vZEVs), where neighboring multi-apartment buildings trade self-generated solar electricity via a shared grid connection. The tool allows users—ranging from citizens and educators to researchers and policymakers—to experiment with different energy community configurations and immediately visualize the outcomes.

The tool's simulation engine is built on a *maximum flow algorithm with fairness constraints*, ensuring equitable energy allocation among participants. This prevents the monopolization of trading benefits by a few high-producing members and promotes a balanced distribution of economic and environmental advantages. Gridly's fairness mechanism guarantees that each member can sell or consume a fair share of energy based on market conditions, mitigating inequality and increasing community acceptance.

Users can manipulate several key parameters: the number of buildings in the community, the proportion of buildings with photovoltaic (PV) systems, the presence of battery storage, the extent of demand-side management (DSM) through smart appliances, and the season of the year. These inputs affect solar generation, load profiles, and trading opportunities, enabling users to compare scenarios with varying degrees of self-sufficiency and cost savings. The simulation outputs include electricity bill reductions, independence from the public grid, peer-to-peer energy trading visualizations, and seasonal generation-consumption graphs.

Gridly combines *real Swiss load data from 600 smart-metered households and synthetic PV generation data* from the Winterthur region. It assumes uniform building configurations (six apartments per building), shared PV systems (20kW), and optional battery storage (10kWh). DSM is modeled via smart washing machines and dishwashers, whose usage patterns are aligned with solar production to illustrate load-shifting principles. All results are calculated per season and can be aggregated to provide yearly insights.

The tool is designed with accessibility and education in mind. It is available both as a *web application* and as an *interactive installation* for use in museums, public exhibitions, and classrooms. Its interface is intuitive and multilingual (English, French, German, Italian), featuring clean visual design, simple controls, and audio narration. This design ensures that Gridly can be effectively used by people with diverse backgrounds and literacy levels.

Since its release, Gridly has been tested in workshops with general audiences, educators, and municipal officials. Usage analytics (e.g., session length, parameters explored) and feedback are collected to guide iterative improvements. Planned developments include the integration of *Local Electricity Communities (LEGs)* under new Swiss legislation (2026), support for heterogeneous buildings and energy systems (e.g., electric vehicles, heat pumps), and visualization of CO_2 savings.

Gridly serves multiple roles — as a public engagement platform, a decision-support tool, and an educational resource. By demystifying local energy trading and promoting fairness, it supports the broader goal of enabling smart energy users and strengthening community-driven energy transitions. The tool also contributes to the scientific and policy discourse around market design, equity, and behavioral impacts in distributed energy systems.

WALKABILITY IN 15-MINUTE CITIES FOR PEOPLE WITH REDUCED PHYSICAL MOBILITY

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Keywords: 15-Minute City; Community Life Circle; Walkability; People with Reduced Physical Mobility

ABSTRACT

Under the framework of the "15-minute city" concept, walkability has become a key indicator for assessing equity and inclusiveness. However, conventional measurement methods often assume homogeneous walking capabilities, overlooking the distinct needs of people with limited mobility — including older adults with functional decline, persons with disabilities, and those carrying heavy loads. Facing the aging society, this oversight leads to overestimated accessibility and service mismatches in planning practices.

To address this issue, this study adopts a dual-perspective approach. A combination of questionnaire surveys and field surveys is used to systematically analyze the travel behavior of people with limited mobility. Barriers related to walking capability, route continuity, and the availability of barrier-free facilities are identified. The study reveals that despite that they retain basic mobility functions, this group often encounters environmental constraints which confine their activity range and numbers of outdoor activities. On the supply side, spatial analyses are conducted to evaluate facility catchment areas and service compatibility within community life circles. The findings highlight structural mismatches between accessibility and service provision, especially for highly demanded facilities such as wet markets, community healthcare centers, and rail transit stations with the problems of spatial distribution and broken "last-mile" connections.

Based on these findings, the study proposes the People with Reduced Mobility Walkability Index (PRMA), based on the Hansen accessibility model. The model incorporates heterogeneous facility weights, environmental barrier factors, and nonlinear gain adjustments to comprehensively assess spatial equity in walkability environments. Using Caoyang Subdistrict in Shanghai as a case study, results demonstrate that although the overall facility generally meets normal residents' needs, the actual walkability for people with limited mobility is significantly constrained by micro-environmental factors, such as discontinuous tactile paving, insufficient sidewalk space, and low coverage of barrier-free ramps. The PRMA index reveals spatial disparities in accessibility and, through LISA analysis, identifies high-value and low-value clusters, offering quantitative evidence to improve the barrier-free environment, aiming to holistically enhance the walkability for people with limited mobility. The research contributes to the measurement of walkability in the ageing society and makes the 15-minute community life circles strategy more relevant to them.

SESSION 6

INTERACTIVE SESSION

Session 6 is conceived as an interactive and practice-oriented space that translates the conference's conceptual debates on systemic urban transformation into hands-on experimentation and collective learning. Building on the real-world lab (RWL) tradition, the session foregrounds experimentation not merely as a research method, but as a governance practice that enables iterative learning, reflexivity, and collaboration across science, policy, and practice.

Rather than presenting completed research outcomes, this session invites participants to actively engage in the design of real-world experiments aimed at fostering urban sustainability transitions across domains such as mobility, energy, food systems, and local democracy. Through guided exercises and facilitated reflection, participants are encouraged to articulate concrete intervention ideas, identify relevant actors, and reflect on the conditions under which small-scale experiments can generate broader transformative effects.

A key contribution of the session lies in making visible the processual and situated nature of transformation. By working with real-world experimentation, participants explore how knowledge is produced through action, how uncertainties and conflicts can be addressed productively, and how learning cycles can be embedded within ongoing governance processes. The format thus bridges abstract sustainability concepts with experiential engagement, highlighting experimentation as a means of uncovering leverage points, negotiating values, and building trust among diverse stakeholders.

Overall, Session 6 positions real-world labs as enabling infrastructures for urban sustainability transitions, emphasizing their capacity to connect theory and practice, foster transdisciplinary collaboration, and support transformation-oriented learning. In doing so, it complements the more analytical sessions of the conference by offering participants practical tools and reflective insights that can be transferred to their own institutional, territorial, and research contexts.

MY REAL-WORLD-LAB EXPERIMENT TO FOSTER URBAN SUSTAINABILITY TRANSITIONS

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Keywords: Real-World Lab; Real-World Experiment; Sustainability; Interactive

ABSTRACT

Real-world labs (RWLs) are transdisciplinary infrastructures where researchers and practitioners collaboratively develop, test, and reflect upon interventions in real-life contexts to foster sustainability transitions (Parodi et al., 2018). Real-world experimentation, in this sense, emphasizes iterative, place-based learning through practical trials that generate both transformative action, learning and scientific insight (Parodi et al., 2024).

After a short introduction and building on this approach, the interactive session invites participants to develop their own real-world experiments for urban sustainability transitions. Participants will design small-scale interventions for transdisciplinary and transformative research and practice for sustainable change in different fields — such as in mobility, energy, food or local community and democracy – as starting points for deeper and further actions. Through hands-on exercises and guided reflection, the session highlights how such experiments can uncover leverage points, enhance cooperation between science and practice, and contribute to transformation-oriented knowledge. The format bridges conceptual understanding with experiential learning, supporting participants in transferring experimental approaches to their work and contexts – thereby making transformation processes tangible and accessible for different target groups and stakeholders.

SESSION 7

POSTERS SESSION

Session 7 brings together a diverse set of poster contributions that foreground citizen-driven, participatory, and place-based approaches to climate-resilient urban transformation. Collectively, the posters illustrate how sustainability transitions are increasingly shaped not only by formal planning instruments and technological solutions, but also by everyday practices, local knowledge, and experimental forms of governance that actively involve residents, communities, and civic actors.

Across the contributions, citizens emerge as co-producers of urban transformation, particularly in domains such as water management, energy transition, neighbourhood regeneration, and science communication. The Sponge City approach highlights how participatory design of green and blue infrastructures can enhance urban climate adaptation while strengthening democratic decision-making and local ownership. Similarly, the Wałbrzych case illustrates how participatory governance can contribute to a just energy transition in post-industrial contexts, where questions of legitimacy, recognition, and procedural justice are central to sustaining long-term change.

Several posters draw on real-world lab methodologies to explore new institutional and spatial arrangements for sustainability. Quartier Zukunft and MobiLab exemplify how long-term, experimental, and mobile research infrastructures can embed sustainability within neighbourhoods and public spaces, fostering learning processes that cut across disciplinary, institutional, and societal boundaries. These initiatives demonstrate how real-world labs can function as relational platforms—connecting research, practice, and citizens—while making sustainability transitions visible, tangible, and accessible.

Taken together, the posters emphasise that climate-resilient urban transformation is deeply relational and situated, unfolding through small-scale interventions, collective experimentation, and sustained engagement over time. Session 7 thus complements the analytical and conceptual discussions of the conference by showcasing how citizen participation, transdisciplinary collaboration, and everyday experimentation contribute to building inclusive, just, and resilient urban futures.

CITIZEN-DRIVEN APPROACHES FOR CLIMATE-RESILIENT URBAN TRANSFORMATION

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Keywords: Sponge City; Water Management; Citizens; Participation; Decision Making

ABSTRACT

Cities are facing growing challenges related to climate change, such as more frequent heavy rains, rising temperatures, and the lack of sustainable water management. The idea of a Sponge City offers a way to deal with these problems by using local knowledge and citizen engagement in developing nature-based solutions. It focuses on the active participation of residents in planning and designing green and blue infrastructure that helps retain rainwater, reduce flooding, and improve the urban environment.

In our approach, the Sponge City model connects water management with other aspects of urban sustainability, including energy use, ecology, and community involvement. By introducing practical measures like permeable pavements, green roofs, or small rain gardens, cities can become more adaptable and resource-efficient while involving citizens in real decision-making.

The experience from our research shows that citizen-driven projects can make a difference in how urban areas respond to environmental stress. They also help build stronger ties between people, local authorities, and their environment. The project illustrates how everyday participation and simple, locally adapted solutions can contribute to long-term resilience and more inclusive urban transformation.

QUARTIER ZUKUNFT (DISTRICT FUTURE – URBAN LAB)

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Keywords: Real-World Lab; Sustainability; Neighbourhood

ABSTRACT

Quartier Zukunft – Labor Stadt (District Future – Urban Lab) is a real-world laboratory operated by the Karlsruhe Transformation Centre at the Karlsruhe Institute of Technology (KIT). It aims to develop, test and research sustainable approaches to urban living through a long-term, participatory process in the Oststadt district of Karlsruhe, Germany. In this experimental space, residents, researchers, the city administration and local stakeholders work together to foster a 'culture of sustainability' and transform the Oststadt district of Karlsruhe into a liveable, sustainable urban environment. The intention is to incorporate KIT into this transformative process through interconnection and transdisciplinary research. The key objective is to initiate and understand the process of sustainability transformation, and to stabilise this development in the long term. The Urban Lab is a transdisciplinary project based on the 'Integrated Concept of Sustainable Development' and the concept of 'Deep Sustainability'. Taking a holistic approach, the focus is on energy transition, climate protection, sustainable mobility, social participation and personal sustainability.

TOWARD LOCAL TRANSFORMATION THROUGH PARTICIPATORY GOVERNANCE IN THE JUST ENERGY TRANSITION

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Keywords: Participatory Governance; Urban Governance; Just Energy Transition; Local Transformation; Wałbrzych (Poland)

ABSTRACT

The paper aims to analyze and evaluate current vectors of sustainability transitions at local and sub-regional levels to find answers to whether they contribute to the urban transformation through participatory governance in just energy transition and the greater involvement of citizens in the co-creation of energy policy. Goals will be achieved by studying both citizens' roles and engagement and institutional arrangements. Specifically, one aims to answer the following detailed questions: What does the political decision-making process look like according to the co-creation approach? How should political decision-making processes be designed to facilitate citizens' engagement toward just transition at the urban level? What drives these process preferences? Can procedural justice increase citizens' perceptions of legitimacy? How? Is the co-creation of energy justice a life-changing experience at the urban level? How is it visible in practice?

Based on this, one specific city within the EU-affected regions was selected for further analysis. This is Wałbrzych, which is the second largest city in Lower Silesia (the 4th biggest region in Poland) with around 110,000 inhabitants. Its economy had long depended on coal mining (lignite) and heavy industry. Almost three decades after the mine closures, Wałbrzych and the surrounding towns show signs of economic recovery but still face ongoing challenges. Pursuing a low-carbon economy may offer opportunities to tackle post-industrial decline. Wałbrzych is an urban region attempting to rebrand itself; however, the transition is in an early stage where narratives and debates are driven by fear of the future rather than lived transition experience.

These dimensions guide and structure the proposed paper and are linked with different forms of energy justice: procedural, distributive, and recognition. All of them will be evaluated from the perspective of the co-creation of a just energy policy for Wałbrzych.

The answers help to understand the state of the art and prospective scenarios for Wałbrzych's transformation through institutional arrangements and political patterns.

MOBILAB: A MOBILE REAL-WORLD LAB INFRASTRUCTURE FOR TRANSDISCIPLINARY RESEARCH AND SCIENCE COMMUNICATION

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Keywords: Mobile Participation Lab; Science Communication; Real-World Lab; Sustainability

ABSTRACT

Transdisciplinary research and the transfer of science to society require innovative formats that foster direct dialogue between research and practice. The MobiLab provides such a format: a mobile real-world lab infrastructure, educational space, and communication platform that brings research out of traditional institutional settings and into public spaces, making it tangible and participatory.

The MobiLab – a tiny house on wheels equipped with flexible interior space, an open veranda, sustainable building materials, and modern digital infrastructure – serves as a venue for workshops, exhibitions, empirical social science research such as surveys, and participatory science communication. Its mobility enables direct engagement with diverse audiences and creates new opportunities for collaboration between researchers and practitioners, especially in the field of urban sustainability.

By bringing transformative research directly to communities, the MobiLab facilitates real-time engagement, face-to-face dialogue, and place-based transformation. It supports sustainability-oriented real-world laboratory research, co-design processes, and advisory activities on climate protection and urban resilience. Through its work, the MobiLab makes scientific knowledge more accessible to the broader public, including hard-to-reach societal groups.

Since its inauguration in 2021, the MobiLab has been actively used in research, participation and educational contexts in Karlsruhe and beyond. Notably, it has traveled along the Rhine River during the *Eucor MobiLab Roadshows 2023 and 2025*, organized in cooperation with universities and institutions from *France, Switzerland, and Germany* within the *Upper Rhine region*. Additional to science communication and dialogue with society, these roadshows have served as cross-border connecting points where researchers, practitioners, and local stakeholders from cities and municipalities exchanged insights and co-created approaches for sustainable urban development.

Drawing on examples from its deployments and accompanying research, the poster outlines the concept, methods, experiences, and perspectives of the MobiLab, highlighting its potential as a model for mobile science communication and for connecting research, practice, and communities in the transition toward urban sustainability in the Upper Rhine region.

CONCLUDING NOTE: NEXUS THINKING AS A HEURISTIC APPROACH FOR URBAN TRANSFORMATION

The 2026 UERA Conference maintains the value of nexus thinking across energy, food, mobility, and ecological transitions not as a prescriptive model, but as a heuristic framework for understanding the evolving realities of urban transformation. Across sessions and contributions, the conference demonstrated that the analytical strength of nexus thinking lies in its capacity to illuminate complexity, interdependence, and contradiction—rather than to produce simplified or definitive solutions.

Four interrelated principles emerge as central to this heuristic potential.

First, urban research must remain attentive to concrete practices and situated problems, which are continuously made and remade through multi-scalar interactions. These processes increasingly unfold within contexts shaped by geopolitical tensions, resource constraints, and economic uncertainty. Rather than aiming for closure or universal models, the contributions underscore the importance of open-ended conceptualisations capable of engaging with ongoing change and uncertainty.

Second, if broad notions such as governance, participation, or systems integration are to retain analytical and practical relevance, they must be grounded in a simultaneous consideration of actors and procedures. Across the conference, it becomes clear that understanding who is involved in socio-ecological change cannot be separated from how decisions are made, knowledge is produced, and interventions are implemented. Nexus thinking gains operational value precisely when it connects institutional arrangements, power relations, and procedural dynamics.

Third, these conditions are essential for addressing the increasingly explicit demands for ecological, social, and spatial justice. Many contributions reveal that participation cannot be assumed to be inherently inclusive. Instead, justice-oriented urban research must interrogate who is effectively able to participate, under what conditions, and with which capacities. This shifts attention from formal inclusion toward substantive access, highlighting justice as both a technical and a political challenge embedded in transition processes.

Fourth, the conference foregrounds a reflexive awareness of the methodological implications of studying transformation. Research on democratic practices, experimentation, and real-world interventions inevitably confronts tensions between engagement and critical distance. Navigating this tension—between being sufficiently embedded to grasp unfolding processes and sufficiently detached to maintain analytical rigor—emerges as a defining challenge of action-oriented and transdisciplinary research.

These insights point to the distinctive role of UERA as more than a forum for presenting results. The network operates as a collective space for grappling with the epistemic, methodological, and normative challenges of researching urban transformations in real time. By sustaining dialogue across projects, disciplines, and institutional contexts, UERA contributes to a deeper understanding of how urban futures are negotiated, contested, and shaped—both in research and in practice.

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