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Sustainable urbanisation



Theme C – Excerpt of the CASRI Strategic Research & Innovation Agenda (SRIA)

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Sustainable urbanisation – *Theme C*

Abstract

Sustainable urbanisation seeks to balance economic development, social well-being, and environmental sustainability by transforming cities into drivers of innovation and systemic change. Growing urban populations, increasing resource demands, climate risks, and persistent social inequalities create complex challenges that require integrated technological, institutional, and governance solutions. Innovation in energy systems, mobility, housing, land use, and environmental management can improve resource efficiency, reduce emissions, strengthen climate resilience, and enhance quality of life. Effective implementation depends on integrated cross-sectoral planning, coherent regulatory frameworks, inclusive governance, citizen participation, and sustainable financing. Cities must also address pressures arising from infrastructure development, land consumption, pollution, and competing demands for resources. At the same time, measures to improve urban sustainability must avoid unintended consequences, including gentrification, social exclusion, and unequal access to housing, services, and green spaces. By connecting environmental objectives with social and economic priorities, sustainable urbanisation contributes directly to SDG 11 and supports SDGs 3, 6, 7, 9, 12, 13, 15, and 17.

Keywords

Urban Resilience; Nature-Based Solutions; Sustainable Mobility; Land-Use Planning; Social Inclusion; Urban Justice

Expected Impacts

Green Space Provision (Topic C1)

Reshape cities to function more like adaptive socio-ecological systems rather than purely engineered spaces — shifting urban development away from grey, resource-intensive models toward hybrid green–blue infrastructures that regulate climate, manage water, support biodiversity, and improve human well-being.

Land Use and Sustainable Mobility (Topic C2)

Shift cities away from car-dependent sprawl toward compact, mixed-use development supported by high-quality public and active transport — reducing inefficient land take, limiting urban expansion into natural areas, and enabling more efficient use of existing public infrastructure through integrated land use and mobility planning.

Achieving social inclusion and assessing social impact (Topic C3)

Shift sustainable urbanisation from a primarily technical or environmental agenda toward a socially grounded transformation of cities that prioritises people and their needs — embedding equity, accessibility, and lived social needs into the design, implementation, and evaluation of urban development projects.

Further Information

For topic-related information on Background & Rationale, Significance and CASRI added values, expected outputs of the research questions and synergies with other relevant R&I initiatives, please refer to the full SRIA (Dictor et al., 2026).

Topic C1 - Green Space Provision

***Keywords**: urban green space; nature-based solutions; ecosystem services; urban resilience*

Description: This topic seeks to provide additional arguments and thematic connections to convince decision-makers to allocate resources and support initiatives aimed at increasing green spaces in urban areas. These are recognised to positively impact urban well-being and contribute to climate adaptation against weather extremes. At the site-specific level, future research could focus on addressing disturbed or contaminated soils in urban areas. Further, research on how to maximize environmental (biodiversity, climate resilience) and social (health, community engagement) benefits is of focus. Methods for research mentioned include living labs, with prioritization given to nature-based vs. technical solutions.

Impacts: Green space provision integrates parks, urban forests, wetlands, green corridors, and other nature-based solutions into urban planning, helping cities balance densification with biodiversity, climate adaptation, water management, and human well-being. Its impacts include improved physical and mental health, recreational opportunities, community interaction, enhanced ecosystem services, and potentially reduced infrastructure costs, while planning must also consider maintenance requirements and possible effects on neighbourhood property prices.

Contribution to Environmental and Sustainability Challenges: Land use decisions and changes significantly impact urban environments and quality of life. This research demand calls for a comprehensive and integrated approach to combine sectoral perspectives and achieve a more holistic understanding of the drivers, pressures and levers of change. The goal is to optimize land use for sustainable urban development through integrative thinking and policy design, alongside adequate data collection and monitoring. CASRI insights note the need for a better understanding of transformative change, requiring deeper insight into the processes of organisational, social, and behavioural shifts related to drivers of land use change, alongside improved utilization of data – including artificial intelligence, participatory citizen science, visioning exercises, and awareness-raising initiatives. The reconfiguration of the economy, incorporating considerations of sufficiency and justice, sustainable consumption, sustainable finance, incentives and disincentives for action, and regenerative economic paradigms, were also highlighted.

Transnational Societal and Policy Relevance: This topic incorporates feedback from across CASRI themes. For sustainable urbanisation, the key issue of “land use and sustainable mobility” was prioritized highly. Similarly, within the biodiversity and climate theme, a better understanding of systemic interactions between different environmental challenges was stressed, addressing potential trade-offs and synergies – extending beyond biodiversity and climate-related activities. These key findings from both themes underscore the importance of an integrative approach to achieve innovative results. Furthermore, for CASRI-theme D “Nature, environmentally and socially friendly energy transition”, “land use” was highlighted not only as a thematic priority but also as an integrative platform for exploring interlinkages.

Systemic Knowledge Needs: Addresses Green Deal goals (pollution-free environments, climate adaptation, biodiversity) with needs of integrated sectoral planning (city planning, energy and blue-green infrastructure, etc.).

Transversal Knowledge Needs: Involves the interplay between EU policies (e.g. Renewable Energy Directives, Nature Restoration Law) and activities by national agencies (e.g. EPAs often as monitors of national land use changes and trends).

Actionable Knowledge Needs: Outputs include pilot-tested data tools, use cases, policy guidance.

Topic C2 - Land Use and Sustainable Mobility

Synergies offered by transport (primarily transport of people, and in some cases freight) with other land use concepts (land use efficiency, reduction of land take, sponge city implementation)

Keywords: *land-use planning; sustainable mobility; compact urban form; accessibility*

Description*:* For the regional spatial impact of transport decisions, a focus was placed on the synergies offered by transport (primarily the transport of people, and in some cases freight) with other land use concepts, such as land use efficiency, reduction of land take, and the implementation of “sponge city” principles. There was explicit recognition of the need to understand the impact of permitting processes, such as zoning, on issues of land take, and how to balance transport with land use.

Impacts*:* Integrating land-use planning with sustainable mobility promotes compact, mixed-use urban development supported by public and active transport. This reduces car dependency, land consumption, greenhouse gas emissions, and pressure on natural habitats while improving infrastructure efficiency. Multifunctional transport corridors incorporating green and blue infrastructure can further strengthen urban resilience through improved water retention and flood mitigation. Improved connectivity enhances access to jobs, education, and services, reduces travel times and costs, and requires cross-sectoral cooperation for coherent, evidence-based urban planning.

Contribution to Environmental and Sustainability Challenges*:* This knowledge demand aims to contribute to understanding the broader societal impact of land use decisions on settlement structures. For example, the impact of transport choices on public health and the achievement of climate neutrality.

Transnational Societal and Policy Relevance*:* Climate neutrality goals are of high priority for society. Some CASRI insights highlighted the need to progress towards this objective, while also recognising that physical infrastructure must support climate-neutral living. This requires a greater integration of mobility and land use fields, and widespread acceptance. CASRI data point towards promising methods of co-design and participation of civil society in developing feasible solutions due to the central role of the general population when it comes to influencing transportation patterns.

Systemic Knowledge Needs*:* Knowledge demands focus on the interplay between land use and mobility, and a need for innovative concepts to address evolving conditions, such as democracy crisis (e.g. populism) and climate change. A central question is how to integrate emerging land use needs, related to renewable energies and climate adaptation, into settlement structures that also support sustainability.

Transversal Knowledge Needs*:* Understanding the impact of local actions while adapting or creating supportive inter-/national frameworks is crucial, essentially mainstreaming effective solutions.

Actionable Knowledge Needs*:* Developing demonstrator sites for improved quality of life, building coalitions, and engaging communities are essential steps forward.

Topic C3 - Achieving social inclusion and assessing social impact

Better integrate social preconditions and needs when pursuing sustainable urbanisation projects

***Keywords**: social inclusion; social impact assessment; co-design; urban justice*

Description*:* This topic aims to better integrate social preconditions and needs when pursuing projects relevant to sustainable urbanisation. This can include adapting co-design and co-management methods when carrying out projects, and highlighting social perspectives within dedicated research fields.

Impacts*:* Social inclusion and social impact assessment integrate equity, accessibility, participation, and diverse social needs into the planning and evaluation of urban development projects. They help identify who benefits from urban interventions and who risks exclusion, promoting fairness and distributive justice. Although time and financial constraints may limit implementation, strengthening social cohesion remains an important objective of sustainable urbanisation. These approaches can also improve the legitimacy, transparency, and accountability of urban governance while fostering community trust and cooperation among stakeholders.

Contribution to Environmental and Sustainability Challenges*:* The focus is on engaging communities to establish them as active participants in sustainability research, thereby addressing existing disengagement and opposition. It looks to address both the contextual and regulatory setting in which initiatives are carried out to better address social needs as well as provide support in the form of knowledge or solutions for sustainable lifestyle changes.

Transnational Societal and Policy Relevance*:* Social aspects, such as inclusion and co-design, are increasingly emphasised by the New European Bauhaus initiative (NEB) of the EU and the related EU Mission/NEB Facility. Further relevance is given to the objectives of cohesion between EU regions, as defined by Cohesion Policy and the related funding schemes (e.g., European Social Fund+).

Systemic Knowledge Needs*:* This topic calls for the integration of various disciplines to better understand community interests and impacts. It prioritises social equity, integrative thinking, and action, involving society in concepts such as climate adaptation and sponge cities. It also addresses the digitalisation of urban services and the creation of better data governance, alongside the essential social preconditions for successful inclusion.

Transversal Knowledge Needs: Knowledge exchange between different levels is crucial. Understanding the role of engagement, co-design, and co-management as means to achieve desired transformational impacts is paramount, as is aligning interests across various levels. European cohesion remains a key objective.

Actionable Knowledge Needs*:* Empowering communities, developing co-creation processes, and reaching consensus are essential. Encouraging interdisciplinary discussions — such as incorporating “Do No Significant Harm” perspectives into urban decision-making — will be vital.

Background on CASRI SRIA

SRIA Objectives, Positioning And Targeted End-Users. Europe is facing interlinked environmental, economic, technological and geopolitical pressures. Sustainability transformation therefore remains essential to Europe's long-term resilience, competitiveness and security. Sustained access to resources, resilient production systems and supply chains, climate-resilient infrastructure, healthy populations, functioning ecosystems, effective regulation and the societal capacity to manage transformation all depend on robust and actionable knowledge. Against this background, European Environmental Protection Agencies (EPAs) and EPA-like sustainability expert organisations have worked with actors across Europe through the project CASRI – Collaborative Action coordinating and enhancing systemic, actionable and transversal Sustainability Research and Innovation – to co-create this Strategic Research and Innovation Agenda (SRIA), which have been developed in close connection with the EPA Network Interest Group on Sustainability Research and Solutions (IG EPAS)**.** The CASRI SRIA consolidates transnational knowledge needs identified and further developed through the CASRI co-design process, providing a basis for further prioritisation, programming, collaboration and implementation. It is not a fixed research programme or a formally agreed policy position of European EPAs. Its topics and priority levels reflect the evidence, participants and timeframe of the CASRI process and are intended to be further developed with funders, policymakers, researchers and implementation actors. The SRIA addresses European and national funders, programme owners and partnerships seeking opportunities for coordinated programming and investment, as well as research organisations, businesses, public authorities, cities, regions, civil society and EPAs developing collaborative R&I and implementation activities. Through the SRIA, CASRI invites these actors to jointly develop and apply systemic, transversal and actionable knowledge for a sustainable, competitive, democratic, resilient and liveable Europe.

SRIA Content and Topic Prioritisation. The CASRI SRIA comprises 8 interconnected themes and 20 transnational Research and Innovation topics. For each topic, it describes expected impacts, background and rationale, the systemic, transversal and actionable knowledge needs, and the significance and added value of further Research and Innovation, including links and gaps in relation to existing initiatives. The topics were developed to different levels of detail according to the interest and evidence emerging through the co-design process.

CASRI SRIA Co-design Process. The SRIA was developed through a bottom-up co-design process involving EPAs and EPA-like organisations as National Contacts who invited National Key Stakeholders and European experts with backgrounds in knowledge production, funding, implementation, politics and use. Around 600 national knowledge needs were identified, clustered and consolidated into 20 transnational Research and Innovation topics, which were subsequently discussed, prioritised and further elaborated through surveys, online exchanges and workshops. The resulting agenda therefore combines national implementation experience with transnational analysis and European dialogue.

CASRI Added Value and Next Steps. The SRIA provides two mutually reinforcing contributions. First, it offers an evidence-based agenda of shared R&I needs, showing where systemic, transversal and actionable knowledge can support sustainability transformation. Second, it provides a basis for collaboration with EPAs and between those who identify knowledge needs, fund research, generate knowledge and innovation, and implement, regulate or scale solutions. EPAs can make a distinctive contribution to this collaboration because they operate between environmental science, monitoring, policy advice, regulation and implementation. Their data, institutional knowledge, stakeholder relations and experience with implementation barriers can help connect research agendas and innovation with real-world needs and support continuous learning between research, policy and practice. Implementation is understood as an iterative process rather than a final stage following research. CASRI will therefore explore how the SRIA can inform agenda-setting, funding and programming, collaborative Research and Innovation, practical implementation and learning, while developing structures for continued cooperation beyond the project.

Further information

Within the EPA Network, the Interest Group on Sustainability Research and Solutions (EPAS) serves as a collaborative platform to support the implementation of the SRIA and advance this thematic priority through knowledge exchange, cooperation and joint action. In case of interest, please contact **Karl Eckert - UBA – Umweltbundesamt (Karl.Eckert@uba.de)**.

Visit the CASRI website at CASRI.eu for more information.

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