

ACKNOWLEDGEMENT

The paper was written by Jonas Bylund (IQ Samhällsbyggnad; Sweden), Johannes Riegler (FFG, Austria) and Margit Noll (FFG, Austria).

JPI Urban Europe would like to thank all institutions and individuals who participated in the development process of this Strategic Research and Innovation Agenda. Special thanks go to the members of the Scientific Advisory Board who strongly supported the process through regular reflections and advice. A large amount of researchers, representatives of municipalities, business, and civil society organisations across Europe and beyond contributed by providing their viewpoints on sustainable urban development and related research and innovation in consultations, workshops and meetings throughout 2018. Additional efforts have been taken by the JPI Urban Europe delegates to mobilise such stakeholders and organise national consultations.

JPI URBAN EUROPE

JPI Urban Europe is a transnational research and innovation programme built upon and aligning national strategies and research programmes on sustainable urban development.

January 2019



This strategy was developed with support of the project EXPAND which received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 726744.

CONTENT

Preamble	3
The JPI Urban Europe strategy process	5
Policy and scientific context for SRIA 2.0	6
Objectives of the Strategic Research and Innovation Agenda	9
Expected Impact	10
Urban transition pathways – creating synergies among the plurality of urban goals, strategies and actions	12
Urban dilemmas as focal points for research and innovation	14
Digital transitions in urban governance	18
From urban resilience to robustness	21
Sustainable land-use and urban infrastructures	24
Inclusive public spaces for urban liveability	27
Principles for SRIA 2.0 Implementation	30
<i>National coordination and alignment</i>	33
<i>Co-creation and capacity building at the AGORA</i>	33
<i>Strategic partnerships</i>	34
<i>Internationalisation and widening participation</i>	35
<i>Joint investments in urban R&I</i>	36
<i>Urban living labs and experimental approaches</i>	37
<i>Managing the project portfolio and targeted communication</i>	39
<i>Strategic synthesis</i>	40
<i>Monitoring and evaluation</i>	40
Multi-annual call agenda	41
References	43

Figures

Figure 1: SRIA 2.0 process	5
Figure 2: Dimensions of expected impact created by the JPI Urban Europe programme	10
Figure 3: UN Agenda 2030 SDGs with no. 11 as entry point, drawing on the SAB position paper.	13
Figure 4: SRIA 2.0 concept and implementation framework	15
Figure 5: Indicative contribution of SRIA 2.0 priorities to SDG 11 sub-targets	17
Figure 6: The JPI Urban Europe Transition Arena – the portfolio of instruments and activities to implement the Strategic Research and Innovation Agenda	32
Figure 7: SRIA 2.0 thematic priorities and other related activities, current UAEU partnerships and JPIs	35
Figure 8: Formats used and events organised under the JPI Urban Europe AGORA Stakeholder Involvement Platform	38
Figure 9: Multi-annual call agenda for SRIA 2.0	41
Figure 10: Indicative topics for the multiannual call agenda	42

PREAMBLE

The Joint Programming Initiative Urban Europe is an intergovernmental and strategic partnership of countries addressing the challenge of sustainable urban development through coordinated research and innovation. The initiative was established following the European Council recommendation of 2010¹, being formally launched by the Council in 2011². The benefits of Joint Programming lies in its structured and strategic process, whereby countries voluntarily agree to work in partnership towards common visions, encapsulated in a Strategic Research and Innovation Agenda and implemented through joint actions. From 2012 to 2018 JPI Urban Europe has

- ▶ Published the Strategic Research and Innovation Agenda 2015-2020
- ▶ Established a programme management and governance structure
- ▶ Implemented seven joint calls for research and innovation projects, spending about 85 million Euros in public investment and engaging more than 25 funding agencies
- ▶ Funded more than 70 projects with about 450 project partners
- ▶ Created a community of urban research and practice across Europe, involving researchers, municipalities, societal organisations, business, entrepreneurs and other stakeholders
- ▶ Organised a variety of scientific and policy conferences, workshops and dissemination activities for strategic and thematic exchange
- ▶ Started international cooperation with the Belmont Forum and China
- ▶ Established relationships to other regional, European and international networks, programmes and initiatives

In 2016, JPI Urban Europe agreed on its long-term vision and reinforced its ambition to address the sustainable urbanization challenge in its complexity taking into consideration the latest research, innovation and policy developments and debates³. There is agreement among all partners that the next development phase of JPI UE must focus on activities that strongly fosters challenge driven innovation and amplify the cooperation of research with cities and urban stakeholders.

1 CEU (2010a).

2 CEU (2010b).

3 Such as the SDGs, in particular SDG 11 (UN (2015)), the UN-Habitat III report (UN (2017)) and the Urban Agenda for the EU (EC (2016)).

The related urban policy and research and innovation objectives have been defined as

- Setting common research priorities according to the EU Urban Agenda and SDGs (SDG 11)
- Address and connect fragmented socio-technical approaches to sustainable urban solutions and enhance knowledge, research capacity and impact of research on urban transitions
- Within the strategic framework, being responsive to urgent urban issues by creating and promptly translating relevant knowledge and evidence
- Foster public sector innovation and capacity building in urban planning, management, and (regional, national, EU, and international) policy making for urban transitions
- Mobilise societal actors and stakeholders to co-create ideas, concepts and solutions, reflect the latest developments and support mutual learning to better meet societal and urban needs

VISION OF JPI URBAN EUROPE:

JPI Urban Europe is established as the European platform to create, combine, discuss and make available knowledge and robust evidence for sustainable urban solutions. This is achieved by setting common research and innovation priorities, improving and aligning R&I instruments, moderating science-policy processes and supporting transnational collaboration for local capacity building.



This document summarizes the principles of the SRIA 2.0, its thematic priorities and implementation framework. The Annexes referred to in this document can be found at <https://jpi-urbaneurope.eu/about/sria-2-0/>

THE JPI URBAN EUROPE STRATEGY PROCESS

JPI Urban Europe started the strategy update with the development of a long-term vision setting out the main objectives for JPI Urban Europe until 2026. This long-term vision was presented to the High Level Group for Joint Programming (GPC) in May 2017. Consecutively, the process of updating the SRIA was initiated. Since one of the guiding principles of the JPI Urban Europe programme is strong stakeholder involvement, JPI UE seeks to ensure this involvement also in the process of developing strategies. One crucial reason this is done is to ensure our priorities match those of urban practitioners. In addition, our priorities should also reflect both global as well as European urban policies enhancing the impact of our activities and investments on a policy, business and societal level. This is why the strategy process:

1. is strongly built upon wide stakeholder consultations and dialogues;
2. is connected to ongoing policy and strategy debates, in particular the implementation of Agenda 2030 SDGs and the Urban Agenda for the EU;
3. considers results of JPI Urban Europe's existing projects, selected other projects and conclusions from the first implementation phase of the JPI Urban Europe SRIA.

The detailed steps of the strategy process are summarized in Annex 1.



Figure 1: SRIA 2.0 process

POLICY AND SCIENTIFIC CONTEXT FOR SRIA 2.0

In 2015 JPI Urban Europe published its Strategic Research and Innovation Agenda (SRIA) *Transitions towards sustainable and liveable urban futures*.⁴ In this agenda, the main ambitions, strategic priorities, and key activities for the implementation of the joint programme were specified. Since then, the JPI Urban Europe countries teamed up in joint actions to achieve its goals. Joint calls were launched addressing research questions of the identified thematic priorities. So far, more than 70 projects have been funded; leading to projects which have generated new insights, approaches and solutions to support sustainable urban development and drive urban transitions.⁵ In addition, efforts have been taken to enhance capacities on urban transitions in research and policy, strengthening science-policy cooperation and disseminating research results in Europe and beyond. The first international cooperation involving countries from Asia, The Americas and Africa was started in order to connect to related global programmes and developments.

The SRIA 2015 was developed to guide efforts considering a long-term perspective and its main intention and focus are still valid. As JPI Urban Europe aims to support the transition of European urban areas towards sustainable, resilient and liveable places, The SRIA 2015 addresses cities' sustainability, in all its complexity; 'to better understand how we can create economic growth and social and economic equality – vibrancy and accessibility, within carefully defined and measurable environmental limits'.⁶

However, as more and more projects finish, an increasing number of research results and transdisciplinary learning outcomes have become available. Following the SRIA 2015 publication new urban-related European and global policies have been launched, and more urban strategies and programmes are currently under development. All this represents important references for the future JPI Urban Europe programme and thus calls for a reflection of the current JPI Urban Europe strategic priorities. JPI Urban Europe with this update seeks to ensure a strong alignment of the research and innovation programme with these policies and specify in which areas and through which key activities the programme can contribute best in order to achieve its international goals and strategies.

4 See JPI Urban Europe (2015).

5 More information about our calls and funded projects is available at the JPI Urban Europe website <www.jpi-urban-europe.eu>.

6 JPI Urban Europe (2015), p.19.

The latest developments considered for this update in particular are:

- ▶ • The United Nations *Transforming our world: the 2030 Agenda for Sustainable Development*, with the 17 Sustainable Development Goals (SDGs), published in 2016 was ground breaking with an explicit urban goal – *SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable* – and with this positioning urban development as one of the priorities for our future global sustainable development. Considering its main goal, the JPI Urban Europe's programme aligns strongly with the Agenda 2030. In the update an even stronger relation will be given to SDG 11 as an entry point towards the achievement of all SDGs.
- The UN Habitat (2016) *New Urban Agenda* and the UN (2015) *Paris Agreement* complement the UN Agenda 2030 with more detail aims and priorities for urban development and climate change mitigation. As the European strategy related to the New Urban Agenda, the *Urban Agenda for the EU* (UAEU), was agreed among the European Union member states in 2016. In this development process JPI Urban Europe was referred to as an initiative which provides scientific evidence to implement the agenda. Accordingly, JPI Urban Europe is establishing relationships with the UAEU and its partnerships. The SRIA update will enable JPI Urban Europe to fulfil the ambition to better connect to the priorities and activities of the UAEU and support its implementation through research and innovation.
- The development of the ninth European Research and Innovation Framework Programme (Horizon Europe) started in 2018. Urban issues continue to be an integral part of several priorities of the Global Challenges pillar. The relevance and role of cities in harnessing the forces of change is also addressed in the BOHEMIA report, a foresight study carried out to inform future European R&I policy, in particular the development of Horizon Europe⁷. Anticipating the cross-sectoral nature of sustainable urban development, JPI Urban Europe is ready to team up with the European Commission and continue its cooperation in Horizon Europe. In addition, the development of European missions for research and innovation is under discussion as one possible key element of Horizon Europe. The implementation of the SRIA has allowed European countries and transnational funding to gain experiences in challenge-driven research and innovation. Additionally, SRIA enabled the testing of different formats, instruments and supporting measures in order to create the type of

7 Weber et al. (2018).

long-term programme required to implement missions. Based on such experiences and with the updated priorities, JPI Urban Europe is prepared to contribute to Horizon Europe in general and the development of urban missions in particular. Concrete proposals for such missions have been provided.

- To reflect the consequences of the Agenda 2030 SDGs for research and innovation the JPI Urban Europe Scientific Advisory Board (SAB) developed a position paper as a reference for the future strategic development of JPI Urban Europe⁸. The SAB emphasises the importance of urban transitions as a *global task* to fulfil the SDGs. However, more integrated approaches for urban transitions are called for, considering not only different sectoral pathways or interests but also different scales, from neighbourhoods' level up to cities' or regions' scale. To achieve this the SAB recommends considering new urban imaginaries for urban sustainability, investigate the limits and potentials of urban integration and strengthen challenge-driven innovation that not only *develops new solutions, but also creates new coalitions between societal actors and business, build new markets and disrupt existing systems, all of which are important aspects of a transition.*
- JPI Urban Europe projects from the first calls have now been finished, leading to more results and scientific evidence being continuously created. Such results and experiences have been considered in the update, not only regarding content and research priorities but also in terms of requirements to improve instruments and framework conditions for research funding, science-policy cooperation and uptake of research results in urban practice (see Annex 2 and 3).

8 Kabisch et al. (2018).

OBJECTIVES OF THE STRATEGIC RESEARCH AND INNOVATION AGENDA

Using this Strategic Research and Innovation Agenda, JPI Urban Europe seeks to continue its efforts to strengthen transnational research and innovation on urban transitions and provide scientific evidence for urban actors on sustainable urban development. JPI Urban Europe does not focus on one particular transition pathway but acknowledges the fact that, depending on local situations, a plurality of goals, ambitions and related pathways exist, not only across cities but also within cities, mirroring the complexity of urban matters. Consequently, to succeed in urban transformations integrated approaches are needed that consider conflicting targets, strategies and interests and identify critical or synergistic interrelationships of such pathways.

In this sense the SRIA 2.0 aims to

- ▶ • address key dilemmas for urban transitions and create knowledge and scientific evidence on how to turn such conflicts into synergistic potential
- enhance capacities in research, innovation, policy and society and create room for experimentation, co-creation, and science-policy-society cooperation to jointly develop and implement transition pathways in an integrative way
- advance formats and instruments to support such transnational and transdisciplinary cooperation on urban matters to position Europe at the forefront of urban research and innovation

EXPECTED IMPACT

According to the particular setting of JPI Urban Europe, the programme aims to create impact in three dimensions (Figure 2):

- ▶ **Impact on cities:** Using the proposed thematic priorities and implementation measures, JPI Urban Europe wants to offer cities room for experimentation, a network of like-minded urban actors, and concrete references that might help them to start similar actions in their own cities. The portfolio of implementation measures is oriented towards shaping an environment to create new transition pathways that correspond to the city's strategies and priorities.
- **Impact on national urban policies:** Considering the Agenda 2030 SDGs and the New Urban Agenda of UN-Habitat international and national frameworks for urban development have been reinforced. Utilising the scientific evidence created in the JPI Urban Europe projects, input and references for such policies or related actions can be provided.
- **Impact on R&I policies:** By going beyond the use of state-of-the-art instruments JPI Urban Europe creates new insights for future instruments and framework conditions that fit the needs of



challenge-driven approaches. The Programme Management established and further developed by JPI Urban Europe can be used as a reference for national ones. At the same time the participating programme owners and funding agencies use the cooperation opportunity to share experiences, jointly test new approaches and create references for their own programmes.

Figure 2: Dimensions of expected impact created by the JPI Urban Europe programme

In particular, urban actors and policy makers can benefit from:

- ▶ JPI Urban Europe delivering on key issues to catalyse urban transitions in Europe, particularly among small and medium-sized cities and in other regions around the world.
- support with much needed conceptual and practical work on the hardest cases as reflected in thematic dilemmas, trans-silo and complex nexus issues by developing and re-working/shaping them into synergies.
- understanding the internal and external dynamics of the transition and translating them into a tangible experience.
- transnational cooperation that leverages a sort of European way of urban development that enhances urban sustainability and takes into account cultural differences.
- facilitating the exchange and adoption of best practices and harmonizing policies transnationally based on such success stories
- educating each other in the different institutional frameworks in which similar cities with similar problems develop different types of policies.

URBAN TRANSITION PATHWAYS – CREATING SYNERGIES AMONG THE PLURALITY OF URBAN GOALS, STRATEGIES AND ACTIONS

The Sustainable Development Goals represent a comprehensive set of targets and ambitions, which demands urban transitions that address a wide variety of urban challenges. The importance of urban areas for achieving the SDGs becomes evident when looking at the roles they are assigned in the document, not only is the SDG 11 Sustainable Cities and Communities entirely dedicated to urbanisation but also the remaining 16 SDGs all comprise an urban dimension (Figure 3). The 17 SDGs and their targets clearly underline the importance of sustainable urban development for the future of humanity and the planet, and 90 out of the 169 indicators encompass urban areas (for more details see Annex 2).

According to these manifold urban challenges and goals the urban setting is characterised by complexity and approaches ‘on the ground’ based on different ambitions and understandings of how cities and urban areas work.⁹ This results in a set of urban strategies and priorities which are implemented in cities in parallel, managed by different city departments or driven by different stakeholder interests. The plurality of urban goals and related strategies thus leads to an interrelated set of actions which risk being counterproductive or cancelling each other out in urban development practice.

While some of these targets and strategies support each other, others compete or conflict across administrative departments, sectors or societal groups. Progress in one area may come at the expense of progress in others. Understanding potential synergies and trade-offs is critical for efficient and coherent implementation and monitoring. Current efforts often stay within silos and sectors, pushing for the implementation of specific solutions, in many cases overlooking a more adequate integrative approach. Therefore, to successfully achieve change, urban transition pathways need to anticipate such divergent targets and/or wicked issues created by the portfolio of urban implementation actions.

The possibility of competing or conflicting targets does apply on all levels, such as the levels of SDGs as well as on an individual city level. Nilsson et al. acknowledged this fact by developing a framework for understanding sustainable development goal interactions with the aim to identify key issues that require particular policy attention to achieve the SDGs in a wider sense.¹⁰

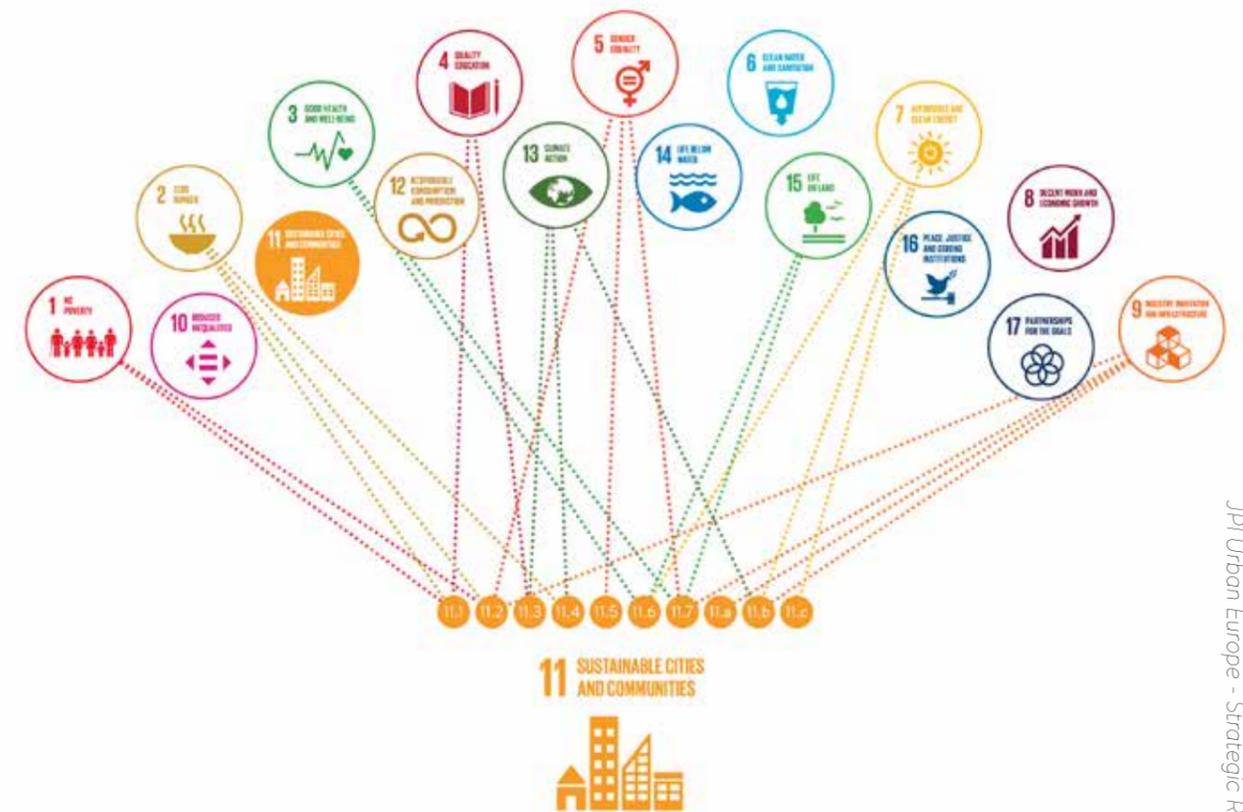


Figure 3: UN Agenda 2030 SDGs with no. 11 as entry point, drawing on the SAB position paper.

9 de Jong, Joss, Schraven, Zhan, & Weijnen (2015).

10 Nilsson, Griggs, & Visbeck (2016); cf. Gluckman (2018).

URBAN DILEMMAS AS FOCAL POINTS FOR RESEARCH AND INNOVATION

Concretely, an urban dilemma is defined as two or more competing goals, such as stakeholder interests and related strategies which potentially fail to achieve their aims as implementing one strategy hampers or prevents the achievement of another. Identifying and tackling such dilemmas is thus key for sustainable urban development.

Urban research and innovation can contribute to creating evidence on how to address these dilemmas and turn them into synergistic potential, thus developing ways to balance or attune competing aims, and connect singular scattered strategies into integrated approaches. Identifying conflicts and dilemmas provides strong cases for research and innovation, to gear up for new insights in sustainable urban development and how change can be more effectively realised. At the same time the AGORA dialogues in the Urban Transitions Pathways Symposia concluded that the various transition pathways require connecting tissue but not a new overarching paradigm.¹¹

Throughout 2018, extensive consultations with Member States' national communities on priorities in urban transitions as well as further input and reflections by the SAB and Urban Transitions Pathways Symposium 2018, the UAEU partnerships, and EC urban interservice group indicated the relevance of the update's approach to thematic issues.

Since JPI Urban Europe aims to create knowledge, evidence, and exchange interfaces for urban transition pathways, the complexity of urban matters means that there are no ways around or short cuts to avoiding the wicked issues generated due to competing targets and strategies. This is why JPI Urban Europe identified dilemmas in the SRIA update to highlight the need for action by policy, practitioners, and other stakeholders driving or being affected by urban development; and addressing these issues through programming activities (joint calls of various kinds, through the dialogues across stakeholder groups, co-creation of approaches to tackle dilemmas, etc.).

A 'dilemma' means 'having to decide between two or more alternatives that seem equally desirable or undesirable.' However, the working definition in the SRIA context also includes the understanding of dilemmas as 'difficult situations where the path taken is not clearly beneficent and the need to compromise continuously appears. In other words, typical implementation, transition, and innovation situations' and, hence, dilemmas 'occur where the level of uncertainty is too high to rely on a pre-calculated action plan.'¹²

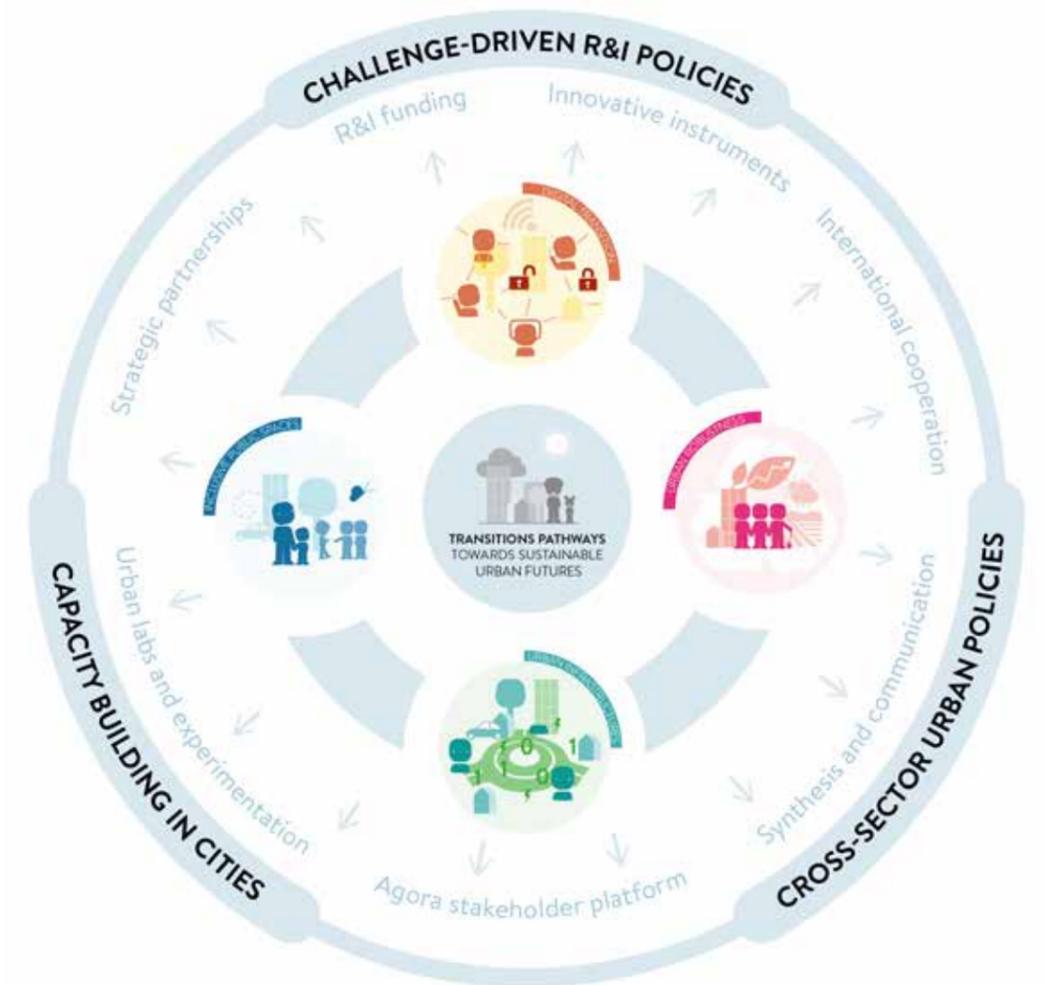


Figure 4: SRIA 2.0 concept and implementation framework

The dilemma-driven approach is hence key to articulating challenges derived in the consultations with stakeholders (city authorities, civil society, business/industry as well as STI and academic R&I), since it enables JPI Urban Europe and the urban 'development community' (mainly European in the SRIA) to simultaneously connect between sectors and silos to shape communication lines, support or generate traction where it is needed, and the 'bite-sized chunks' of complexity that are required entry points to tackle wicked urban issues.¹³ Central to this approach is to shape conceptual platforms where various stakeholders with very different urban logics and experiences may find common ground and build trust.¹⁴ In effect, each dilemma emerges as a (potential) ur-

¹¹ Bylund (2017).

¹² See also Wrangsten & Bylund (2018).

¹³ Cf. Urban-Nexus (2014); Law (2014); Bylund (2017).

¹⁴ Cf. Wolfram (2019).

ban nexus intersection and interaction of various experiences, systems, infrastructures, and concerns for integrated urban development.¹⁵ Hence, JPI Urban Europe continues to foster inter- and transdisciplinary R&I which entails socio-technical co-creation in urban innovation ecosystems to address these dilemmas.

The consultations also provided clear signals that (at least) three cross-cutting dimensions pervade the four dilemmas below: urban governance, urban liveability, and digitalisation in society at large.

Urban governance as a cross-cutting concern in the SRIA means that challenges almost invariably tangents or touches upon public policy and management practices in territorial administration of urban areas. In addition to the formal urban (and urban functional area) government and planning procedures there are socio-technical and networked organisational dynamics, at times informal, to consider for an integrated development for urban transitions aiming for transformations.

Urban liveability, and the related concept of quality of life, picks-up on the human-centered aspects of urban transitions pathways. It is human-centered in the relational sense of ‘leaving no one behind’ and with a principle of foregrounding equality (particularly gender issues), equity and just cities, in the sense of the right to change and be changed by urban life. As a cross-cutting issue, liveability focuses on urban experience as well as behaviour, from the personal to communities and human socio-material entanglements. Hence, this is a societal perspective inclusive of more forms of life than simply human beings as well as the socio-technical environs since these aspects are directly influential on human wellbeing and since solutions are not ends in themselves but means for societies’ sustainable urbanisation.

Digitalisation in societies at large has been identified as so pervasive in many urban processes, dynamics, and events – not least democratic and societal cohesion aspects – that it cannot be adequately contained in a single thematic priority. It increasingly emerges as connective tissue between various societal technologies and systems – to the point that while technologies are not reducible to their digital components, it becomes hard not to encounter them without their information managing interfaces. While there are particular challenges for urban governance related to the fast pace in information and data management technologies and tools, reflected in the dilemma *Digital transitions*, the impact of increasing everyday use and organisation around various kinds of digital infrastructures and appliances contributes simultaneously to opportunities and challenges with different textures and concerns in all the four dilemmas.

¹⁵ Cf. Leipzig Charter (2007); BBSR (2018).

By building upon existing (national or European) programmes that might focus on specific sectors, creating technologies and solutions for different parts of urban systems, JPI Urban Europe brings knowledge and robust scientific evidence to support policy makers in their implementation approaches and transition efforts. Hence, we use dilemmas as focal points for research and innovation, see Figure 4. Consequently, JPI Urban Europe addresses research issues that build upon and connect current pathways and solutions but that also imply barriers for implementation, calling for innovation to successfully achieve urban transitions.

Each of the selected priorities addresses a set of dilemmas and proposes research issues to tackle these which are also directly connected to the SDG 11 sub-targets as shown in Figure 5.

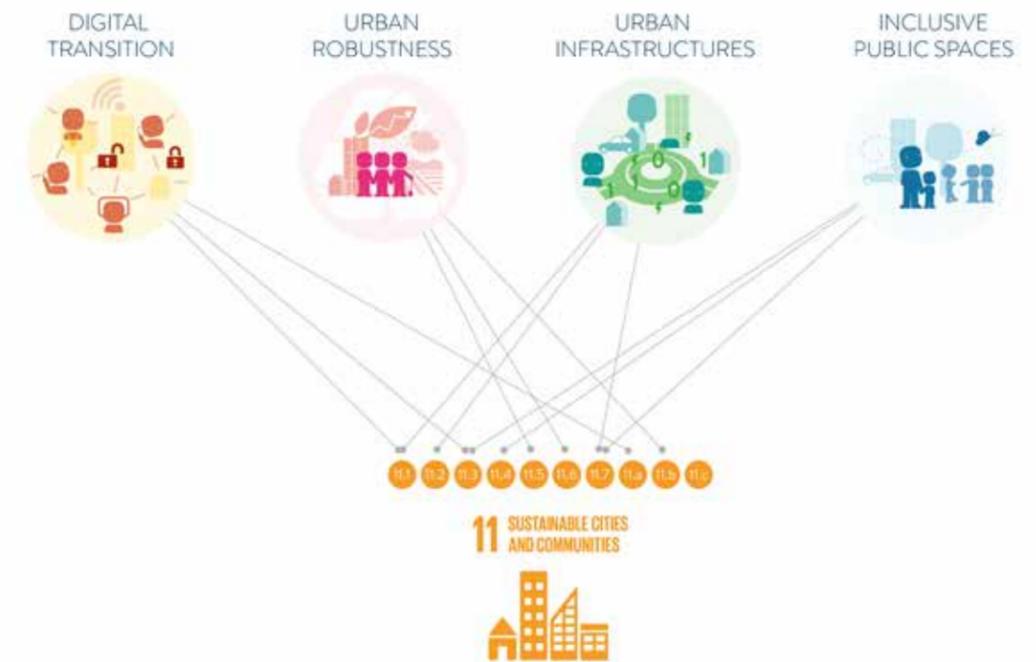


Figure 5: Indicative contribution of SRIA 2.0 priorities to SDG 11 sub-targets

DIGITAL TRANSITIONS IN URBAN GOVERNANCE

Dilemma

Digitalisation offers potential for economic development and innovative urban planning. Digitalization and related technologies are implemented in an accelerating pace across Europe and in many parts of the world's urban areas. Digitalisation also enables more connections to citizens and empowers and engages them to shape their urban environments

through digital democracy. It improves social policies, presents major opportunities to support sustainable solutions, while data sovereignty is clear, and regulations are in place.

In the current digital transition, urban governance may also risk implementing suboptimal or segregating technical solutions unless city administrations work with capacity building in public innovation governance and integrated urban planning to expand the current policy scope in many urban digitalisation efforts to include issues such as poverty, gender, education, and marginalised neighbourhoods.



Context

Many of world's cities and urban areas, particularly European ones, both drive and are 're-built' by urban transitions. In fact, digital transitions are gaining momentum: digitalised tools are increasingly used by urban planners and available analogue data is becoming digitalized; for instance, there is an increased use of 'digital twins' to merge physical and virtual objects and spaces to increase the experimental potential in design and planning. It is intrinsic to new urban economies, not least since digital transitions also present resources enabling circular economy elements such as sharing cities/economies

and other social innovations. Digitalisation is also a driver for example in energy and mobility transitions.

At the same time, urban governance has an increasingly networked character (in contrast to the 'government' ideal in the 20th Century). In general urban governance processes are 'flattening out' and assuming a less vertically hierarchical structure, this is occurring at different paces with varying dynamics depending on the different regions. Inevitably, this is leading to the decentralisation of power. Additionally, as data shapes decision-making to an ever-greater extent it ideally also prevents silo-thinking and silo-decision making.

This networked character means more multi-actor/multi-stakeholder settings and implementation becoming ever more complex by networked actions rather than implementation by command-and-control. It is crucial for contemporary urban governance to deliver on policy which is experimental, co-creative, and involve public participative approaches. Although these approaches are not new, there is also a need to understand and to increase know-how in the new dynamics of digital transitions; particularly, concerning potential for and risks to inclusion and democratic deficits or intentional disruption in urban settings. For instance, there is currently interest in the role of creative hubs and new business models for creative sectors in public service innovation, and how urban experimentation may support the development of public services (e.g. organising them in re-used spaces).

value base around democracy and human rights by increasing turbulence and shifting grounds in terms of climate as well as societal dynamics. Whereas resilience denotes the capacity to recover, robustness focus on the sturdy and healthy 'baseline' of urban settings as a pre-condition for sustainability as well as for sound resilience in crisis-management. Hence, robustness emerges as an integrative principle in urban transitions and as an aim to achieve by urban transformations.

Although there is already considerable action and awareness on the need for mitigation and adaptation (combined approach) among political actors and citizens (e.g. Horizon 2020, C40, Covenant of Mayors), this requires further efforts to make integrated approaches in urban development. For instance, Nature-Based Solutions (NBS), with socio-technical and socio-ecological approaches, which include urban green and blue development, provide both mitigation and adaptation if the principles are adhered to correctly. For example, by safeguarding urban aspects and contributions to biodiversity as well as through measures to tackle the risk of gentrification that may arise in the wake of these improvements and other conflicting interest in land-use.

Still, these developments and conditions presents a challenge characterised by urban turbulence: increasing global economic uncertainty and climate as well as ecological change (impact by environmental shocks, sudden events, changes in flora and fauna) means a more uncertain and unpredictable context for ur-

banisation in an ever more connected urban planet. Climate change will further impact urban areas through mitigative efforts, such as low carbon cities, or adaptation, by preparing for change and roller-coaster climates and climate swings. Urban resilience, in terms of dynamic re-organisations after crisis, will have uncertain effects on communities and neighbourhoods.

Urban robustness also entails a challenge around urban materials. For instance, cement/concrete is the largest climate emitting sector in 2025. Provision of materials needed for urbanisation has to comply with environmental limits which calls for new materials and new urban design as well as for refurbishment in existing built environments, by e.g. increased circularity in re-usage and recycling of materials on construction. Hence, innovative and durable urban materials for design in the built environment may play a key role here. For instance, the future research and implementation actions on nanomaterials and new sustainable urban materials.

Health and welfare can be greatly supported through well-conceived and managed urban built environments and communities. To safeguard this, these kinds of infrastructures, many times urban commons, require a robust co-design with multi-stakeholder approaches as well as long-term provision of technical expertise. A growth of urban frugal innovation might support such developments. New concepts around urban food and agriculture, e.g. agriculture in controlled environments and the growing of

meat in labs, might reshape our understanding of the food potential of cities. It might also redefine the relations between urban and rural areas.

In terms of urban circular economies and new urban economies, a challenge is the need to vastly increase urban climate change adaptive capacity and to improve urban resilience, with special attention to urban equity and in the face of externally imposed precepts on global competition between urban areas. This entails the challenge of how local urban innovation ecosystems are made robust and sound in the face of global and 'intrinsic' emergencies and crises, such as volatile financial as well as natural and political events. It also relates to the logistics concerning energy transitions, care, safety, and food. However, these developments in new urban economies require actions to tackle increasing urban poverty and socioeconomic polarisation to genuinely increase robustness.

Without doubt, digital transitions come with significant changes in the future of urban life and work. Related to the fourth industrial revolution, the urban dimension of such changes requires investigation into the consequences for job losses, the impact of automation and robotics on urban economies and work to inform urban governance and urban national and transnational policy. As urban life and public services might be significantly influenced by autonomous systems (vehicles, logistics, home devices, robotic social care, and so on) the challenges and potentials this creates need to be analysed and reflected upon. Not least concerning big

data and building information modeling (BIM) in the field of construction and the issue of standardised infrastructure or interoperability needs to be addressed, e.g. using cloud technologies to process data of buildings for energy consumption, waste management, etc.

The key issues for sustainable urban development are very diverse all over Europe in their drivers and manifestation. In itself, this is already a research topic, but it also means that the importance and urgency of key issues will differ significantly across Europe. It is strongly advocated to actively tie in local and regional variations in drivers, manifestation and impact of urban dynamics.

In this respect, there is a need to further enhance cities and urban areas resilience, their capacities and adaptive governance, paving the way to robustness; how to e.g. develop manageable and non-gentrifying financial models to retrofit housing for urban energy transitions.

Urban robustness may also be at risk by the growth in digital devices and effects of rebound dynamics in energy-efficiency by increased energy consumption agglomerated in urban settings.



SUSTAINABLE LAND-USE AND URBAN INFRASTRUCTURES

Dilemma

Cities and urban areas in general attract people and create positive effects out of agglomeration, density, and diverse and intersecting infrastructures and facilities. These positive effects of urbanisation are underpinned by integrated urban planning and management by public administrations and across diverse public and

private actors. This is particularly supported by public engagement and participation in decision-making relating to land-use management, flows of people, flows of information, goods, and resources, place-making, and impact on existing settlements and environs affected.

Consequently, at the same time there are also risks involved and currently increasingly wicked problems around e.g. congestion and accessibility, loss of identity or demand/waste of natural resources. Furthermore, urban areas may succumb to conflict and clashes between powers,

mismangement of transportation flows, existing tensions intensify and severely limited progress towards sustainable urbanisation will ensue. Added to this, increased spatial and social inequalities between different types of urban areas may be caused by increasing economic polarisation, segregation and gentrification dynamics, suburban sprawl, and shrinking cities in functional regional contexts.

Context

From a land-use and infrastructures perspective, contemporary European (and global) urban land-use develops beyond

zoning and towards strategic uses of comprehensive planning, inter-city and larger functional urban areas. Urban, peri-urban, suburban, and related built environments face increasing tensions between relatively fixed or steady parts and increasing flows of information, data, matter, food, energy, and people. Not least, the urban sub-surface posits a challenge here – a huge space to be exploited and consequently planned but that has to cope with tremendous problems, such as high costs, increased complexity, etc.

The global achievement of the UN Agenda 2030 SDGs and implementation of the UNFCC Paris Agreement (both have a strong urban dimension) raises multiple questions regarding the development of low carbon urbanism that is socially just and equitable, or what socially equitable and climate sensitive infrastructure might look like.

For instance, regarding energy efficiency, energy transitions, and low carbon districts, transforming the urban housing stock into positive energy districts requires not only major investments in energy and building and logistics technologies that includes new urban design and planning procedures, but also puts demands on the socio-economic aspects of such developments. Creating role models for inclusive and affordable low carbon or positive energy districts remains a challenge.

The integration of various energy infrastructures such as gas, heating and water may today be more of a governance issue

rather than a technical one. Similarly, urban governance challenges may also be how to provide incentives to clean mobility when you cannot change urban infrastructure or how to change transport mode behaviour, for example by car sharing systems and promoting slow modes of transport.

Currently mobility infrastructures merge with other types of infrastructures: e.g. when cities develop their walkability; when urban markets combine different functions; when accessibility becomes seamless between all types of infrastructures – in various degrees – that are digitalised in the sense of augmented or enhanced with new qualitative aspects to services or everyday urban life.

Urban liveability meets a basic human need around the world. It also shapes the baseline to place-making, urban attractiveness and sound creativity which requires (besides other factors) accessibility and affordable housing, urban green spaces, and is influenced by demographic change (e.g. ageing societies themes and challenges such as generational segregation) and participatory governance. Hence, much of urban metabolism, flows, and infrastructural services ideally underpins liveable cities and urban areas. Hence, this accessibility is also at the core of how the just city and the right to the city works in practice.

Segregation and inter-generational relationships, e.g. youth moving to the dense urban areas, leaving older people behind, is also an important element in the dilem-

ma. Creating a long-term sustainable living situation for older people in declining urban areas may be beneficial to avoid further segregation. Also, in small and medium sized cities, vacancies are an infrastructural challenge.

Current urban sprawl may decrease liveability by the promotion of service driven city centres and relegate inhabitants to live only in the suburbs. At stake in this dilemma is a focus on cities and urban areas' cultural and design development in spatial planning, their citizens' and inhabitants' wider accessibility to resources and increased equity. An ever increasing disconnect between infrastructure functions and liveability may generate loss of culture, gentrification, spatial concentration of wealth, empty city centres and urban sprawl, prioritisation of capitalism, loss of community, increased social inequality, loss of green spaces and environment.

Important in this perspective on sustainable urbanisation is to take into account urban relational aspects, i.e. that cities are not insulated islands with no interaction with other cities nor the surrounding landscape. Their transformation depends also and foremost on their relations with the other cities and their environs. The context of their transformation is the context of the metropolization. Furthermore, key challenges of European cities are not located in their city centers but in peripheral and periurban areas and also in urban fringes. Hence, the coordination of agendas overarching territorial administrative areas seems crucial in this dilemma.



INCLUSIVE PUBLIC SPACES FOR URBAN LIVEABILITY

Dilemmas

Public spaces are ideally attractive to all, these are spaces for wellbeing and health (stimulating people to move), increasingly green public and shared places for people, where different groups and communities meet, preconceived ideas of the Other are challenged, and where citizens control their streets and shared spaces. Urban development can be used to increase urban quality of life by design, public space management e.g. walkability. Public spaces may also retain and emerge as second living rooms (as housing living areas get smaller).

However, a dilemma regarding everyone's right to the city is that public spaces are constantly influenced by power balances and the needs of different groups and communities. A specific concern is how to cater for safety and security con-

cerns without a widening of exclusive spaces. Furthermore, strategies and policy to progress and enhance city status and attractiveness does not always support urban liveability. The dilemma here, then, foregrounds archetypal concerns with urban public spaces around inclusion and security, mobility and morphology, openness and integrity, urban green and density – with the current aspects of e.g. the impacts of increased concerns in digitalised public protection and control, autonomous vehicles, qualities of design, green accessibility, urban demographics, and increasing privatisation in the everyday settings and use of public spaces.

Context

Urban public spaces are an emblematic type of urban space where the cities' multitude of interests and diversity (ideally) rubs up against each other – or where the lack of such friction may tell us something important about the state of the communities that utilise them. Public space has

a long tradition in European urbanism. It comes with a typical intersection between design and integration of various functions, services as well as urban identity building. The recent half-century has seen this field – both in terms of research and innovation as public debates on urban development – grow and explore power issues and democratic sensibilities in the built environment, gender issues, urban green-blue-grey balances, tensions between self-organising dynamics and master-planning ambitions, and public spaces’ pivotal role in various integration and exclusion effects. Today, urban public spaces are seamlessly linked to virtual public spaces in ways which are still not well understood, and whether there is augmentation or a hollowing out may be on a place-to-place, case-by-case basis.

These kinds of spaces are also reshaped not only by consumption and urban conviviality. The augmentation by digital public spheres, urban material commons, as well as other developments, means a reconfiguration of these material spaces as well. These developments open towards co-design and creative place-making opportunities.

As diversity as well as segregation increase in urban areas (depending on scale of perspective and regional location) and people also tend to move around more and more, either by forced displacement or by desire for decent livelihoods or more, liveability is many times most acutely and concretely organised on a neighbourhood level.

Inclusion and the just city, as well as the right to the city, is centre-stage in public

space developments. This is a key objective of sustainable urban development as declared in both, the UAEU and UN Habitat New Urban Agenda, and an explicit target in SDG 11 (11.7). Gender issues and equality pervade the core of this inclusivity, just as the integration of migrants and refugees may do. Furthermore, an emerging concern is also the massively increased tourism pressure in many urban centres, as well as the physical and sociocultural aspects in urban environs’ cultural heritage.

The dilemma hence also evokes a concern on contemporary ‘splintering urbanism’. In urban communities and society at large, digitalisation comes with the risk of increased inequalities and exclusion in European cities and urban areas. Since not all people are able to access services in the wake of digitalisation, transitions may solely benefit the already privileged citizens and gender. Digital transitions may not eliminate access issue and solely relying on digitalisation solutions further excludes the ‘have-nots’ and ‘cannots’ – even from basic decision making. As cohesion in societies at large and among urban communities is a concern in Europe and elsewhere, the fragmentation and uneven distribution of technologies across cities that obstructs a common and shared urbanity and may lead to marginalisation of specific groups is increasingly a challenge.

These dynamics currently in civil societies may be augmented by digitalisation: virtual and physical ‘bubbles’ that entrenches groups ‘away’ from cohesion. Even in less dense and smaller cities, this issue in technologicalisation and its impact on local identities requires better understand-

ing and innovation to support cohesion. Harnessing digital services for e.g. sharing communities may cut across typical bubbles and segregation lines or enhance them.

Furthermore, urban demographics not only in terms of communities but also in terms of different – and not necessarily in a linear ageing ‘career’ – life stages requires more attention. Urban environs that are inclusive for younger and older people is a core concern in place-making. This also connects to various populations’ and generations’ housing needs, mobility and attractive public spaces.

In these developments, a challenge is to develop strong civil societies with a sense of community and baseline trust among urban actors. This also points to ways of making the current and coming diverse urban contexts workable in terms of cultural values and shared spaces. Urban integration hence presents questions and begets further understanding in what is already integrated and what needs to be integrated. What techniques, knowledge practices are needed? Is it a city-wide capacity or in bounded enclaves? How might we develop notions of inclusive integration?

Community-based initiatives have become common as an instrument in urban development – both in Europe and around the planet. These initiatives are typically issue-oriented and come with the potential to remedy democratic deficits on a local level. It remains to be seen how these developments affect and reverberate in democratic societies at large, particularly in how a diversity of interests both within and beyond the community are handled.

What is the right balance between democracy and governance concerning inclusiveness? Currently stakeholders are often invited at a very late stage which means that there is not much room left to propose changes to a plan, while the impact of the plans can be significant. Besides this, specific groups in society might be underrepresented or not targeted at all; for example younger generations, disabled or elderly people, migrant communities etc. What are good models for inclusion and engagement of stakeholders throughout the whole process?

A synergistic integration of urban functions and liveability creates the possibility of providing better accessibility for people and communities that risk marginalisation due to their perceived belonging to a specific social category such as gender, class, and ethnicity. It could empower vulnerable groups – e.g. women in transportation. Integration in this matter also depends on a focus on urban areas and functional regions, not just cities and towns in their individual administrative territorial capacity. The challenges of public spaces and inclusive neighbourhoods not only concern the city centre but also the peripheries and the periurban areas – both in terms of centre-periphery dynamics as well as in between the broad range of types of urban areas that are not conventional city centres, such as suburban, fringe, edge, and urban-rural hybrids. These issues require enhanced capabilities for collaboration between public administration planning and management between municipalities and in functional urban areas.

PRINCIPLES FOR SRIA 2.0 IMPLEMENTATION

JPI Urban Europe is committed to challenge-driven research and innovation. It aims to not only create new knowledge and scientific evidence but to co-design new solutions and support capacity building among all stakeholders to act accordingly. This requires a comprehensive programme management and a portfolio of implementation measures, including advanced funding instruments, community building and formats for dissemination and mainstreaming of good practice.

The need for instruments and formats attuned to challenge-driven and mission-oriented research and innovation are nowadays widely recognized in Europe. In the frame of the development of Horizon Europe, debates have started about future European R&I policy, relevant frameworks and appropriate models. While Marianna Mazzucato proposed a problem-solving approach to fuel innovation-led growth through a mission-oriented approach,¹⁶ the BOHEMIA project identified Perspectives for the European Union's future research and innovation policies to make transformative change happen.¹⁷ Both papers provide recommendations for advanced policies to ensure that research and innovation can unfold its full potential for societal and economic benefits.

Fostering experimentation, engaging a wide set of stakeholders in R&I from early stages on, offering a portfolio of instruments supporting all phases on innovation up to a programme management including dissemination and exploitation actions¹⁴ are seen as essential not only to achieve missions but address societal challenges at large.

Similar recommendations are provided by the BOHEMIA project.¹⁵ It recognises the importance of policy experimentation to allow new approaches, solutions and markets to unfold. In particular, if policy makers have to cope with high uncertainties caused by the complexity of situations and challenges. The project also highlights the relevance to include policy, business and society in such experimental settings as this allows to create ownership on all sides, connect demand and supply and with that accelerate transition processes.

JPI Urban Europe has been working along those lines already in its first implementation phase. Creating an urban innovation ecosystem or transition arena for sustainable urban development requires not only efforts and investments to develop new knowl-

¹⁶ Mazzucato (2018).

¹⁷ Weber et al. (2018).

edge for such urban innovations and solutions but also new knowledge on innovation in terms of improved R&I systems and instruments. Along those lines, there is agreement among all partners that JPI Urban Europe has to continue efforts for advancing the portfolio of instruments, strengthen programme management and exploitation of research results, intensify capacity building as well as stakeholder involvement. The guiding principles for the SRIA 2.0 implementation are therefore as follows:

- ▶ • Joint investments in urban research and innovation building upon the current portfolio of instruments for R&I projects, innovation actions and alignment of national projects
- Continued 'labbing' – taking Urban Living Labs to the next generation/phase and fostering capacity building in science, policy, public administrations, and society at large
- Co-creation and science-policy cooperation throughout all activities and instruments.
- Strategic partnerships with major European (and international) initiatives and networks
- International cooperation and widening participation
- Strategic synthesis to strengthen programme management, dissemination and exploitation

Following the model of transition arenas as described by Sarasini et al.¹⁸ such an arena has to include four functionalities – strategic, tactical, operational and reflexive ones. Translated into the JPI Urban Europe programme Figure 6 summarizes the portfolio of activities proposed to implement the SRIA 2.0.

¹⁸ Sarasini et al. (2018).



Figure 6: The JPI Urban Europe Transition Arena – the portfolio of instruments and activities to implement the Strategic Research and Innovation Agenda

STRATEGIC MEASURES

At the core of the strategic aspects of the JPI Urban Europe transition arena is the long-term strategy, published in 2017, as well as this SRIA 2.0. They together build the common ground for all other measures and actions, as both have been agreed by the JPI Urban Europe Governing Board.

TACTICAL MEASURES

National coordination and alignment

In order to achieve the JPI Urban Europe vision, the SRIA not only requires joint actions as laid out in the following paragraphs but also measures on a national level. In order to drive urban transitions mobilisation of urban stakeholders is needed as well as coordination among different policy actors on national, regional and municipal level. Funding agencies and national programme owners with their different portfolios should be connected and involved to allow alignment. Depending on the national context and responsible actors this requires national coordination across ministries, involvement in or contributions to related national strategy processes and/or dedicated actions to promote results and involve cities.

Some countries already have JPI Urban Europe-specific national coordination mechanisms in place, such as mirror groups involving key stakeholders on a national level to prepare decision and implementation measures or coordination among different national funding agencies to align participation in joint actions. Such efforts need to be increased if JPI Urban Europe wants to enhance its impact.

Co-creation and capacity building at the AGORA

Usually a variety of different urban stakeholders and interests are involved in any urban sustainability problem, and these stakeholders are often highly dependent upon each other for solving the problem. This raises several issues, such as lack of awareness, priorities and the value orientations of stakeholders leading to less sustainable choices, or private versus public targets. Reconciliation of all these different interests requires new ways of working: co-design and co-creation, creating a common vision of the problem and viable solutions, instead of traditional participation, but also different power balances.

In this sense and following the challenge driven approach cities, business and societal actors need to be mobilized and engage together with researchers with the aim to exchange on research needs, discuss research results, promote good practice and reflect future R&I priorities and strategies. For this reason, the AGORA – The JPI Urban Europe Stakeholder Platform was developed. Events of different sizes and formats have been organized so far, from thematic workshops to elaborate recommendations for future calls or pressing urban issues up to a symposium series to continuously drive the discussion on urban transition.

However, the complexity of urban matters is also manifested in the complexity in managing or supporting the diverse landscape of urban actors. Not all groups of society can be mobilized equally or have the skills or resources to engage in urban development. City administration or business is not always strongly connected to research, driven by

their own sectoral interests and needs. JPI Urban Europe will thus continue its efforts to create and shape an environment that provides interfaces to these various groups, anticipates their requirements better, offers a wider set of options to engage and benefit from the JPI Urban Europe programme and thus mutually align strategies. The formats of the Urban Transition Pathways Symposium to build communities of practice will continue as well as AGORA activities to foster exchange between a diverse set of stakeholders or shape city panels to strengthen the policy-science dialogue.

Strategic partnerships

The main ambition to establish the platform for urban transitions opens manifold opportunities to cooperate and liaise with other organisations, initiatives and city networks. Climate issues, the water-food-energy nexus, cultural heritage or an aging urban society are matters that need to be jointly addressed with all involved parties. Right from beginning, JPI Urban Europe put emphasis on establishing relationships with European and international urban networks and platforms and fostered a regular exchange on policy developments, opportunities for joint actions and events or promotion of results. JPI Urban Europe is committed to continuing such cooperation and to start new ones when opportunities arise.

Besides this, JPI Urban Europe sees particular potential for strategic partnerships with other JPIs and the UAEU partnerships. As indicated in Figure 7, the SRIA 2.0 thematic priorities provide strong interfaces to several JPIs and partnerships as well as to other European networks.

Cooperation with the other JPIs on strategic issues is ongoing but in terms of the SRIA implementation, this needs to be translated into joint actions to leverage funds and gain synergies whenever possible. Tackling issues such as urban agriculture, the built environment, demographic development or urban resilience in cooperation enhances the capacities to address these challenges. In addition, a dialogue with the UAEU partnerships has started and efforts will be taken to align the JPI Urban Europe action with the partnerships action plans, not only in the course of the SRIA 2.0 development process but also throughout its implementation.

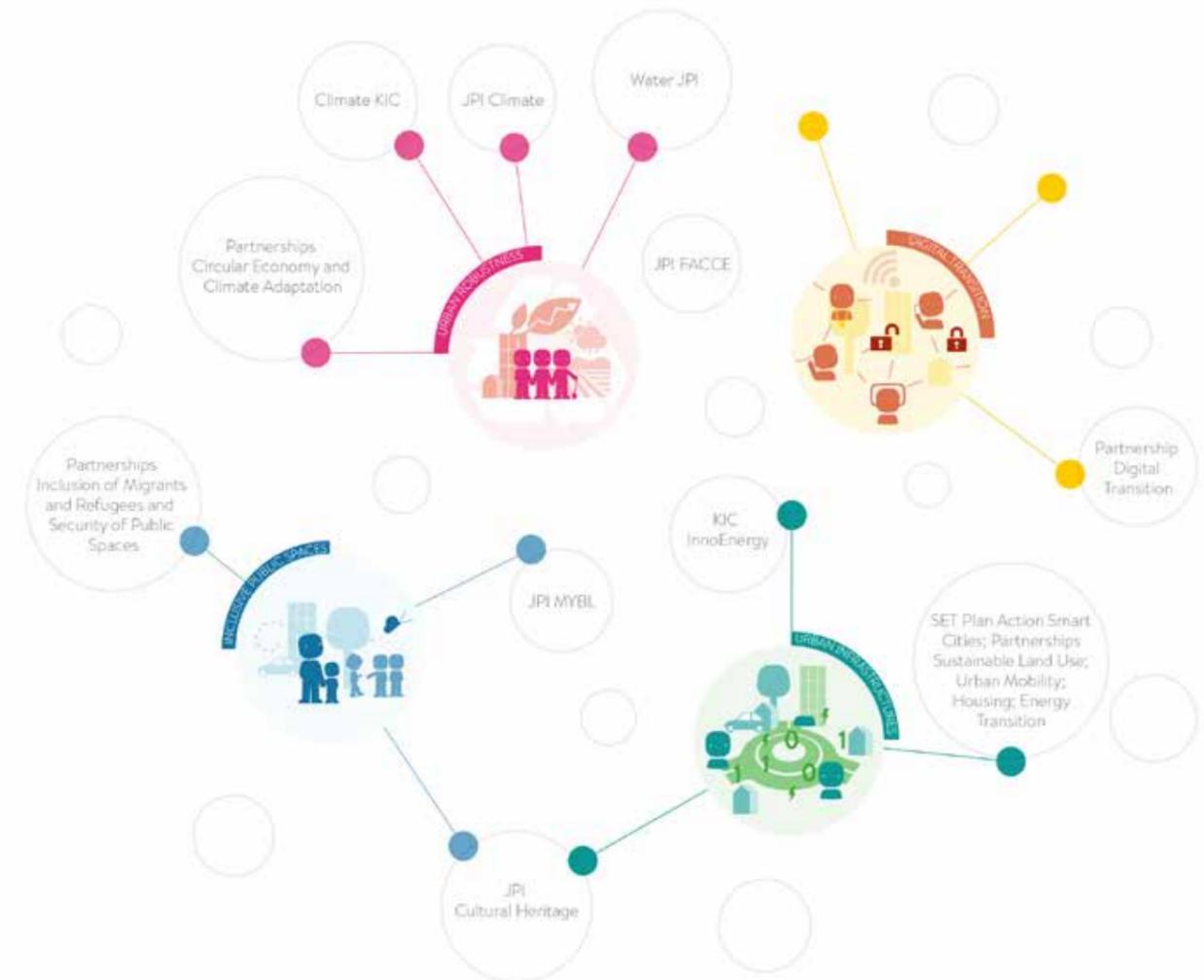


Figure 7: SRIA 2.0 thematic priorities and other related activities, current UAEU partnerships and JPIs

Internationalisation and widening participation

Sustainable urbanisation is a global issue, with global policy references and a high potential for Europe to contribute to urban transitions in developed and less developed regions and countries. Benefits from international cooperation do not only arise from global scientific exchange but also from city-city partnerships if co-creation and validation of approaches in different local situations are supported.

Along with the European ambition to be a role model in sustainable development, JPI Urban Europe can strengthen the case for sustainable urban development, gain inter-

national visibility of European activities and achievements, offer access to results internationally and team-up with research programmes and urban stakeholders globally. In light of the SDGs, combining local research and practice with global learning and exchange is needed to benefit from different perspectives and diverse experiences. In this sense, the JPI Urban Europe strategy towards 2026 clearly indicates the international dimension and relevance of the JPI Urban Europe programme.

JPI Urban Europe has already gained experiences in international cooperation and implemented a joint call with the Belmont Forum, another one with NSFC, China. Based on these experiences a framework for international cooperation was developed which is described in more detail in Annex 4. According to this, the proposed priorities for continuing international outreach and collaboration comprise

- ▶ • cooperation with global and international research funding networks to align strategies and research agenda
- promoting scientific evidence and good practice for urban policy on international level and in cooperation with international networks
- gradually open up cooperation with new countries outside of Europe, with particular focus on establishing entry points on all continents

In this sense, international cooperation with selected countries and regions will be continued along the internationalisation strategy to compare approaches, test solutions, exploit results, exchange experiences and needs and support the transfer of knowledge across continents and regions.

OPERATIONAL MEASURES

Joint investments in urban R&I

Since 2010 JPI Urban Europe has built up its portfolio of research and innovation projects and it will continue to jointly fund projects along the defined priorities. At the same time, it was recognised in previous calls that existing instruments and framework conditions only partially meet the needs for inter- and transdisciplinary urban research and innovation. Not all agencies or national programmes are able to fund non-university partners, but strong stakeholder involvement is seen as key to enhancing impact. Attention needs to be given to balance knowledge creation, innovation and implementation efforts through carefully choosing the most appropriate instrument for the various activities and calls. This is of particular importance as learning and science-policy cooperation from early stages onwards should be prioritised to support co-creation and the uptake of research results in urban practice.

In the related research and innovation community, JPI Urban Europe is already known for testing new frameworks and developing new instruments. The Innovation Action piloted in the Making Cities Work call¹⁹ as well as the concept of Alignment Actions²⁰ will be used to complement the portfolio of funding instruments. In this sense JPI Urban Europe will continue to act as a testbed for piloting new instruments and advancing framework conditions, if needed, that might be mirrored on a national level.

Finally, around Europe, the dangers in what is called ‘projectification’ resonates among city authorities as they are increasingly taking part in transdisciplinary projects. Experiences show that ‘projectification’ may be quite counter-productive as it does not allow public administrations to fully capitalise on the investments (resources) brought into these projects.²¹ To this end longer-term models should be put in place, allowing all actors to build upon findings and R&I results and take them into validation and implementation. A well-structured support framework including connected calls (e.g. from national to transnational level or R&I calls followed by Innovation Actions) and related programme management activities should be looked into.

Urban living labs and experimental approaches

In all related policy recommendations,²² experimentation and science-policy cooperation is highlighted as one of the main requirements for addressing societal challenges. As transition processes have to be accompanied or guided by appropriate policy frameworks, such policies must deal with uncertainties and fast changing futures. However, policy and governance tend to prioritise low or calculable risks. At the same time administrative structures and planning procedures do not change easily and might not be able to keep pace with market changes or societal developments. Thus, space for policy experimentation is needed, for participatory development of new approaches, for testing new roles and new governance models under real-life conditions but still within manageable frameworks.

The Urban Living Lab approach has proven to be a flexible and innovative way to create arenas for co-creation and experimentation in science-policy-business-society cooperation. Since the SRIA was launched in 2015, comprehensive experiences and

¹⁹ JPI Urban Europe (2018a).

²⁰ An Alignment Action is a new funding instrument developed by JPI Urban Europe. It aims to connect nationally funded projects and experts on a transnational level to create a wider community of practice, synthesise research results and experiences and provide recommendations for policy and research.

²¹ ‘Projectification’ is a neologism to characterise the segmentation of ongoing and running work and service provision into timeframes with accentuated starts and stops, midterm reporting, typically three year spans, and frequently with a ‘solutionist’ expectation on results; cf. Fred (2018).

²² Mazzucato (2018); Weber et al. (2018).

knowledge has been created by implementing Urban Living Labs in JPI Urban Europe projects. Living Labs may address a wide range of specific challenges in urban transitions, such as in the JPI Urban Europe project portfolio of inter alia urban governance, water management, e-participation, mobility management, inter-ethnic co-existence, stakeholder involvement, etc.²³ A number of projects such as GUST, URB@EXP, SmarterLabs among others developed guidelines and handbooks which give recommendations to researchers, city administration, civil society, business and all other stakeholder who consider implementing such labs (for more information see Annex 6).

Out of this portfolio, a non-exhaustive set of challenges have emerged that re-

quire attention by the urban research and innovation community in order to optimise their use and effectiveness. The question of how urban living labs are designed and by whom requires comparative and longer-term assessment, since the current exploration of the approach is driven by a very diverse set of actors and interests. Then their implementation and operation also requires more knowledge to increase the conceptual understanding on the risks involved. Finally, the long-term impacts of urban living labs on particular places as well as on a general understanding of urban transitions are far from well understood and needs to be assessed on an ongoing basis by dedicated measures.²⁴ These experiences and challenges are echoed in other parts of the world, for instance in China and Brazil.²⁵

At the same time, these results are very valuable sources for JPI Urban Europe to continue developing the concept further and for experimenting with new formats to deepen and intensify science-policy-business-society cooperation. In addition, it seems to be the right time to take Urban Living Labs to the next stage of development, towards models that support scaling up and mainstreaming of results.

Still, as a method, the types of interaction and the perceived benefit from such collaboration is likely to be highly context specific, grounded in the specific region and its community's need for solutions and new knowledge. As such, an issue that resonates among many JPI Urban Europe funded urban living lab projects is that the implementation of the urban

living lab concept must seek to ensure that results can be translated, and to generate impact beyond the local setting and support transitions in urban societies and governance at large.

Managing the project portfolio and targeted communication

To provide robust evidence for urban transitions and create impact beyond the single projects and cases, programme management is required. Synergies can be developed by connecting projects, project results have to be communicated and disseminated to the various target groups, policy briefs shall inform future decisions and the dialogue between research, policy, society and business has to be facilitated. Taking into account the development of the JPI Urban Europe project portfolio, the efforts to establish such a programme management have been intensified. A variety of communication and networking events were organised, from high-level policy conferences and strategic stakeholder dialogues to thematic workshops, projects meetings and a symposium series (Figure 8). In the sense of alignment, it is essential to involve national and European projects in such activities, e.g. through Alignment Actions, to get the highest possible benefit of R&I investments at all levels. In this sense, joint events were organised with EC-funded projects or connected to international conferences.

Such efforts will continue. The AGORA will provide the platform for many such activities, complemented by projects meetings and exploitation activities. Results will be communicated towards specific target groups, e.g. by developing

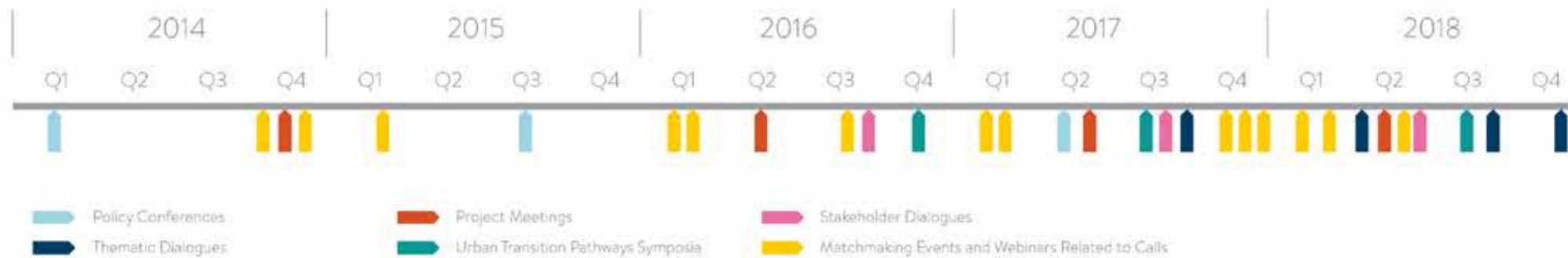


Figure 8: Formats used and events organised under the JPI Urban Europe AGORA Stakeholder Involvement Platform

23 JPI Urban Europe (2018b).

24 Cf. Marvin et al. (2018); see also Evans, Karvonen, & Raven (2016); Bulkeley et al. (2016); von Wirth et al. (2019).

25 Cf. Riegler (2018a); Riegler (2018b).

policy briefs or recommendations for policy makers, city administration and other urban actors. Targeted communication will be needed to not only raise visibility of JPI UE and its activities but to also contribute to the dissemination and exploitation of results and good practice.

For such communication, it is usually more cost efficient to target larger actors and ‘multipliers’, although they seem to be in most cases actively engaged already and well in the picture. The hardest case, however, is to work with the plurality and diversity of smaller stakeholders, such as small and medium sized cities and different smaller citizen groups and entrepreneurs.

Strengthening community building across such stakeholder groups, mobilising cities and civil society organisations is therefore a priority for the SRIA 2.0 implementation. New formats might be needed to engage cities, one of which could be the establishment of city panels for some of the thematic priorities, identifying and working together with cities interested in particular strategic issues.

REFLEXIVE ACTIVITIES

Strategic synthesis

In support of managing the project portfolio and targeted communication, strategic analysis of projects and their activities and results is needed, particularly to support the development of the urban living labs approach. Advanced communication in terms of strategic synthesis could help to promote research results in terms of policy recommendations, good practices, policy briefs, case studies, etc. A strategic synthesis framework is thus to be developed to help create and prioritise appropriate formats, target groups and communication aims.

Monitoring and evaluation

In its long-term vision, JPI Urban Europe has laid out its objectives and expected impacts for the next development phase. To keep track of the progress in terms of SRIA implementation and its contribution to achieve the defined goals requires monitoring and evaluation. So far, a monitoring and evaluation framework has been developed and piloted. It will be put in place over the next few years and thus accompany the SRIA implementation, provide strategic and operational feedback about the appropriateness of selected instruments and the results of specific implementation measures. In addition, evaluation processes will be set up to create evidence about the mid- to longer-term impact of the JPI Urban Europe programme and the SRIA.

MULTI-ANNUAL CALL AGENDA

Translating the thematic priorities and the principles for implementation into an action plan leads to a multi-annual call agenda as the backbone of future joint actions. According to dedicated transition pathways or ambitions the related dilemmas are addressed, cross-cutting the thematic priorities. Figure 9 matches the selected transitions with the specific dilemmas, indicating how strongly the specific thematic priority will be addressed. Figure 10 provides some more details on indicative topics for each of the proposed calls according to the dilemmas and identified issues.

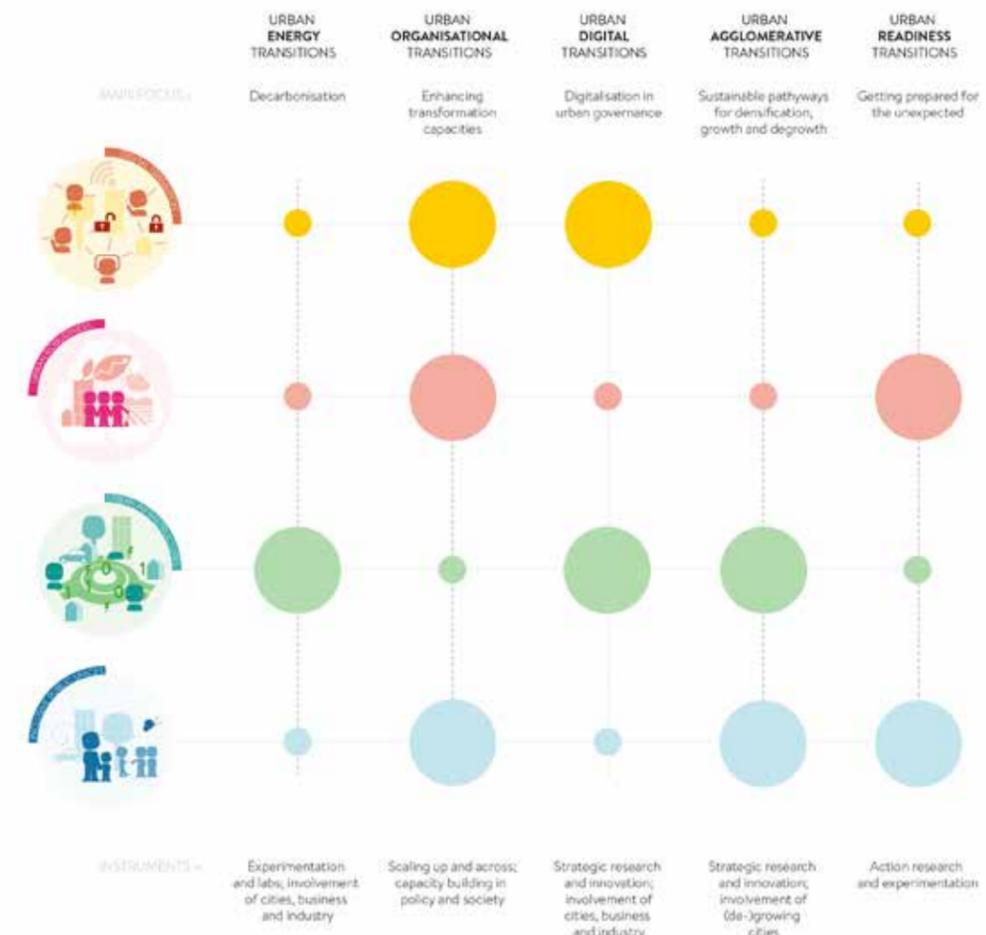


Figure 9: Multi-annual call agenda for SRIA 2.0

MAIN FOCUS >	URBAN ENERGY TRANSITIONS Decarbonisation	URBAN ORGANISATIONAL TRANSITIONS Enhancing urban transformation capacities	URBAN DIGITAL TRANSITIONS Digitalisation of urban governance	URBAN AGGLOMERATIVE TRANSITIONS Sustainable pathways for densification, growth and degrowth	URBAN READINESS TRANSITIONS Getting prepared for the unexpected
	Pathways for PED implementation: Tools, methods, approaches for positive energy districts, governance of PED implementation, new public services, new models of citizen participation	Governance capacities and innovation ecosystems, utilising digital and emerging technologies and their impact on governance	Governance of digital transitions, new urban planning, right to the city in digital transitions, new public services, transparency and accountability in digital transitions	Digital as an enabler for new design, governance of growth/degrowth	Governance of crisis, integrated approaches to deal with the complexity of major events, models for citizen participation, new financing models to deal with uncertainties
	Retrofitting housing for energy transitions, new business models, regeneration strategies, socio-economic factors influencing energy transitions	Urban circular economy, new urban economy, new public services	Enhancing robustness through digital transitions, education to close the digital divide	Robustness in densified / thinned-out urban areas; consequences for climate change adaptation and mitigation, urban-rural relationships	Climate change adaptation and mitigation, Nature-Based Solutions, urban design, frugal innovation
	Land use and urban planning for energy transitions, energy and mobility infrastructures, environmental aspects	Enhancing planning capacities, transformation of urban infrastructures	Digital urban planning, new value chains, business models for public and private organisations	Densification of urban areas, managing scarce resources, cultural heritage, brownfield dev., renovation, mobility, affordable housing	Urban-rural context, regional preparedness, robust infrastructures, urban agriculture, urban design and green infrastructures
	Design of inclusive public spaces for energy transitions	Place-making including cultural heritage, tackle gentrification, ensure accessibility of public spaces for all, considering needs of different groups of society	Inclusive digital public spaces	Design of public spaces for all under constraints of densification, green spaces, cultural heritage, tourism, liveability in densified areas, developments in small and medium sized cities	Social crisis, public spaces as room for democracy, design of public spaces (security, inclusiveness)

Figure 10: Indicative topics for the multiannual call agenda

REFERENCES

- BBSR (2018), 'Ten years after the Leipzig Charter: The enduring relevance of integrated urban development in Europe', Federal Institute for Research on Building, Urban Affairs and Spatial Development, <<https://agendastad.nl/wp-content/uploads/2017/08/Ten-years-after-the-Leipzig-Charter-low-res.pdf>>. Bonn: BBSR.
- Bulkeley, H., Coenen, L., Frantzeskaki, N., Hartmann, C., Kronsell, A., Mai, L., Marvin, S., McCormick, K., van Steenberg, F., & Voytenko Palgan, Y. (2016), 'Urban living labs: Governing urban sustainability transitions', *Current Opinion in Environmental Sustainability*, 22, 13-17.
- Bylund, J. (2017), 'A community of practice to enhance urban transformations in-between?', Reflections on the Urban Transitions Pathways Symposium, Sheffield, UK, 12-13 October 2017, <<https://jpi-urbaneurope.eu/news/a-community-of-practice-to-enhance-urban-transformations-in-between/>>. JPI Urban Europe.
- CEU (2010a), 'Conclusions concerning various issues related to the development of the European Research Area', 10246/10, Brussels 26 May 2010, Brussels: Council of the European Union.
- CEU (2010b), 'Council conclusions on the launching of the joint programming initiatives on 'Healthy and Productive Seas and Oceans', 'Urban Europe - Global Urban Challenges, Joint European Solutions', 'Connecting Climate Knowledge for Europe', 'Water Challenges for a Changing World' and 'The Microbial Challenge - An Emerging Threat to Human Health'.
- de Jong, M., Joss, S., Schraven, D., Zhan, C., & Weijnen, M. (2015), 'Sustainable-smart-resilient-low carbon-eco-knowledge cities; making sense of a multitude of concepts promoting sustainable urbanization', *Journal of Cleaner Production*, 109, 25-38.
- EC (2016), 'Urban agenda for the EU: Pact of Amsterdam', 30 May 2016, <<https://ec.europa.eu/futurium/en/content/pact-amsterdam>>. Amsterdam: European Union.
- Evans, J., Karvonen, A., & Raven, R. (Eds.). (2016). *The experimental city*. London: Routledge.
- Fred, M. (2018), *Projectification: The Trojan horse of local government*, <http://portal.research.lu.se/ws/files/37164681/Fred2018_Projectification_the_Trojan_horse.pdf>, Lund University / Malmö University, Malmö.
- Gluckman, P. (2018), 'The relevance of science-policy cooperation for implementing the SDGs', Presentation given at Austrian Presidency Conference '10 years Joint Programming - Achievements and the way forward', 20 September 2018, <<https://era.gv.at/object/news/4303>>.
- JPI Urban Europe. (2015). Strategic Research and Innovation Agenda: Transition Towards Sustainable and Liveable Urban Futures. Retrieved from <http://jpi-urbaneurope.eu/app/uploads/2016/09/JPI-UE-Strategic-Research-and-Innovation-Agenda-SRIA.pdf>. Accessed JPI Urban Europe.
- JPI Urban Europe (2018a), 'Making Cities Work - Finding solutions to urban challenges through cooperation', Retrieved from <https://jpi-urbaneurope.eu/making-cities-work/>
- JPI Urban Europe (2018b), 'Urban Living Labs by JPI Urban Europe', Drafted by Colette Bos, NWO, <<https://jpi-urbaneurope.eu/app/uploads/2018/01/Urban-Living-Labs-info-sheet-draft-171123-version-8.2-PRINT.pdf>>. JPI Urban Europe.
- Kabisch, S., Finnveden, G., Kratochvil, P., Sendi, R., Smagacz-Poziemska, M., Matos, R., Noll, M., Bylund, J., & Riegler, J. (2018), 'New Urban Transitions towards Sustainability: Challenges for science and implementation from the perspective of the Scientific Advisory Board (SAB) of the Joint Programming Initiative (JPI) Urban Europe', Position Paper of the SAB of JPI Urban Europe presented at the Governing Board Meeting, 7 June 2018,
- Law, J. (2014). Working well with wickedness. In K. Klingan, A. Sepahvand, C. Rosol, & B. M. Scherer (Eds.), *Textures of the Anthropocene: Grain vapor*

- ray (pp. 157-176). Berlin: Revolver Publishing.
- Leipzig Charter. (2007). Leipzig Charter on Sustainable European Cities. Retrieved from https://ec.europa.eu/regional_policy/archive/themes/urban/leipzig_charter.pdf. Accessed 2018-10-15, European Commission.
- Marvin, S., Bulkeley, H., Mai, L., McCormick, K., & Voytenko Palgan, Y. (Eds.). (2018). *Urban living labs: Experimenting with city futures*. New York: Routledge.
- Mazzucato, M. (2018). 'Mission oriented research and innovation in Europe - A problem-solving approach to fuel innovation-led growth'. Retrieved from https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf
- Nilsson, M., Griggs, D., & Visbeck, M. (2016). 'Map the interactions between Sustainable Development Goals', *Nature*, 534(7607), 320-322. Retrieved from <https://www.nature.com/news/policy-map-the-interactions-between-sustainable-development-goals-1.20075>
- Riegler, J. (2018a), 'Research and innovation for transitions in Brazil', Reflections on a workshop organised by FINEP and JPI Urban Europe, 7-8 November 2018, Rio de Janeiro, Brazil, <<https://jpi-urbaneurope.eu/research-and-innovation-for-urban-transitions-in-brazil/>>. JPI Urban Europe.
- Riegler, J. (2018b), 'Urban living labs in China?', Reflections on a workshop organized by Chinese Academy of Urban Planning (CAUPD), the Trans-Urban-EU-China project, and JPI Urban Europe, 4 September 2018, Beijing, China, <<https://jpi-urbaneurope.eu/news/urban-living-labs-in-china/>>. JPI Urban Europe.
- Sarasini, S., Diener, D., Sochor, J., & Vanacore, E. (2018), 'Stimulating a transition to sustainable urban mobility: JPI Urban Europe programming in the field of Mobility as a Service'. Retrieved from https://jpi-urbaneurope.eu/app/uploads/2018/09/JPI-UE_MaaS_white_paper2018.pdf
- UERA (2018), 'UERA input to JPI Urban Europe's Strategic Research and Innovation Agenda 2.0', Urban Europe Research Alliance position paper drafted by Judith Borsboom-van Beurden (NTNU), Maria Beatrice Andreucci (La Sapienza University), Roberta Chiarini (ENEA), Monika Heyder (Eifer), Pia Laborgne (Eifer), Susanne Meyer (AIT), 25 May 2018,
- UN (2015), 'Transforming our world: The 2030 agenda for sustainable development', A/RES/70/1, <<https://sustainabledevelopment.un.org/post2015/transformingourworld>>. New York: United Nations.
- UN (2017), 'New urban agenda', UN-HABITAT III, A/RES/71/256, <<http://habitat3.org/wp-content/uploads/NUA-English.pdf>>.
- Urban-Nexus (2014), 'Engaging society for a sustainable city: URBAN NEXUS research findings', URBAN-NEXUS FP7 project no. 282679, <<https://cordis.europa.eu/docs/results/282/282679/final1-results-urban-nexus.pdf>>.
- von Wirth, T., Fuenfschilling, L., Frantzeskaki, N., & Coenen, L. (2019), 'Impacts of urban living labs on sustainability transitions: Mechanisms and strategies for systemic change through experimentation', *European Planning Studies*, 27(2), 229-257.
- Weber, M., Andreescu, L., Cuhls, K., Dragomir, B., Gheorghiu, R., Giesecke, S., Ricci, A., Rosa, A., Shaper-Rinkel, P., & Sessa, C. (2018), 'Transitions on the Horizon: Perspectives for the European Union's future research and innovation policies', BOHEMIA Final report, <https://ec.europa.eu/info/sites/info/files/transitions-on-the-horizon-2018_en.pdf>. Brussels: European Commission.
- Wolfram, M. (2019), 'Learning urban energy governance for system innovation: an assessment of transformative capacity development in three South Korean cities', *Journal of Environmental Policy and Planning*, 21(1), 30-45.
- Wrangsten, C., & Bylund, J. (2018), 'A dilemma-driven approach to urban innovation', A dilemma-driven approach to urban innovation, <<https://jpi-urbaneurope.eu/news/a-dilemma-driven-approach-to-urban-innovation/>>. JPI Urban Europe.

