**Shaping Common Ground in Urban Sustainability?**

**Smart City Governance – Common Ground for Integrated Urban Management**

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**1 – Introduction - Shaping Common Ground**

The JPI Urban Europe analysis underpinning the specification of the SRIA raises significant concerns that a fragmented landscape of urban initiatives consisting of different perspectives arising from resilient, smart, and low carbon cities, will undermine efforts to secure sustainable development. The fear is that diversified and potentially divergent concepts of the sustainable city will counter integrating approaches to urban sustainability that are central to SRIA objectives, and more specifically to those of urban planners seeking to develop capacity to secure urban transitions.

This paper responds to these concerns and the issues identified within the framework of the JPI Urban Europe Urban Transitions Pathway Symposium with focus on shaping common ground in urban sustainability. Specific focus is given to 2 orientation questions:

- What is your contribution towards the issue outlined by "Shaping Common Ground in Urban Sustainability"? What do you propose as a common cause?

- What is needed to go beyond and integrate the diversified state-of-the-art in contemporary urban sustainability research and innovation?

In this regard the prime message of this paper is that the cities of Europe and indeed globally face common drivers of change generating common challenges that demand the development of common solutions, and in so doing define an essential common cause. At one level this is evident in respect of the governance of cities where exchange of good practice between governance agencies is frequently the basis for viable innovations in land use management diverse locations. More fundamentally it is argued that the essential objective of these initiatives is the definition of principles for the development of the urban governance model translated into the development of common processes and assessment methodologies focused on decision-making on land-use transformation according to the principles of sustainable development.

The principles of urban governance are based on the twin pillars of an integrated and participatory urban governance, that define requirements driving the development of a common model of governance globally, which in turn is driving the development of common methodologies of urban governance and land-use planning. Integrative governance addresses the complexity of the interconnected socio-economic and environmental considerations constituting city life, that must be managed in the urban spatial frame. Furthermore, all urban governance and land use planning decision-making processes require the provision of a political mandate for the urban plan and associated development proposals, generating the political will essential to implement the plan. In various ways stakeholders including citizens, business representatives and civil society organisations must be engaged in the decision-

making process to facilitate political decision-making, providing endorsement of plans and development proposals, so securing necessary legitimacy for the decisions in a framework of democratic governance.

Within the framework of the governance principles land use decision making is driven on the basis of assessments that are common for all urban environments. For example, the need to assess the socio-economic and environmental impacts of alternative development proposals in a territorial perspective is a fundamental question for all land-use planning. Do we develop site A or site B, and what is the evidence in relation to impacts on, for example, new jobs created, tons of $CO_2$ emitted, quality of air and citizen health that inform decisions on land development. These questions, and more, are addressed by land-use planning in an integrated spatial planning impact assessment to support land use decision making, forming a methodological perspective that is common for all cities and city regions.

Technological innovation allied with an intersecting social innovation is providing a new and powerful dynamic of change that is promoting and shaping the development of common and generic applications of integrated and participatory urban governance. This dynamic is focused on the context of smart city governance whereby ICT derived tools and methodologies are applied to the operationalisation of decision-making within the framework of the policy cycle in respect of both integrated and participatory urban governance, enhancing the opportunity for more effective realisation of sustainable urban development objectives. Smart city open government initiatives building on innovation and research conducted globally involving city planners, research institutes and industry is creating new means of impact assessment, stakeholder engagement as well as simulation and visualisation of urban futures.

The paper seeks and defines common ground integrating a diversity of approaches in respect of integrated and participatory urban governance including:

- development of a robust and common model of urban governance and decision-making in relation to the key dimensions of integrated and participatory governance – that reflects the commonality of the drivers of change at global and pan-European level that impact cities;
- within this model specifying a user-defined framework of interconnected strategic policy objectives in which policy co-benefits and "win-win" solutions are the principal outcome;
- promoting a common understanding of open smart city governance solutions defined by the application of common ICT enabled tools and methodologies, that facilitate more effective integrated assessment of urban complexity and enhanced participatory decision-making;
- supporting the development of generic modular systems of urban governance in which smart city governance solutions are applied to the major cities of Europe according to a common methodology and common process of open governance.

Accordingly the paper addresses key issues identified by the SRIA integrated framework including:

- enhanced understanding of the complexity of cities;
- more effective assessments and monitoring of city interventions;

- development of new data sources, intelligence and communication methodologies supporting decision-making.

Methodologically the paper build upon the extensive experience of EU funded (FP7 and Horizon 2020) open smart city governance research and innovation projects. These projects include Humboldt, urbanAPI, URBIS, DECUMANUS, and Smarticipate, in which research and innovation actions are grounded via applications in major European cities including Helsinki, London, Hamburg, Antwerp, Rome, Milan, Bologna and Madrid. Specific concerns arising in relation to this research include:

- identification of commonalities and synergies in the development of integrated urban management driven by social and technological innovation supporting enhanced integrated, participatory and open urban governance;
- synthesis of new knowledge, and development of a common understanding and good practice exchange, supporting existing project activity;
- development of innovative ideas and supporting the future directions of the research.

**2 - Urban Governance Challenges**

This real-world context for governance transformation emphasizes the challenges that cities face in trying to deliver sustainable urban development, and makes clear that the challenges are not only strategic, technical and financial but also relate to urban complexity, city management and institutional barriers.

**Urban Governance Challenges – Complexity**

The socio-economic architecture of the city-region defined in a territorial context determines the extent to which the cities of Europe positively contribute to Europe's global commitments to halt climate change by reducing greenhouse gas emissions, which are substantially associated with motorised forms of urban transport. The overall shape and structure of the city-region, the extent of urban sprawl, the density of population and the dominant mode of transport between homes and work, and recreational and cultural facilities substantially determine the level of greenhouse gas emissions. As a result of the interconnected nature of socio-economic drivers and environmental impacts, these socio-economic variables critical in city formation also fundamentally influence the health of the urban population, primarily as a result of air pollutants generated by motorised transport. Furthermore, the form of the city-region and its physical connectivity and interaction with its hinterland substantially determines the wider impact of the city on the natural environment, and the conservation or loss of biodiversity.

The interconnectedness of social, economic and environmental challenges in the urban context create complex conditions for urban management, and as a consequence barriers to delivery of a more sustainable urban development. This interconnectedness and complexity is illustrated in Figure 1, whereby the relationship between more compact city and city-region solutions or more sprawling cities is substantially influenced by the land use - transport relationship that impacts directly on air quality, noise and greenhouse gas emissions, and so influences human health, climate change as well as biodiversity degradation.
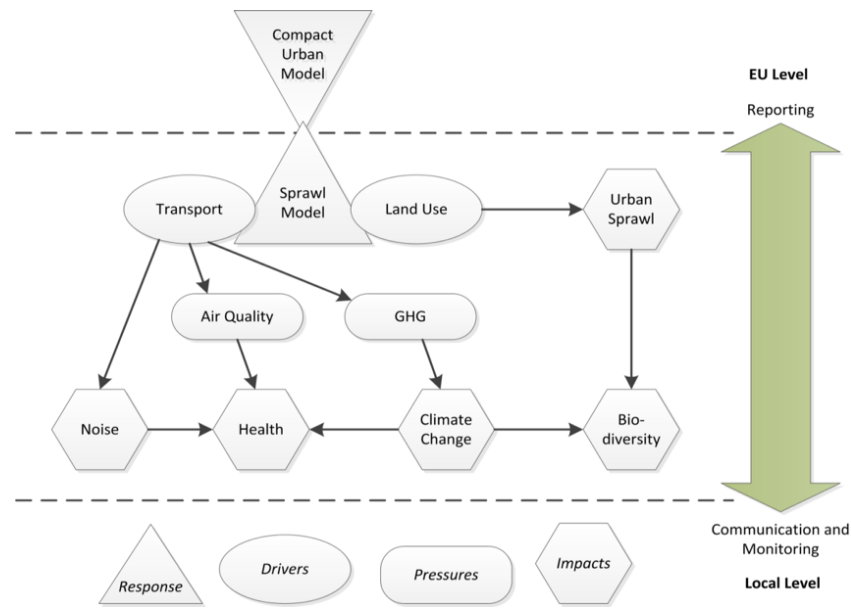
**Figure 1: Urban interconnectedness and Complexity**

## Urban Governance Challenges - Fragmentation

All levels of governance, local, regional, national and European, have an impact on urban development, the difficulty is to merge the actions of these different levels of governance into a consistent and integrated urban policy due to the fragmentation of responsibilities and decisions. Inadequate governance arises as a result of the growing mismatch between administrative delineations and the 'real' urban structures that extends far beyond the limits of the municipality of the core city. In emerging large polycentric city-regions, urban structure is often composed of a network of small and medium, urban, peri-urban and rural municipalities

located around the major urban centre. Urban policies have to be defined at a larger scale than municipality scale for operational reasons in order to provide better services for users (e.g. public transport), for cost-efficiency reasons in order to share costs (e.g. utilities, infrastructure, public transport); for strategic reasons in order to develop policies at the appropriate scale and involve the key actors (e.g. economic strategies and programmes); for territorial reasons in order to take into account the characteristics of the place (eg. protection against flooding).

**Urban Governance Challenges – Stakeholder Engagement**

In this fragmented environment (institutionally and spatially), urban governance is further complicated by the number and the variety of actors (private and public) operating at different territorial levels (e.g. Municipalities, Urban-Rural Region, Metropolitan area, City-Region) with various competences (e.g. agencies, services providers) and objectives. Besides public and semi-public sectors, the policy-making process involves heterogeneous actors from private sector, third sector and citizens. These private sector including firms and companies operate at national (e.g. infrastructure providers), regional, city and individual (e.g. property development companies) levels of activity. Third sector agencies including NGOs, civil society organisations, non-profit-making organisations (e.g. interests groups, ecological associations, neighbourhood committees) are also engaged.

**3 - Transformational Governance - Integration**

As a consequence of the various challenges identified above transformational governance, which attempts to drive the socio-economic and environmental transformations necessary to deliver the sustainable development objectives adopted by all cities of Europe, is confronted with the limitations of the policy instruments that are inadequate to deal with urban complexity. Furthermore, current governance models are insufficiently agile to cope with the entrepreneurial environment encountered, and to respond to the pace of change in demography, societal expectations, and technology etc.

Transformational governance seeks solutions in integrated and multi-level urban governance, an arrangement for making binding decisions that engages a multiplicity of politically independent and interdependent actors, private and public, at different levels of territorial aggregation. Coordination, cooperation, participation and integration are the key principles of the multi-level urban governance approach. Accordingly, the practical implementation of this multi-level concept is a complex challenge for all levels of power. It is a relationship based on a permanent process of 'negotiation-deliberation-implementation' between numerous actors at different territorial levels and within each level. Urban governance is particularly characterized by the need for cooperation between a large variety of actors of many domains (e.g. utilities, housing, urban planning, health) and the necessity to engage stakeholders (e.g. citizens, business, NGO's) in the decision-making process.

Cooperation and effective collaboration between levels of government (vertical dimension) and spatial cooperation (horizontal dimension), aims to enable efficient policymaking and service delivery:

- **Vertical Dimension:** involving linkages between higher and lower levels of government, including their institutional, financial, and informational aspects;

- **Horizontal Dimension:** concerning co-operation arrangements between regions or between municipalities, as a means to improve the effectiveness of local public service delivery and implementation of development strategies.

**Transformational Governance - Participation**

In addition to the integration model of governance outlined above, the involvement of civil society in the decision-making process is essential. For policy-makers and decisions-makers, dialogue with citizens is not only a way to understand society's expectations but also to identify barriers and opportunities for transformation, supporting the effective implementation of policies. Engagement of stakeholders and the variety of domains actors is supported by both top-down and bottom-up approaches at the urban level:

- **Top-down approaches**: based on regulatory and economic instruments developed by EU, national governments and regional governments, for example, focused on sectoral policies (e.g. energy, waste, water, transport);

- **Bottom-up approaches:** including participation of the local level and society (e.g. citizens, NGO's and sectoral actors) in the policy process.

Top-down and bottom-up practice-based approaches are both essential to strategically manage multi-level and multi-stakeholder change processes, but societal process is also critical, involving fundamental change in the structure, culture and practices of the societal system. To achieve transition towards sustainable cities it is necessary to critically examine institutions (e.g. global markets), the scale (e.g. district, municipality, city, city-region, region) the values and norms, and daily practices (e.g. commuting by car), as well as the characteristics of the place (e.g. territorial capital). Change needs to occur at many levels, at small and large scales, and among many stakeholder groups.

## 4 - Transformational Governance – Co-Creation and Participatory Process

Transformational governance combines technical planning capabilities with greater collaboration, within and across traditional policy and administrative boundaries within and between cities and communities. Some cities have adopted ambitious policy agendas with targets to plan, organise and manage the city in order to achieve these goals. These approaches can be used to influence and facilitate societal changes and to orientate actions of all actors towards sustainable pathways. But transformational governance cannot be realized via a top-down approach alone, and efforts to shape or accelerate it are greatly enhanced by open co-creative and participatory processes, involving all relevant actors, including business, civil society, researchers, policy-makers and public administrations.

In this frame of transition management, policy-makers and city administration do not have full control of the process that is driven by stakeholders and citizens. At the start of the process, it is not possible to determine the nature of the vision which is determined by stakeholders. The results may not be fully in line with the initial goals and plans of the municipality, so policy-makers have to rethink their roles in driving decision-making in their communities, bearing in mind that lasting changes will depend on citizens. The target of the process is the empowerment and engagement of a community around a shared vision and agenda.

**Transformational Governance – Planning and Decision Making**

The above general principles of transformational governance are applied to the specific needs of urban planning and land use decision making. This requires the development of an overarching policy integrating various sectoral policies, setting collaborative networks, involving multiple actors, combined with a decision making process. Here the land use plan, including collective goals and long-term vision for the territory, provides the framework for operational decision making level, in which individual decisions on land use development proposals drive the implementation of the plan in response to the provisions of the land use plan and other relevant policy frameworks.

**Operational Decision Making – Top Down Model**

Operational decision making supporting the implementation of the land use plan is effected via the policy and decision making cycle in respect of the traditional top-down model of urban

planning is identified in Figure 2. The policy and decision making cycle, in a sequential and iterative fashion, mobilises and operationalises intelligence, integrating governance, based on the following:

- **assessment** of socio-economic and environmental impacts of alternative development options

- **stakeholder engagement** regarding alternative development options

- **political decision making** and plan implementation



**Figure 2: Planning Decision Making Cycle - Top Down Model (Managing Urban Europe 25, 2008)**

In the traditional top-down model the planning requirement for ICT enabled solutions is based on a sequence of actions that deploys information and intelligence, communicates this

intelligence between planning agencies in order to inform assessment as a basis for decision involving:

- assessment methodologies, visualisation, simulation

- integration of information and analysis (cross departmental/multi-scalar)

- limited engagement of stakeholders

**Operational Decision Making – Co-Creative and Participatory Process**

The co-creative model of decision making, in contrast to the top-down model recognises that transformational governance cannot be realized via a top-down approach alone, and effective decision making can only happen in a co-creative, participatory process, involving all relevant actors, including business, civil society, researchers, policy-makers and public administrations. The top-down model defines as essential to good governance effective collaboration across government departments and with non-governmental actors, requiring working across portfolio boundaries to jointly achieve integrated responses to the issues of policy development.

The co-creative model stresses effective collaboration with societal actors in public service delivery and policy-making helping government agencies to improve their response to user needs and release their problem solving capacity. Effective engagement with societal actors also help citizens to actively participate in the decisions that affect their lives, to be involved in the co-creation of services, including design and delivery, as well as in finding solutions to

societal challenges as demonstrated in Figure 3 below. Here the red elipses (crowdsourcing, participatory 3-D sketching, and participatory ex-ante impact assessment) indicate opportunities for ICT enabled co-creative process applied to the policy and decision-making cycle.
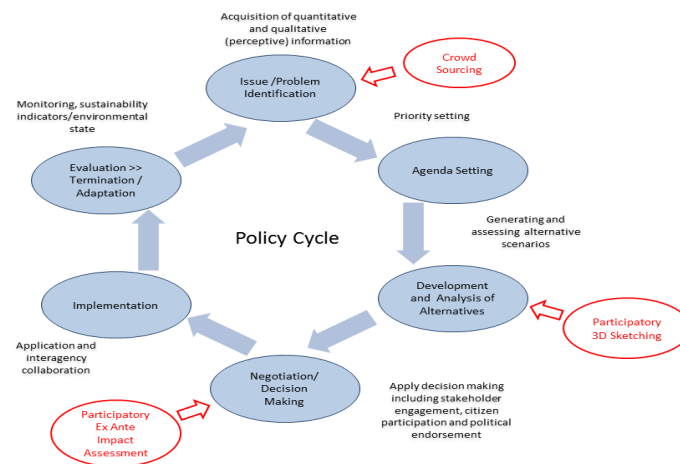


**Figure 3: Planning Decision Making Cycle - Co-Creation Model**

The co-creation model, forms the basis for all interventions in the land use planning and governance process, and thereby redefines the governance model. Here the land use planning requirement for ICT enabled solutions is based on a sequence of actions defined according to an open government paradigm driven by open public data and services and facilitating collaboration in the design, production and delivery of public services, with benefits including:

- making government processes and decisions open to foster citizen engagement improving the quality of decision-making for public institutions;

- open processes, activities and decisions enhancing transparency, accountability and trust in government. ICT facilitates bottom-up, participative and collaborative initiatives that tackle specific societal problems;

- open governance improving the efficiency, effectiveness and quality of public services by introducing new processes, products, services and methods of delivery enabled by ICT.

## 5 - Conclusion – Common Solutions

The conceptual frame shaping common ground in urban sustainability described above is a transformational governance based upon the understanding that urban managers throughout Europe face common challenges in responding to the need to secure urban economic vitality, social inclusion and environmental sustainability in urban society in relation to the global challenges of urbanisation. The commonality of the drivers of urban change offers a major opportunity and requirement for the development of common solutions. These solutions are increasingly based on the dynamic of smart urban governance supporting the development of generic ICT applications and methodologies, harnessing social innovation, and grounded in integrated assessment process and wide stakeholder engagement. EU funded smart city governance research directly addresses these potentials, developing common models of policy formulation and implementation in respect of information generation and management, as well as stakeholder engagement, thereby supporting the potential for widespread application of the tools developed throughout the cities and regions of Europe.

The development of an integrated, more powerful and effective urban governance aims to manage the most intractable urban planning issues, including the management of the complexity of urban interactions, specified in socio-economic activity, set within both environmental limits and the territorial frame. This transformational governance requires greater stakeholder engagement in the urban planning process. Municipal experts providing a top-down view of the urban vision, and its local level specification, are no longer able to manage the inherent complexity of the sustainable city alone. Greater bottom-up stakeholder engagement thereby secures the quality of integrated assessment necessary to effectively plan the modern city, providing inputs in respect of the political diversity of views on the best way forward, all essential to secure the democratic legitimacy of the urban plan.

The specification of a common framework for analysis of smart city governance applications, is set against a background of the evolving dynamic of social and technological innovation, in which opportunities for development of the integrated and participatory governance model, together with it's requirements for enhanced intelligence and communication tools are identified. As a result powerful synergies between diverse initiatives may be harnessed, to support the development of a critical mass of capacity building for urban transition pathways, operationalising the integrated and participatory governance approach.

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