Research and Innovation on
SUSTAINABLE URBAN DYNAMICS

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Printed in Luxembourg

Contents

Introduction
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As part of its preparations for Horizon 2020 (the European Framework Programme for Research and Innovation 2014-2020), the European Commission's Directorate General for Research and Innovation organized a one day stakeholder seminar entitled 'Sustainable Urban Dynamics'.

The workshop took place on 28 March 2013 on the premises of MIUR (Italian Ministry of Education, Universities and Research) in Rome. 70 researchers, administrators, urban planners and stakeholders from around Europe participated at the seminar.

The purpose of the brainstorming workshop was to identify potential research subjects to be covered under the Societal Challenge 6 – Inclusive, innovative and reflective societies, under the item 6.1.4: **'The promotion of sustainable and inclusive environments through innovative spatial and urban planning and design.'**

This item complements other R&I activities on urban issues, especially from the Societal Challenge 3 – Secure, clean and efficient energy and the Societal Challenge 4 – Smart, green and integrated transport.

Addressing the need to create more 'Inclusive Societies', the above item is part of Horizon 2020 Challenge 6, which is largely dedicated to social sciences and humanities. A budget of 70 billion euros has been proposed for the H2020 Research and Innovation Framework Programme. The programme covers the period from 2014 to 2020.

Domenico Rosetti di Valdalbero, Principal Administrator at DG Research and Innovation, led the workshop proceedings. This report was prepared by Mr. Terry Martin, executive director of the science-policy interface agency SPIA, who served as rapporteur for the event.

Special thanks to the Italian Ministry of Research, especially to Federico Cinquepalmi who hosted the meeting, and APRE that made this event successful and in particular Diassina Di Maggio, Natalia Morazzo and Keji Adunmo.

The European Commission also acknowledges the excellent collaboration with the Urban Europe JPI during this workshop and its representatives Margit Noll and Paola Clerici Maestosi.

Several Commission DG RTD colleagues helped to make the agenda as complete as possible and should be thanked: Patricia Postigo McLaughlin, Pia Laurila, Heiko Prange-Gstöhl, Cristina Marcuzzo, Marc Goffart and Catherine Lemaire.

Research
and innovation
on urban issues
in Horizon 2020

The Sustainable Urban Dynamics workshop focused on generating research and innovation ideas related to one specific item found in the proposal for a Council Decision establishing the Specific Programme implementing Horizon 2020 – The Framework Programme for Research and Innovation (2014-2020). The item of societal challenge 6 – Inclusive, innovative and reflective societies – reads as follows:

6.1.4.   The promotion of sustainable and inclusive environments through innovative spatial and urban planning and design

▶ 80% of the EU's citizens live today in and around cities and inadequate urban planning and design can thus have tremendous consequences on their lives.

▶ European research and innovation should provide tools and methods for a more sustainable, open, innovative and inclusive urban and peri-urban planning and design; a better understanding of the dynamics of urban societies and social changes and of the nexus of energy, environment, transport and land-use including the interplay with surrounding rural areas; an improved understanding of design and use of public space within cities also in the context of migration to improve social inclusion and development and reduce urban risks and crime; new ways to reduce pressures on natural resources and stimulate sustainable economic growth while improving the quality of life of European urban citizens; a forward-looking vision on the socio-ecological transition towards a new model of urban development reinforcing EU cities as hubs of innovation and centres of job creation and social cohesion.

This item complements other Horizon 2020 activities on:

- urban greening, urban farming and urban bio-waste in Societal Challenge 2 – Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy

- urban ecosystems and urban mines (landfills and mining waste) in Societal Challenge 5 – Climate action, environment, resource efficiency and raw materials

- the protection of critical infrastructures (including in urban areas) in Societal Challenge 7 – Secure societies – protecting freedom and security of Europe and its citizens

Other important Research and innovation subjects dealing with urban issues are managed under Societal Challenge 3 – Secure, clean and efficient energy and under Societal Challenge 4 – Smart, green and integrated transport.

3.1.3. Foster European Smart cities and Communities

▸ Urban areas are one of the largest consumers of energy in the Union and emit a correspondingly large share of greenhouse gases, while generating a substantial amount of air pollutants. At the same time, urban areas are affected by decreasing air quality and climate change and have to develop their own mitigation and adaptation strategies. Finding innovative energy solutions (e.g. energy efficiency, electricity and heating and cooling supply systems, and integration of renewables in the built environment), integrated with transport systems, smart construction and urban planning solutions, waste and water treatment as well as ICT solutions for the urban environment are therefore crucial in the transformation towards a low carbon society. Targeted initiatives in support to the convergence of industrial value chains of the energy, transport and ICT sector for smart urban applications need to be envisaged. At the same time, new technological, organisational, planning and business models need to be developed and tested at full scale according to the needs and means of cities and communities and their citizens. Research is also needed to understand the social, environmental, economic and cultural issues that are involved in this transformation.

4.1.3. Improving transport and mobility in urban areas

▸ This will benefit a large and increasing share of the population which lives and works in cities or uses them for services and leisure. New mobility concepts, transport organisation, multimodal accessibility models, logistics, provision of innovative vehicles and urban public services and planning solutions need to be developed and tested, which will contribute to reduce congestion, air pollution and noise, and improve the efficiency of urban transport. Public and non-motorised transport as well as other resource-efficient transport options for passengers and freight should be developed as a real alternative to the use of private motor vehicles, supported by greater use of intelligent transport systems as well as by innovative supply and demand management. Special emphasis shall be given to the interaction between the transport system and other urban systems.

Balancing subsidiarity and action since two decades

At the beginning of the seminar, Domenico Rossetti of DG Research and Innovation pointed out that the EU is obliged to strike a balance between the need to accommodate subsidiarity and the need to bring about concrete action to address the policy challenge. He noted that a number of institutional entities have a stake in this process, including:

- Several Commission DGs

- The European Parliament (cf. MEP constituencies)

- The Committee of the Regions

- Regional and urban representations in Brussels

- Pan-European city associations

Two decades of EU initiatives

Offering some historical context on EU initiatives related to sustainable urban dynamics, Domenico Rossetti mentioned a number of noteworthy efforts undertaken over the past 20 years, notably:

- URBAN Community Initiative – ERDF (DG XVI – REGIO)

- City of Tomorrow Key Action in FP5 and Urban sustainability in FP6 (DG RTD)

- Sustainable cities (DG ENV)

- CONCERTO and CIVITAS for energy, efficiency, renewables and clean transport (DG TREN)

- Projects on Cities in the programmes 'Environment' and 'Socio-economic Sciences and Humanities' in FP7 (DG RTD)

- Covenant of Mayors (DG TREN)

- European Innovation Partnership Smart Cities and Communities (DG ENER and DG MOVE)

- Joint Programming Initiative – Urban Europe (Member States)

European Research projects (FP7) on urban issues (2007-2013)

SOCIAL SCIENCES AND HUMANITIES & SUSTAINABILITY AND ENVIRONMENT – European research projects and actions

- AIRMONTECH – Air quality monitoring technologies for urban areas

- AMEDEUS – Demonstration of innovative solutions for reuse of water, recovery of valuables and resource efficiency in urban wastewater treatment

- BOST – Cooperation in urban science, technology and policy

- BRIDGE – Sustainable urban plannIng – Decision support accounting for urban metabolism

- BURBA – Bottom up selection, collection and management of urban waste

- C4BI – Cities for business innovation – Network of urban procurers

- CABLED – Electromobility solutions for cities and regions

- CASC – Cities and science communication: innovative approaches to engaging the public

- CHANCE2SUSTAIN – Urban Chances: City growth and the sustainability challenge; Comparing fast growing cities in growing economies

- CITI-SENSE – Development of sensor-based citizens' observatory community for improving quality of life in cities

- CITYSPYCE – Combating inequalities through innovative social practices of, and for, young people in cities across Europe

- CLARA – Capacity-linked water supply and sanitation improvement for Africa's peri-urban and rural areas

- CLUVA – Climate change and urban vulnerability in Africa

- COPE – Combating poverty in Europe – Inclusion through participatory multilevel governance

- CORFU – Collaborative research on flood resilience in urban areas

- DIVERCITIES – Governing urban diversity: Creating social cohesion, social mobility and economic performance in today's hyper-diversified cities

- DOROTHY – Development of regional clusters for research and implementation of environmental friendly urban logistics

- EDUMIGROM – Ethnic differences in education and diverging prospects for urban youth in an enlarged Europe

- EURO-URHIS – European urban health indicators: Using indicators to inform policy

- FACIT – Faith-based organisations and exclusion in European cities

- FASUDIR – Friendly and affordable sustainable urban districts retrofitting

- GEITONES – Generating interethnic tolerance and neighborhood integration in European urban spaces

- GREEN SURGE – Green infrastructure and urban biodiversity for sustainable urban development and the green economy

- HEREPLUS – Health risk from environmental pollution levels in urban systems

- INNOBITE – Transforming urban and agricultural residues into high performance biomaterials for green construction

- LOCALISE – Local worlds of social cohesion

- MEGACITIES – Emissions, urban, regional and global atmospheric pollution and climate effects, and integrated tools for assessment and mitigation

- MIC – My ideal city

- NAWATECH – Natural Water Systems and Treatment Technologies to cope with Water Shortages in Urbanised Areas in India

- PACT – Pathways for carbon transitions

- PANTURA – Flexible processes and improved technologies for urban Infrastructure construction sites

- PASHMINA – Paradigm shifts modelling and innovative approaches

- PATHWAYS – Exploring transitions pathways to sustainable, low carbon societies

- PLACES – Platform of local authorities and cities engaged in science

- POCACITO – Post-carbon cIties of tomorrow – foresight for sustainable pathways towards liveable, affordable and prospering cities in a world context

- PRIMUS – Policies and Research for an Integrated Management of Urban Sustainability

- PURGE – Public health impacts in urban environments of greenhouse gas emissions reduction strategies

- RAMSES – Reconciling adaptation, mitigation and sustainable development for cities

- SEISMIC – societal engagement in science, mutual learning in cities

- SHRINK SMART – The governance of shrinkage within a EU context

- SOCIAL POLIS – Social platform on cities and social cohesion

- SPREAD – Social platform on sustainable lifestyles

- SUME – Sustainable urban metabolism for Europe

- SUPURBFOOD – Towards sustainable modes of urban and peri-urban food provisioning

- SUSTAINCITY – Micro-simulation for the prospective of sustainable cities in Europe

- THE ISSUE – Traffic- Health- Environment. Intelligent Solutions Sustaining Urban Economies

- TRST – Transitions to the urban water services of tomorrow

- TURAS – Transitioning towards urban resilience and sustainability

- URBACHINA – Sustainable Urbanisation in China : Historical and Comparative Perspectives, Mega-trends towards 2050

- URBAN-NEXUS – Furthering strategic urban research

- URGENCHE – Urban Reduction of GHG Emissions in China and Europe

- WE@EU – Water efficiency in European urban areas

- WILCO – Welfare innovations at local level

TRANSPORT & ENERGY – European research projects and actions

- 2MOVE2 – New forms of sustainable urban transport and mobility

- ANULOID – Investigation of novel vertical take-off and landing aircraft concept, designed for operations in urban areas

- BEAUTY – Bio-Ethanol engine for advanced urban transport by light commercial vehicle & heavy duty

- BEHICLE – Best in class vehicle: Safe urban mobility in a sustainable transport value-chain

- CATS – City Alternative Transport System

- CELSIUS – Combined efficient large scale integrated urban systems

- CITY MOVE – City multi-role optimized vehicle

- CITY-HUB

- CITYHUSH – Acoustically green road vehicles and city areas

- CITYLOG – Sustainability and efficiency of city logistics

- CITYMOBIL2 – Cities demonstrating cybernetic mobility

- CITYNETMOBIL – City network for fair mobility

- CIVITAS ELAN – Mobilising citizens for vital cities Ljubljana – Gent – Zagreb – Brno – Porto

- CIVITAS RENAISSANCE – Testing Innovative Strategies for Clean Urban Transport for historic European cities

- CIVITAS VANGUARD – Advancing sustainable urban transport in an enlarged Europe through CIVITAS

- CONDUITS – Coordination of network descriptors for urban Intelligent transportation systems

- DEMOCRITOS – Developing the mobility credits integrated platform enabling travellers to improve urban transport sustainability

- FREVUE – Validating freight electric vehicles in Urban Europe

- FURBOT – Freight urban roboticic vehicle

- GUGLE – European cities serving as green urban gate towards leadership in sustainable energy

- I–TOUR – Intelligent transport system for optimized urban trips

- METROPOLIS – Urban airspace design

- MODSAFE – Modular urban transport safety and security analysis

- MOVE TOGETHER – Raising citizens awareness and appreciation of EU research on sustainable transport in the urban environment

- NODES – New tools for design and Operation of urban transport Interchanges

- OPTICITIES – Optimise citizen mobility and freight Mmanagement in urban environments

- OSIRIS – Optimal strategy to innovate and reduce energy consumption in urban rail systems

- PICAV – Personal intelligent city accessible vehicle system

- PITAGORAS – Sustainable urban planning with innovative and low energy thermal and power generation from residual and renewable sources

- PLEEC – Planning for energy efficient cities

- P-MOB – Premium low weight urban sustainable e-Mobility

- R2CITIES – Renovation of residential urban spaces: Towards nearly zero energy cities

- R2CITIES – Replicable and innovative future efficient districts and cities

- SOLUTIONS – Sharing opportunities for low carbon urban transportation

- SPIDER PLUS – Sustainable plan for integrated development through the European rail network – Projecting logistics & mobility for urban spatial design evolution

- STEEP – Systems thinking for comprehensive city efficient energy planning

- STEP-UP – Strategies towards energy performance and urban planning

- SWIP – New innovative solutions, components and tools for the integration of wind energy in urban and peri-urban areas

- TRANSFORM – Transformation agenda for low carbon cities

- TURBLOG_WW – Transferability of urban logistic concepts and practices from a world wide perspective

- URBANEV – Super light architectures for safe and affordable urban electric vehicles

- URBAN-NET – City-zen, a balanced approach to the city of the future

- VIAJEO PLUS – International coordination for implementation of innovative and efficient urban mobility solutions

- WIDEMOB – Building blocks concepts for efficient and safe multiuse urban electrical vehicles

ICT – European research projects and actions

- CAP4ACESS – Collective awareness platforms for improving accessibility in European cities and regions

- CITINES – Design of a decision support tool for sustainable, reliable and cost-effective energy strategies in cities and industrial complexes

- CITYFLOW – Open flow city experiment – Linking infrastructure and applications

- COSMOS – Cultivate resilient smart objects for sustainable city applications

- ECOMPASS – Eco-friendly urban multi-modal route planning services for mobile users

- ENIGMA – Enlightenment and innovation, ensured through pre commercial procurement in cities

- EUNOIA – Evolutive user-centric networks for intraurban accessibility

- INSIGHT – Innovative policy modelling and governance tools for sustainable post-crisis urban development

- IURBAN – Intelligent urban energy tool

- IURO – Interactive urban robot

- MODUM – Models for optimising dynamic urban mobility

- OPTIMUS – Optimising the energy use in cities with smart decision support system

- PLAN4BUSINESS – A service platform for aggregation, processing and analysis of urban and regional planning data

- SEMANCO – Semantic tools for carbon reduction in urban planning

- SIMPLI-CITY – The road user information system of the future

- SUDPLAN – Sustainable urban development planner for climate change adaptation

- SUPERHUB – Sustainable and persuasive human users mobility in future cities

- URBANAPI – Interactive analysis, simulation and visualisation tools for urban agile policy implementation

- URBANFLOOD

- URBANIXD – Designing human interactions in the networked city

- URBANWATER – Intelligent urban water management system

- V-CITY – The virtual city

SMART CITIES – (ICT-ENERGY-TRANSPORT) European research projects and actions

- ALMANAC – Reliable smart secure Internet of things for Smart Cities

- BESOS – Building energy decision support systems for Smart Cities

- CITYOPT – Holistic simulation and optimization of energy systems in Smart Cities

- CITYPULSE – Real-time Iot stream processing and large-scale data analytics for Smart City applications

- CLOUT – Cloud of things for empowering the citizen clout in Smart Cities

- DC4CITIES – Environmentally sustainable data centres for Smart Cities

- FIREBALL – Future Internet research and experimentation by adopting living labs – towards Smart Cities

- GEYSER – Green networked data centres as energy prosumers in Smart City environments

- INDICATE – Indicator-based interactive decision support and information exchange platform for Smart Cities

- INSMART – Integrative Smart City planning

- MOBINCITY – Smart mobility in Smart City

- MOVESMART – Renewable mobility services in Smart Cities

- NICE – Networking intelligent cities for energy efficiency

- ORPHEUS – Optimising hybrid energy grids for Smart Cities

- OUTSMART – Provisioning of urban/regional smart services and business models enabled by the future Internet

- PETRA – Personal transport advisor: An integrated platform of mobility patterns for Smart Cities to enable demand-adaptive transportation systems

- READY4SMARTCITIES – ICT Roadmap and Data Interoperability for Energy Systems in Smart Cities

- RERUM – Reliable, resilient and secure Iot for smart city applications

- SAFECITY – Future Internet applied to public safety in Smart Cities

- SINFONIA – Smart initiative of cities fully committed to invest in advanced large-scaled energy solutions

- SMARTFREIGHT – Smart freight transport in urban areas

- SMARTFUSION – Smart urban freight solutions

- SMARTIE – Secure and Smarter Cities data management

- STADIUM – Smart transport applications designed for large events with Impacts on urban mobility

- STRAIGHTSOL – Strategies and measures for smarter urban freight solutions

- TRESCIMO – Testbeds for reliable Smart City machine-to-machine communication

- VITAL – Virtualized programmable Interfaces for innovative cost-effective Iot deployments in Smart Cities

SECURITY – European research projects and actions

- BESECURE – Best practice enhancers for security in urban environments

- DESURBS – Designing safer urban spaces

- ENCOUNTER – Explosive neutralisation and mitigation countermeasures for IEDs in urban/civil environment

- HARMONISE – Holistic approach to resilience and systematic sctions to make large scale urban built infrastructure secure

- INDECT – Intelligent Information System Supporting Observation, Searching and Detection for Security of Citizens in Urban Environment

- LOTUS – Localisation of threat substances in urban society

- PROACTIVE – Predictive reasoning and multi-source fusion empowering anticipation of attacks and terrorist actions In urban Environments

- SAFECITI – Simulation Platform for the Analysis of Crowd Turmoil in Urban Environments with Training and Predictive Capabilities

- SECUR-ED – Secure urban transportation – European Demonstration

- SGL FOR USAR – Second Generation Locator for Urban Search and Rescue Operations

- SMARTPREVENT – Smart Video-Surveillance System to Detect and Prevent Local Crimes in Urban Areas

- TACTICS – Tactical approach to counter terrorists in cities

- VITRUV – Vulnerability identification tools for resilience enhancements of urban environments
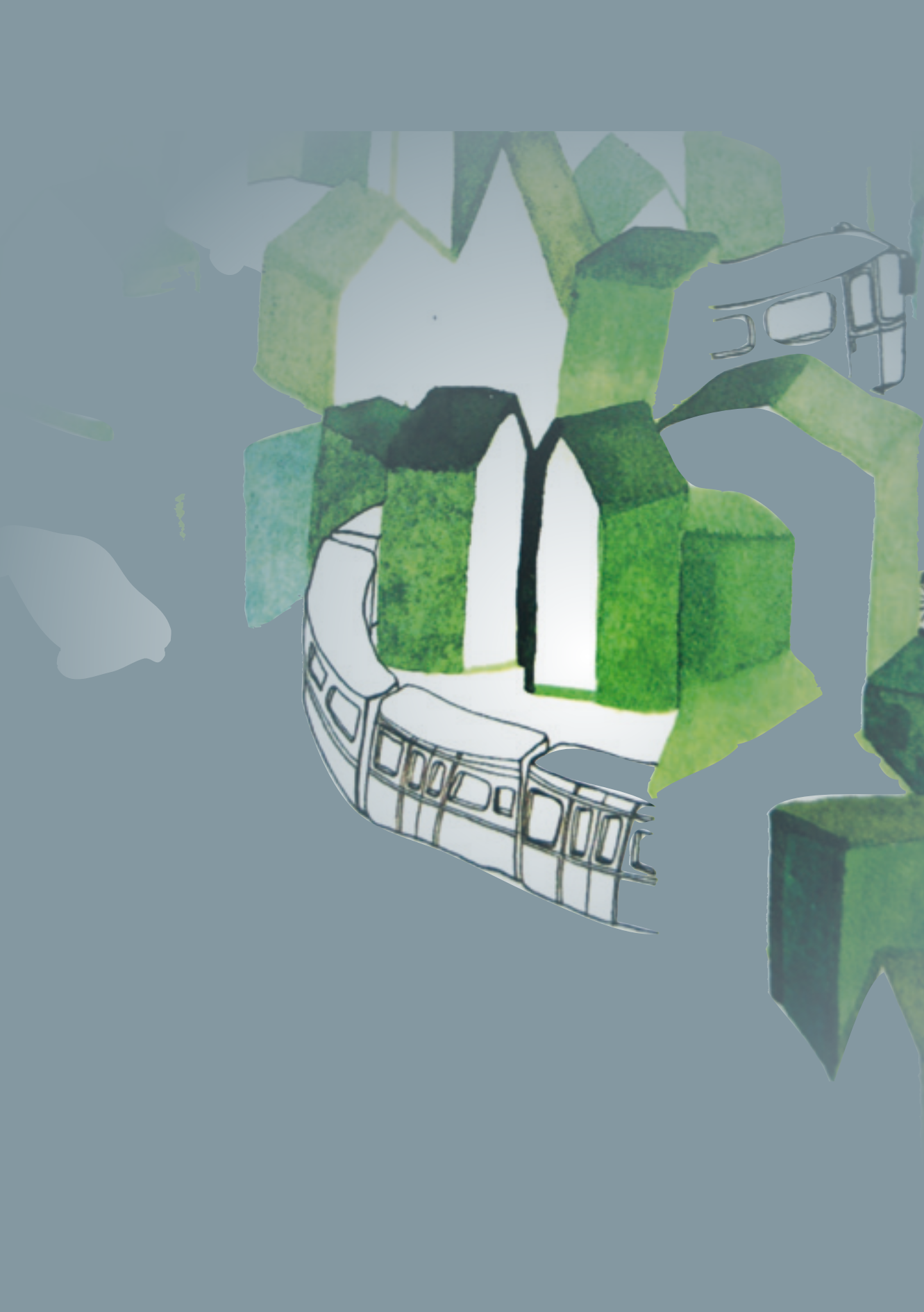
Other European initiatives dealing with urban research and innovation

- URBAN EUROPE – Joint Programming Initiative

- EUROCITIES – The network of major European cities

- ICLEI – Local governments for sustainability

- EURA – The European urban research association

- POLIS – European cities and regions networking for innovative transport solutions

- CEMR – Council of European Municipalities and Regions

European Commission information on Urban issues:

- DG RTD web pages on Foresight and Sustainable Urban Management and Transport:

  http://ec.europa.eu/research/social-sciences/fwl-sustainable-future_en.html

  http://ec.europa.eu/research/environment/index_en.cfm?pg=projects&area=land

  http://ec.europa.eu/research/transport/multimodal/sustainable_urban_transport/index_en.htm

- DG Energy web page on Smart Cities:

  http://ec.europa.eu/energy/technology/initiatives/smart_cities_en.htm

- DG Transport and mobility web page on Urban Mobility:

  http://ec.europa.eu/transport/urban/urban_mobility/urban_mobility_en.htm

- DG CONNECT web page on Smart Cities:

  http://ec.europa.eu/information_society/activities/sustainable_growth/cities/index_en.htm

- DG REGIO web page on Cities of Tomorrow:

  http://ec.europa.eu/regional_policy/conferences/citiesoftomorrow/index_en.cfm

Potential research and innovation on urban issues in Societal Challenge 6 – Inclusive societies

Limiting the scope

In order to keep the workshop focused, Dr. Rossetti stressed the importance of differentiating between the H2020 topic at hand (item 6.1.4) and closely related but separate topic than 3.1.3 that is designed to help 'foster European smart cities and communities', 4.1.3 that aims at 'improving transport and mobility in urban areas' and 7.2 and 7.5 that are targeted at the improvement of the resilience of critical infrastructures. While item 6.1.4 is dedicated to innovative spatial/urban planning and design, item 3.1.3 deals with convergence of energy, transport and ICT for smart cities, item 4.1.3 deals with new mobility concepts and items 7.2. and 7.5 concentrate on security. In practice, it proved difficult during the workshop's discussions to completely respect the boundaries between these topics.

Consistent with the nature of a brainstorming event, the workshop facilitated a wide-ranging discussion reflecting a broad spectrum of policy priorities and research interests. [1] To help give structure to these heterogeneous contributions, this summary breaks the content down into 10 clusters corresponding to potential research, innovation and policy subjects identified at the conclusion of the event [2].

1. Measuring and forecasting housing needs

2. Integration and cohesion in urban areas (ethnic mix and generations)

3. Functionalities, sharing (consumption) and lifestyles

4. Export of EU urban best practices in third countries

5. Economic, social and environmental city resilience

6. Urban regeneration/renewal including artistic assets

7. Welfare city visions

8. Urban tools to attract and retain people

9. Urban socio-ecological transition

10. Cross-cutting urban issues: Data; Gender; Foresight

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[1] While all contributions to the workshop were interesting and valuable, some exceeded the scope of this report. It is important to note that this is not intended as a comprehensive account of the workshop proceedings but rather as a targeted thematic summary.

[2] All the presentations are available on: http://ec.europa.eu/research/social-sciences/events-240_en.html

1. Measuring and forecasting housing needs

According to the United Nations, it is estimated that some 83% of Europe's population will be living in cities by 2050. But urban growth patterns in Europe are uneven. While many cities are growing, others are stagnant and some are shrinking. Geographical trajectories are very different. Understanding the need for housing - how much of what kind of housing will be needed where, when and by whom - is a fundamental concern.

Innovative monitoring and forecasting methods will be needed in order to identify and address housing needs in a timely fashion. Shifting demographic patterns must be taken into account. Failure to accurately forecast these needs can lead to severe gluts and shortages of housing, with profound socio-economic consequences.

Hence, measuring and forecasting housing needs should remain a key research priority as it provides the basic foundation for planning sustainable and inclusive urban environments.

2. Demographic and ethnic integration and cohesion in urban areas

Europe's populating is ageing. At the same time, many parts of Europe are becoming ethnically and culturally more heterogeneous. Promoting social cohesion and achieving an overall good quality of life in urban areas constitutes a major policy challenge, a challenge that research can and should be helping to address.

In his presentation to the workshop, Julien Dijol (Policy Coordinator of CECODHAS Housing Europe – the European Federation of Public, Cooperative and Social Housing) referred to what he called 'the double integration challenge'. He defined that challenge as 'the difficulty to house increasingly heterogeneous households (in terms of age, income, employment status, ethnic background) in places that are often deprived neighbourhoods that need reconnection with mainstream urban fabric.' Such situations, he observed, are often associated with crime, vandalism, poor quality of life and a sense of marginalisation. Research is needed to understand how people can be integrated into neighbourhoods more effectively and how those neighbourhoods can be integrated into the larger urban fabric.

Integration and cohesion issues in urban contexts are highly variegated. Cities are facing different challenges depending on the specific demographic, economic and cultural circumstances. Research is needed to chart these dynamics at micro and macro levels.

This research vein also offers opportunities to investigate urban integration in relation to international migration and explore opportunities to enhance cultural dialogue.

3. Functionalities, sharing (consumption) and lifestyles

Starting from Stefan Schleicher's (University of Graz and WIFO in Austria) presentation, several participants in the workshop expressed support for the idea of investigating a potentially significant trend away from the conventional paradigm of individual consumption towards one of shared functionality in urban environments. This trend could be of great importance with respect to sustainability as it implies a rethink (and reorganization) of the way goods and services are consumed and supplied.

The standard example for shared functionality is car sharing, which has experienced a boom in some urban environments over the past couple of years. There appears to be potential for extending this model to many other spheres of urban life. If such a paradigm shift were to gain momentum, it could substantially reduce environmental impact, improve economic efficiency and reduce overall space requirements (in places where space is at a premium). Research is needed to identify the full potential and needs of such a paradigm shift, not least with respect to infrastructure and communication.

4. Export of EU urban best practices in third countries

As noted by Margit Noll – a member of the JPI Urban Europe Management Board – European cities are different from cities in other parts of the world. Cities in Europe tend to be smaller than those in the US and China, for example. Moreover, a larger share of the European population lives in small and medium sized cities. And the wealthiest – some would argue the most successful – cities in Europe are mid-sized.

Yet despite having a long and rich urban experience to draw upon, Europe has so far failed to forge a strong connection to urban research. Most research on cities is still based on US cities which may not be representative of those found elsewhere.

Because Europe does boast many cities that can be regarded as successful (i.e. prosperous, efficient, relatively clean and with a high quality of life), greater effort should be made to identify and delineate good practice examples which can be shared with third countries such as China.

5. Economic, social and environmental city resilience

European cities face numerous challenges. While there will always be uncertainty about exactly what challenges lie ahead, some can already be anticipated. Iván Tosics of the EU-funded URBACT programme suggests that European cities in the future could face threats ranging from demographic decline and social polarization to the depletion of natural resources. He also notes that economic development and competitiveness in European cities is coming under

intense pressure. While some policy responses to these threats are already being worked on, continuous research is required to assure that challenges are properly anticipated and addressed.

New integrated models – new arenas of planning and governance – will be required to assure sustainability and resilience. These models should take into account Europe's economic and demographic trajectory, recognizing that the capacities of the public sector may be diminished in the future.

6. Urban regeneration including artistic assets

Urban regeneration/renewal is a challenge many European cities are already facing. And that challenge is expected to grow, not only in cities that are shrinking but also those that are witnessing uneven growth patterns. How to properly assess urban regeneration needs – and more importantly, how to address them – is a topic that researchers urgently need to explore.

Former industrial centres are being abandoned, and some urban residential areas have degenerated into crime-infested ghettos. While disused buildings are left to rot, disaffected youth struggle to find constructive outlets for their energies. Meanwhile, the number of homeless in many European cities is rising for lack of affordable housing.

Urban studies experts such as Sako Musterd of the University of Amsterdam argue that 'soft conditions' are often overlooked in the urban development matrix. Musterd suggests that interventions should be tailored to the historically grown context, adding that best practices will work only if they fit the individual context. Identifying an area's unique characteristics – not ignoring difficult past developments – is essential for developing its specific strengths.

Numerous participants in the workshop highlighted the value of mobilizing artistic assets for urban renewal. Panos Mantziaras of France's Ministry of Culture and Communication, for example, emphasised the transformative power of urban innovation. Others, including Isabel André of the University of Lisbon, suggested that more research should be done on exploiting the arts as a vehicle for intercultural dialogue and social inclusion in urban contexts.

7. Welfare city visions

Responding to the needs of the urban poor was another topic deemed to warrant additional research, particularly given the devastating impact of the ongoing financial and economic crisis in Europe. Many people have lost their homes or their jobs or both in the wake of the crisis. This presents a challenge for affordable housing providers and for European research. There appears to be a general lack of longterm financial instruments for providing affordable housing. A need was identified to explore possibilities for developing countercyclical instruments.

A further need was identified to explore ways of assuring that private-sector realestate speculation does not exacerbate the housing exclusion phenomenon and undermine inclusive social development.

It was suggested that greater effort should be put into investigating new forms of land, home and energy use that are attuned to demographic development. This may require a rethinking of public accounting. Research may help European policymakers recognize why they originally came up with social housing and what the implications are of neglecting it. It was suggested that social housing has been disappearing in Europe and that research is required to find out why and to understand the implications. Effort should be put into evaluating the risks and costs of people losing their homes and not having access to social housing.

One should keep in mind, however, that social housing and social cohesion do not always go hand in hand. Further research on that relationship should be pursued. The connection between urban development and social welfare regimes in Europe may also warrant more investigation – the aim being to avoid radical regional divergence.

8. Urban tools to attract and retain people

Understanding the factors that influence how people move within and between cities seems an important but underexplored avenue of research. Paul Bevan of Eurocities contends that the data on social mobility in cities is 'incredibly limited'. He asks: 'If we don't know how urban mobility happens, how can we possibly improve it with urban infrastructure?'

Sako Musters posited the idea that there are only three reasons why people go to cities: for jobs, to study and for personal networks. Echoing a point made by several workshop participants, he suggested that more emphasis should be placed on developing 'everyday space' in urban settings as opposed to highprofile 'prestige' projects that absorb massive resources yet may not positively affect mobility.

More research effort should be devoted to finding out how to influence urban development in a way that allows more effective exploitation of personal networks.

9. Urban socio-ecological transition

This topic goes to the heart of sustainable urban dynamics as it embraces fundamental patterns of human behaviour. Reducing a city's carbon footprint and waste output while boosting local production of services and goods are areas where intensive research is still needed. This involves energy, transport, communications, food production and many other vital areas. It also calls for exploring linkages between urban and rural environments.

One suggestion is to study smallscale examples (towns) that have made a successful socialecological transition and evaluate their suitability for largescale application. Both selfgovernance and selforganizing processes of innovation deserve further research attention. In this context there may be a need for reflexive monitoring to capture learning effects in governance.

Urban metabolism' emerged as a notable buzzword at the workshop. The metaphor appears to be gaining currency in the urban research environment. A need was expressed to more effectively share urban environmental data and to explore the concept of metabolism in relation to networks of cities.

10. Cross-cutting urban issues

Several participants highlighted the importance of cross-cutting urban issues including on:

1. Past and present data (for example ownership of buildings, share of social housing),

2. Gender (the role of women in the functioning of key tasks in the cities),

3. Foresight (i.e. how to anticipate the future, to forecast data (modelling) and to shape sustainable cities in the Europe of tomorrow).

Agenda

8.30 – 9.00	Registration
9.00 – 9.15	**Welcome** *Federico Cinquepalmi, Italian Ministry of Education, Universities and Research, MIUR/DGIR*
9.15 – 9.30	**Facilitating access to socio-economic research (FLASH-IT)** *Diassina Di Maggio and Natalia Morazzo, APRE*
9.30 – 9.45	**Scope of the workshop and EU research on urban issues** *Domenico Rossetti di Valdalbero, European Commission, DG RTD*
9.45 – 10.00	**Joint Programming Initiative Urban Europe** *Margit Noll, JPI Management Board* *Paola Clerici Maestosi, ENEA and JPI Governing Board*
10.00– 10.30	**Social cohesion in EU cities** *Julien Dijol, CECODHAS Housing Europe* **Discussant:** *Isabel André, University of Lisbon*
10.30 – 11.00	Brainstorming on potential new EU research and innovation subjects
11.00 – 11.30	*Coffee break*
11.30 – 12.00	**Economics of urban and peri-urban areas** *Stefan Schleicher, University of Graz and WIFO* **Discussant:** *Paul Bevan, Eurocities*
12.00 – 12.30	Brainstorming on potential new EU research and innovation subjects
12.30 – 13.00	**Environmental urban governance** *Dieter Rink, Helmoltz Centre for Environmental Research* **Discussant:** *Cristina Garzillo, ICLEI*
13.00 – 13.30	Brainstorming on potential new EU research and innovation subjects

13.30 – 14.30	*Lunch break*
14.30 – 15.00	**European cities as hubs of creativity and innovation** *Sako Musterd, University of Amsterdam* ***Discussant:*** *Panos Mantziaras, French Ministry of Culture*
15.00 – 15.30	Brainstorming on potential new EU research and innovation subjects
15.30 – 16.00	**Medium and long-term pathways of urban development** *Carlo Sessa, ISIS* ***Discussant:*** *Ivan Tosics, URBACT & Metropolitan Research Institute*
16.00 – 16.30	Brainstorming on potential new EU research and innovation subjects
16.30 – 16.45	**Wrap-up session by the Rapporteur** *Terry Martin, SPIA*
16.45 – 17.00	**Conclusions and next steps** *Domenico Rossetti di Valdalbero, European Commission, DG RTD*

List of participants

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Urban issues are tackled in different Challenges of the Horizon 2020, the European Framework Programme for Research and Innovation.

In Challenge 6 dealing with Inclusive, Innovative and Reflective Societies, a specific socio-economic item deals with "The promotion of sustainable and inclusive environments through innovative spatial and urban planning and design".

This publication highlights 10 stakeholders-based urban subjects to be addressed over the next years. It also provides a list of the EU urban research projects funded in the 7th EU Framework Programme (Social Sciences and Humanities; Sustainability and Environment; Transport and Energy; ICT; Smart Cities; and Security).

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