CITIES 4PEOPLE
PEOPLE ORIENTED TRANSPORT & MOBILITY

COMPREHENSIVE DEFINITION OF THE CITIES-4-PEOPLE CONCEPTUAL FRAMEWORK

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2020 CiViTAS Cleaner and better transport in cities

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Project overview:	Cities-4-People unfolds in five European areas: the Oxfordshire County, Hamburg District of Altona, Üsküdar in Istanbul, Budapest and Trikala. In these areas Mobility Communities are set up involving citizens, city authorities, mobility providers and innovation experts. By developing and providing a framework of support services and tools, Cities-4-People empowers these communities to actively contribute to shaping their local mobility innovation ecosystems in line with a People-Oriented Transport and Mobility (POTM) approach. POTM encompasses a blend of new digital and social technologies under an inclusive and multidisciplinary approach in order to bring out solutions that have a low ecological footprint, a sharing mentality and the potential to solve real urban and peri-urban mobility issues.

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Abbreviations

BEIS: Biomass Energy & Industrial Strategy

BEPA: Bureau of European Policy Advisors

CLLD: Community-Led Local Development

COS: Core-Outcome-Set

DSI: Digital Social Innovation

EC: European Commission

EIP-SCC: European Innovation Partnership on Smart Cities and Communities

ENoLL: European Network Of Living Labs

EU: European Union

HIA: Health Impact Assessment

HTA: Health Technology Assessment

ICT: Information and Communication Technologies

IUC: International Urban Cooperation

OIP: The Operational Implementation Plan

OI2: Open Innovation 2.O

OTS: Open TechSchool

OTS: Oxford Transport Strategy's

POTM: People-oriented Transport and Mobility

SI: Social Innovation

SIJ Toolbox: Social Innovation Journey Toolbox

SILK: Social Innovation Lab for Kent

SIP: The Strategic Implementation Plan

SIX: Social Innovation Exchange

STAP: The Scientifc and Technical Advisory Panel of the Global Environment Facility

STBs: Sub-national Transport Bodies

SUMP: The sustainable urban mobility plan

UDN: Urban Development Network

WHO: The World Health Organisation

Introduction

Cities-4-People puts forth a **People-Oriented Mobility and Transport (POTM)** approach with a view to drive the shift towards the emergence of people and community centric urban mobility systems; in short, Cities-4-People works towards the development of mobility innovations by the people for the people. In doing so, it utilises several different concepts, methodologies and tools.

This report is based on a thorough literature review and **aims to create an up-to-date knowledge base** of concepts, principles, definitions, models, tools and methods that are interwoven to this framework. **The investigation of these elements will create an inventory that the Cities-4-People consortium partners will be able to tap into and consult throughout the entire life cycle of the project. However, the actual deployment of these concepts, methodologies, tools, etc. within the Cities-4-People project, will be addressed as the project unfolds within the respective tasks and work packages.**

As such, the insights offered through this report rather than channelling project actions towards specific directions, will provide indications for effective deployment of concepts, tools and methods, as highlighted within relevant literature and best practice examples.

In a nutshell, the purpose of this report is to shed light on the central concepts of the project and identify:

- Methodologies for the application of our key concepts.
- Common processes, structures, practices and tools for our key concepts.
- Relevant best practices along with their implications for Cities-4-People.
- The spread of social innovation, participatory and community approaches as a baseline for urban and peri-urban mobility interventions.
- Policy and regulatory perspectives that are relevant to the Cities-4-People approach.
- Relevant regional policies, initiatives, support actions as well as the role of mobility stakeholders and the communities in the Cities-4-People pilot areas that could have implications on the project approach.

To this end, seven sections present the main elements examined:

1. **Section 1**, 'People Oriented Transport and Mobility' (POTM) is introduced as a framework able to tackle some of the most persistent urban and peri-urban sustainable mobility challenges all over Europe. How is the POTM approach framed and by which technologies and methods could it be implemented? None of this is new: even though researchers, practitioners and policy makers are aware of this potential, the current research and innovation framework is plagued by a surprising lack of evidence and transformative POTM solutions.
2. **Section 2** examines the evolution of the EU's role in addressing urban mobility policies, actions and initiatives. In particular, the **policy perspective on the People-oriented Transport and Mobility approach** at a local, national and international level is presented on the basis of 4 different axes: **(i)** the EU policy, regulatory and operational background on sustainable mobility and transport, **(ii)** the integration of the bottom-up approach on the EU policy level, **(iii)** the role and relevance of some key EU initiatives, and **(iv)** the urban mobility regulatory framework, ecosystems and similar actions within the five project pilot areas.
3. The various **forms of innovation that are utilised in the POTM framework** are described in **Section 3** with a view to offer insights into their up-to-date application processes, methodologies, and tools. In doing so, the key concept of **Social Innovation** is framed as a four-stages process, where an idea is generated, then prototyped or piloted, being implemented and, finally, scaled up as a new concept to achieve greater

impact in the big picture of long-term visions. Social Innovation is used along with the closely related concept of **Digital Social Innovation** that involves multiple actors, including the six major categories of grassroots community initiatives, academia, governmental authorities, industry and social entrepreneurs. In addition, the paradigm of **Open Innovation 2.0** is examined as an important concept for creating innovation ecosystems, that engages participatory processes between different stakeholders.

4. In a similar perspective, the report investigates in **Section 4 community approaches and their role in the field of urban developments,** by exploring common processes, structures, practices and tools used in similar to the Cities-4-People contexts. The report provides a theoretical background on **community engagement and public participation processes,** and moves on to investigate the **spread of community approaches within the transport and mobility field.** In addition, it highlights best practice examples as well as some **common citizen participation challenges**, aiming to provide insights in how to best plan and deploy community approaches within urban mobility.
5. The aspects of **sustainable urbanisation**, **sustainable urban mobility planning** and urban resilience are also addressed in the **Section 5**, by offering an overview of their main trends, implications, etc. In this context, **social determinants and health inequalities** (e.g. socioeconomic factors, health hazards, access to health services, access to employment, etc.) are investigated as key drivers for sustainable urban mobility developments, while **shared economy mobility solutions** are presented as a way to facilitate the emergence of citizen-led, sustainable urbanisation interventions, with multiple environmental, social and mobility related benefits.
6. The report also focuses on some key collaborative techniques in the **Section 6**, i.e. **living labs, smart citizen labs, hackdays and co-creation workshops**, that enhance the community focus and co-creation element of Cities-4-People. The main aspects of these approaches, which aim to mobilise communities towards the development of mobility interventions, are presented.
7. Moreover, the report provides insights into the development of **evaluation processes for urban interventions in Section 7** and lays the foundations for the introduction of **Health Technology Assessment** and the **Core Outcome Set** evaluation methodology in this context.

Overall, in the light of the thorough investigation of the aforementioned concepts, the report also identifies valuable **key success factors** and offers a **suite of indications** for their effective deployment.

This report aims to build a knowledge base of concepts and methodologies that are relevant to the Cities-4-People POTM framework. The insights offered can be supportive to and function as a frame of reference for the Cities-4-People future activities. However, they do not aim to channel the respective project actions towards a specific direction. Instead, the actual deployment of the various concepts and methodologies within Cities-4-People, will be in line with the project's Grant Agreement as well as with the project's requirements, and will be described with detail in the respective foreseen work packages and tasks.

1. The Cities-4-People POTM framework

"Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has."

Margaret Mead

Prior to the presentation of the various concepts and tools that are deployed in the frame of the Cities-4-People project, it is useful to offer an overview of the project's People-oriented Transport and Mobility (POTM) framework, along with related notions and their dynamics within the project.

Overall, the Cities-4-People POTM framework works towards the emergence of open, inclusive and transparent mobility communities that, via bottom-up procedures, will be able to design and produce demand-led urban mobility innovations that will not be imposed on either citizens or institutions, but will be commonly agreed upon and accepted.

The POTM framework constitutes an approach for systematically co-creating urban mobility interventions based on the meaningful collaboration of all quadruple helix city stakeholders. In other words, the POTM framework offers local citizens the opportunity and the means to work together with urban mobility authorities as well as with research and industry stakeholders, with a view to co-develop, prototype and pilot **innovative and smart mobility solutions that address pressing and real urban mobility challenges.**

This multi-disciplinary framework leverages concepts from different innovation forms, including **Social Innovation, Digital Social Innovation** and the paradigm of **Open Innovation 2.0**, and takes into account the key aspects that are necessary for the co-creation of sustainable, feasible, effective and inclusive mobility solutions. To this end, **civic engagement, sustainable urbanisation and urban planning, social determinants and health inequalities** as well as **shared economy** notions, are entirely integrated within the POTM approach.

As the **empowerment and mobilisation** of the communities is central to this framework, this approach encompasses various state-of-the art collaborative technologies and tools, both physical and digital to enable citizens to take up a new role within their local mobility innovation ecosystems. More specifically, it includes physical spaces that have been dubbed **"Citizen Mobility Labs"** and are in line with both the open innovation spaces that are provide by the **Living Labs and Smart Citizens Labs** concepts (see section 6). In support of these physical spaces as well as of the entire co-creation and community building process, and according to the **Digital Social Innovation principles**, resources are also provided within POTM and grouped as the **"Citizen Mobility Kits".**

Finally, and with a view to facilitate the meaningful evaluation of mobility interventions and pilots, the POTM approach employs assessment frameworks that have been successfully deployed in other, similarly demanding application areas. Building upon the principles of **health technology assessment,** the POTM framework encompasses a **Core-Outcome-Set (COS) evaluation methodology** that will be used as a baseline for definitions, metrics and assessment protocol for urban mobility interventions.

2. Policy Perspective on POTM

This section aims to present the policy perspective on the **People-oriented Transport and Mobility framework** along with **insights on the urban mobility regulatory environment of the project pilot areas.** This is achieved by addressing four main subjects, namely: **(i)** the EU policy, regulatory and operational background on sustainable mobility and transport are explored by considering the major factors that will affect the evolution of future of research and innovation, **(ii)** the integration of the bottom-up approach on the policy level is investigated in order to assist the understanding of its effects, needs and challenges on the policy level, **(iii)** the role and relevance of some key EU policy frameworks and initiatives and their potential connection to Cities-4-People are presented, and **(iv)** the regional urban mobility regulatory frameworks, initiatives and ecosystems of the 5 project pilot areas are described with a view to offer a better perspective on the potential connection between local policies, actors and Cities-4-People.

2.1 The EU sustainable transport policy: the European experience

The POTM approach is aligned with the framework of the European sustainable transport policy agenda which addresses the key mobility challenges across Europe: **congestion, climate change, pollution, road safety, lack of green, public spaces, health and social inclusion**. Considering that 80% of European citizens lives within cities, urban transport is both a basic social need and an aspect that is rapidly transformed into an environmental and socioeconomic issue. In particular, it should be taken into account that urban transport:

- accounts for 40% of CO_2 emissions of road transport and causes up to 70% of other pollutants from transport;
- results in 38% of the overall number of accidents;
- creates serious congestion problems in cities.

In this framework, the EC has stressed the need to develop and maintain a sustainable transport policy whose objective will be the promotion of transport systems that are responsive to economic, social and environmental needs[1].

The challenges that stem from urban mobility were not inserted in the European public discourse until recently, but they have developed rapidly over the last 15 years. The year of 1992 is regarded as a starting point for the development of an agenda on transport[2]. The EU transport policy was firstly presented in 1992 when the European Commission (EC) published a white paper on the common transport policy as well as between 1995-1998 in the context of the "Citizens' Network". These policies resulted in the launch of a number of initiatives that were based upon a "best practice" approach.

The 2001 transport white paper **“European transport policy for 2010: time to decide”** identified the following as main transport challenges: the uneven development of different transport systems; the congestion on routes and cities; and the environmental impact. The white paper proposed an effective policy on infrastructures. However, it must be taken into account that these challenges were expressed in the context of a significant economic growth, before the economic crisis of 2008.

[1] EC,2014. Transport, The European Union Explained. Available at: http://europa.eu/pol/index_en.htm

[2] Communication from the Commission to the Council and the European Parliament - Keep Europe moving - Sustainable mobility for our continent - Mid-term review of the European Commission’s 2001 Transport White paper {SEC (2006) 768}

The European experience since 2001, highlighted that the measures proposed by the EU would not be sufficient on their own, if they were not integrated within a wider and more flexible transport policy toolbox that could include regulations, economic and technological instruments as well as a geographically differentiated people-oriented approaches [3]. As a matter of fact, there is an increasing urban mobility gap between Europe's advanced cities and the majority of the other cities that trail behind or even between neighbourhoods within the same city.

In 2007, the EC elaborated the **"Green Paper – Towards a new culture of urban mobility"** which introduced the agenda for the necessary strategies and solutions regarding current urban mobility challenges. The Green Paper proposed solutions and joint actions taken at **different levels and multiple spatial scales** that**citizens, industry** (private companies, industries, business associations), **public sector** (non-governmental organisations, not-for-profit associations and research institutes) **and local, regional, national and European authorities** could take part together. The European transport policy also underlined the need for financial support for public transport. Through such policies, the actors of the cities themselves were in the position to choose and implement the right portfolio of measures in order to improve collective transport, to increase the use of clean and energy efficient technologies, to promote walking and cycling solutions as well as to protect the rights of passengers on public transport.

Overall, this Green Paper opened a discussion on some key urban mobility issues, including: free-flowing and greener towns and cities, smarter urban mobility and urban transport which is accessible, safe and secure for all European citizens, and led to the adoption of an **Action Plan on urban mobility** in 2009[4]. In the framework of the 2011 transport white paper **"Roadmap to a Single European Transport Area"[5]**, the EC presented the objectives of a competitive transport system that would increase mobility, reduce major barriers in crucial areas and promote growth and employment. A structural transformation of the transport system was sought through the detachment of transport from fossil fuel along with the creation of a modern infrastructure of systems assisted by smart and innovative information technologies[6]. The 2011 white paper also identified several urban transport challenges, among which the problem of "clean urban transport and commuting". According to this challenge, urban settings suffer mostly from congestion, poor air quality and noise exposure and they are the terrain were a large percentage of CO_2 emissions from transport is produced and road accidents occur.

Finally, in 2013, the EC developed the **Urban Mobility Package** that continued to address mobility in urban settings, since the majority of daily travels begin and end within cities. With the Urban Mobility Package, the EC proposed measures in the area of urban transport in order to share common experiences and best practices, provide financial support, focus on research and innovation as well as enhance international cooperation. In order to share experiences in a more complete and efficient way, the EU set up an Urban Mobility Observatory in the form of a virtual platform – the ELTIS website. The Urban Mobility Package also set out the concept of the "Sustainable Urban Mobility Plans" that aim to promote the principles of integrated planning, participatory approach and evaluation in the field of urban planning and transport.

[3] Communication from the Commission to the Council and the European Parliament - Keep Europe moving - Sustainable mobility for our continent - Mid-term review of the European Commission's 2001 Transport White paper {SEC (2006) 768 }

[4] EC (n.d.), "Clean transport, Urban transport: Urban mobility", available at: https://ec.europa.eu/transport/themes/urban/urban_mobility_en

[5] European Commission 2011, WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system

[6] European Commission 2011, COMMISSION STAFF WORKING DOCUMENT (2011) Accompanying the White Paper - Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system

2.2 Rethinking Urban Mobility through bottom-up integrated policies

Although legislation and policies at the European level tackle a large number of challenges in the mobility and transport field, the gap between policies, legislations and solutions tends to remain. This gap can become insurmountable under different geography, culture and demographic contexts.

The EC recognises the importance of the mobility challenges that European cities face. The response to these challenges is critical for achieving the smart, sustainable and inclusive society envisaged in the Europe 2020 Strategy[7]. These challenges have environmental, economic, social and cultural dimensions. According to the EC these dimensions can be better tackled through an integrated approach, which can be reached by building strong partnerships between local citizens, civil society, industry and government authorities.

To this end, among the **urban development objectives of the EC** in EU's Regional Policy[8] (2014-2020 programming period) the following specific tools are included to promote community participation and stakeholders' collaboration:

- *"Cities are encouraged to use Community-Led Local Development (CLLD), which paves the way for local stakeholders, businesses, the public sector and civil society to get more involved in urban neighbourhood regeneration".*
- *"The URBACT III programme - which acts as a European exchange and learning programme promoting sustainable urban development – has been financially strengthened and expanded, enabling European cities to work together to develop better solutions to urban challenges".*

Citizen-centric approaches have been increasingly put on the radar of mobility related initiatives and public bodies in recent years. Concepts such as public consultation, citizen focus, community engagement (mostly on consultation level) have been actively in use in policies and white papers in many European cities. Although, those approaches are a relatively new phenomenon, they have already started to show their efficiency. Such policies and initiatives have largely contributed to encouraging people-centric projects and processes and seek to further enhance the promotion of bottom up processes in the mobility ecosystems.

For instance, the European Innovation Partnership on Smart Cities and Communities (EIP-SCC) has taken action beyond the stakeholder group involvement. In its Action Cluster on Citizen Focus, it looks at the intersection of ICT, Mobility and Energy (multi-disciplinary approach) in urban development, aiming in its recent strategies to explore ways to promote the engagement of citizens. It also takes into consideration the barriers to citizen participation by promoting data privacy and protection and by providing officials and Smart City practitioners with tools to design solutions.

Several high-level initiatives and statements (e.g. the Inclusive Smart Cities Manifesto, the Basque declaration promoted by ICLEI, the Bremen Declaration on Sustainable Urban Mobility by the Polis Network) have also followed a similar path by promoting the shift towards **people-oriented social innovation** over market-demand innovation, **citizen engagement**

[7] EC (2010), "Europe 2020: the European Union strategy for growth and employment", Communication (2010), available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:em0028

[8] EC (n.d.), "Urban Development", available at: http://ec.europa.eu/regional_policy/en/policy/themes/urban-development/

over stakeholder involvement and encouraging the new trends such as **open 2.0 innovation, digital innovation, connected mobility,** etc. [9,10,11,12].

Some of the most important of these initiatives, as well as their relevance to the POTM framework, are presented with greater level of detail in the next section.

Through these new lens, the Polis initiative suggests using a broader and more citizen-centred definition of Smart Cities, i.e.*:*

"A Smart City should enable every citizen to engage with all services on offer, public as well as private, in a way best suited to his or her needs. It brings together hard infrastructure, social capital including local skills and community institutions, and (digital) technologies to fuel sustainable economic development and provide an attractive environment for all" [13].

Overall, it seems that one possible way of responding to existing urban mobility challenges is to inform the top-down approach of mobility policy making with bottom-up approaches. As an inherently bottom-up approach, POTM can stimulate this interaction. A bottom-up approach on the policy level can strengthen the effect of urban mobility policies by addressing real needs and targeting more realistic and applicable goals through the collaboration between policy makers and citizens. Then, the policy development process becomes a valuable tool in changing the mobility priorities to tackle the challenges and establish new ideals for operation of mobility tools and transportation channels[14].

2.3 EU Policies & Initiatives relevant to the POTM framework

In the following sections, we will elaborate on some EU policies and initiatives which integrate key aspects of the POTM framework in their agendas.

The strategic focus of the initiatives presented below is set on issues related to sustainable urban developments, on creating synergies that promote the implementation and replication of innovative urban frameworks as well as on promoting people-centric approaches within urban settings.

Thus, it is evident that their mission and objectives fully comply with the Cities-4-People concept that promotes citizen participation and community-based sustainable urban developments.

Smart Cities - EIP SCC

Relation to the POTM framework

EIP–SCC is an initiative that brings together cities, industry, research and other smart city actors in order to develop and implement smart city solutions by integrating the Energy, ICT and Transport sectors. EIP-SCC has a dedicated **Cluster for "Citizen Focus"** and "**Sustainable Urban Mobility"** aiming to engage citizens for mobility and sustainability topics.

[9] https://eu-smartcities.eu/content/citizen-focus

[10] https://eu-smartcities.eu/node/2949

[11] http://www.iclei.org/details/article/basque-declaration-now-open-for-endorsements.html

[12] http://www.eltis.org/sites/eltis/files/bremen_declaration_draft_2016-04-07.pdf

[13] Polis (2015), "Polis Policy paper: Sustainable Urban Mobility and the Smart Cities. 2015", available at: http://www.polisnetwork.eu/uploads/Modules/PublicDocuments/polis_smartcities_policy_paper_november_2015.pdf

[14] McCann, B., Rynne, S., Editors (2010). Complete Streets: Best Policy and Implementation Practices. American Planning Association Planning Advisory Service Report Number 559.

The European Innovation Partnership on **Smart Cities and Communities** (EIP-SCC) was initiated in 2012 with the aim of bringing cities, industry and citizens together to initiate sustainable integrated solutions through applied innovation, better planning, a more participatory approach, higher energy efficiency, better transport solutions, intelligent use of Information and Communication Technologies (ICT), etc.[15]. The Operational Implementation Plan (OIP), which is a companion document to the Strategic Implementation Plan (SIP) of EIP-SCC, stresses the need for substantial changes in Europe's transport systems, as well as in the mobility behaviour of people and businesses in urban areas.[16] SIP and OIP common framework emphasises "Citizen Focus" as one of the key priority areas and tries to find out ***"how we include citizens into the process as an integral actor for transformation"*** [17]***.***

CIVITAS

Relation to the POTM framework

CIVITAS dedicates an entire **thematic group on Public Involvement**, trying to empower local communities to take ownership of urban mobility developments, while increasing the interaction between policy makers and communities during the mobility measures planning stage.

CIVITAS is a network launched by the EC in 2002, with the aim of networking cities that are dedicated to cleaner, better transport in Europe and beyond. In practice, CIVITAS Initiative has tested and implemented over **800 measures and urban transport solutions** as part of demonstration projects in more than **80 Living Lab cities** Europe-wide.

Not only is the initiative specialised in mobility solutions and offers innovative transport solutions that are being developed first-hand, but it also supports the political commitment of citizens, implementing and evaluating a mix of technology and policy measures, new marketable solutions, and offers funding and knowledge exchange with a view to creating growth and better connected, more sustainable transport approaches[18].

EUROCITIES

Relation to the POTM framework

As described in its 2014-2020 Strategic Framework, the initiative targets a number of fields including **(i)** investigating solutions to drive the shift towards sustainable behaviour and mobility solutions, **(ii)** empowering citizens to come up with sustainable integrated solutions, and **(iii) identifying new innovative approaches to tackle urban challenges,** by strengthening the direct participation of citizens in urban development, through co-creation and social innovation (e.g. use of urban living labs, the sharing economy, etc.).

[15] http://ec.europa.eu/eip/smartcities/

[16] http://ec.europa.eu/eip/smartcities/files/operational-implementation-plan-oip-v2_en.pdf

[17] ibid 16

[18] Civitas (n..d.), http://civitas.eu/content/about-us

EUROCITIES is network initiative of major European cities which was founded in 1986 by the mayors of six large cities: Barcelona, Birmingham, Frankfurt, Lyon, Milan and Rotterdam. Since then, 130 European cities as well as 40 city partners have joined as a member (local and municipal governments of European cities) across 35 countries. Having the objective "to reinforce the important role that local governments should play in a multilevel governance structure", the initiative aims to shift the focus of EU legislation in a way which allows city governments to tackle strategic challenges at local level[19].

Covenant of Mayors

Relation to the POTM framework

The Covenant of Mayors is a network of more than 3,000 municipalities, aiming to endorse and support the efforts deployed by local authorities in the implementation of sustainable energy policies. Over 55% of around 3,500 signatories of Sustainable Energy Action Plans analysed in 2015 included measures on transport, **mainstreaming sustainable mobility into local authorities' strategic planning.**

Covenant of Mayors was launched in 2008 by bringing local and regional authorities together. The initiative started as a bottom-up movement and reached 6500 signatories which are committed to implement EU climate and energy objectives in their regions[20]. In 2015, the Covenant of Mayors set as its new objectives the initial CO_2-reduction commitment and the adaptation to the climate change. Overall, local authorities share a vision for making cities decarbonised and resilient, where citizens have access to secure, sustainable and affordable energy.[21]

Urban Innovative Actions

Relation to the POTM framework

UIA supports urban authorities in testing innovative solutions that address the challenges of urban areas. One of the topics that are supported is **sustainable urban mobility**. Hence, the initiative has a keen interest in receiving the results, lessons learned and guidelines for such experiments.

Urban Innovative Actions (UIA) is an Initiative of the European Union that provides urban authorities throughout Europe with resources to test new solutions that address urban

[19] http://www.eurocities.eu/eurocities/about_us

[20] http://www.covenantofmayors.eu/about/covenant-of-mayors_en.html

[21] http://www.covenantofmayors.eu/IMG/pdf/CovenantLeaflet_web.pdf

challenges[22] to generate a real positive change for the citizens. In principle, the initiative assists projects that fulfil certain criteria, including their **participatory** element[23]:

Polis

Relation to the POTM framework

As a manager of the EIP – SCC Action Cluster for **Sustainable Urban Mobility**, the main activity areas of the Polis network are highly related to mobility and transport challenges such as: **1) Mobility and Traffic Efficiency, 2) Transport Safety and Security, 3) Social and Economic Aspects of Transport, and 4) Environment and Health in Transport.**

Polis is a network with the aim to support European cities and regions to work together to develop innovative technologies and policies for local transport. In this frame, European local and regional authorities have been working under the umbrella of Polis to promote sustainable mobility through the deployment of innovative transport solutions. Polis's aim is to improve local transport through integrated strategies that address the economic, social and environmental dimensions of transport[24].

2.4 Five cities as urban laboratories: Regional policies and initiatives

Transport and mobility in western countries over the last 50 years has evolved in three stages.[25] In the first stage, rapidly growing economies and technological/engineering advances stimulated a rapid increase in car ownership and use that led to a policy focus on building more roads. A combination of factors, including increasing traffic congestion on roads, and concerns about air pollution, road traffic accidents, and CO_2 emissions, led to the second stage, characterised by greater investment in public transport (trains, trams, buses, underground). The third stage is driven instead by growing interest in urban areas as centres for cultural and social activities, as well as economic centres and healthy places to be, which has shifted the focus on people's quality of life[26].

Within this section, the regional urban mobility regulatory frameworks, initiatives and ecosystems of the five project pilot areas are described with a view to offer a better perspective on the potential connection between local policies, actors and the Cities-4-People approach. These five European cities are the following: Oxford in Oxfordshire County (UK), Hamburg District of Altona (Germany), Üsküdar in Istanbul (Turkey), Budapest (Hungary) and Trikala (Greece).

[22] http://www.uia-initiative.eu

[23] http://www.uia-initiative.eu/en/about-us/what-urban-innovative-actions

[24] http://www.polisnetwork.eu/about/about-polis

[25] Jones, P., The evolution of urban mobility: *The interplay of academic and policy perspectives*, IATSS Research 38, 7–13, 2014. http://dx.doi.org/10.1016/j.iatssr.2014.06.001

[26] Ibid 25

2.4.1 Hungary: Budapest as the case study

The national context urban mobility in Hungary

In Hungary, the **national government and the local governments share the responsibility regarding the development and operation of the transport infrastructure**, in accordance with the respective legal framework and ownership aspects. There are also several strategic documents in the national and local level which determine the main development priorities of the transport policy in the country.

In the frame of the national and local governments' cooperation, the most important topics of focus are transport systems' connecting points (e.g. construction of junctions, harmonisation of timetables of the interurban and urban public transport, utilisation of rail in suburban transport, construction of bypass roads, etc.).

Hungary became a member of European Union in 2004. Since then, the Hungarian transport and energy policy is largely influenced by and dependent on EU policy papers. Before the accession to the European Union, the main policy document was the Hungarian Transport Policy (2003-2015) which, however, also relied on the common transport policy of the EU. The strategic document focused on improving the quality of life, increasing the safety of transportation and improving and extending the mobility connection with neighbouring countries. In the Hungarian Transport Policy strategic plan, sustainable transport system was a main focus together with pollution reduction and protection of the environment, which were mentioned as main goals.

The basis of the Hungarian Transport Policy was the 3rd white paper of the EC on transport, which recognised the need to address a number of challenges towards the adaptation of transport policy to the requirements of sustainable development. Infrastructure bottlenecks needed to be eliminated through infrastructure development or capacity utilisation. Moreover, the document argued that it is fundamentally important that external transport costs, and in particular environmental external costs, normally covered by society, are internalised.

The next main strategic document was the Unified Transport Development Strategy (2007-2013) whose main targets were also partly reflecting those of the 3rd white paper of the EC. The challenging areas were passenger transport, goods transport, infrastructure development and development of transport safety. With regards to passenger transport the main aim is to **maintain the high modal share of public transport.** The strategic document also includes elements about sustainability and **distinguishes environmental sustainability of transport from the social one.** Environmental sustainability focuses on the priority of public transport and the development of environmental quality in urban areas, whereas social sustainability reflects the rationalisation of travels and the development of agglomeration transport system.

The 4th EC white paper (2010-2020) on transport, also affected the priorities of the Hungarian transport policy. The National Transport Strategy (2015-2020) was developed as the up-to-date policy paper, building upon the 4th white paper. In this strategy, the focus shifted to **sustainable transport, the support of environment-friendly passenger and goods transport such as electric driven mobility or car-sharing**. The main message was the **decrease of environmental pollution** caused by transport as well as the **decrease of social inequity** caused by the inhomogeneous dispersion of transport infrastructure and services.

The local context of urban mobility in Budapest

It is important to mention the **MOR Balazs Plan (2014-2030)** which is the transport development plan of Budapest. The plan is based on both EU and national transport

guidelines. Its main goals and target areas include: **promotion of environment-friendly transport**; **systematic approach for transport developments**; **full integration of new technologies in public transport** (e.g. e-bikes, e-cars; bike-sharing; car-sharing). The MOR Balazs Plan also identifies **social consultation and social partnership as main goals and important factors** for public transport in Budapest.

Overall, the plan has 3 different strategic objectives, namely:

- **Liveable urban environment**: integrating transport development into urban development by influencing transport needs and mode selection; reducing environmental pollution and enhancing equal opportunities.
- **Safe, reliable and dynamic transport**: integrated development of transport modes through efficient organisation, stable financing and target-oriented development.
- **Cooperation in regional connection**: regional integration of Budapest with the help of a transport system that supports regional cooperation and strengthens economic competitiveness.

In further detail, the plan focuses on the following transport intervention areas:

- **More transport connections** (i.e. by introducing new connections as well as through the development of the existing transport networks, the redistribution of public areas and the development of passenger-oriented intermodal connections).
- **Attractive vehicles** (i.e. through a comfortable and passenger-friendly vehicle fleet and the exploitation of environment-friendly technologies)
- **Better services** (i.e. through an effectively-organised, intelligent, widely-available, integrated transport system).
- **Efficient Governance** (i.e. through consistent regulation, and development of passenger-friendly national, regional and local network connections) [27].

According to the UN national report on the Hungarian transport system, several important initiatives have been deployed in order to improve the conditions for passenger and freight transport in the city of Budapest and its suburbs, such as:

- Budapest Mid-term Urban Development Programme (Podmaniczky Program), which includes the development of the public transport systems;
- Reform of the Car-parking System;
- Extension of the Budapest Underground System (i.e. M4 metro line project);
- Establishment of the Budapest Transport Association: the cooperation of the three transport companies operating within the metropolitan area of Budapest can provide a cheaper transportation and better services for the local inhabitants;
- Smog alarm regulation: the Budapest Municipality has adopted regulations to protect human health and the environment in case of dangerous air quality situation, and has identified measures that have to be taken when the air quality requires emission reduction, with special attention to car traffic limitations;
- Access fee conception (i.e. limitation of the traffic in the city centre introducing an access fee for motor vehicles);
- Construction of a bike lanes system to promote the environment-friendly means of transport;

27 Budapest Muncipality (2013), “Balazs MOR Plan: Budapest Mobility Plan (2014-2020)”, available at: http://www.eltis.org/sites/eltis/files/case-studies/documents/budapest_mobility_plan.pdf

- 20 electric buses have been put into operation[28].

2.4.2 Germany: Hamburg District of Altona as the case study

The national context of urban mobility in Germany

Since Germany is an export-oriented nation the mobility and transport sector plays an important role on every governmental level. On a national level, **the Federal Ministry of Transport and Digital Infrastructure coordinates all issues concerning mobility and transport** and gives guidelines as well as nationwide policy strategies for the federal states to implement[29]. U**rban transport planning and guidelines are therefore implemented on a local level.** The central topics with which Germany deals within the mobility sector are the following:

- Aviation
- Rail
- Road
- Water
- Electric mobility
- Freight transport and logistics
- Protection against emissions
- Transport and fuels strategy
- European transport policy
- International transport policy

The main challenge in this sector is to fulfil the desire for individual transport as well as the demand for sustainable development[30]. Regarding the latter, Germany has set a goal to reduce its CO_2 emissions by 30% until 2020 in comparison to 1990, and, being one of the G8 countries, it has also agreed to the 2°C global warming limit.[31] The 2020 Climate Action Plan makes clear that transport is one of the main areas of focus for these emissions cuts.[32]

Overall, Germany has developed many **national policies and strategies regarding sustainable mobility and transport** or at least touching on those topics. The most important are:

- The German Sustainable Development Strategy (latest version from 2016)[33]
- The Mobility and Fuels Strategy (2013)[34]
- The Freight Transport and Logistics Action Plan – Towards a Sustainable and Efficient Future (latest version from 2017)[35]
- The new High-Tech Strategy – Innovations for Germany (2014)[36]

Those papers and strategies serve as orientation for German policies and the federal states. In order to control the emissions being caused by transport and to mitigate air pollution, some

28 UN (n.d.), "Hungary: Transport", UN National Reports, available at: http://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/hungary/Transport.pdf

29 http://www.bmvi.de/EN/Home/home.html

30 http://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/germany/transport.pdf, A. 1.

31 http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimaschutzplan_2050_kurzf_en_bf.pdf

32 Ibid 31

33 https://www.bundesregierung.de/Content/EN/StatischeSeiten/Schwerpunkte/Nachhaltigkeit/2016-07-27-die-nationale-nachhaltigkeitsstrategie_en.html?nn=393722

34 https://www.bmvi.de/SharedDocs/EN/Documents/MKS/mfs-strategy-final-en.pdf?__blob=publicationFile

35 http://www.bmvi.de/SharedDocs/EN/Articles/G/freight-transport-and-logistics-action-plan.html

36 http://www.hightech-strategie.de/de/The-new-High-Tech-Strategy-390.php

bigger cities in Germany have introduced low-emission zones. Those legal zones are meant to help the implementation of the Federal Emission Control Act[37], which contains many regulations indirectly affecting mobility and transport issues in Germany. Other measures range from support to electric vehicle integration, investigation of new drive train and fuel technologies for different vehicle types, maximisation of efficiency through infrastructure, digitisation and SMART innovations.

The local context of urban mobility in Hamburg

Since in Germany urban transport planning and guidelines are implemented on a local level, Hamburg – as the second largest German City – has **various plans and strategies dealing with mobility and transport.** The central authority in this sector **is the Administration for Economy, Transport and Innovation.** The organisation has published the overall **Mobility Programme** (2013)[38] as a basis for continuous urban transport planning in Hamburg.

The Mobility Programme focuses on several goals, including **accessibility to the city** (considering the important role of international trade), **strengthening of public transportation**, **increasing efficiency and improving the transportation network**, and **intensifying electrification of transportation modes**. As part of this programme, the participation of the **Mobility Advisory Board, made up of the relevant stakeholders in the transportation field and from the region and science**, is a central point, as it represents an opportunity for continuing dialogue on goals, measures, scenarios, and further planning. **The Mobility Programme also outlines the requirement for general public engagement in all of its proposed projects.**

In 2015, Hamburg published the latest version of the biking strategy which contains goals in order to improve the biking situation in Hamburg. In particular, Hamburg's target is to achieve a bike mode share of approximately 25% during the 2020s.[39] A main action towards this goal is the consistent and concentrated creation of biking routes and improvement to the cross-city bike network.[40] Furthermore, Hamburg **has a strategy for intelligent transport systems**, called Transport 4.0[41] with the aim to structure high quantities of data.

2.4.3 Greece: Trikala as the case study

The national context of urban mobility in Greece

The sustainable urban mobility plan (SUMP) is an essential instrument for European cities to tackle their current challenges. However, in the case of Greece, no national regulation or guideline regarding SUMPs is implemented. The legislation for urban transport planning is not based on one central law but is instead dispersed among several laws, which are mainly dedicated to other subjects.

In general, **transport planning falls under the responsibility of municipalities**. Major transport projects are directly performed by the Ministry of Infrastructure, Transport and Network and state agencies in

[37] http://www.bmub.bund.de/en/topics/air-mobility-noise/air-pollution-control/umweltzonen-umweltplakette/low-emission-zone-emissions-control-windscreen-sticker/

[38] http://www.hamburg.de/bwvi/mobilitaetsprogramm/

[39] http://www.hamburg.de/hamburg-auf-dem-weg-zur-fahrradstadt/2995602/radverkehrsstrategie-ziele/

[40] http://www.hamburg.de/hamburg-auf-dem-weg-zur-fahrradstadt/2995602/radverkehrsstrategie-ziele/

[41] http://www.its2021.hamburg/downloads/ITS-Strategie%20Management-Summary%20-%20EN.pdf

collaboration with the respective local authorities. Transport planning is actually centred on these projects and, integrated urban transport planning in Greece is mostly missing[42].

However, Greece has made extensive use of EU structural and cohesion funds regarding transport planning. Therefore, Greek transport policy objectives are closely aligned with EU priorities. The completion of the national transport system, with an emphasis on trans-European corridors, so as to improve accessibility throughout the country and make Greece a major transport node for the Eastern Mediterranean, has been a major objective and a driving force of relevant funding. Other **top priorities are the promotion of combined transport alternatives**, **the restructuring of the system and its operation** in alignment with EU legislation and best practices and the **reduction of environmental impacts** through land and sea transport projects.

In this context, the General Framework Plan for Spatial Planning and Sustainable Development (OJG 128 / A / 03.07.2008) [43] provides guidelines for the spatial structuring of transportation networks and services in Greece. Further upgrades of railway and marine infrastructure are envisaged, in order to make these transport modes more competitive as compared to road and air transport. Other provisions of the Plan concerning commercial transport are:

- **the connection of transportation nodes** (harbours, airports, commerce centres) through independent transport networks (road/railway), **in order to alleviate the burden on urban traffic systems**;
- **the adoption of standardisation processes and equipment** used by international transportation within the internal transport;
- **the development of an integrated information system**, enabling the feed, process and administration of all transport-related information.

Furthermore, a major policy component for the Greek Ministry of Infrastructure, Transport and Network is the **promotion of environment-friendly and energy-efficient vehicles and other transport means and networks**, by resorting to new technologies (e.g. electric or hybrid vehicles) and cleaner fuels (e.g. LPG, CNG or hydrogen). EU directives related to air emissions limits from internal combustion engines of vehicles from 1998 till now ("Euro" standards) have been transposed into the Greek legislation. In addition, Greece has adopted the legal framework regarding the approval of vehicle types, related EU regulations concerning internal combustion engine vehicles, as well as hybrid, electric and hydrogen vehicles[44].

The local context of urban mobility in Trikala

Trikala is a unique destination not only for its natural and manmade beauty but also for being the **first Smart City in Greece**, having been awarded as a Smart City in 2004. Since then, the city has a highly strategic orientation towards the future, using information and communication technologies to enhance the quality and performance of urban services, health services, government services and mobility. With a population of approximately 80,000

[42] Claus Köllinger, 2016. CityMobilNet, State of the art Sustainable Urban Mobility Plan, Network for co-productive development of sustainable urban mobility plans empowering cities to create joint visions, targets and sets of measures to manage their future city progress..

[43] Ministry of Environment, Energy and Climate Change, National Reporting to the Eighteenth and Nineteenth Sessions of the Commission on Sustainable Development of the United Nations, Chapter III: Trans port, 2011, Available at: http://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/greece/Greece_CSD18-19-Chapter_III-Transport.pdf

[44] Directives and regulations on motor vehicles, their trailers, systems and components, https://ec.europa.eu/growth/sectors/automotive/legislation/motor-vehicles-trailers_en

citizens[45], the overall goal is to make sure that public benefits are maximised by implementing policies that reduce cost and resource depletion and promote citizens' participation.

De3spite its forward-looking policies, as many other medium-sized European cities, Trikala faces several problems with the operation of its urban mobility system. While walking and cycling are very popular, the central city area is quite small, traffic is dense, and there are parking problems. Moreover, the fact that the collector roads and the main arteries are bidirectional, combined with their restricted width and widespread illegal parking, creates problems in the movement of vehicles. The occasionally irregular urban planning of the region results in roadswith many branches, poor geometric design, lack of sufficient visibility and increased risk[46]. . Major efforts have been made in recent years to address all these issues by city authorities and their strategic partners, i.e. the Institute of Communication and Computer Systems (ICCS)[47], supported by European research initiatives, as described below.

- Important asset for Trikala are the TEAM[48] applications and especially the Collaborative Public Transport Optimization (CPTO)[49] app, which aims to enhance the flexibility of transport infrastructure by adapting it to the demands and needs of the citizens.
- The European Smart Mobility Resource Manager[50] has also been deployed in the city. This platform provides services and facilities to support collection and processing of information which is supplied by the urban community. It also addresses the efficient and seamless integration of different mobility services, while considering limited transport capacities. This covers all transport modes and mobility sharing schemes.
- Trikala has also enrolled in the Europe-wide e-market place of global mobility services, developed in the framework of the MOBiNET[51] project. As one of the MOBiNET pilot sites, Trikala has the opportunity to test use cases that have the potential to positively influence the mobility behaviour of citizens. The service validated in the city of Trikala is a multimodal travel assistant that provides travellers with a journey planner and necessary information about traffic, buses or parking.
- One of the city's major achievements is the demonstration of 6 public driverless transport vehicles in the frame of the CityMobil2[52] project activities. The six buses operated as complementary to the rest of the city's public transportation system within the city centre. In this framework, Greece was the first EU country to apply a national law allowing automated transportation. The results of this demonstration are useful not only for the city of Trikala, but for every city that intends to automate its urban transport system.
- Specifically for tourists, an application was designed to help them travel in the city and explore it, namely MyWay[53]. The application offers plenty of information about public transportation, museums, cultural sites, excursions, local maps and cultural events. In this framework, citizens and visitors of Trikala have 35 free Wi-Fi and 30 Public Displays Showing up-to-date information about the city at their disposal[54].
- Regarding health care, Trikala supports a range of smart applications. For example, the Telecare service was developed, through which remote care for elderly and physically less

[45] Trikala "2014-2019" Strategic Planning, http://www.data.gov.gr/dataset/5ff3e1db-92c8-4269-a968-ceab1114ba40/resource/bff6e21b-e233-45c1-8585-7a185d24a1e7/download/stratigikos-sxediasmos-2.pdf

[46] ENDURANCE, European SUMP network, http://www.epomm.eu/endurance/index.php?id=2809&city=315

[47] Institute of Communication and Computer Systems (ICCS), https://www.iccs.gr/en/?noredirect=en_US

[48] TEAM, https://www.collaborative-team.eu/facts/structure?hide_banner

[49] How future mobility will look like in cities: the case of Trikala, 2015, https://www.collaborative-team.eu/blog/archives/9-How-future-mobility-will-look-like-in-cities-the-case-of-Trikala.html

[50] MyWay – European Smart Mobility Resource Manager, https://www.e-trikala.gr/portfolio/myway-eu-mobility/

[51] MOBiNET, Pilot Site, Trikala, http://www.mobinet.eu/?q=content/pilot-trikala

[52] Cities Demonstrating Automated Road Passenger Transport, Trikala's large-scale demonstration, http://www.citymobil2.eu/en/city-activities/large-scale-demonstration/trikala/

[53] MyWay, Trikala, http://myway-project.eu/www.myway-project.eu/index.php/living-labs/trikala/index.html

[54] Ibid 45

able people is provided. Thus, people with mobility problems can be taken care of while at home, without having to reach a local hospital[55].

Considering all the above, it becomes obvious that the city of Trikala continuously strives to drive the shift of local urban transport and mobility towards the principles that are set by the Smart Cities paradigm. To this end, Trikala has prepared the **"Trikala 2025" strategy, a 10-year planning for the city** with priorities and measures that secure the city's future against challenges like climate change. The strategy is broken down into two operational plans (2015-2019 and 2020-2024) with intermediate targets and projects[5657]. It identifies **all city stakeholders** (local and regional government; service providers; industry; NGOs; academia; citizens and communities) as key target audiences and prioritises6 axes, including, among others, the following two:

- **Mobility**, with an emphasis on sustainable mobility (including the drafting of a corresponding plan).
- **People**, with an emphasis on accessibility and inclusiveness[58].

In further detail, several transport and mobility measures are foreseen by the city of Trikala including [59,60]:

- an increase of bike lanes by 2.8 km in the next 3 years and by an extra 10km by 2025;
- the construction of a new ring road around the city by 2020, which can lead to a reduction of transport demand through the city centre and a corresponding reduction in fuel consumption, as well as to a decrease in particles emissions;
- the provision of incentives for the promotion of electric and hybrid cars in the city, including free parking in the city centre for this typologies of cars;
- the replacement of existing municipal small vehicles with electric cars by 2025 and of all heavy duty municipal vehicles with Euro 6 vehicles by 2030;
- the implementation of a programme for the development of green spaces in all city squares and open spaces to help reduce cooling demand in nearby buildings by 5% by 2030.

On top of these, central to the city's ambitions is service co-creation, where citizens will be able to directly apply their needs and promote their challenges and priorities through open consultation and engagement in participatory processes[61].

[55] E-trikala, http://www.e-trikala.gr/portfolio/telecare/?id=1012

[56] Sustainability Observatory, "Trikala 2025 Strategic Plan: A Smart, Sufficient and Resilient City", http://observatory.sustainablegreece2020.com/en/practice/trikala-2025-strategic-plan-smart-sufficient-and-resilient-c.1025.html

[57] Ibid 45

[58] Anthopoulos, L. (2017), "A standardised smart city: the case of Trikala", https://www.google.gr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjj8erim7HVAhWFCcAKHdUACzEQFggnMAA&url=https%3A%2F%2Fwww.eu2017.mt%2FDocuments%2FPresentations%2FSESSION%252017%2520PARALLEL%2520EL2%2520GREECE%2520A%2520standardised%2520smart%2520city%2520Trikala.ppsx&usg=AFQjCNGyJfWTquGvi5UJ0bLozCkhlFCL5g

[59] Greek News Agenda, Thinking of a Greek smart city? Think of Trikala, 2017, http://www.greeknewsagenda.gr/index.php/topics/business-r-d/6357-thinking-of-a-greek-smart-city-think-of-trikala

[60] INSMART project, "Findings and lessons learnt for European cities from the INSMART project: A new methodology for smarter energy planning, tested in four EU cities", http://www.insmartenergy.com/wp-content/uploads/2014/11/54263_Insmart-brochure_36pp_FINAL_LR.pdf

[61] Ibid 58

2.4.4 Turkey: Üsküdar as the case study

The national context of urban mobility in Turkey

In Turkey, the **administration of urban transport and mobility services is being handled at the municipality and metropolitan municipality level**. To do so, municipalities construct **"Transport Coordination Centres"**, which have a central role in developing action plans and taking decisions regarding public transport. Through these organisations, municipalities can track and administer urban transport in an economic and efficient manner. The decisions that are taken by these Centres are obligatory for all municipalities, public institutions and organisations.

The metropolitan municipalities prepare "**Transport Master Plans",** while the association of Turkish Municipalities developed the "**Transport Planning Studies and Transport Master Plan Preparation Guide**" with a view to guide municipalities and allow them to share their experiences across the country.

With regard to urban transport, future goals and recommendations are also provided in the Turkish Transport and Communication Strategy that was published in 2011. In 2013, the 11th Transport Council was held and a huge planning was launched towards urban accessibility through urban transport. In the frame of this process, the integration of the urban transport plans within specific local urban areas, the development of public transport systems and the improvement of accessibility standards for different urban transport modes were set as targets.

In Turkey, there are also actions towards urban transport developments for disabled people[62]. More specifically, a law was issued for protecting disabled people's rights. This law can be summarised as the *"improvement of urban transport in all ways for disabled people"* and the re-design of the whole transport system as *"viable/accessible"* for disabled people. Transport plans and national development plans for the period 2014-2018 are also being prepared.

Although the administration of urban transport remains mostly at the local level, the central national administration regulates the field as well. Starting from 2014, the Turkish Ministry of Transportation, Maritime Affairs and Communications has prepared the "National Smart Transport Systems Strategy Paper" (2014-2023) and two action plans about urban transport in the country.

On top of the above, a strategy and action plan was prepared, i.e. the **"KENTGES Integrated Urban Development Strategy and Action Plan"**. The plan was put into action in 2010 and includes urban development strategies until 2023[63]. KENTGES can be summarised as a detailed basis for both local and central administrations about urban transport and planning. It also foresees actions towards the improvement of mechanisms for participation in urban processes, e.g.participation of non-governmental organisations, chambers of commerce,

[62] D. Bezmez, (2012), "Urban Citizenship, the Right to the City and Politics of Disability in Istanbul", *International Journal of Urban and Regional Research*

[63] M Güler, M Turan (2013), "Development Strategies for Sustainable Urbanization in Turkey: KENTGES Action Plan (2010-2023) Case", *International Conference on Eurasian Economies*

universities, local authorities and citizens through the creation of committees, information centres, communication tools and city councils[64].

However, the lack of coordination between urban and transport plans are important obstacles for sustainable urbanisation in the country with negative effects on the transportation infrastructure and road congestion. However, the National Development Plan that was developed in 2013 included policies aiming to increase the use of public transport, to promote the use of e-mobility and hybrid cars, establish smart bike networks and expand pedestrian zones[65]. Moreover, various bike road plans and pedestrianisation projects have been initiated to make Turkish cities more eco-friendly.

As the technology progresses, urban transport is also benefitting from it in terms of new traffic management systems. The term smart transport has been created in order to sum up the integration of new technologies in transportation systems. The city of Istanbul applies the principles of this new term through the "Metrobus Project" which enables citizens to travel with safety and comfort[66].

The local context of urban mobility in Istanbul - Üsküdar

The Istanbul metropolitan municipality administers an extended area with 73 lower-level authorities (i.e. 32 provincial sub-municipalities and 41 first-level municipalities, including Uskudar). The Istanbul Metropolitan Municipality is the authority responsible for organising urban transport and supervises a range of bodies dedicated to land use planning, transport and traffic regulation, while two specific bodies (UKOME and AYKOME) are devoted to coordinating the transport sector[67].

Regarding specific regulations for the metropolitan region of Istanbul, an Urban Transport Master Plan was prepared in 2011 and the basic principle adopted in the plan was the establishment of a sustainable transport system. The transport investments of the municipality were mainly focused on public transport and, in particular, on developing rail systems, while efforts were put into decreasing the use of private cars in the metropolitan centre and its immediate surrounding with a view to decrease traffic congestion[68].

2.4.5 UK: Oxford in Oxfordshire County as the case study

The national context of urban mobility in UK

UK's national transport policy, while retaining a focus on enhancing existing road systems through adding extra lanes and improving road junctions, predominantly integrates elements of stage 2 and stage 3. Within local urban areas transport and mobility policies are increasingly shifting towards stage 3, with a focus on movement of people by all modes of transport, including walking and cycling, and on reclaiming space from traffic on streets to create urban places that increase people's quality of life. The transformation of the north side of Trafalgar Square in London from a traffic dominated area to a public space for people is one example of this.

[64] Ibid 65

[65] Republic of Turkey: Ministry of environment and urbanisation (2014), "Turkey Habitat III - National Report", https://unhabitat.org/wp-content/uploads/2014/07/Turkey-national-report.pdf

[66] E Babalik-Sutcliffe, EC Cengiz (2015), "Bus Rapid Transit System in Istanbul: A Success Story or Flawed Planning Decision?". *Transport Reviews*

[67] Houpin, S. (2010), "Urban mobility and sustainable development in the Mediterranean", United Nations Environment Programme Mediterranean Action Plan, Plan Bleu Regional Activity Centre

[68] Ibid 65

In the UK, **local authorities have power over local transport decisions**, supported by devolved funding. In addition, **groups of local authorities** join together to promote regional transport infrastructure investment through Sub-national Transport Bodies (STBs).

In 2017, the UK Department of Transport published its Transport Investment Strategy document **"Moving Britain Ahead",** which sets out a case for continued investment in transport infrastructure[69]. The strategy describes how future government transport investment decisions should focus on four key objectives, with one of them being solely targeted to mobility aspects: creating a more reliable, less congested, and better-connected transport network that works for the users who rely on it.

In achieving its objectives, the strategy identifies various factors which influence the delivery proposals, including the need to protect the environment and health. In this regard, the strategy identifies the transport needs of people at a local level, i.e. to access employment and services, and at a national level, i.e. to travel between cities and international gateways. At the same time, the strategy identifies the needs of businesses for both local and international transport.

The Transport Investment Strategy identifies the **need to combat climate change, improve air quality, and manage wider impacts on the environment, such as transport noise or damage to natural habitats and cultural heritage**. The UK's approach to these challenges is through investment in innovation, research and technology, including investments in the areas of ultra-low emission, and connected and autonomous technologies.

Clearly, several planning initiatives in the UK are relevant to the Cities-4-People approach, Sustainable development, in its economic, social and environmental dimensions, is a "golden thread" running through the national planning policy framework.[70] Within this national planning framework there are 12 core land use planning principles, the first of which emphasises **developing a local or neighbourhood plan**, and **"empowering local people to shape their surroundings."** This relates directly to the Cities-4-People's approach to co-create mobility and transport solutions and innovations with communities.

Notably, to help local authorities **assess and take on board local transport needs in their local plans**, the UK Government produced a guidance document, updated in 2014**.** The aim of this guidance is to *"improve, the sustainability, viability and deliverability of proposed land allocations"* [71].
Guidance documents from the **UK Department for Communities and Local Government** and **Department for Transport** inform local plans. These include Manuals for Streets 1 and 2 which emphasise the "place" aspects of streets, the needs of people, and environmentally sustainable modes of transport, particularly walking and cycling.[72]

Moreover, the UK's Department for Transport published a **Cycling and Walking Strategy Investment document** in 2017, which stated the Government's ambition for England: *"we want to make cycling and walking the natural choices for shorter journeys, or as part of a longer journey"*. Key to this ambition are three objectives to reach by 2040: **better safety, better mobility, and better streets**. The respective strategies are described below[73].

Strategies for Better safety
• streets where cyclists and walkers feel they belong and are safe

[69] https://www.gov.uk/government/publications/transport-investment-strategy
[70] https://www.gov.uk/guidance/national-planning-policy-framework/achieving-sustainable-development.
[71] https://www.gov.uk/guidance/transport-evidence-bases-in-plan-making-and-decision-taking
[72] https://www.gov.uk/government/publications/manual-for-streets
[73] https://www.gov.uk/government/publications/cycling-and-walking-investment-strategy

• better connected communities • safer traffic speeds, with lower speed limits where appropriate • cycle training opportunities for all children
Strategies for Better Mobility
• more high-quality cycling facilities • more urban areas that are considered walkable • rural roads which provide improved safety for walking and cycling • more networks of routes around public transport hubs and town centres, with safe paths along busy roads • better links to schools and workplaces • technological innovations that can promote more and safer walking and cycling • behaviour change opportunities to support increased walking and cycling • better integrated routes for those with disabilities or health conditions
Strategies for Better Streets
• places designed for people of all abilities and ages so they can choose to walk or cycle with ease • improved public realm • better planning for walking and cycling • more community-based activities, such as guided rides and play streets • a wider green network of paths, routes and open spaces

Furthermore, the cycling and walking investment strategy **highlights ways in which local plans, prepared in consultation with local communities, could prioritise sustainable modes of transport**. To facilitate more cycling and walking the strategy proposed that local developments would be designed and placed so as to give priority to pedestrian and cyclists, provide access to high quality public transport, create safe settings for cyclists and walkers, and site primary schools and local shops within walking distance of most properties.[74]

Green spaces enhance people's lives and wellbeing, and contribute to biomass and biodiversity. In this context, the Energy & Industrial Strategy (BEIS) greenspace mapping project, led by the UK Department for Business, maps all open-access green spaces, to make it easier for people to locate nearby green spaces for walking and cycling and other recreational activities.[75]

Finally, the UK Department for Transport has published a national "Door to Door strategy" (2013)[76] and subsequent action plans.[77] The national strategy focuses on journeys people make as a whole, and aims to integrate public transport with cycling and walking. The strategy is seen as contributing to the wider policy goals of greener, more sustainable transport, reducing road congestion, supporting economic growth and encouraging healthy lifestyles.

[74] https://www.gov.uk/government/publications/cycling-and-walking-investment-strategy
[75] https://www.gov.uk/guidance/transport-evidence-bases-in-plan-making-and-decision-taking
[76] https://www.gov.uk/government/publications/door-to-door-strategy
[77] https://www.gov.uk/government/publications/door-to-door-action-plan

The local context of urban mobility in Oxford in Oxfordshire County

Within the UK national strategies local governments have power over local urban and transport planning. As such, Oxfordshire County Council developed a new transport strategy in 2015.[78]

This strategy identifies seven current and future economic, social and environmental challenges that impact transport needs, namely: Oxford's growing and changing economy, economic growth in new locations, inequalities, rapid population growth and demographic change, the fact that more people are travelling into Oxford each day and changing travel patterns, the unmet need for housing and the need for new high quality neighbourhoods, the necessity to better balance different needs in the city centre, and major challenges with regards to the urban environment and air quality.[79]

Consequently, Oxford Transport Strategy's (OTS) 2015-2031 objectives cover economic, social, and environmental dimensions. The OTS supports inclusive economic growth through measures that help to reduce pressure on the road network, reduce emissions and promote active and healthy travel. These are planned to be achieved by encouraging cycling and walking and providing better integrated, high-quality public transport, and improving road safety. In this context, Oxfordshire communities that are developing Neighbourhood Plans should make sure to be consistent with the overall regional transport strategy.

[78] https://www.oxfordshire.gov.uk/cms/content/ltp4-policy-and-overall-strategy

[79] Oxford Park and Ride – Future Strategy Development: Final Report, Page 6 https://www.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/roadsandtransport/transportpoliciesandplans/areatransportstrategies/oxford/OxfordParkRide-MainReportForTasks1-4_V2_0withAppendices.pdf

3. Forms of innovation in the POMT field

> *Whatever has happened in my quest for innovation has been part of my quest for immaculate reality.*
>
> *George Lucas*

Innovation has already become a buzzword that is ubiquitous, from policies to research, streets to houses. Currently, there is no consensus on the broader definition of the term innovation[80,81]. Innovation has had various definitions according to the dominant approach or discipline, such as market, product, or R&D process. Capturing innovation becomes even harder today, since the forms of exchange (e.g. big data, open-source software, etc.) and collaboration mechanisms (e.g. open innovation, innovation hubs, etc.) continuously change[82].

Despite the lack of agreement on one definition, there is a significantly growing consensus that innovation is a multi-actor oriented and collective process[83,84]. Moreover, it is a fact that today diverse forms of innovation can take place inside and outside of organisations, while idea exchange can occur reciprocally via new collaboration mechanisms. However, what is crucial is to ensure that innovative ideas are turned into daily-life products and services that create growth for the major areas of concern for citizens[85].

The approaches of Social Innovation, Digital Social Innovation and Open Innovation 2.0 paradigms are key levers for success of innovation ecosystems. These three forms of innovation are analysed in the following subsections. It can be argued that both Digital Social Innovation (i.e. social innovation facilitated by the use of digital tools) and Open Innovation 2.0 (i.e. paradigm based on the principles of integrated collaboration, co-creative collaboration among all actors within a society, shared value, etc,) are directly linked to the Social Innovation concept. Therefore, the latter is the concept that will be elaborated in greater detail.

3.1 Social Innovation

According to the EC's definition, social innovations are "**new ideas that meet social needs, create social relationships and form new collaborations**"[86]. In general, social innovation can be defined as a type of innovation that has as a priority the social benefit and not the personal or corporate gain.

Experience has shown that some of the most pressing and persisting social challenges (e.g. climate change, poverty and sustainability, etc.) are multivariate. As such, they might be difficult to be resolved through existing traditional processes. Social Innovation (SI) could be an effective way to tackle complex social challenges by combining the strengths of multiple stakeholders (cross-sectoral cooperation) in order to develop innovative solutions for pressing social needs. Indeed, SI can be conceived, planned and executed by various stakeholders[87],

[80] INSEAD, 2009. Are you innovation ready? http://innovationmanagement.se/images/stories/file/INSEAD_report.pdf

[81] http://www.ericshaver.com/the-many-definitions-of-innovation/

[82] Graineri and Renda, 2012. Innovation Law and Policy in the European Union: Towards Horizon 2020

[83] Ibid 82

[84] Anahita Baregheh, Jennifer Rowley, Sally Sambrook, (2009) "Towards a multidisciplinary definition of innovation", Management Decision, Vol. 47 Issue: 8, pp.1323-1339, https://doi.org/10.1108/00251740910984578

[85] EC memo, 2010. Turning Europe into a true Innovation Union http://europa.eu/rapid/press-release_MEMO-10-473_en.htm

[86] http://ec.europa.eu/growth/industry/innovation/policy/social_en

[87] Biggs, R., Westley, F.R. & Carpener, S.R. (2010). Navigating the Back Loop: Fostering Social Innovation and Transformation in Ecosystem Management. *Ecology and Society.* 15:2 (9); in ISABEL Project report (2016), "SI and CE best practices, methods and tools across Europe"

since the SI approach is participatory and targeted at achieving societal behavioural changes towards sustainability.

Overall, SI is applicable in tackling global and local issues[88] and is strongly linked to environmental challenges and their impacts on peoples' lives, health and wellbeing. As such, it constitutes a process that adequately responds to social needs and contributes to sustainable solutions of societal challenges.

Overall, the main characteristics of social innovation, are presented below.

Characteristics of Social Innovation[89]	
Open to all	Open rather than closed when it comes to knowledge-sharing and the ownership of knowledge.
Multi-disciplinary	Multi-disciplinary and more oriented to problem solving than the single-department or one-profession solutions of the past.
Participative and empowering	Participative and empowering of citizens and users rather than 'top down' and expert-led.
Demand-led	Demand-led rather than supply-driven.
Tailored	Tailored rather than mass-produced, as most solutions have to be adapted to local circumstances and personalised to individuals.

BEPA (Bureau of European Policy Advisors) has identified some patterns of SI initiatives that aim to address societal challenges and stimulate social cohesion at local levels, the main ones being: **Social Economy; Microfinance; Incubation; Workplace innovation; Changes in governance; Social inclusion; Migration; Urban regeneration; Health and ageing; Environment**[90].

Social Innovation approaches

By its nature SI is more **open to sharing knowledge and ownership** compared to other modes of innovation. The **high integration level of different disciplines, cultures and multiple stakeholders** is its main asset and facilitates the emergence of efficient and sustainable solutions. Moreover, **SI empowers citizens by means of tailored processes** and breaks through the top-down or mass-produced solutions. BEPA outlines three key approaches to social innovation[91]:

Social demand	
Approach	This SI approach is a response to social demands that are traditionally not addressed by the market or public authorities, mostly directed towards vulnerable groups in communities (youth, migrants, the elderly, socially excluded etc.)
Societal challenges	
Approach	This SI approach focuses on innovative solutions through the integration of the social, the economic and the environmental challenges.

[88] Clinton, L. & Whisnant, R. (2014), "Model Behavior: 20 Business Model Innovations for Sustainability, SustainAbility Ltd.", in ISABEL Project report (2016), "SI and CE best practices, methods and tools across Europe"

[89] EC (2013), "Guide to social innovation", http://s3platform.jrc.ec.europa.eu/documents/20182/84453/Guide_to_Social_Innovation.pdf

[90] EC BEPA Report, 2014. Social Innovation A Decade of Changes ISBN 978-92-79-39417-1 (PD F)

[91] BEPA, 2011. Empowering people, driving change: Social innovation in the European Union ISBN 978-92-79-39417-1 (PD F)

Systemic change	
Approach	This SI approach focuses on the process of organisational development and changes in relations between institutions and stakeholders. This approach is the most ambitious and, in a way, encompasses the other two approaches.

According to the TEPSIE project[92], social innovations generally share some core elements and features as illustrated in the figure below.

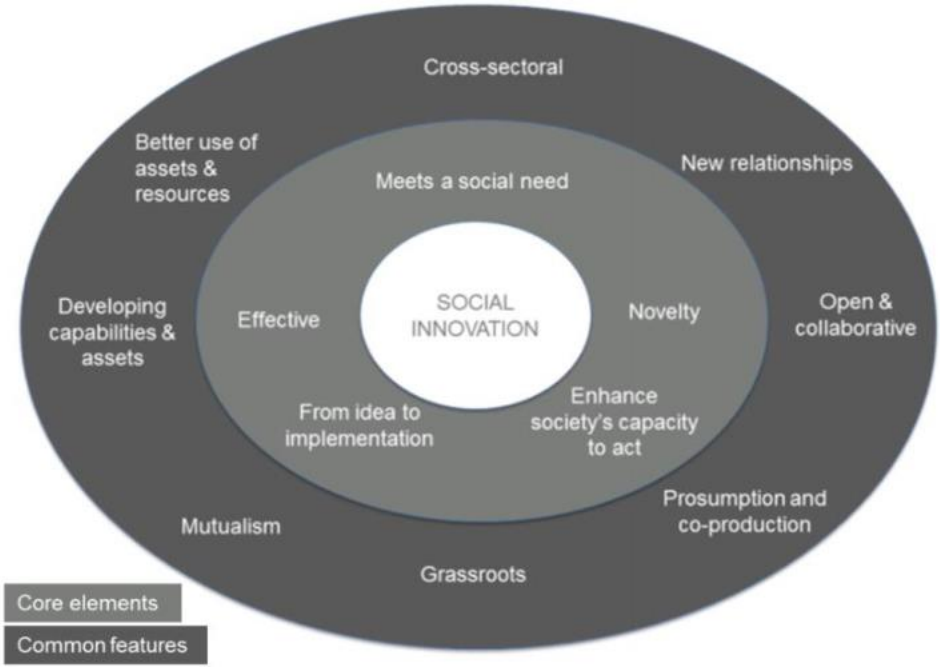

Figure 1. Core elements and common features of SI[93]

As such, SI needs to demonstrate a level of **novelty**, **meet a social need, enhance society's capacity to act, lead to the actual implementation of an idea and not remain at its conception, and, finally, be more effective than already existing solutions**. On top of these core elements, several additional features further detail the nature of SI, such as: being cross-sectoral, open and collaborative, lead to grassroots initiatives, etc.

It should be underlined that the concept of Digital Social Innovation (DSI) and the paradigm of Open Innovation 2.0 also share many of the aspects depicted in the figure above.

Processes towards building Social Innovation approaches

According to the EC's Guide to SI, the SI process can be considered as entailing four main steps, namely:

1. Identification of new, unaddressed or inadequately met social needs;
2. Development of new solutions in response to these social needs;

[92] http://www.tepsie.eu/

[93] Caulier-Grice, J., Davies, A., Patrick, R. & Norman, W. (2012), "Defining Social Innovation: Part 1", TEPSIE project, https://youngfoundation.org/wp-content/uploads/2012/12/TEPSIE.D1.1.Report.DefiningSocialInnovation.Part-1-defining-social-innovation.pdf

3. Evaluation of the effectiveness of new solutions in meeting social needs;
4. Scaling up of effective social innovations.

Typically, social innovations start as ideas that are then prototyped or piloted. In case they are successful, an implementation stage is applied. Scaling up the new concept to achieve greater impact is the final stage[94]. This spiral model of social innovation is illustrated in the figure below.

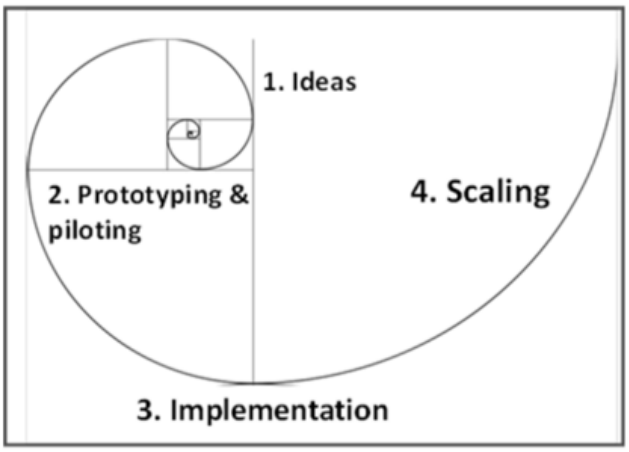

Figure 2. Spiral social innovation process[95]

However, social innovations do not have to go through all 4 stages, or reach systemic change effect (i.e. typically the step after scaling a SI). Instead, they can remain small and local. In fact, few social innovations have such an impact so that they can reach the stage of systemic change. In other cases, social innovations can skip stages entirely (e.g. from prototyping to scaling)[96].

However, in between these four stages, additional and smaller millstones can be considered for organisations and communities that aim to promote and implement social innovation. These steps are illustrated in the figure below and are meant to assist innovators in understanding where to start and which tools to exploit, regardless of which stage their innovative ideas or solutions stand at[97]. It is important to mention that, although these steps follow an order of increasing involvement in social innovation, the order can be adapted based on the specificities of the context in which the SI approach will be applied.

[94] Ibid 89
[95] Source: Young Foundation, Social Innovation Exchange
[96] Ibid 93
[97] Ibid 89

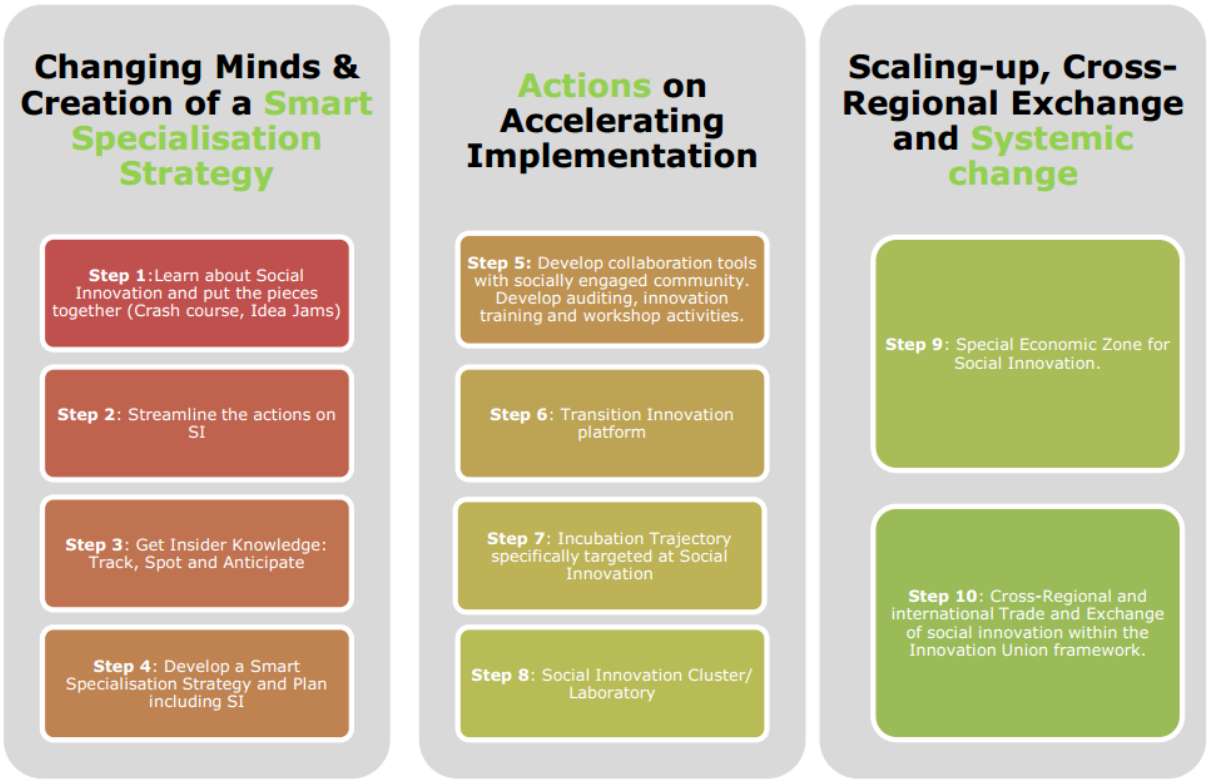

Figure 3. Social Innovation in 10 Steps

Efficient Social Innovation ecosystems

While the main vectors in an efficient SI ecosystem are the people, the citizens, the communities and the social entrepreneurs, a supportive administrative, economic and legal environment has to be in place for a SI ecosystem to flourish and have long-lasting transformative effects. Thus, the following components are also important for fostering SI within a specific context[98]:

- Supportive policies;
- Adequate governance;
- Innovative finance;
- A variety of capacity building tools (e.g. incubators, hubs, forums, prizes, etc.);
- Benchmarking and impact measurement.

On top of these, Biggs et al. have identified a suite of strategies that are able to foster SI as presented below[99]:

Foster awareness and attachment to local ecosystems	
Explanation	People are often greatly motivated by an awareness and understanding of the unique aspects of their ecosystems, and they often feel a deep attachment to them.
Methods	Awareness and attachment may be best fostered through informal, experiential activities that take place within the setting of the local ecosystem.

[98] Ibid 89

[99] Biggs, R., Westley, F.R. & Carpener, S.R. (2010). "Navigating the Back Loop: Fostering Social Innovation and Transformation in Ecosystem Management", *Ecology and Society.* 15:2 (9); in ISABEL Project report (2016), "SI and CE best practices, methods and tools across Europe"

Build capacity for social entrepreneurship	
Explanation	Social entrepreneurship refers to the ability to recognise a social problem and use entrepreneurial principles to organise, create, and manage a venture to address the problem. Social entrepreneurship and leadership have widely been found to be critical to transformation processes.
Methods	Key strategies employed by successful social entrepreneurs include: (1) build networks of individuals and organisations relevant to the problem, (2) distribute power, and (3) avoid centralised control and structuring. In addition, developing actions that focus on building leadership and entrepreneurial capacity for collaborative problem solving could give a substantial boost to social innovation.
Foster dialogue between key stakeholders	
Explanation	Dialogue between key stakeholders is critical for the establishment of integrated, collaborative initiatives, while simply inviting all stakeholders to some joint meetings is usually insufficient for achieving a productive exchange that enables new ideas to emerge and grow.
Methods	There is a need to first acknowledge and explore the perspectives and needs of the different stakeholders involved. Then, it is important to understand how stakeholder dialogue processes can be supported. An important tool in this context is social network analysis, or the mapping and measuring of relationships and flows between people, groups, and organisations. Dialogue processes can then be initiated and managed by moderators or by some identified leaders.
Provide institutional support	
Explanation	Institutional support in enabling new SI approaches is vital, since once such SI initiatives are formed, their sustainability over time is often challenged by institutional and financial constraints.
Methods	Partnering with local authorities and government institutions can provide a durable basis for collaborative SI initiatives to function.

3.1.1 Social innovation intermediaries and tools

Considering the information provided above, it becomes obvious that in order to create enabling SI ecosystems with the ability to foster such initiatives, it is important to connect people, ideas and resources. There is already a wide range of innovation initiatives, tools and toolkits across Europe that aim to link innovative activities and support the development and sustainability of SI approaches. An indicative list of these important pillars of the SI process is provided below.

Social Innovation Intermediaries

Social Innovation Intermediaries	
Local innovation teams	There are a lot of examples of local innovation teams around Europe that link the innovation operations of local authorities with the direct contribution of citizens. Such an example is provided by the **Social Innovation Lab for Kent**[100] (SILK). SILK is a small team in the Kent County Council built in 2007 with the aim to "do policy differently". In the last ten years the team together with citizens accomplished 16 projects in different societal areas.

[100] http://socialinnovation.typepad.com/silk/about-silk-1.html

Innovation Networks	Since SI is inherently dependent on bottom-up processes, it usually takes place on a local scale or within specific fields. Thus, it is important to link the main actors of SI with a view to build a collaborative knowledge exchange and learning process[101]. In addition to facilitating knowledge transfer and sustaining the information flow, these networks also provide access to necessary resources (e.g. funding). For instance, the **Social Innovation Exchange (SIX)** is a UK-based global serving network, established in 2008. The mission of SIX is "to help established social innovators to become better innovators by connecting peers, sharing methods and exchange solutions globally"[102]. To this end, SIX provides services in relation to European living labs, SI research, DSI, SI in urban settings, funding, etc.
SI Agencies & Universities	Large innovation and SI agencies like Ashoka, Nesta and DigitalSocial.eu serve a key role towards the support of SI systems. Such organisations offer important research insights, networks, resources and tools that can be exploited by social entrepreneurs. Universities are also an essential vector of SI systems, since they represent a core element the of quadruple helix model of innovation[103] and can provide valuable expertise and training to social innovators.

Social Innovation tools

For a SI project to succeed, it is important to be supported by an appropriate suite of SI tools that can facilitate the dynamics of such initiatives. To this end, several SI toolkits and methodologies are available that constitute practical applications for organising and supporting innovation processes and aim to enhance capabilities of SI projects and entrepreneurs[104]. An indicative list of SI toolkits is provided as follows:

DIY - Development Impact and You[105]	
Aim	DIY is a toolkit that addresses how to invent, adopt or adapt ideas that can deliver better results. It is quick to use, simple to apply, and designed to help busy people working in development.
Content / Features	The toolkit contains 30 practical DIY tools that serve various purposes, ranging from developing a clear plan and clarifying priorities, to collecting inputs from others, generating new ideas and sustaining and implementing the ideas. The toolkit features tools like: innovation flowchart; SWOT analysis; problem definition; theory of change; question ladder; story world; people and connections map; fast idea generator; value mapping; improvement triggers; blueprint; marketing mix; and scaling plan, etc.
Harvard Innovator's Toolkit[106]	
Aim	The Innovator's toolkit has been developed to help provide system-level change strategies as well as tips and tools that stem from the experience of innovators and have the capacity to drive change within communities.

[101] Sonne, L. (2015), "The usefulness of networks: a study of Social Innovation in India", *Social Frontiers* http://www.transitsocialinnovation.eu/content/original/Book%20covers/Local%20PDFs/118%20SF%20Paper%20Sonne%20on%20nrtworks%20SI%20India.pdf

[102] http://www.socialinnovationexchange.org/about#missionvalues

[103] EU Committee of Regions, 2016. Using the Quadruple Helix Approach to Accelerate the Transfer of Research and Innovation Results to Regional Growth ISBN: 978-92-895-0890-2

[104] Eric von Hippel (2001), User Toolkit for Innovation. Journal of Product Innovation Management https://evhippel.files.wordpress.com/2013/08/toolkits-jpim-final.pdf

[105] http://diytoolkit.org/

[106] Innovator's Toolkit at http://www.socialinnovation.ash.harvard.edu/innovators-toolkit.html

Content / Features	The toolkit provides guidance with regards to **12 civic actions that aim to empower civic entrepreneurs**. The toolkit also includes the **Harvard Social Innovators Self Assessment Tool**[107]**,** that offers a template with 20 questions to understand the local landscape of the innovator, its openness to outside or new ideas, the availability of resources for trying innovative programmes, key barriers to reform, and more. Many of these questions can be directed to a range of actors across sectors, while some are specifically geared to government agencies seeking to re-evaluate their impact on the local landscape public problem solving.
SIJ Toolbox (Social Innovation Journey Toolbox)[108]	
Aim	The SIJ Toolbox has been developed by TRANSITION[109] project partners to support social innovators at different stages of the Social Innovation Journey. It is an evolving sequence of actions, activities and tools with the aim to help practitioners in their own journeys of scaling SI.
Content / Features	The SIJ Toolbox presents a selection of SI tools according to five main areas of a SI process, helping innovators to enhance their social impact and tackle complex issues. The tools can be adapted to different contexts and different social innovations. Most of them can be used by both early and late-stage innovations. These tools include stakeholder maps, storyboards, social business model canvas, prototype framework, etc.
SILK Methodology[110]	
Aim	The SILK Methodology provides creative and innovative ways to approach SI projects, and enables a collective ownership and responsibility for project design, delivery and outcomes.
Content / Features	This methodology relies on four stages (initiate, create, test, define) and covers three main areas (Strategic and Policy, Service Re-design, and Creating Sustainable Communities). The SILK Method DECK is a complementary tool. It is a collection of methods, principles and prompt cards, and can be used by other organisations.

3.1.2 Social Research and Innovation in Transport and Mobility

Transport and mobility is a field that greatly influences sustainable urban developments, with researchers acknowledging that appropriate transportation and mobility policies can facilitate the emergence of urban sustainability. This can be achieved by various means (e.g. enhancing the efficiency of motorised vehicles, using electricity instead of oil, etc.). Promoting awareness and social participation in these fields is also recognised as an important step for addressing the societal challenges that are connected to transport and mobility [111].

According to the SI-Drive project, the societal challenges that are related to transport and mobility are summarised in two areas. **First**, citizens living in urban and peri-urban areas are affected by high CO_2 emissions, traffic congestion and high noise levels, which lower the quality of life in cities. **Second**, since mobility is crucial for accessing employment, education and health services, a weak transport infrastructure either restricts citizens or prevents them altogether to access such aspects of societal life. The reasons for this are various, including

[107] http://www.socialinnovation.ash.harvard.edu/innovators-toolkit/tools/appendix-self-assessment-template.html

[108] Transition project (n.d.), "The social innovation journey toolbox", available at: http://transitionproject.eu/wp-content/uploads/2013/11/INTRO-SIJ-toolbox.pdf

[109] http://transitionproject.eu/

[110] http://socialinnovation.typepad.com/silk/about-silk-1.html

[111] Abbas M. Hassana,b,1, Hyowon Leea (2015). "Toward the sustainable development of urban areas: An overview of global trends in trials and policies". Land Use Policy, Elsevier Volume, 48, November 2015, Pages 199-212

the non-profitability of remote areas, the lack of transport modes for people with reduced mobility, unaffordable transport, etc.[112]

An analysis that was conducted in the frame of the same project, indicates that 17 practice fields of SI can be identified in transport and mobility. A common feature among all the social innovation case studies that were investigated was their local perspective. In fact, according to SI-Drive project, these SI initiatives seem to **focus on the neighbourhood/city or regional level**, and can be grouped in three main clusters:

- **Inclusiveness and access dimension** (e.g. reduced mobility, gender sensitive transportation, citizen initiatives, etc.)
- **Greening mobility and transport** (e.g. fostering co-modality, usership instead of ownership, etc.)
- **Slow transportation** (e.g. walking, cycling, etc.)

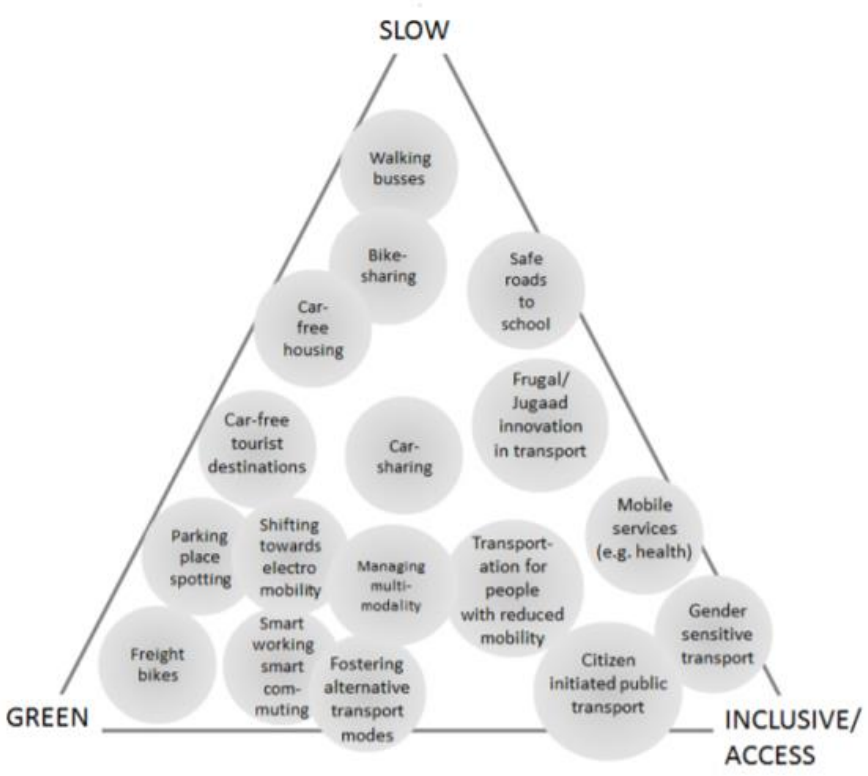

Figure 4. Social Innovation practice fields in mobility and transport[113]

Regarding the driving forces of SI in transport and mobility, these seem to be the following:

1. **Sharing economy.** Car-sharing and bike-sharing practices will increase in terms of diversity and variation due to the shift from ownership to usership.
2. **Technological progress**. ICT development and implementation, social media development and big data will provide the necessary infrastructure for SI. However, privacy will still constitute a challenge to be addressed.
3. **Environmental friendliness.** Environmental protection, energy innovations, clean environment, oil price/peak oil, energy shortage will be the driving motivation to use SI practices as an efficient tool to tackle such global challenges.

[112] Butzin, A. (2015), "Social Innovation: Driving Force of Social Change", SI-Drive project, Policy Brief Mobility and Transport, December 2015

[113] Ibid 112

4. **Business models.** This refers to the need for the quality of infrastructure, the need for a better connectivity between different modes of transport, and all those aspects that contribute to create possibilities for business models to emerge.
5. **Local context:** Social justice (i.e. bringing mobility services to people), demographic change, regulations, local deficiency, sense of community, etc. will give birth to new challenges and, in turn, to new social innovation solutions.

Considering all the above, SI in mobility and transport will be an important asset towards the creation of an **inclusive** (i.e. create jobs, refugee inclusion, accessible remote area, integration of the different stakeholders in the decision-making process, etc.) and **sustainable mobility**. However, it is important to be aware of possible barriers that include: the lack of formalisation of SI-initiatives; the gap between initiators and followers; the lack of political priority; the lack of transparency; the division between digital users and non-users; lack of engagement, etc. [114].

3.1.3 Best practices – SI Initiatives in urban developments and mobility

Existing social innovation practices can provide mobility and transport actors with valuable guidelines, not only showcasing new trends and community approaches but also because of the key messages that they point out. To this end, within this subsection three examples of social innovation initiatives are provided.

[115]La Petite Reine, Electric "Cargo-bikes", France

Case: La Petite Reine, is an organisation that is deals with Urban Logistic Spaces by providing an electric "cargo-bikes" service in Paris, Bordeaux, Toulouse, Aix-en-Provence. La Petite Reine, is a member of the Star service group which is a voluntary signatory to the CO_2 objective charter with the aim to reduce CO_2 emissions. The goal of La Petite Reine is "*Making an optimum delivery service while improving the quality of life in the city center. Reducing the effects of air pollution is a currency inscribed in the DNA of La Petite Reine. Indeed, the vehicles that compose its fleet emit neither CO_2 nor particles: they are electrically assisted bicycles, and electric vehicles*."[116]

SI Method: The initiative summarises its actions as **regular renewal of the fleets** (to preserve the emission of CO_2), **optimisation of routes via computer tools**, **training teams in eco-driving** and fleet composed of standard Euro 5 or Euro 6 vehicles. This new method has been introduced in 2001 as "Cargocycle", which is an electric lightweight three-wheeled bike, capable of loading 180 kg. This bike emits zero GHG (greenhouse gas). The method was also seen as an opportunity for employment for low-skilled and unemployed people since it did not require much relevant experience.

Impact: This project brought together local stakeholders, companies and public authorities. The Petite Reine was bought by a large French urban delivery and logistic company, (i.e. Star Service) in 2011. The organisation is the first carrier to commit to reducing its CO_2

[114] Ibid 112

[115] Image: http://www.harringayonline.com/group/harringaycyclists/forum/topics/844301:Topic:39334?commentId=844301%3AComment%3A39397&groupId=844301%3AGroup%3A21755

[116] http://lapetitereine.com/lentreprise/qui-sommes-nous/

emissions. In total, an emission reduction of more than 10% was measured in 3 years (2010-2013) and a new commitment for 3 more years was signed in 2013. ARES (Association for Economic and Social Reintegration) also became a shareholder in 2009. As key figures of the impact, there are 100 cargo cycles, 50 light commercial vehicles, 280.000 ecologic deliveries per year and 700.000 km travelled per year by Petite Reine, which currently employs over 70 people.

Child in a Chair in a Day, UK [117,118]

Case: Child in a Chair in a Day is initiated by Wizz-Kidz, an organisation that provides wheelchairs, in close cooperation with the National Health Service (NHS) in the UK. In the UK national context, people within the healthcare industry recognise that there is a problem associated with wheelchair waiting times. There is a clear need to provide wheelchairs quickly and effectively. Whizz-Kidz partnered with the NHS, and worked with other NHS trusts in the country to try and improve this situation. Whizz-Kidz uses innovation within the wheelchair services for disabled children so that the entire procurement and negotiation at the supply chain is executed quickly. Currently, the organisation also extends the "same day equipment service" to adults as well. Overall, the project is inspiring other projects to include young and disabled people by providing transport and mobility tools that are suitable for their social and health needs.

SI Method: The initiative's primary aim is to offer the right equipment to disabled children in one day. So far, they have successfully met their targets by increasing the percentage of users every year. Consulting young people was a great source of information, since people made their need for better products and quicker delivery times clear. The organisation also has a kids' board integrated within their structure, and the whole processes of the organisation are very much dependent on the kids' insights. There is a lot of fundraising, and volunteers run marathons for raising money. 90.6% users benefitted from the solution in 2016, which means they received the required wheelchair with just one visit to Wizz-Kidz.

Impact: The initiative's impact power in the field is high: achieving a success rate of 90.6%. 'Child in a Chair in a Day' has been recognised as NHS' high-impact innovation. This initiative also has a big impact on the policy level, and is now getting support in this sense as well. The success of the solution is acknowledged by several other organisations and has already been replicated within contexts that face similar challenges.

[117] SI Drive, 2017. Social Innovation in Mobility and Transport: Case Study Results https://www.si-drive.eu/wp-content/uploads/2017/03/SI-DRIVE-Deliverable-D8_3-Mobility-1.pdf

[118] Image: http://www.whizz-kidz.org.uk/healthcare-professionals/leading-innovation/child-in-a-chair-in-a-day

***Moosdorf Dorfmobil, Austria*[119,120]**

Case: Moosdorf Dorfmobil was an initiative of the town's mayor and was financed by a regional programme for development from the state of Upper Austria. Engaged citizens formed a working group and developed a project with the aim to come up with innovative solutions for situations of reduced mobility. The project resulted in a service that is still being run by a group of engaged citizens on a voluntary basis. The main aim of "Moosdorf macht mobil" is to provide accessible and affordable local mobility services for citizens with reduced mobility (physically, financially, etc.).

SI Method: Moosdorf Dorfmobil is a community service, driven by community demands that emerged through a survey about mobility patterns. The service works towards inclusive and accessible mobility. It allows people to "hire" a car or ask someone to drive them. The central idea is to move from no service to service on demand. An electric vehicle is the key technological innovation in the service; it is charged by photovoltaic cells mounted on the roof of a nearby primary school. "Moosdorf macht mobil" is a registered non-for-profit association, which allows the group to provide mobility services according to the Austrian law (as service of members for members).

Impact: The key factors that determined the success of the initiative and the adoption of the solutions are: (i) a strong voluntarily basis, (ii) strong public relations, and (iii) its inclusive nature. Both the solution and impact of the initiative are fully community-oriented. The project achieves social impact by providing mobility independence for people who, otherwise, cannot afford transport or are dependent on family members. The project also reinforces local community interactions and engagement by bringing its members together. Moreover, the project aims at inspiring drivers to move towards greener e-mobility options.

3.2 Digital Social Innovation

3.2.1 Introduction to the concept of Digital Social Innovation

In today's societies, Information and Communication Technologies (ICTs) are an inevitable means of communication, connecting people and enhancing mobility. According to the most recent EUROSTAT Statistics, in 2016 the share of EU-28 households with internet access reached 85%, 30 percentage points higher than in 2007. The share was 95% for EU-28 enterprises. The use of internet while on the move (outside of house and work) has risen to 59% thanks to common mobile devices such as mobiles or smartphones, laptops, and tablet computers.

Such statistics on the ICT usage in Europe suggest that digital technologies have a big impact and provide an opportunity for social innovation and civic engagement. As the EC puts it, "*Digital technologies are particularly well suited to helping civic action: mobilising large communities, sharing resources and spreading power. A growing movement of tech*

[119] Ibid 117

[120] Image: https://www.klimaaktiv.at/mobilitaet/mobilitaetsmanagem/kommunalregional/moosdorfer_dorfmobil.html

entrepreneurs and innovators in civil society are now developing inspiring digital solutions to social challenges"[121].

Digital Social Innovation (DSI), in its broadest and inclusive sense, is defined as **a type of social and collaborative innovation in which innovators, users and communities collaborate using digital technologies to co-create knowledge and solutions for a wide range of social needs and at a scale and speed that was unimaginable before the rise of the Internet**[122].

The shift towards DSI and its impact on society and economy have not gone unrecognised by the EC. The EC's renewed Strategy for the creation of a Digital Single Market[123] has a clear roadmap towards the free movement of goods and services without barriers in the offline and in the online world, offering the same level of consumer protection and privacy[124]. As it is well recognised by the EC Strategy, the systematic support for innovations that use digital technology to address social challenges is key for social innovation ecosystems.

Next to the Digital Single Market, Horizon 2020 funds programmes like Digital Social Innovation for Europe (DSI4EU), which supports and connects digital social innovators to regional peers, projects and organisations all over Europe.[125]

Main trends and domains of Digital Social Innovation

Digital technologies provide well-suited tools to strengthen the civic engagement towards addressing social challenges. Nesta's in-depth study on more than 130 global examples of digital social innovations shows the diversity of the field and recognises four main technological trends to DSI[126]:

- **Open Hardware.** It refers to making digital hardware available for people to adapt, hack and shape into tools for social change.
- **Open Networks.** It refers to how citizens are developing new networks and infrastructures where they connect their devices, such as phones and Internet modems, to collectively share resources and solve problems.
- **Open Data.** It refers to innovative ways of opening up, capturing, using, analysing and interpreting data.
- **Open Knowledge.** It refers to large groups of citizens coming together through online platforms to collectively create and analyse new types of knowledge or social projects.

In general, many different types of DSI organisations and activities are emerging. However, **six thematic clusters** seem to be the most prominent and they derive from the abovementioned four dominant technological trends, as illustrated below:

[121] EC, 2015 Growing a Digital Social Innovation Ecosystem for Europe ISBN: 978-92-79-45603-9 – available at: http://waag.org/sites/waag/files/public/media/publicaties/dsireport.pdf)

[122] Ibid 121

[123] https://ec.europa.eu/digital-single-market/en/policies/shaping-digital-single-market

[124] EC, 2016. A Digital Single Market for Europe, available at:https://ec.europa.eu/commission/sites/beta-political/files/2-years-on-dsm_en_0.pdf

[125] www.digitalsocial.eu

[126] Ibid 121

Figure 5. Thematic Clusters of DSI[127]

According to the EC report "Growing a Digital Social Innovation Ecosystem for Europe", the **collaborative economy** domain aims to promote new collaborative socio-economic models that present novel characteristics, and enable people to share skills, knowledge, etc. (e.g. digital currencies, new forms of crowdfunding and financing, new platforms for exchanges, sharing resources, etc.). **New ways of making** encompasses open design and manufacturing (e.g. 3D manufacturing tools, free CAD/CAM software, open source designs, etc.). The **open democracy** field aims to transform traditional models of representative democracy, with digital technology enabling collective participation, collective deliberation, and mass mobilisation. In the frame of **awareness networks,** communities are able to aggregate data coming from people in order to create new products and services, while platforms for collaboration are used to solve environmental issues and promote sustainable behavioural changes, or to mobilise collective action and respond to community emergencies. The **open access** approach has the potential to empower citizens and increase participation, while preserving the openness and accessibility of the Internet infrastructure (e.g. including open access to content, open standards, etc.). Finally, **funding, acceleration and incubation** of DSI projects is achieved through the support offered by public and private actors that consists of seed funding, access to co-working spaces, etc.[128]

Actors delivering and supporting Digital Social Innovation

In general, it seems that the actors that are directly involved in DSI initiatives can be grouped in 6 main types. As illustrated in the figure below, these include **grassroots community initiatives, academia, governmental authorities, industry and social entrepreneurs**. It does not come as a surprise that the categories of communities that are sought after in the POTM framework are largely in line with the main stakeholders who are typically involved in DSI processes. Especially with regards to community initiatives, DSI enables their engagement and enlargement and also promotes the democratisation of their access to emerging technologies.

[127] Ibid 121
[128] Ibid 121

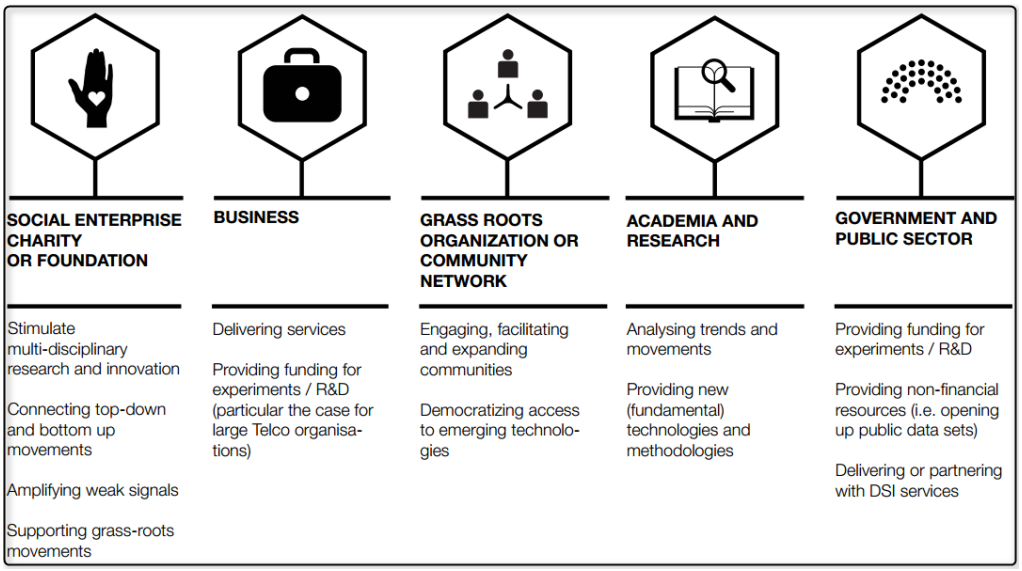

Figure 6. The main actors of DSI processes and how they are involved[129]

Process for setting up a Digital Social Innovation

The process for setting up a DSI, is largely aligned to the process for SI that has been described in section 3.1. According to the EC, a slightly different model can be considered for DSI, as shown below.

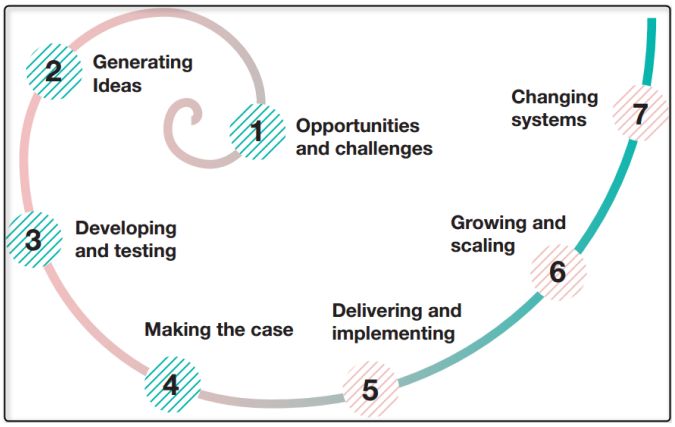

Figure 7. The SI spiral for DSI

This spiral consists of 7 stages for DSI development that, however, are not always sequential and include feedback loops in between. In turn, DSI entrepreneurs might require different tools and support for each step of the spiral[130].

Overall, a DSI should encompass certain characteristics and values. These can be conceived as the **Triple Helix of Social Tech** and are[131]:

[129] Ibid 121

[130] Ibid 121

[131] Sutch, D. (2014), "The Triple Helix of Social Tech Innovation", Nominet Trust, http://www.nominettrust.org.uk/sites/default/files/Nominet%20Trust%20-%20Triple%20Helix%20Overview%20Paper.pdf

1. **Social Value**. The extent of the social change that the DSI intends and manages to produce (e.g. positive impact health, resilience and sustainability society).
2. **User Value**. In order to realise its potential social value, a DSI needs to demonstrate value to users by meeting their needs.
3. **Financial Value**. There has to be a market for the DSI, for it to be sustainable. Necessary precondition for this is also the social and user value that stem from the DSI.

3.2.2 Examples of Digital Social Innovation

This section includes some representative DSI examples that include both individual tools and entire toolkits that have been developed in order to facilitate social innovation, community-based and/or open innovation processes. Such examples can fuel the development and feed in digital social innovation kits, similar to the Citizen Mobility Kit that will be developed in the frame of Cities-4-People and will aim to facilitate the social innovation, participatory and co-creation actions of the project.

On the European digital social innovation platform[132], the community of people who uses digital technologies to tackle societal challenge is mapped. In the following list, examples ranging from community-based environmental sensing to digital decentralised voting on policy issues are described:

- **Making Sense:** a European project that aims to explore how open source software, open source hardware, digital maker practices and open design can be effectively used by local communities to fabricate their own sensing tools, make sense of their environments and address pressing environmental problems in air, water, soil and sound pollution.[133]
- **D-CENT:** Giving people the digital tools to engage with their communities and governments with large scale pilots across Europe. The impact here is on redesigning bottom up democratic systems and a common based economy.[134]
- **Amsterdam Smart Citizens Lab:** An Amsterdam based innovation lab that invites citizen communities, experts, artists and makers in co-creation sessions to design digital tools for environmental mapping of the city.[135]
- **Open TechSchool (OTS):** OTS offers educational courses on technology through hands-on events taking place all across Europe. While the technology community has sometimes been guilty of excluding women and the elderly, OTS is actively inclusive and open to enthusiasts of all genders and all ages.[136]
- **Rahvaalgatus:** Estonian based platform that facilitates the process of making proposals, debating and voting on them, as well as digital signing and the sharing of updates. Citizens require 1,000 signatures for their proposals to reach discussion by Parliamentary Committees.[137]
- **DIVA:** provides new e-participation services as an important means to achieve “citizen-centric government”. The project “Citizen-centric e-Participation” is a trilateral collaboration project between Sweden, Estonia and Iceland, combining research with networking to enhance e-participation in three countries. The project network includes partners from

[132] http://digitalsocial.eu

[133] https://making-sense.eu

[134] https://dcentproject.eU

[135] Laurence Henriquez, 2015. Amsterdam Smart Citizen Lab ISBN 978-90-806452-4-0 available at: https://waag.org/sites/waag/files/public/media/publicaties/amsterdam-smart-citizen-lab-publicatie.pdf

[136] http://www.opentechschool.org

[137] https://rahvaalgatus.ee

local governments, experienced researchers in the field as well as software companies that are exploring new possibilities and markets.[138]

- **Digital Social Innovation tools provided by the city of Trikala**: Trikala has developed **two e-Government applications** which aim to engage citizens and stakeholders in social participation, so as to maximise public benefits. These are two online platforms that promote public dialogue and offer problem solving tools, namely **Demosthenes** and **e-dialogos.** Demosthenes is an online complaint and feedback management platform that allows the municipality of Trikala to register citizens' complaints and manage their feedback, while e-dialogos is a platform that facilitates online referendums, e-forums and e-consultation. It's also worth mentioning that e-dialogos has been nominated by the EC as a finalist project for the European e-Government Awards 2009[139].

3.3 Open Innovation 2.0

Open Innovation 2.O (OI2) is a relatively new paradigm that is based on the Quadruple Helix Model, in which innovation is the outcome of an interactive process involving different actors who are contributing according to their function in the innovation ecosystem.[140] The additional fourth leg to the older, triple helix model (top down approach: industry, university and government spheres) belongs to the civil society (bottom-up approach addition). The model also encompasses other types of bottom-up approaches such as user-oriented innovation, social inclusion and creativity. In other words, Open Innovation 2.0 prioritises the collaboration and the co-creation of shared value through the integration of citizens and users.[141]

The innovation evolution towards a more ecosystem centric perspective of innovation is illustrated in the figure below.

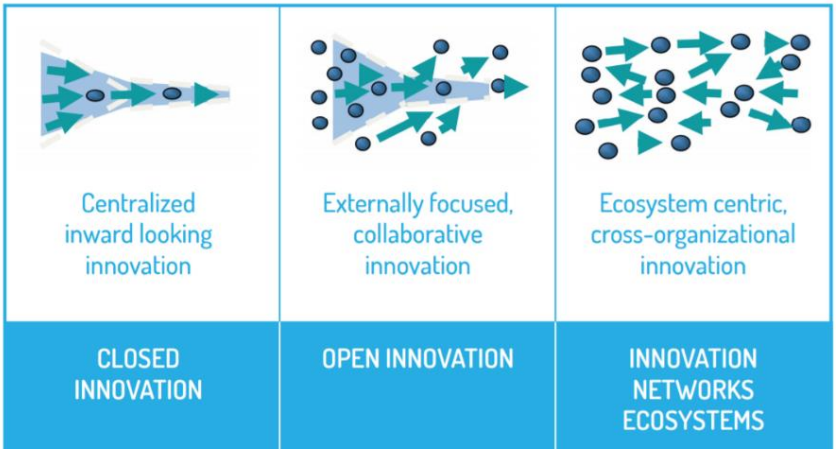

Figure 8. The evolution of Innovation[142]

The Open Innovation 2.0, **Quadruple Helix model of innovation** and its main vectors are shown in Figure 9.

[138]Praxis, 2013. Citizen Centric e-participation. ISBN 978-9949-507-20-7 (PDF) available at: http://www.diva-portal.org/smash/get/diva2:638808/FULLTEXT01.pdf

[139] Greek News Agenda, Thinking of a Greek smart city? Think of Trikala, 2017, http://www.greeknewsagenda.gr/index.php/topics/business-r-d/6357-thinking-of-a-greek-smart-city-think-of-trikala

[140] EU Committee of Regions, 2016. Using the Quadruple Helix Approach to Accelerate the Transfer of Research and Innovation Results to Regional Growth ISBN: 978-92-895-0890-2, available at: http://cor.europa.eu/en/documentation/studies/Documents/quadruple-helix.pdf

[141] Martin Curley & BRor Shalmelin, 2013. Open Innovation 2.0: New Paradigm Curley Martin, OI2 Conference Paper,

[142] Source: EU Open innovation Strategy and Policy Group, 2013

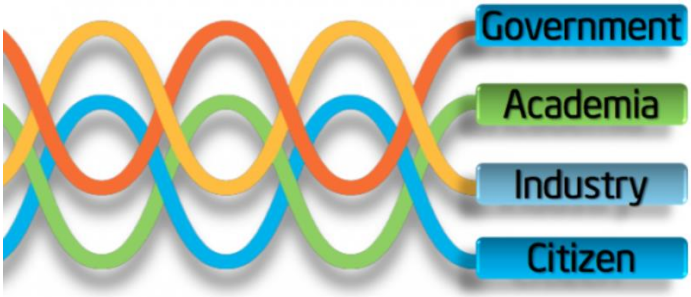

Figure 9. The Quadruple Helix innovation model[143]

In the frame of the previous sections in which the principles of SI and DSI have been described, it became obvious that the innovation paradigm shifts towards the openness of the innovation process, with a keen eye on the social and technological levels. Thus, Open Innovation 2.0 is an important concept for creating innovation ecosystems in which all relevant stakeholders participate throughout the entire innovation process[144].

Overall, Open Innovation 2.0 has a strong societal impact, merging societal & technological innovation. The report "Open Innovation 2.0: Yearbook 2016" elaborates on Open Innovation 2.0 practices and future impact of the new paradigm under different perspectives. According to this document, societal drivers are recognised among the key drivers of Open Innovation 2.0. **Sustainability**, **mobility** and **citizen empowerment and participatory processes** are mentioned as both core drivers and main application areas for Open Innovation 2.0 processes[145].

Supportive to Open Innovation 2.0 approaches, is the use of physical spaces where these actors can interact seamlessly and in an efficient manner. Such settings can be provided through the **Living Labs spaces** that offer an open innovation real-life setting where user driven innovation fuels the process for new services, products and societal infrastructures[146].

In fact, several methods can facilitate the collaborative aspect of Open Innovation 2.0, including **Fab Labs, focus groups, ideation workshops**, etc. Critical factors for its successful deployment is the existence of a **shared vision among all actors, the facilitation of their active collaboration and interaction, and an enabling policy framework** that fosters cross-sectoral and open collaboration activities[147].

Overall, it is important to highlight the role of civic society and citizens in this form of innovation. Technology can be a great help, but only if it is designed and developed with users' specific requirements and demands in mind[148]. The "users as designers" approach is an important theoretical framework that is fully integrated within the Open Innovation 2.0 paradigm. This is also build-in the People-Oriented Transport and Mobility (POTM) approach of Cities-4-People, where the user/citizen is a crucial stakeholder in the urban mobility innovation development.

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[143] Curley, M. (2013), "How to optimize the return from EU Research Investment: Open Innovation 2.0", *Open Innovation 2.0 Sustainable Economy & Society –Stability. Jobs. Prosperity,* Dublin, Ireland, May 20-21, 2013

[144] https://ec.europa.eu/digital-single-market/en/policies/open-innovation;

https://ec.europa.eu/digital-single-market/en/open-innovation-strategy-and-policy-group

[145] EC (2016). Open Innovation 2.0 2016 Yearbook, ISBN 978-92-79-53366-2, https://www.researchgate.net/profile/Rianne_Valkenburg/publication/303822705_Open_Innovation_20_Yearbook_2016/links/57566c9c08ae10c72b66f315/Open-Innovation-20-Yearbook-2016.pdf

[146] Ibid 90

[147] Ibid 145

[148] Waag Society (2011), "Users as Designers", ISBN 978-90-806452-0-2 available at: https://waag.org/sites/waag/files/public/Publicaties/Users_as_Designers.pdf

4. Community approaches and their role in urban and peri-urban developments

4.1 Public participation, community engagement and community approaches

> *A community is like a ship; everyone ought to be prepared to take the helm.*
>
> Henrik Ibsen, Norwegian playwright
> "An Enemy of the People", 1882

Societies and communities are dynamic in their nature. They change constantly with new knowledge, skills and new economic activities. In compliance with its nature, the term community has many definitions and there are many different ways to think about it. Some of the most prominent definitions and accompanying community engagement processes are the following:

i. **Systems Perspective**
ii. **Social Perspective**
iii. **Virtual Perspective**
iv. **Individual Perspective**

While **social** perspective defines the community as *"the social and political networks that link individuals, community organizations, and leaders",* in the **virtual** perspective "*individuals rely more on computer-mediated communications to access information, meet people, and make decisions that affect their lives".* The **individual** perspective relies more on the community membership models and choices of the individuals, so their participation in one or even multiple communities can change or shape over time.

Regarding the **systems community** definition, each part of the community efficiently carries out its role in coordination with the whole organism to share the responsibility for recognising and tackling problems and empowering its well-being. For this mechanism to function well, successful coordination of the resources, integration and collaboration within interdependent sectors are necessary steps. In fact, this perspective encompasses all the crucial elements of the other three community perspectives and provides a multi-actor and inclusive perspective that is in line with the Cities-4-People approach[149]

Public participation and community engagement

Public participation and community engagement can be viewed as two connected and consecutive elements; in fact, community engagement can be considered as the continuum of public participation. This continuum is illustrated in the figure below that shows how public participation can, over time, move towards greater community involvement and engagement.

[149] CTSA (2012). Principles of Community Engagement Second Edition NIH Publication No. 11-7782, Pg, 5

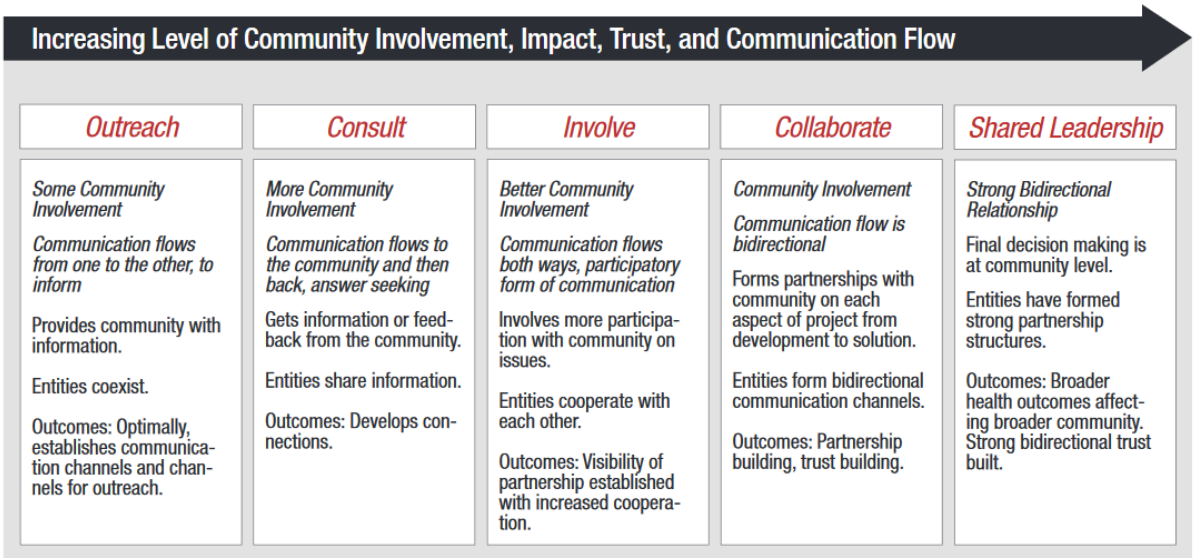


Figure 10. Community engagement continuum[150]

In further detail, public participation can be defined as "a *continuum of interaction between government and the public, ranging from informing and listening at one end, to implementing jointly agreed solutions at the other; and in between there is dialogue, debate and analysis*". Moreover, according to the European Institute for Public Participation, a core component of genuine participation is the possibility for involved actors/stakeholders to come to a shared understanding of solutions instead of just exchanging views [151].

Armitage argues that citizen participation is a process in which citizens act in response to public concerns, express their opinions about public decisions, and take responsibility of their own community[152]. This is in line to the approach of Oakley and Marsden that also puts the responsibility of communities to manage their own welfare and developments in the centre of the community participation process[153].

Overall, public participation can be viewed as a process with several consecutive steps and stages. The **participation ladder model** is a long-established model that outlines the various phases ranging from non-participation to citizen control in which power and responsibility is allocated to communities/citizens [154].

According to Arnstein, the typology of eight levels of participation describes the main elements of effective public participation, as presented below[155]:

- The first and second rungs of the ladder represent the non-participation levels of the model where "*the real objective is not to enable people to participate in planning, but to enable powerholders to "educate" participants"*.
- The levels of "tokenism" (i.e. rungs 3, 4 and 5) represent a limited participation of the people consultations and informing of citizens takes place, but there is no chance to change the status quo by the citizens, since the policy decision-making is absolutely under the control of the authorities.

[150] Ibid 149

[151] EUKN (n.d.), "Public Participation in the Development Process Obtaining insight in European experiences", Available at: http://www.eukn.eu/fileadmin/Lib/files/EUKN/2013/Factsheet.pdf

[152] Armitage, A. (1988). Social welfare in Canada: ideals, realities and future paths. 2nd edition. Toronto: McClelland and Stewart.

[153] Peter Oakley and David Marsden (1987): Approaches to participation in rural development. Geneve : ILO, 1987

[154] Arnstein, S. R. (1969) A Ladder of Citizen Participation. AIP Journal, pp. 216-224.

[155] Ibid 154

- The highest levels (partnership, delegated power, citizen control) of the ladder include the real citizen power which represent not only influence to decision-making but also the fact that citizens have a control over the process.

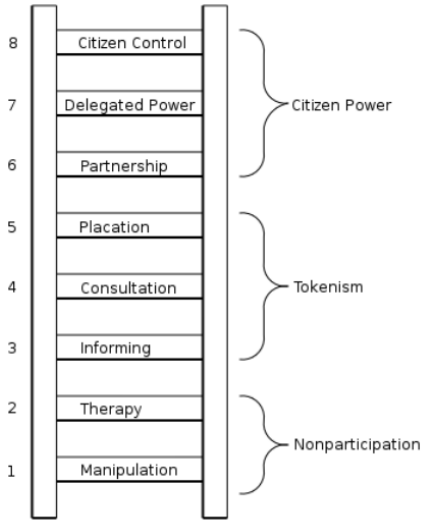


Figure 11. Arnstein' s Ladder of Participation[156]

Another model that describes the different levels of public participation distinguishes between **(i)** simple access to information for citizens, **(ii)** consultation with citizens, and **(iii)** active participation and engagement. The increasing level of involvement of citizens and influence on policy making is illustrated in the figure below[157]:

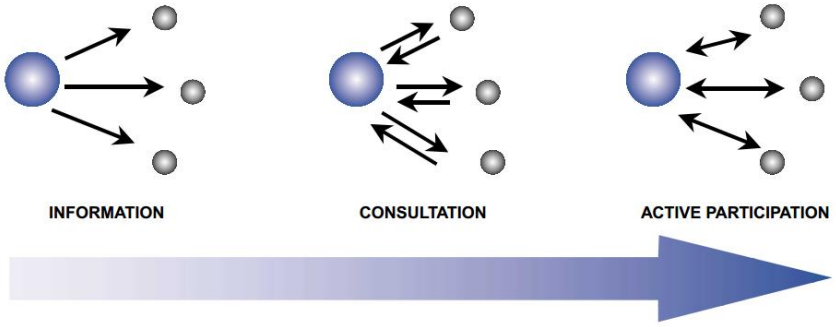


Figure 12. Level of interaction based on the citizens' participation type

Access to **information** is the first but a crucial base for the whole participation process.. **Consultation phase** is a very critical phase and approach for the process. This reactive phase either occurs either in a one-way direction where certain groups/ individuals from citizen are asked to express their opinions, or reciprocally where well-informed citizens engage themselves in the process or request to be consulted. Proceeding, **active involvement** shapes through the **open dialogue, influence and co-decision** processes. The success of all the stages of engagement relies on effective collaboration and collective decision-making[158].

[156] Ibid 154

[157] OECD (2001), "Citizens as partners: Information, consultation and public participation in policy making"

158 EUKN (n/a). Public Participation in the Development Process Obtaining insight in European experiences, http://www.eukn.eu/fileadmin/Lib/files/EUKN/2013/Factsheet.pdf

Why is public participation important?

The citizen engagement and participation in public decision-making has the capacity to lead to better and more sustainable public decisions since these are developed in close collaboration with the citizens themselves[159]. It can also contribute in higher satisfaction rates among citizens[160]. In addition, according to Jeffrey Henig[161], citizens' participation offers resources in knowledge, information, creativity, commitment, and energy which are all important aspects for the overall success of a policy or measure. It's also relevant that the experience of participation leads to further participation in the future[162] which, in turn, results in a more sustainable public decision-making.

The European Urban Knowledge Network summarises the benefits of public involvement by identifying several added value aspects, as presented below [163]:

- It includes the promise that the public's contribution will influence the decision.
- It promotes sustainable decisions by recognising and communicating the needs and interests of all participants, including decision makers.
- It facilitates the involvement of those potentially affected by or interested in a decision.
- It seeks input from participants in designing how they participate.
- It provides participants with the information they need to participate in a meaningful way.
- It communicates to participants how their input affected the decision.

Key features of a successful community-based initiative

The UN Habitat toolkit "Building Bridges", suggests that the key success factors for community initiatives can be summarised in the following **5 pillars for effective collaborative processes**. Although these points constitute somewhat generic attributes, they are crucial for the success and long-term sustainability of public participation and engagement[164].

1. **Diversity** (i.e. in background, experience, culture, education and other socio-economic factors among community members).
2. **Equity** (i.e. equal inclusion and representation of all sections of a community).
3. **Openness and transparency** (i.e. participation process is open and communicated to all, sharing information and ideas willingly and promptly).
4. **Accountability** (i.e. offering authority and assigning responsibilities to a community).
5. **Trust** (i.e. level of trust that community members are able to achieve with each other and with those who initiated the community project, dictates the quality of their interactions and the results they achieve)

In addition, **leadership training** and **targeted capacity building** actions are also very important towards the successful development, support and uptake of any community[165].

[159] Breuer, D., 1999. Community Participation in Local Health and Sustainable Development: a working document on approaches and techniques European Sustainable Development and Health Series: World Health Organization, pp: 9-10.

[160] Moriarty, Jo., et al., 2006. Practice Guide: the participation of adult service users, including older people, in developing social care: Great Britain, pp: 16.

[161] Henig, J, 1982. Neighbourhood Mobilization: Redevelopment and Response, Rutgers UniversityPress, 1982.

[162] Carole Pateman (1970): Participation and Democratic Theory. Cambridge University Press

[163] Ibid 151

[164] UN Habitiat (n.d.), "Building Bridges between citizens and local governments to work more effectively together: Part 1 Concepts and strategies",

[165] Dreier, P (1996), "Community Empowerment Strategies: The Limits and Potential of Community Organizing in Urban Neighborhoods", *Journal of Policy Development and Research*, Volume 2, Number 2

Basic steps for building community initiatives

According to the European Institute for Public Participation a successful citizens' participation initiative needs be built upon the following aspects:

- A **clearly defined framework for public participation** that will clarify to what degree the outcomes of a participation process will be considered by decision-makers.
- A **set of adequate methods of public participation** that should take the form of easy to use tools with real added value for the public participation processes.
- A **consistent and systematic evaluation** of the participation process that will aim to reveal aspects such as the effectiveness and efficiency of the process, and the quality of decisions made[166].

Regarding the dynamics within a community initiative itself, it seems that the following aspects should be considered for setting up a successful community-based initiative[167].

1. **Understanding the insiders' point of view**. In order to achieve a successful collaboration within a community, all actors need to understand and take into account the perspective of all the community members (e.g. neighbourhood members, experts, public authorities, etc.).
2. **Community organisation**. A key question is who will represent the community. It is very often the case that the most empowered members of a community take up this role. However, this should be done in a way that their views are representative of the entire community. Overall, community organisation has to be based on the principles of empowerment, community competence and capacity and active participation, so that it properly serves the needs of its members.
3. **Community participation**. Community building requires community participation which is meaningful and leads to people being involved in decision making processes and sharing responsibilities. Community participation can be triggered by a number of factors such as: feeling a sense of community, seeking an active role in bettering their lives, etc. Regardless of people's motivation for participation, the community initiators should respect them and provide the necessary means to meet them.
4. **Capacity building**. Capacity building includes the development of skills, resources and structures within a community. It is directly linked with fostering shared knowledge and should an integral part of a community engagement and building process.
5. **Community empowerment**. Community empowerment is key towards enabling people to gain greater control over the issues that affect them. Empowerment actions can target both the individual and the community level and, usually, means the provision of tools and resources that enable a community to act based on its own interests and priorities.

Other important aspects in the process of public participation, community engagement and community building are defined by the following set of questions.

1. Who should participate?
2. What tools facilitate collaboration and communication?
3. At which stage should people participate and how much influence and authority will they have?

Who should participate?

In principle, participation should be addressed to everyone and support the open-to-all approach and mindset. Thus, such a process should possess the means to mobilise everyone.

[166] European Institute for Public Participation (2009), "Public participation in Europe; An international perspective", available at: http://www.partizipation.at/fileadmin/media_data/Downloads/Zukunftsdiskurse-Studien/pp_in_e_report_03_06.pdf

[167] Ibid 149

What is also crucial is to involve all different types of stakeholders so as to address their needs as well. In particular, it is crucial to involve socially excluded groups such as ethnic minorities, impaired people, elderly, people with low literacy, etc. that may otherwise face difficulties in expressing their needs and requirements. However, it is possible that depending on the type of participation, certain groups might be prioritised[168].

The CHEST project identifies 4 generic groups of stakeholders regarding participation in collaborative processes on societal tasks[169]. These are described below.

Table 1. Generic groups for involvement in a participatory process

Group	Description
Main target groups	The beneficiaries of the expected social impact are directly involved (e.g. members of a neighbourhood, users of public transport, etc.)
Indirect users	Apart from the main beneficiaries, groups indirectly affected by the social impact of the project can also be involved.
Multipliers	Involvement of people who can act as multipliers for the project.
Expert communities	Involvement of experts in the participatory process.

What tools facilitate collaboration and communication?

Regarding the tools and methodologies that can enable collaboration within such processes, these range from simple collaborative exercises (e.g. role playing, gamifications tools, tests, mapping exercises, etc.)[170],[171] to the organisation of events and the setup of physical open spaces that can support them. The latter can be achieved through the principles of **Living Labs, Hack-days and Co-creation workshops** that are described in more detail in Section 7.1 of this report.

In addition, the Social Capital Building Toolkit of the Harvard Kennedy University identifies several actions that are suitable for communication and collaboration, based on the size of the community.

- **Within small community groups**, individuals can get to know the others fairly well, which makes trust in others higher, and conversations often more open. As such, simpler tools are foreseen for this type of groups.
- **Large community groups** may need effective rules and facilitations to ensure that group activities are productive. They may also need to address obstacles to participation: e.g., public transportation access, work schedules, etc. Smaller groups may encounter some of these obstacles as well, but it is often easier for them to schedule or manage around this[172].

[168] Lindenau, M. & Böhler-Baedeker, S. (2014) Citizen and stakeholder involvement: a precondition for sustainable urban mobility, Transportation Research Procedia 4 (2014) 347 – 360 pg 350

[169] CHEST project (n.d.), "D5.1: Social Innovation and Ethical Guidelines", CHEST project - Collective enHanced Environment for Social Tasks

[170] Wates, N. (2000), "The community planning handbook", Earthscan Publications, Ltd. (The toolkit includes 53 methods for community participation)

[171] UN Habitiat (n.d.), "Building Bridges between citizens and local governments to work more effectively together: Part 2 Toolkit",

[172] Sander, T.H. and Lowney, K. (2006), "Social Capital Building Toolkit", Saguaro Seminar: Civic Engagement in America, John F. Kennedy School of Government, Harvard University, Available at: https://www.hks.harvard.edu/saguaro/pdfs/skbuildingtoolkitversion1.2.pdf

Overall, as the European Institute for Public Participation suggests, there are already several toolkits and online tools that practitioners can consider[173].

Timing and influence of public participation

The Participation Matrix that is illustrated in the following figure provides a good level of explanation regarding the level of citizens' involvement based on the type of partnership and level of authority that a community has as well as on the stage of a project.

This Matrix identifies 4 levels of participation (information, consultation, partnership, self-help) and 4 stages of project processes (initiation, planning, implementation, maintenance) that help to define the type of authority a community will have based on these two aspects.

		Project stages			
		Initiate	Plan	Implement	Maintain
Level of community involvement	**Self Help** Community control	Community initiates action alone	Community plans alone	Community implements alone	Community maintains alone
	Partnership Shared working and decision making	Authorities and community jointly initiate action	Authorities and community jointly plan and design	Authorities and community jontly implement	Authorities and community jointly maintain
	Consultation Authorities ask community for opinions	Authorities initiate action after consulting community	Authorities plan after consulting community	Authorities Implement with community consultation	Authorities maintain with community consultation
	Information One way flow ofinformation Public relations	Authorities initiate action	Authorities plan and design alone	Authorities implement alone	Authorities maintain alone

Figure 13. Participation Matrix[174]

4.2 Community approaches in urban mobility developments

Urban transport and mobility planning is often an issue of controversy since its developments can affect the daily lives of many people. That said, it is logical that public acceptance is also sought after in this area with a view to increase the durability of relevant policies and measures.

According to the European Handbook for Participation that is developed by URBACT[175], there are three main targets for public participation in urban developments:

i. To improve urban management
ii. To "democratise" democracy, and
iii. To foster social cohesion.

[173] Ibid 166
[174] Wates, N. (2000), "The community planning handbook", Earthscan Publications, Ltd.; in Urbact (n.d.), European handbook for participation.
[175] URBACT (n.d.), "European Handbook for Participation", available at: http://www.eukn.eu/fileadmin/Lib/files/EUKN/2013/European_Handbook_for_Participation.pdf

By allowing citizens' requirements, demands, opinions and recommendations to be submitted, the process of problem estimation and urban management becomes more efficient since this cooperation based model can ensure the durability and acceptability of relevant urban policies and measures. Participation can also drive urban democracy since it increases openness and transparency of such processes. Finally, participation in urban planning and developments can build social ties and offer a sense of inclusiveness in a society.

In turn, the fact that the quality of planning for transport and mobility can be enhanced by placing the public within the ecosystem, has been acknowledged by experts in the field[176]. The importance of citizen participation in sustainable urban mobility planning is also obvious via the central role that is given to citizens' engagement in the development of the **SUMPs**. In further detail, these plans should foresee the citizens' involvement in several planning phases such as in the identification of transport and mobility problems, in specifying the vision and objectives, in the strategy development process, in suggesting possible solutions and during the identification and evaluation of those solutions[177].

In fact, the CH4LLENGE project has developed a thorough participation manual named ***"Actively engaging citizens and stakeholders in the development of Sustainable Urban Mobility Plans"*** which offers detailed **guidance on how citizens' participation should be approached with regards to sustainable urban mobility planning**[178].

Overall, participation in urban mobility planning has been gaining ground during the last years with significant participatory and inclusive activities taking place. Of course, these processes vary across countries; from countries with formal participatory procedures to countries with no such participatory mobility planning processes[179]. For instance, many public decision-making programmes (e.g. DCLG in UK[180]) have been encouraging citizens to re-connect with local authorities, build communities and become active citizens[181,182].

The CIVITAS ELAN project provides an interesting suite of lessons learnt and good examples of improving the community approaches of cities. The project outcomes demonstrate how cities can build or improve their skills to engage citizen or empower the existing approaches to include more citizens. In sum, the project's findings indicate the following **lessons learnt with regards to citizen engagement in the field of mobility**[183]:

- Experience has shown that citizen participation is most effective when stakeholders and citizens are asked to contribute in identifying needs, problems and possible solutions, and when they can provide local information and knowledge.
- Innovative techniques have proved to be effective, and are also appreciated by stakeholders, when they are properly organised and enable people to grasp the message quickly and avoid failures.
- Consultation should be based on good provision of information to all involved actors.

176 Lindenau, M. & Böhler-Baedeker, S. (2014) Citizen and stakeholder involvement: a precondition for sustainable urban mobility, Transportation Research Procedia 4 (2014) 347 – 360 pg:349

177 Lindenau, M. and Böhler-Baedeker, S. (2013), "Why is Participation a challenge in sustainable urban mobility planning?", CH4LLenge project

178 Lindenau, M. and Böhler-Baedeker, S. (2016), "CH4LLENGE Participation Manual – Actively engaging citizens and stakeholders in the development of Sustainable Urban Mobility Plans", CH4LLenge project

179 Ibid 177

180 DCLG (Department for Communities and Local Government) (2006a) Strong and Prosperous Communities (London: DCLG) and DCLG (Department for Communities and Local Government) (2006b) Promoting Effective Citizenship and Community Empowerment: A Guide for Local Authorities on Enhancing Capacity for Public Participation (London: DCLG).

181 Blunkett, D. (2003) Active Citizens, Strong Communities. Progressing Civil Renewal (London: Home Office)

182 Marinetto, M. (2003) Who wants to be an active citizen?, Sociology, 37(1), pp.103–120.

183 Marega, M., van Aken, E., Braun, M., Kontić, V., Delanghe, P., Pavić-Rogošić, L., Štěpnička, J., São Martinho, B., Engels, D. (2012), "Citizen Engagement in the field of mobility: Work and Lessons Learnt related to Citizens' Engagement", CIVITAS ELAN project, http://civitas.eu/sites/default/files/citizen_engagement_in_the_field_of_mobility_2.pdf

- The use of both face-to-face and online means (e.g. social media) of communication seems to be necessary.

In addition to real-life examples of citizen participation in sustainable urban mobility planning processes, several handbooks and toolkits have been developed with a view to offer guidelines on the successful realisation of similar processes.

- The **European Urban Knowledge Network (EUKN)** has prepared a multilevel urban governance handbook in order to stimulate practical and integrated participatory methods in urban planning[184].
- UN Habitat has developed **two toolkits for local governments** that aim to develop an integrated, participatory, long - range development plan to address more immediate problems within the local community. The toolkits contain strategies and tools to increase collaboration and participation within local governments[185].
- The GUIDEMAPS project handbook named **"Successful transport decision-making - A project management and stakeholder engagement handbook"** that provides clear instructions for different engagement methods, tools and checklists, covering different modes of transport[186].
- The **URBACT European Handbook on Participation**[187].
- The CIVITAS ELAN project provides in its report **"Citizen Engagement Shelf"**[188] a suite of good practice cases, relevant theoretical and methodological materials on stakeholder/citizen participation (e.g. handbooks, guidelines, toolkits, books, etc.) aimed to raise capacities and skills of people when planning and implementing citizen engagement actions.
- The CIVITAS VANGUARD Project handbook **"Involving Stakeholders: Toolkit on Organising Successful Stakeholder Consultations"** that provides a structured six step strategy for citizen participation[189].

The abovementioned documents can provide important guidelines for the selection of different community participation approaches and tools for urban public participation process. Thus, they are valuable assets for local authorities that seek to enhance their citizen-led decision-making processes in the field o urban transport and mobility.

Considering all the above-mentioned points it becomes obvious that public participation within urban transport and mobility planning is currently addressed not as a completely novel concept, but rather as an established concept with new dimensions such as efficiency, level of participation, empowerment, etc. that have the potential to boost to the overall sustainability of urban mobility decisions.

184 Mart Grisel & Frans van de Waart (eds), 2011. Multilevel Urban Governance or the Art of Working Together: Methods, Instruments and Practices. European Urban Knowledge Network https://www.mi-is.be/sites/default/files/documents/eukn-publication_multilevelgov._0.pdf

185 Ibid 164, 171

186 GUIDEMAPS project (n.d.), "Successful transport decision-making - A project management and stakeholder engagement handbook" http://www.eltis.org/sites/eltis/files/trainingmaterials/guidemapshandbook_web.pdf

187 Ibid 175

188 CIVITAS ELAN project (2012), "Citizen Engagement Shelf"; available at http://www.civitas.eu/sites/default/files/documents/file/citizen_engagement_shelf.pdf

189 CiViTAS VANGUARD Project (2011), "Involving Stakeholders: Toolkit on Organising Successful Stakeholder Consultations", CiViTAS Handbooks

4.2.1 Common public participation and citizen involvement challenges in urban mobility developments

Achieving an efficient public participation in urban developments and especially in mobility and transport planning does not come without challenges[190]. The main challenges comprise of the limited opportunities of citizens to participate as well as of traditional top-down functioning of mobility innovation ecosystems that, often, seem to overlook the insights offered by the public.

A survey of the CH4LLENGE project among 31 cities regarding their participation practices in urban mobility planning revealed that, although, citizens are involved in many cases in the identification of transport and mobility problems, their participation is rarely transferred to further planning and decision-making stages. In addition, it is interesting to highlight that citizens' interest in participating in sustainable mobility planning processes seems to increase as this participation progresses towards further and more high-level stages (i.e. low interest in early stages and high interest in later stages)[191].

Overall, in order to understand how to efficiently empower the collective decision-making process in urban mobility, it is crucial to understand the barriers on public participation. The following table that was prepared by The European project "CH4LLENGE – Addressing Key Challenges of Sustainable Urban Mobility Planning", presents an overview of common barriers on public participation and strategies on how to avoid them.

Table 2. Common barriers in participation processes in the field of sustainable urban mobility planning and how to overcome them[192]

Barriers	Description	Strategies to overcome barriers
Aim and purpose of participation are unclear	**Clarify the aim of the participation** - to understand the needs of certain groups (e.g. people with mobility difficulties, etc.) - to draw on lay or expert knowledge in developing a transport plan - to gather information about travel experiences	**Determine**: *who should be involved* - people who represent the demographic make-up of the city - members of groups if the aim is to understand needs of specific groups *what form of participation is appropriate* - forums, questionnaires or interviews for gathering experiences of travel, question and answer sessions for helping to explain decisions, etc. *when to involve* - explain how public or stakeholder involvement influences decisions. - show people that their participation makes a difference.
Accessibility of participation	**Barriers to participation occur**: - if people cannot physically reach a venue - if information is not provided in a format that can be clearly understood	**Consider aspects such as:** - can people attend after work? - is there provision for children at events? - is there wheelchair access? - what is the availability of transport to the venue? - how is material distributed? (consider e.g. that online questionnaires are cost effective

190 Bickerstaff, K. Walker, G. (2001): Participatory Local Governance and Transport Planning. Environment and Planning. 33, pp. 431-451

191 Ibid 177

192 Ibid 177

		and have broad reach, but may exclude some groups of people) - how are opportunities for participation publicised? - is information presented in clear language? - should information should be translated?
Public reluctance to engage in participation	- Groups that face forms of social exclusion or discrimination may have little trust in formal participation. - People might feel they have little free time. - People might feel that their word does not count.	It is probable that interest will increase to the extent that people see the relevance to them of participating, and feel that the processes are transparent and worthy of their trust.
Institutional barriers to participation	- Limitations in institutional resources, and difficulty in securing resources required for participation. - Institutional cultures which place low priority on participation.	Might lead to poorly planned participation or a failure to take seriously the results of participation (perhaps because of a view that the public are poorly informed
Limits of participation	- Lack of awareness about what participation can achieve.	- Avoid claims that respondents represent the public when only some members of the public, or some stakeholders are involved. - Avoid claiming that the public has expressed a view, when a substantial disagreement exists among the public.
Dissatisfaction with the involvement process	Forms of participation which members of the public consider insufficient.	- Identify stakeholders and groups to be involved carefully so that no one feels left out. - Communicate with them regularly and discuss their involvement and influence. - Take action as early as possible and take the concerns of the public seriously.

4.3 Examples of community approaches in urban and peri-urban developments

Duisburg 2027 – Long term planning

Case: The German city of Duisburg is a shrinking city with an outdated land use plan that is facing decreasing public finance and increasing ecological demands. Thus, the local community has developed an alternative way of dealing with their city challenges. In the Duisburg 2027 project they combined the formal procedure of creating a new land use plan, with the informal process of

developing an urban development strategy by integrating the citizens[193].

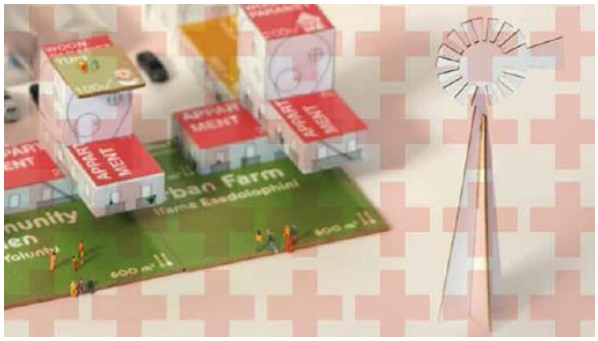
Community Approach Method: To approach their challenges and issues Duisburg chose the method: “Future Management”, in which five questions are highlighted:

- How do we create our future? (Strategy)
- What is the probable future? (Assumptions)
- How could the future surprise us? (Discontinuity)
- How do we want our future to look like? (Vision)
- What is the possible and creatable future? (Opportunities)

They launched forums that were visited by 700 interested citizens. In addition, seven district citizen forums were founded. In the district forums, 27 workgroups were organised, in which each participant was able to look at his or her district with a planning perspective. Under the name "Duisburger Ideas", the ideas of the forums and results of the youth participation had been exhibited first in the seven city districts, and later from April 19th until April 30th 2010 in the Forum Duisburg.

Impact: The results of the forums influenced the development of the **Strategy of Living and Working**. The forum results were included in the strategy planning as “Duisburger Ideas".

Play the City Organization - Amsterdam[194,195]



Case: With a view to change the stakeholders’ engagement process, “Play the City Organisation” designs physical games as a method for collaborative decision making and conflict resolution for cities and organisations. In Amsterdam, the engagement game “Play Noord” was organised with the participation of 100 stakeholders in 4 game sessions, aiming to create an alternative masterplan for Overhoeks in Amsterdam Noord.

Community Approach Method: The following three steps explain the methodology of gaming application to advanced urban questions:

1. **Stakes and Stakeholders**: identifying key stakeholders (both visible and hidden), field survey and personal interviews on challenges, developing a map of stakeholders relating powers and interests of various parties, converting the outcomes of this research into a “Game Concept”
2. **Game**: seeking consensus amongst conflicting interests, testing alternative scenarios and implement decisions during the Game to prepare for reality
3. **Action**: negotiating in a unique way and reach decisions collaboratively, analysing and translating insights and opportunities into innovative strategies and action plans for your real-life interventions.

Impact: The introduction of such an innovative method into an ongoing legal planning process was a novel step. By 2014, the legal plan was altered. An incremental development strategy

[193] http://www.duisburg.de/micro2/2027/englisch/dir-3/102010100000431259.php

http://www.eukn.eu/eukn-research/policy-labs/public-participation-in-the-development-process/case-studies/duisburg-2027-long-term-planning/

[194] https://www.playthecity.nl/

[195] Image: https://www.tudelft.nl/en/architecture-and-the-built-environment/research/research-stories/archive/2014/city-game-play-the-city-helps-to-come-up-with-solutions-to-urban-problems/

was internalised by Project Bureau Noordwaarts.[196] The gaming method had been implemented for other large-scale projects in Amsterdam, Istanbul, Brussels and Cape Town.

The Living Street Project in Gent [197,198,199]

Case: The Living Street Project is the result of another project initiated by the City of Ghent. In 2012 the City asked a group of citizens, entrepreneurs and civil servants to imagine a sustainable future for their city. Through the vision of their agenda, some activities such as building car-free zones, rapid transit bike lanes, public transit, and neighbours talking in the street have started. The community realised that just a vision is not enough to fulfil their approach, so they launched concrete experiments, such as the Living Street Project (i.e. "Leefstraat"). The **Lab van Troje**, a local non-profit organisation in Ghent, Belgium is responsible for this initiative.

Community Approach Method: The Lab van Troje as a multi-stakeholder network aims to connect collaborating citizens, businesses, city services and organisations in Ghent to bring about a new way of city governance and new ways of co-creation. The community takes the approach of every living street is different, so the wishes and needs of its residents. They discuss the challenges in their street, look for solutions, and then have the opportunity to work on realising their own ideas. Thus, the approach takes each street as a n experiment area to demonstrate that co-creativity, co-decision making can have a concrete outcome

Impact: Living Street led the structural and governance practices in more than 50 Living Streets in Ghent and has given inspiration to many other cities.

[196] https://www.playthecity.nl/page/8983/play-noord

[197] http://www.leefstraat.be/en/

[198] Image: http://www.participatorycity.org/news/2015/9/2/16-streets-transformed-into-collective-spaces-by-residents

[199] https://www.childinthecity.org/2016/04/15/no-cars-allowed-the-ghent-living-street-experiment/

5. Sustainable Urbanisation and Sustainable Urban Planning

While people are getting more connected, cities become more complex and urban challenges diversify. Therefore, the need for an increased focus on sustainable urban planning and developments is increasing. In order to start with it is crucial to define and understand the aspects of "sustainability" and "sustainable development", which have become the most used words in last decades in the European policy and research context, as a response to the growing concern on the impact of urban planning practices on a number of societal issues (e.g. environment, health, etc.).

Sustainability is a process that negotiates between the ecological, social and economic dimensions of an ecosystem with a view to meet the human needs while enhancing and ensuring the ecosystem's future[200]. The organising principle of sustainability is the term **sustainable development,** which is seen by many disciplines as meeting the needs of human beings and increasing the quality of life, while preserving the life-support systems in the whole ecosystem. It is obvious from these two definitions that a development without people engagement carries a risk to raise the question of non-sustainability since people and society factors play a critical role.

Furthermore, **urbanisation** is one of the most important forces to drive the global economy. World Bank data shows that urbanisation is a very strong indicator of all aspects of productivity growth over the long run. However, at the same time, urban developments can be associated with numerous environmental damages such as air pollution, greenhouse gases, waste and degradation of land and ecosystems. The difference between well managed urbanisation and uncontrolled urbanisation is huge for people's quality of life and the productivity of cities[201].

As such, **sustainable urbanisation and sustainable urban developments** that have the potential to satisfy social demand, respect technical capacity and to facilitate fund mobilisation are required in order to rethink urban planning in the context of developing cities[202].

5.1 From Sustainable Urbanisation to Urban Resilience

A transition to a more sustainable urban reality is on the top of the global agenda as cities are at the forefront of global socio-economic change. Cities of all sizes are expected to continue to grow in number, with an estimated 2.5 billion people added to the world's urban population by 2050. Sustainable urbanisation is a disputed term in the sense that it is highly influenced by local urban policies and practices, and due to this local context-setting, it is difficult to identify and adapt a universal definition of sustainable urbanisation. However, most scholars agree that **sustainable urbanisation is a cross-cutting concept**. In the literature, urbanisation, sustainable development and economic growth are often described as going hand-in-hand in order to achieve successful city development.

According to the STAP policy brief, **sustainable urbanisation is by definition multidisciplinary, encompassing water, energy, food, transportation, land, biodiversity, chemicals, construction, and climate change issues**. In addition, the policy brief suggests that solutions towards sustainable urbanisation should result from the combination of these elements and that this integrated multidisciplinary approach is critical for success.

[200] Planning, Development and Management of Sustainable Cities, 2015

[201] Xing Quan Zhang (2015). The trends, promises and challenges of urbanisation in the world

[202] Criqui, L. (2015), "Infrastructure urbanism: Roadmaps for servicing unplanned urbanisation in emerging cities", *Habitat International,* Vol. 47, pp. 93-102

Furthermore, the figure below illustrates the inputs, sectors, impacts and outputs of sustainable urbanisation and puts the main innovation actors of a city at the heart of sustainable urbanisation, suggesting that a close consultation with all of them is necessary[203].

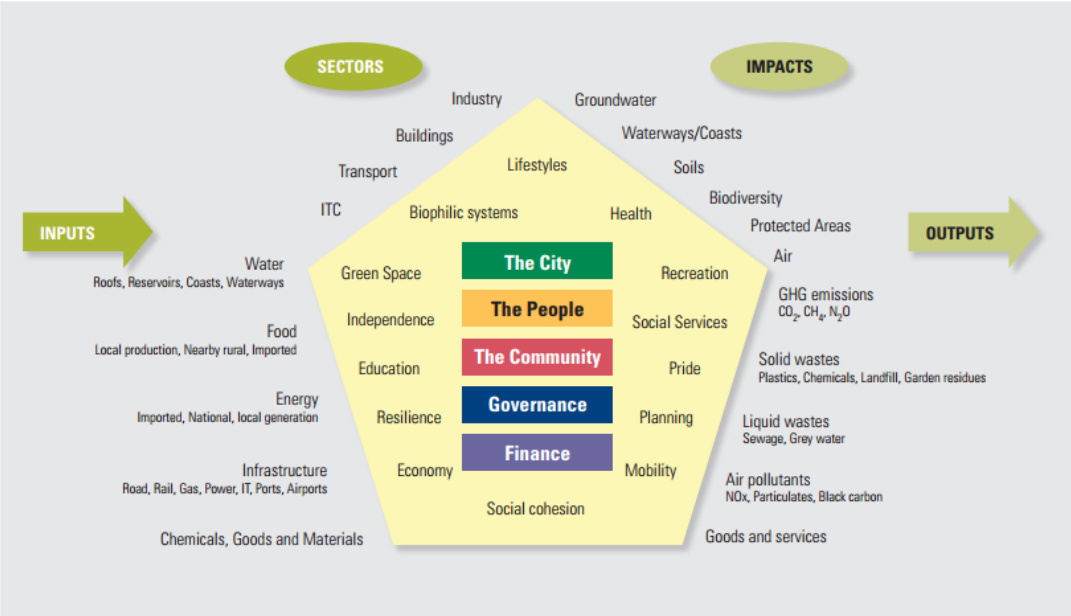


Figure 14. The ecosystem and process of sustainable urbanisation[204]

Overall, cities are, due to their social, economic and environmental dominance, transformative agents in the pursuit for sustainable development. However, this can happen only if their spatial arrangements provide for the prosperity and safety of all their residents.[205] The UN-Habitat argues for a new definition for sustainable urbanisation. **This new vision for sustainable urbanisation calls for the alignment of public and private decision-making through transparent and participatory processes.** These start with the articulation of national urban policies which, in turn, translate downward to regions, cities and neighbourhoods into spatial guidance for planning and development.

Concerning mobility, the sustainable agenda has proposed policies and tools that could limit climate change trends, such as the development of options for mass transit, the use of cleaner fuels, the promotion of active/non-motorised transport (walking and bicycling), the use of climate proofing transit infrastructure, the promotion of policies of congestion pricing and other forms of control and demand management for private vehicles[206].

Urban resilience

Over the 2000s, urban resilience has become a crucial notion in the international development discourse and has emerged as one of the core principles of sustainable development or even

[203] STAP (The Scientifc and Technical Advisory Panel of the Global Environment Facility). (2014). 'Sustainable Urbanization Policy Brief: Proliferation of Urban Centres, their Impact on the World's Environment and the Potential Role of the GEF. Report to the 5th GEF Assembly, México May 2014'. Global Environment Facility, Washington, DC.

[204] Ibid 203

[205] http://citiscope.org/habitatIII/commentary/2015/09/un-habitats-vision-sustainable-urbanization-good-not-enough

[206] UN-Habitat (2015) Guiding Principles for City Climate Action Planning. Nairobi: UN-Habitat.

replacing the notion of sustainability[207]. The core concept of resilience has become one of the most contested topic that bridges social to natural world, used also in contemporary planning research[208].

Overall, resilience of cities has also gained traction as a predominant element in the urbanisation sphere, especially for cities[209], including physical, economic and social implications. In particular, it is framed as the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience. It should be noted that resilience "implies adaptation rather than returning to a pre-crisis state"[210].

As the STAP policy brief puts it, the majority of the population in a city drives up the demand on ecosystem services, while the concentration of people in cities accelerates and intensifies the challenges (e.g. land degradation, etc.). As such, cities are ideal laboratories for identifying and enhancing coordinated action to promote resilience of human development and environmental protection efforts[211].

In fact, the use of the urban resilience notion has been extended from environmental events to social and economic crises. In particular, in 2015 and 2016 the theory of resilience has been a main theme across six major global agendas of United Nations: the Sendai Framework for Disaster Risk Reduction 2015-2030, the Addis Ababa Action Agenda, the Sustainable Development Goals, the Paris Agreement on Climate Change, the World Humanitarian Summit Commitments to Action and the New Urban Agenda [212].

5.1.1 Natural and socioeconomic challenges in the cities of the 21st century

In the last decades, people are concentrated more and more in the cities (i.e. four out of five live in urban areas) and, thus, the world becomes predominantly *urban*. A majority of urban areas of the world has grown most significantly since the decade of 1950s.

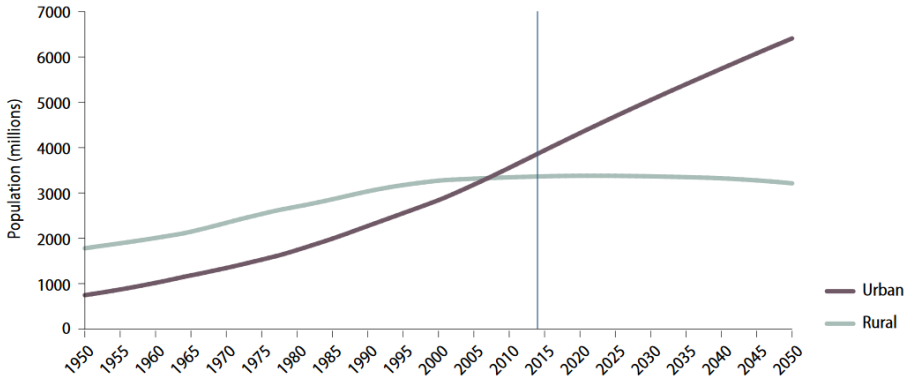


Figure 15. Global urban and rural population(1950-2050)[213]

Cities produce 70% of the global GDP, greenhouse gas emissions and global waste, and the 60% of global energy consumption. Going beyond qualitative data that frame cities as engines of economic growth and consumption, cities are the areas of social inclusion that provide

[207] Davoudi, S. (2012) Resilience: a Bridging Concept of a Dead End?, *Planning Theory & Practice*, 13(2):299-307
[208] AESOP 2013 Conference for Young Academics, http://www.aesop-youngacademics.net/meetings/en/2013/02/26/readabout/resilience
[209] Ibid 203
[210] Fainstein, S. (2014) Resilience and Justice, International Journal of Urban and Regional Research, 157-167.
[211] Ibid 203
[212] United Nations (2017), "Trends in Urban Resilience", 2017.
[213] United Nations (2014), "World Urbanisation Prospects", ISBN 978-92-1-151517-6

employment and better social and economic opportunities for all. It is in cities that the upward social mobility trends have been traditionally noted in the four postwar decades, when a vast majority of low income groups were transformed to middle classes. It is there that the needs for housing, urban infrastructures and social services are growing and met.

However, natural challenges from human activity such as unplanned urbanisation, or from physical disasters like earthquakes, floods, disease outbreaks, are multiple shocks that cities have been dealing with. In addition, cities are deeply vulnerable to the effects of climate change, with coastal flooding threatening the well-being of countless communities[214]. Climate change is a key concern for urban areas, as they encounter serious problems related to climatology. Climate change is framed by UNFCCC as a change in the global physical environment provoked by human activity or "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods[215]".

In addition, it is also cities that have been hit especially hard by financial and socioeconomic stresses such as high unemployment, inefficient public transportation systems, food and water shortages, deficit of housing stock and the parallel wave of mortgage foreclosures, the shrinking incomes and the falling revenues. Urban areas are currently struggling with the impacts of the crisis of 2008. In that framework, it is in cities that austerity '*bites*'[216]*, in an unequal way and in a way that* mostly affects the most vulnerable social groups.

Cities are emerging as the privileged sociospatial terrains where the key challenges for sustainable development emerge and have to be confronted. In that context, the need for a substantive research on sustainable urban planning and development is increasing.

To this end, several initiatives and networks operate at the EU and the global level, with a view to promote and support sustainable urban developments. Some major relevant initiatives are the following:

- **URBACT**[217]
- **Urban Development Network (UDN)**[218]
- **International Urban Cooperation (IUC)**[219]
- **100 Resilient Cities (100RC)** [220]

5.2 Sustainable urban mobility planning and developments

The field of transport and mobility has been strongly influenced by the push towards sustainability. In the EU, emissions from transport make up a significant, and increasing, share of total greenhouse emissions.[221] Without major changes to transportation habits, systems, and policies, achievement of EU long-term sustainability and climate mitigation goals is impossible. For this reason, transportation and mobility planning focus increasingly on sustainability and how to incorporate this in the planning process[222].

[214] Ibid 206

[215] United Nations, 1992, United Nations Framework Convention on Climate Change, https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

[216] Jamie Peck (2012) Austerity urbanism, City: analysis of urban trends, culture, theory, policy, action, 16:6, 626-655, DOI: 10.1080/13604813.2012.734071

[217] http://www.urbact.eu/urbact-glance

[218] http://ec.europa.eu/regional_policy/en/policy/themes/urban-development/network/

[219] http://ec.europa.eu/regional_policy/en/policy/cooperation/international/urban/

[220] http://www.100resilientcities.org/cities/

[221] http://ec.europa.eu/eurostat/statistics-explained/index.php/Greenhouse_gas_emission_statistics

[222] Banister, D. (2008), "The sustainable mobility paradigm", *Transport Policy*, 15, 73-80.

The need for sustainable developments with regards to urban planning has been well recognised by the EC. In fact, in 2007, the EC published the Green Paper on Urban Mobility which has identified **five challenges** faced by cities that need to be addressed towards the development of sustainable urban mobility.

1. Congestion.
2. Dependence of fossil fuel.
3. Increase in freight and passenger flows.
4. Accessibility to the urban mobility system.
5. Safety aspects within the urban mobility system[223].

Central to sustainability in transportation are four pathways, namely: **(i)** substitution of travel, **(ii)** shift to non-car modes, **(iii)** distance reduction, and **(iv)** improved efficiency through technological innovation. [224] The planning system has influence on these pathways, and the ultimate success of transportation and mobility sustainability at many levels. Taking advantage of these pathways calls for changes to urban structures, infrastructure, policy, lifestyles and habits.

Typically, areas and activities that can be considered for affecting sustainable urban transport include a mixture of alternative options as described below:

- Walking and cycling measures.
- Efficient public transport systems.
- Demand management also with the implementation of shared mobility options.
- Behavioural change measures.
- Exploitation of technological progress.
- Freight transport in urban areas[225].

An indicative list of successful urban mobility solutions that have been implemented at an international level, is provided by the EU project Viajeo Plus.[226]

The role of citizens is also very important in the frame sustainable urban transportation. Their acceptance of current situations or of proposed changes drives the success of implementation. As citizens are asked to accept new systems and policies, to change their daily habits and transportation choices, attention must be given to targeted action to enlist their support and desire for the new options. Here, long-term engagement and thorough education on the value of their individual actions is vital[227].

Trends and models in urban mobility developments

In the case of transportation planning, the traditional methods are characterised by technical analysis with modelling of economic and congestion data, large scale, focus on speed and travel time, and focus on personal vehicles.[228] A new, sustainable approach, demands the integration of people and human (as opposed to merely vehicle) concerns: hierarchy of modes,

[223] Morchain, D. & Fedrizzi, S. (2011), "Strategising sustainable urban mobility in EU Neighbour Countries", Chisinau Municipality, ICLEI – Local Governments for Sustainability

[224] Ibid 222

[225] Ibid 223

[226] Viajeo Plus project (n.d.), "D8.8: Top 10 urban mobility solutions", http://19343a27nxyv1ifure2nq0aw.wpengine.netdna-cdn.com/wp-content/uploads/sites/4/2015/12/Best-practices_Vp_v2.pdf

[227] Ibid 222

[228] Marshall, S. (2001), *The challenge of sustainable transport*. In: Layard, A., Davoudi, S., Batty, S. (Eds.), *Planning for a Sustainable Future. Spon, London, pp. 131–147*.

reliability over speed, drivers of travel choice, local impacts, conceptual (in addition to technical) planning and participatory decision-making.[229,230]

Combining the need for further integration of people in the transportation planning process, sustainability concerns, and potential digital options to support engagement, the concept of an **urban or city lab has arisen**. This method offers great potential as a way to host and incorporate citizens and their concerns into sustainable mobility planning. Labs are rooted locally, focusing on experimentation, involvement, building ownership, and cooperative evaluation.[231] These characteristics are suited well to a people-oriented overhaul of mobility planning, as they help the local citizens build understanding of the transportation system and options, both as it is in the present and as they would wish it to be. The participatory approach is essential, both to educate citizens and involve them in the decision making, but also to ensure their buy-in on new mobility strategies which can require them to make changes in their own lifestyles.

In addition, as new approaches to urban mobility planning are emerging, many local authorities seek to break out of traditional approaches and develop strategies that can stimulate a shift towards cleaner and more sustainable transport modes. Supportive to this is the concept of the **Sustainable Urban Mobility Plans (SUMPs)** that has been developed to address the need for more sustainable mobility planning processes and as a way of dealing with the complexity of urban mobility.

This concept describes the main **features of a modern and sustainable urban mobility and transport plan** and comprises of the following main elements:

1. The goal of a SUMP is to improve the accessibility of urban areas and provide high-quality and sustainable mobility and transport within the urban area.
2. The SUMP has a long-term vision and a clear implementation plan for future mobility developments in an urban area.
3. The SUMP sets measurable targets and defines clear performance objectives.
4. It fosters the balanced and integrated development of all modes, while encouraging a shift towards more sustainable modes. Typically, it address the Public transport, Walking and cycling, Intermodality, Urban road safety, Road transport, Urban logistics, Mobility management, Intelligent Transport Systems
5. It promotes horizontal and vertical cooperation among different levels of authorities.
6. It follows a transparent and participatory approach, by involving citizens and representatives of civil society groups in developing and implementing the plan, thus ensuring a high level of acceptance and support[232].

5.3 Social determinants and health inequalities as drivers of urban and peri-urban sustainable developments

Social Determinants and Health Inequalities are aspects of key relevance when dealing with transport and mobility issues in urban and peri-urban settings. As cities are the predominant mode of living, a number of health hazards are foreseeable consequences caused by

[229] Marshall, S., 2001. The challenge of sustainable transport. In: Layard, A., Davoudi, S., Batty, S. (Eds.), Planning for a Sustainable Future. Spon, London, pp. 131–147.

[230] Banister, D. (2008), "The sustainable mobility paradigm", *Transport Policy*, 15, 73-80.

[231] Voytenko, et al. (2015), "Urban living labs for sustainability and low carbon cities in Europe: towards a research agenda", *Journal of Cleaner Production*, 123, 45-54.

[232] Eltis (2017), "The SUMP concept", (10-01-2017), http://www.eltis.org/mobility-plans/sump-concept

increasing level of air pollution, congestion, water scarcity, heat waves among other environmental risks[233].

Social determinants of health are the conditions in which people are born, grow, live, work and age, and the social, economic, environmental and cultural drivers of those conditions. Inequalities in the social determinants of health experienced by social groups related to factors including gender, ethnicity, socioeconomic position, disability, or area of residence contribute to health inequalities. Health inequalities are systematic differences in health outcomes between social groups. Where health outcomes are disaggregated, for example by area income deprivation, health inequalities are apparent in cities across Europe.

The INEQ-CITIES project examined health inequalities in 16 European cities. Key findings included the observation of a social gradient in mortality in cities, with increasing mortality found with increasing socioeconomic deprivation. Cities in countries in the East and North of Europe had generally greater health inequalities than those in Western Europe (among men) and Southern Europe (among women)[234]. Overall, researchers in the INEQ-CITIES project conceptualised factors and processes driving health inequalities in urban areas as illustrated in the figure below.

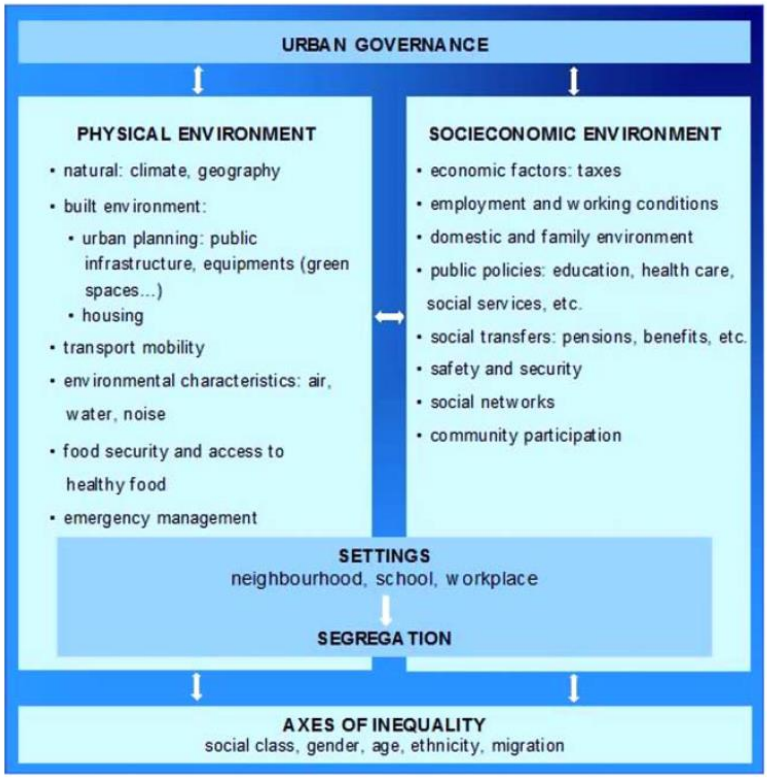


Figure 16. Determinants of health inequalities in cities of Europe[235]

[233] http://www.who.int/world-health-day/2010/media/whd2010background.pdf

[234] Borrell C, Marí-Dell'olmo M, Palència L, Gotsens M, Burström B, Domínguez-Berjón F, Rodríguez-Sanz M, Dzúrová D, Gandarillas A, Hoffmann R, Kovacs K, Marinacci C, Martikainen P, Pikhart H, Corman D, Rosicova K, Saez M, Santana P, Tarkiainen L, Puigpinós R, Morrison J, Pasarín MI, Díez E. (2014), "Socioeconomic inequalities in mortality in 16 European cities", *Scandinavian Journal of Public Health. Vol 42, Issue 3, 2014*

[235] Borrell C, Pons-Vigués M, Morrison J, Díez E. (2013), "Factors and processes influencing health inequalities in urban areas", *Journal of Epidemiology and Community Health, Vol 67 (5)*

The stepwise association of deprivation (with poor health and premature mortality) is widely recognised. Tackling health inequalities requires concerted action across six key areas[236,237]:

1. Give every child the best start in life.
2. Enable all children, young people and adults to maximise their capabilities and have control over their lives.
3. Create fair employment and good work for all.
4. Ensure a healthy standard of living for all.
5. Create and develop healthy and sustainable places and communities.
6. Strengthen the role and impact of ill-health prevention.

Creating and developing healthy and sustainable places and communities is one of the 6 core policy objectives necessary for tackling health inequalities. In addition, transport and mobility are key areas in creating sustainable and inclusive societies across the economic, social and environmental dimensions. Based on a review of evidence, the Marmot Review team proposed good urban design principles for promoting both physical and mental health and well-being within communities **(see Appendix 1)**[238]. While the proposals were made in the UK context, the evidence has wider applicability across urban areas in Europe.

After the Marmot Review had reported in England, the WHO European Review of Social Determinants and the Health Divide[239] gathered evidence across the wider European area and made recommendations to tackle health inequalities based on further evidence about the social determinants of health. In fact, the WHO European Review of Social Determinants and the Health Divide recommended that concerted efforts should be made **"to reduce inequities in the local determinants of health through co-creation and partnership with those affected, civil society and a range of civic partners"**[240]**.**

Overall, it is evident that for urban and peri-urban areas to develop in a sustainable way, polices and interventions should be aimed at **improving health, reducing inequalities and improving environmental sustainability.** This "triple win" is the focus of EU INHERIT (2016-2020) [241], an EU funded project that aims to identify ways of living, moving and consuming that protect the environment and promote health and health equity. INHERIT's baseline report brought together a range of evidence and argues that "*a transition to healthy and sustainable societal and individual behaviours is urgently needed, calling for integrated measures both at a system and at a local level."* [242]

In terms of urban transport and mobility developments, there is a need to prioritise sustainability, while improving social inclusion (reducing social and environmental inequalities) and improving health across the social gradient. It is also important to highlight that the Marmot Review team has acknowledged the **connection of transport and mobility issues to social determinants and health inequalities**. In fact, the team suggests that mobility, including walking, cycling, driving and public transport, is essential to the health and well-being of a community, mentioning that places that promote active transport (walking and cycling) and

[236] The Marmot Review, Fair Society, Healthy Lives (2010)

[237] Marmot Review Team. Fair society, healthy lives: strategic review of health inequalities in England post-2010. 2010 www.instituteofhealthequity.org.

[238] The Marmot Review Team: Geddes, I., Allen,J., Allen,M.,Morrisey, L.. The Marmot Review: implications for Spatial Planning. http://www.instituteofhealthequity.org/resources-reports/the-marmot-review-implications-for-spacial-planning

[239] Marmot, M., Allen, J.,Bell, R.,Bloomer, E.,Goldblatt, P., WHO European review of social determinants of health and the health divide. The Lancet, 2012. 380(9846): p. 1011-1029.

[240] Recommendation 2 (b) in WHO European review of social determinants of health and the health divide, WHO EURO, 2014

[241] http://www.inherit.eu/

[242] Staatsen,B, van der Vliet,N., Kruize,H. Hall, L.Morris, G., Bell,R. Stegeman, I. INHERIT Horizon 2020 Research Project Baseline review: Exploring triple-win solutions for living, moving and consuming that encourage behavioural change, protect the environment, promote health and health equity, INHERT, 2017

http://www.inherit.eu/baseline-report/

provide effective public transport are likely to improve health, cut carbon emissions, improve community cohesion, and enable access to services (e.g. employment, health)[243].

5.4 Growing trends related to sustainable urban developments – The shared economy paradigm

Although shared economy is not a new phenomenon for communities, the respective new business models and citizen-led solutions have brought a new dimension on the sharing cultures of the communities: the shared use of resources ranges from sharing homes, cars, and know-how among others. This new economy model has been accepted rapidly because it accommodates the fundamental human need to be part of a community, share with others and build relationships. Moreover, it is very closely **related to mobility** in the sense that people use or provide mobility services (e.g. ride sharing or shared parking) and they lend/borrow vehicles from enterprises/ peers. In fact, it is argued that **the mobility sector has the most important effect on empowering shared economy practices**[244].

5.4.1 Shared mobility

Shared mobility is a concept that encompasses transportation services that are shared among users. This innovative concept includes all the possible modes of transportation from public transport to bikes. In recent years, the shared mobility concept gained more interest from people, not only due to its cost-efficient effects, but also because it constitutes a sustainable alternative considering the growing environmental and energy concerns[245].

Supportive to the growth of this trend is the digitisation speed of our era. As described by the Shared Use Mobility Center (SUMC) in their shared mobility reference guide, some of the advantages of this concept are[246]:

- It provides more mobility choices.
- It addresses first mile and last mile solutions.
- It reduces traffic congestion.
- It mitigates various forms of pollution.
- It reduces transportation costs.
- It reduces fossil fuel consumption.
- It reduces pressure on parking spaces.
- It improves mobility efficiency.
- It provides options for those who cannot afford to buy and maintain a vehicle.

The opportunities of shared mobility have been also recognised by researchers, citizens and the transportation industry. In fact, there is a continuous increase of shared mobility usage every year, especially in car-sharing and bike-sharing schemes[247]. The Shared Mobility Whitepaper created by the Transportation Sustainability Research Center gives an overview

[243] Ibid 238

[244] Berger, R. (2014). Shared Mobility, available at https://www.rolandberger.com/en/Publications/pub_shared_mobility.html

[245] Shared Used Mobility Center, *What is Shared-Use Mobility?*, available at: http://sharedusemobilitycenter.org/what-is-shared-mobility/

[246] Shared Used Mobility Center (n.d.), "Shared used mobility: Reference Guide", available at: http://sharedusemobilitycenter.org/wp-content/uploads/2016/10/Reference-Guide-Editsweb-version-10.24.2016.pdf

[247] Arthur D. Little (2014), "The future of Urban Mobility 2.0", UITP, available at: http://www.uitp.org/sites/default/files/members/140124%20Arthur%20D.%20Little%20%26%20UITP_Future%20of%20Urban%20Mobility%202%200_Full%20study.pdf

of current shared mobility models. The figure below presents the seven key areas of shared mobility.

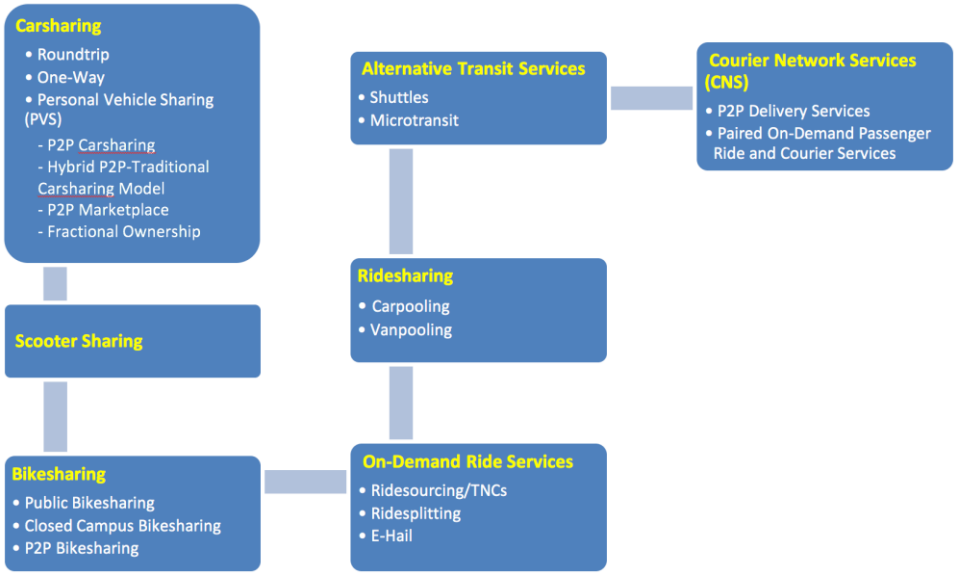


Figure 17. Key areas of Shared Mobility[248]

It is important for citizens, communities and cities to take into account the abovementioned shared mobility examples and collaborate with different mobility and transport stakeholders so as to choose and use the most efficient methods for their cities or even to create solutions to tackle their own urban challenges. The most common shared mobility modes, their definitions and purposes are presented in the table below [249, 250, 251].

Table 3. Shared Mobility Modes Definitions and Benefits

	Purpose	Benefits
Car Sharing	A service where Individuals have temporary access to a vehicle without the costs and responsibilities of ownership.	• Decreasing the need for personal car ownership • Extending affordable access to transportation, • Decreasing dependence on fossil fuels. • Encouraging residents to use other forms of transportation, including walking, cycling and public transit.
Bike Sharing	A service that allows users to access bicycles on needed basis from a network of stations, which are typically concentrated in urban areas	• Increased mobility. • Lower transportation costs. • Reduced fuel use. • Economic development, health benefits, and greater environmental awareness.

[248] Susan Shaheen et al (2015). Shared Mobility A sustainability & Technologies Workshop, White Ppaer by Berkeley Transportation Sustainability Research Center and Caltrons available at: http://innovativemobility.org/wp-content/uploads/2015/11/SharedMobility_WhitePaper_FINAL.pdf

[249] http://sharedusemobilitycenter.org/what-is-shared-mobility/

[250] Ibid 248

[251] Ibid 244

Ride sharing/ Ride sourcing	Traditional ridesharing includes **carpooling** (i.e. grouping of travellers into a privately owned vehicle, typically for commuting), **vanpooling** (sharing of a ride in a van by commuters traveling to/from a job centre) and **real-time ridesharing services** (matching of drivers and passengers based on destination, usually through a mobile app before the trip starts and through which the passenger pays a share of the trip cost).	• Better realise vehicle occupancy potential. • Reduces the number of vehicles on the roadway. • Address problems of congestion, emissions and fossil fuel dependency.

5.4.2 Connected mobility

The connected mobility concept could be conceived as "on the one hand being connected to the internet while on the move and, on the other, having the resources to achieve this connection[252]. Overall, connected mobility is described as a means to[253]:

- Seamlessly integrate modes of transportation and mobility services (e.g. buses, trains, taxis, hired cars, private cars, parking facilities, rented bicycles, etc.) and making it possible to combine the different options as required.
- Apply self-organising technology to optimise traffic flows.
- Make real-time traffic information accessible to all users via apps.
- Leverage mobile devices as an identification, booking and payment tool for travellers.

Overall, the connected mobility paradigm has the capacity to assume a leading role in the future of European cities by tackling one of the biggest urban challenges: reduce CO_2 emissions and cut time spent in traffic[254]. In fact, EC through the "Europe on the Move" initiative[255], works closely with the Member States and the industry towards the emergence of a cooperative intelligent transport system by 2030 [256]. However, it is very important for initiators of connected mobility schemes to take into account and address the reported data privacy concerns of people[257].

Figure 18. Expected benefits of cooperative intelligent transport systems by 2030[258]

[252] https://fleetstreet.michelin-solutions.com/2015/05/29/what-is-connected-mobility/

[253] Berger, R. (2013). Connected Mobility 2025 Adding Value in the Passenger Transportation of Tomorrow

[254] EC, Europe on the Move factsheet available at: https://ec.europa.eu/transport/sites/transport/files/mobility-package-factsheet-ii.pdf

[255] https://ec.europa.eu/transport/modes/road/news/2017-05-31-europe-on-the-move_en

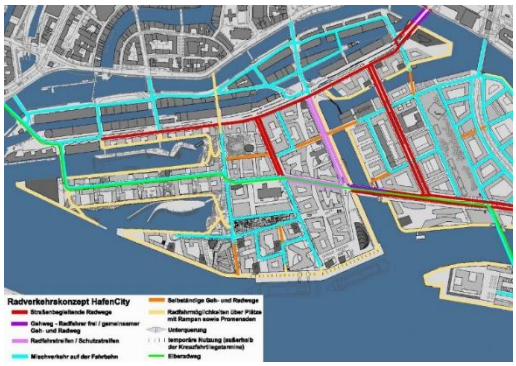
[256] EC, Europe on the Move factsheet available at: https://ec.europa.eu/transport/sites/transport/files/mobility-package-factsheet-ii.pdf

[257] Berger, R. (2013). Connected Mobility 2025 Adding Value in the Passenger Transportation of Tomorrow

[258] European Commission, Europe on the Move. Mobility Package factsheet

5.5 Examples of sustainable urban planning and developments

HafenCity, Hamburg[259,260]



Case: Priority of sustainable transport modes – the city of many short cuts.

Method in Practice: Fine-grained and varied mix of residential, work, leisure and central uses ensure short distances even to the nearby city centre. Pedestrians have to and a half times more kilometres of path than motorised users and have a variety of routes to choose from the same destination due to the open architecture. Furthermore there are two parallel paths at different levels in some areas of HafenCity. Since it is a former harbour site, parts of the quarter are very likely to be flooded every now and then. In order to ensure the mobility of the inhabitants there is a second elevated pathway connecting the buildings and ensuring the access for emergency doctors, fire brigade or else even in case of a flood.

For the public transport there has been planned a new subway line with three new stations especially for HafenCity quarter. In addition to the new bus lines, which also have been developed, the quarter offers many attractive alternatives instead of using the car.

Impact: Encouraging people covering their daily routes by feet or bicycle instead of using motorised private transportation. Ensuring a simple access to the buildings during a flood. Around 70% of Motorised transport routes and foot and cycling paths are separated to ensure safe and enjoyable walks and rides along the quarter.

German Freiburg im Breisgau[261,262]

Case: Planning with foresight and civic involvement - Developing a “Long-Term-Plan” as a guideline plan for long-term urban development and the management of its open spaces. The plan serves as an orientation for the to be updated Land Use Plan in 2020.

Method in Practice: One of the most important parts in the sustainable development of Freiburg is the district-based involvement of the citizens as local people are the only ones with the necessary detailed knowledge. The goal of the civic participation is to develop district urban development guidelines, so-called STELLs, for each district. Furthermore, internationally known sustainable urban development projects like the Vauban quarter are located in the city. This district is known as an example for creating a quarter

[259] Image: http://www.hafencitynews.de/main-leben/magazin/radfahren-soll-sicherer-werden#prettyPhoto
[260] http://www.hafencity.com/en/concepts/urban-mobility-the-city-of-many-short-cuts-.html
[261] http://planningspokane.blogspot.com.tr/2010_09_01_archive.html
[262] Image: http://www.freiburg.de/pb/,Len/372971.html

through cooperative decision making and has become a model for a holistic way of environmental planning[263].

Impact: The ideas of the "Long-Term-Plan" will be implemented in the soon to be developed Land Use Plan 2020. The results of the civic working groups are adopted by the municipal council and implemented into its development plan.

GWL terrain: an urban eco area, Amsterdam [264,265]

Case: Car-free, environment-friendly residential area - The only parking spaces available are created on the edge of the complex which influences car use and car ownership. There are 190 cars for around 1.000 residents and only 0,20 parking spaces per resident.

Method in Practice: The development of the quarter has been started by the residents living next to the former site of the Municipal Water Company. They successfully lobbied for the location to become a residential area and against it being zoned for industrial purposes. When the residential development began the citizens have been involved actively and basic principles for the site were described in an Urban Planning Schedule of Requirements (SPvE). One of the central aims was to discourage car ownership and use by ensuring good public transport, a safe environment for pedestrians and selecting inhabitants who agreed with the principles of the project.

Impact: The encouragement to use alternative transport and mobility offers works out. There are 190 cars for around 1.000 residents and only 0,20 parking spaces per resident. Due to the restriction of cars within the quarter the street and public space design is characterised by fluent forms and efficiency. Those rooms offer many chances to interact among the residents and building their own sense of community.

Electric Vehicles, Oslo [266]

Case: Introduce and promote the use of electric vehicles for reducing greenhouse gas emissions.

Method in Practice: Request for the City Government to reserve parking spaces for electric vehicles and to establish public charging stations, and provide support to private operators. The city also provides electric vehicles with free parking, free access to toll roads, permission to use bus and taxi lanes, and free transport on ferries, as well as levying no taxes or fees on those low-emissions vehicles.

Impact: Oslo has now the world's highest proportion of electric vehicles per inhabitant. This coincides with a significant decline in the City's greenhouse gas emissions.

[263] http://www.smartcitiesdive.com/ex/sustainablecitiescollective/words-most-successful-model-sustainable-urban-development/229316/

[264] https://www.gwl-terrein.nl/files/artikelen/low%20carbon%20communities%20GWL%20only.pdf

[265] http://www.freiburg.de/pb/,Len/618522.html

[266] http://www.eltis.org/discover/case-studies/oslo-electric-vehicle-capital-world-norway

Car Pooling, Athens[267]

Case: The initiative 'Carpooling.ntua.gr' started in 2011 offers its services to the students of the Technical University of Athens (NTUA) located in the district of Zografos in Athens, who want to go to (or leave) the university campus. The most common problem students have to deal with is the increased waiting time at bus stops.

Method in Practice: Car pooling aims to attract residents, tourists and students that do not own a car due to their low-income status or due to their preferences. However, they may use a car sometimes in case needed. In particular, carpooling is a type of collective private car that aims at users that need to share a ride, usually for work commuting. More often, it is used for daily travels between suburbs and the city centre. Passengers that share the car, also share fuel costs. Sometimes they may use different cars in rotation. Mobile applications can help in mapping users with common origin – destination routes and suggest carpooling schemes between them. [268]

Impact: A platform for organising carpooling and carpooling schemes among passengers were promoted when public transport could not be a solution.

[267] Source: http://carpooling.ntua.gr/

[268] Stratigea, A., Kyriakides, E., Nicolaides, C. (2017), ''Smart Cities in the Mediterranean: Coping with Sustainability Objectives in Small and Medium-sized Cities and Island Communities".

6. Collaborative development as a methodological tool

6.1 Collaborative techniques for innovative solutions development

The main characteristic of the Cities-4-People POTM approach is its community focus: in the frame of the project, the mobilisation of people and the formation of *Citizen Mobility Communities* that are open to everyone and are inclusive to the plurality of the different voices, interests and needs, is targeted. As the figure below shows, the aim is to invite these voices to co-creative spaces to work together on ideas, interventions and innovation that resonate with both the community and the (urban) context.

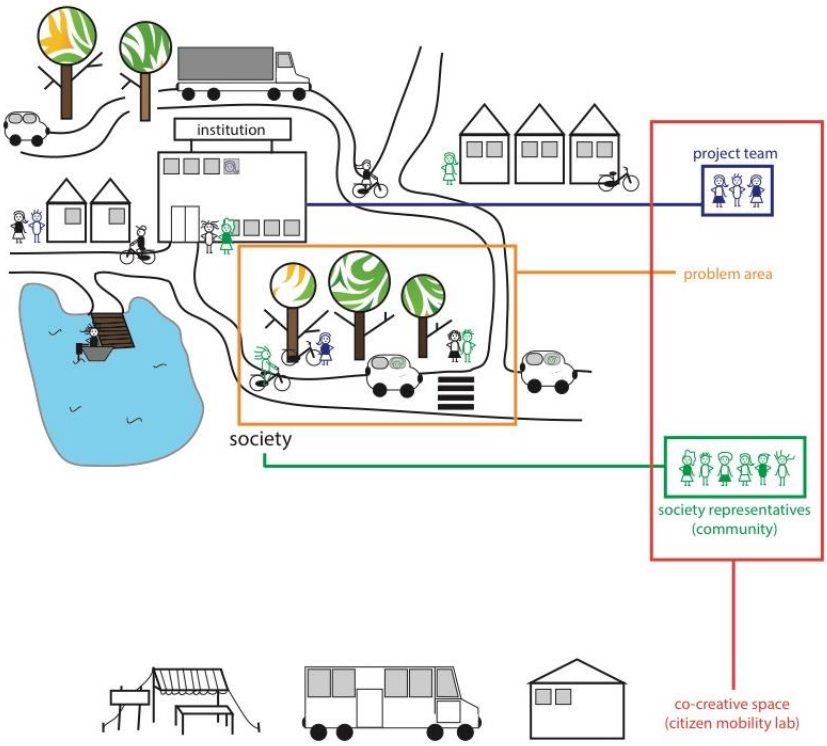


Figure 19 Citizen Mobility Communities

The mobilisation of people within the mobility communities can be realised through state-of-the-art collaborative tools, both physical and digital. As such, the physical space that has been dubbed “Citizen Mobility Lab” will be developed in line of both the Living Labs and Smart Citizens Labs concepts. To support the physical space, digital resources will be developed, grouped as the ‘Citizen Mobility Kit’, to support both the set-up of the physical labs, and the process of co-creation with stakeholders and community building in general.

On top of these, the mobility communities are further involved in the co-creative space through their participation in additional forms of collective intelligence, namely Hackdays and Co-creation workshops. The objective is that the combined effect of introducing both physical and digital tools and methods, will be a community, that is empowered to collectively innovate and propose solutions, which will be developed and pilot-tested in the real field.

6.1.1 The Living Labs approach

Many concepts have been used to capture this type of community involvement – including “Living Labs”, which is well-documented. The Living Lab concept moves research and

development out of laboratories, into real-life contexts[269]. It involves the creation of a real-life, user-driven and open innovation environment.[270] A Living Lab is not just a network of infrastructure and services, but much more a system for building a future economy in which real-life, user-centric research and innovation will be the normal co-creation technique for new products, services and societal infrastructures.[271] During the process, the participants get involved in four main activities: Co-creation, Exploration, Experimentation and Evaluation.[272]

A Living Lab offers services that enable the users to take active part in research and innovation and is a new way to deal with community-driven innovation. The Living Lab approach represents a research methodology, where stakeholders (e.g. firms, public agencies, universities, institutes, citizens and other experts) collaborate for creation, sensing, prototyping, validating and refining complex solutions in multiple and evolving real-life contexts.

It can be seen as a sustainable implementation of open innovation for its stakeholders[273]. Many types of Living Labs exist like **Research Living Labs** (focusing on performing research on different aspects of the innovation process), **Corporate Living Labs** (focusing on having a physical place where they invite stakeholders to co-create innovations), **Organisational Living Lab** (where the members of an organisation co-creatively develop innovations), **Intermediary Living Labs** (different partners are invited to collaboratively innovate in a neutral arena) and **time limited Living Labs** (as a support for the innovation process in a project).[274]

Use of elements of the Living Labs approach

Europe has accepted the Living Labs concept with open arms as the way to deal with user-driven open innovation. In fact, several initiatives joined forces into a European Network of Living Labs (ENoLL)[275] In 2012, 320 Living Labs were members of ENoLL and the network is continuously growing. The members are operating all around the world, but their main residence is in Europe.

Community-based research and development, like is done in the Living Labs approach, covers many contemporary trends such as: **(i)** Users' changed roles from passive consumers to active prosumers of content, **(ii)** shortened time to market for innovators, **(iii)** a globalised market through internet and IT entrance into peoples' everyday activities. A Living Lab has the endeavor to support the innovation process for all involved stakeholders, from manufacturers to end-users, with the potential users in the centre in their real-world context.[276]

In addition, the concept seems to be largely accepted as a territorial policy instrument and as a way to deal with innovation in products and services that have social and/or location based aspects (e.g. cities, villages, rural areas, industrial plants, etc.). Outcomes can be knowledge, new products or services.[277]

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[269] Schaffers, H., Budweg, S., Ruland, R. and Kristensen, K. (2009), "Collaborative Environments to Support Professional Communities: A Living Lab Approach", *Advances in Information and Communication Technology,* Vol. 307, 635-642

[270] Mulder, I., Velthausz, D. and Kriens, M. (2008), "The Living Labs harmonization cube: Communicating Living Labs' essentials", *The Electronic Journal for Virtual Organizations and Networks*, Vol. 10, Special Issue on Living Labs

[271] Ktenas, A. (2009), *EUROPEAN NETWORK OF LIVING LABS,* European Commission

[272] Schumacher, J. (n.d.), "Alcotra Innovation project: Living Labs Definition, Harmonization Cube Indicators & Good Practices", Alcotra Innovation project – D3.1

[273] Ibid 90

[274] Ståhlbröst, A. and Holst, M., *The Living Lab Methodology Handbook,* A Transnational Nordic Smart City Living Lab Pilot – SmartIES Project

[275] Ibid 270

[276] Ibid 274

[277] Ibid 270

Some benefits of the Living Labs process are the following[278]:

- User-centric approach which leads to the development of more efficient applications.
- Transforms citizens into more active society members.
- Creates links between the public and private sector.
- Engages and motivates stakeholders.
- Stimulates innovation.
- Assists in understanding critical industry needs that drive future technology directions.
- Reduces the risk of innovation.
- Allows early assessment of the socio-economic implications of new technological solutions by demonstrating the validity of innovative services and business models.
- Brings users early into the creative process in order to discover new and emerging behaviours and user patterns.

Beyond the use of tried and tested elements of the Living Lab approach, the Cities-4-People project also embraces approaches linked to behavioural change such as the Hooked Model developed by Nir Eyal[279] and the Behavioural Economics as practiced by Irrational Labs and Dan Ariely[280], and new out-of-the-box approaches, to engage the public and stakeholders, to solidify ownership, and to build sustainable communities and change. An extensive list of living labs is provided on the ENOLL website[281]:

6.1.2 Smart Citizen Labs

Considering the specific context of the project, which is community-based urban/peri-urban innovation development, it is only natural to reference the groundwork that has been done with regards to democratising hands-on technology to measure and research local surroundings, and making it accessible to citizens in so called Smart Citizens Labs.

Official bodies typically measure environmental qualities with sparse networks of high quality sensors, and the resulting data are analysed to inform policy and regulations. At the same time, except for extreme cases like smog pollution, citizens tend to be unaware of for example health threats that they are subjected to on a daily basis. Moreover, they lack the means to act on their own behalf. The concept of Smart Citizen Labs encourages and enables the creation of bottom up sensor networks, and sharing the resulting data and knowledge aims to add to the available data and understanding, and contribute to a healthier and cleaner environment. This supports a more human approach to improving the cities living conditions, that resembles the views put forward by a host of authors in a recent publication on ***Smart Citizens***:

"*Our goal is to shift the debate towards the central place of citizens in smart city design, and to decentralised, open urban infrastructures. But this isn't just about local innovation. It's also about global collaboration. Which is why we also set out to introduce new thinking about ways citizens in one city can share and recombine the best new ideas and technologies from elsewhere across the globe. Because the value of bringing citizens into the process is that only they can turn cookie-cutter corporate plans for the Smart City into designs that are truly bespoke*" [282].

- ***MAKING SENSE*** (EU project)

[278] Mulder, I. and Stappers, P.J. (2009), *Co-creating in Practice: Results and Challenges,* Proceedings of the 15th International Conference on Concurrent Enterprising, Leiden, Netherlands

[279] Nir, E. & Hoover, R. (2014), *Hooked: How to Build Habit-Forming Products*, London: Penguin Books Ltd.

[280] Ariely, D., J. Hrera & K. Berman (2014), "Hacking Human Nature for Good: A Practical Guide to Changing Human Behavior"

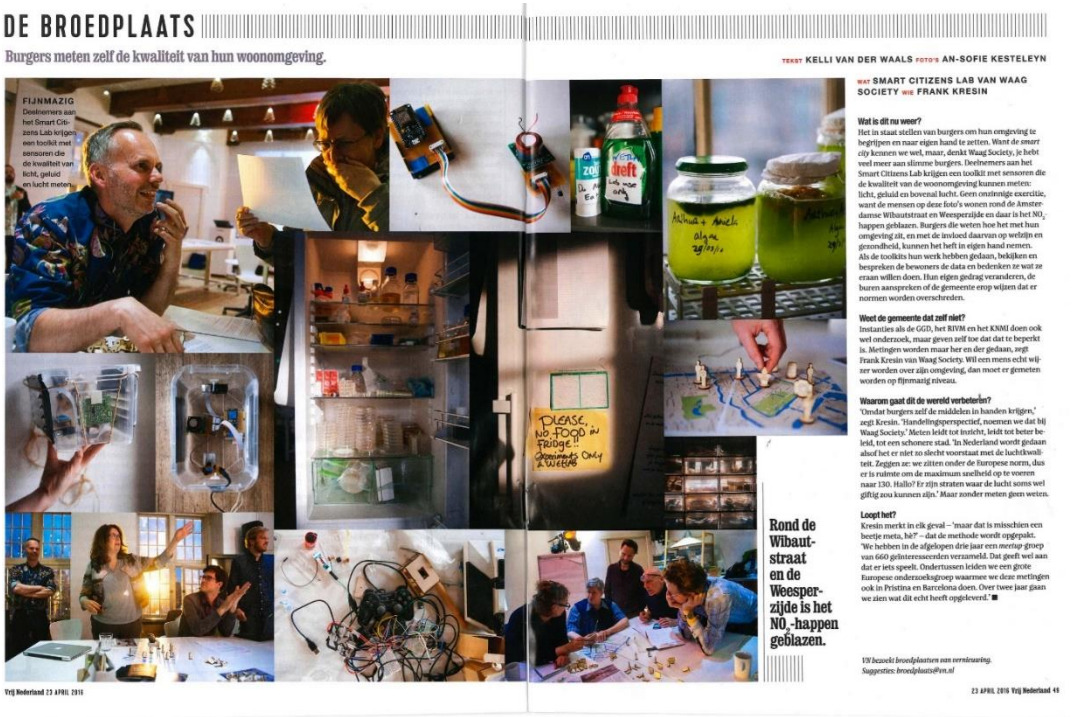
[281] http://www.openlivinglabs.eu/search/livinglabs/results/mobility

[282] http://futureeverything.org/ideas/smart-citizens/

"The raise of Fablabs and other maker spaces is creating new opportunities for citizen-driven innovation in domains ranging from open hardware to digital fabrication, community informatics, and participatory sensing. In the past five years, the broad availability of open hardware tools, the creation of online data sharing platforms, and access to maker spaces have fostered the design of low cost and open source sensors that citizens can appropriate to engage in environmental action. By collectively measuring and making sense of their environment, citizens can become aware of how their lifestyle affects the ecosystem and be inspired to adopt more sustainable behaviours."[283]

- ***THE AMSTERDAM SMART CITIZENS LAB***

  The Smart Citizens Lab[284] explores the tools and applications to map the world around us. Along with citizens, scientists, and designers, we deal with themes ranging from air quality to the conditions of bathing water, to smart city routes, to noise pollution. In the past years, the broad availability of open hardware tools, the creation of online data sharing platforms, and access to maker spaces have fostered the design of low-cost and open-source sensors that citizens can appropriate to engage in environmental action. By collectively measuring and making sense of their environment, citizens can become aware of how their lifestyle affects the ecosystem and be inspired to adopt more sustainable behaviour.



DE BROEDPLAATS

Burgers meten zelf de kwaliteit van hun woonomgeving.

TEKST KELLI VAN DER WAALS FOTO'S AN-SOFIE KESTELEYN

WAT SMART CITIZENS LAB VAN WAAG SOCIETY WIE FRANK KRESIN

FIJNMAZIG

Deelnemers aan het Smart Citizens Lab krijgen een toolkit met sensoren die de kwaliteit van licht, geluid en lucht meten.

Rond de Wibautstraat en de Weesperzijde is het NO_2-happen geblazen.

Vrij Nederland 23 APRIL 2016

Figure 20. Smarty Citizen Lab on news[285]

6.1.3 Hackdays

Hackdays, also known as hackathons or hack fests, are short, concentrated events lasting between a day and a week in which small teams of participants with diverse skill sets, design and build innovative solutions and concepts. By bringing together the "hacker" mentality and the concentrated burst of activity of a "marathon," hackathons can provide an alternative space, outside of day-to-day assignments, project management procedures, and decision-

[283] http://waag.org/en/project/making-sense

[284] http://waag.org/sites/waag/files/public/media/publicaties/amsterdam-smart-citizen-lab-publicatie.pdf

[285] Publication in Dutch national magazine 'Vrij Nederland' on Smart Citizens Lab

making processes, that stimulates alternative thinking about a problem, a tool, a dataset, or even an institution[286].

In many occasions, hackdays are social coding, computer oriented events, involving programmers, graphic designers, interface designers, citizens and entrepreneurs who collaborate on technological projects. However, participants don't always have to be a programmer or a technology expert in order to participate. The "hacker" in hackdays refers mostly to the ability of creative problem solving. It has the meaning of getting enough motivated and engaged people together in order to design and make something worthwhile within the constraints of a limited period of time. To this end, the key is collecting diverse skill sets since a successful hackday team (and consequently a successful hackday) builds upon the variety of skills of its participants.

Use of elements of the Hackdays approach

Hackdays can be used in order to address a wide range of issues. There can be hackdays aimed to develop innovative applications, software, operating systems, business models, etc. Moreover, hackdays have been used to ignite innovative economic development by offering new concepts that stimulate entrepreneurial activity and even from governments in order to help in the solution of political issues[287].

Hackdays, is also a popular approach that leverages the expertise of large numbers of individuals in order to address social issues[288]. The National Day of Civic Hacking is an international event for people to focus on improving their community and it has already been held to more than 100 communities in USA. This event brings together participants with the passion to make their city better and they collaboratively build new solutions (e.g. a system that uses local data for coordinating food donations)[289].

Many hackday events have been organised in order to improve public services such as urban transport systems[290]. In fact, Hackdays have started to get recognised within the transport and mobility field. A relevant example from Europe is the Hackothonist days organised in Istanbul by TAGES, in cooperation with the Istanbul Metropolitan Municipality[291]. The aim of this event was to develop smart city applications by using CitySDK APIs on three domains: **smart mobility**, **smart tourism** and **smart participation**.

Some benefits that result from Hackdays are the following:

- They reduce the cost for developing innovative solutions compared to traditional R&D processes.
- They drive innovation.
- They provide a real-world scenario, where various disciplines collaborate for an organisational or societal goal[292].
- They focus on solving social and local challenges.
- They generate creative solutions to civic problems.

[286] DPLA (2014), GLAM Hack-in-a-box A short guide for helping you organize a GLAM hackathon, DPLA
[287] https://blog.generalassemb.ly/collaboration-meets-competition-power-hackathon/
[288] http://www.ssireview.org/blog/entry/lessons_in_mass_collaboration
[289] http://ndoch.codeforsanfrancisco.org/
[290] http://archive.is/Wxo8V
[291] https://www.citysdk.eu/come-to-istanbul-for-hackathonist/
[292] http://www.hackdays.com.au/blog/why-run-hackdays

6.1.4 Co-creation workshops

A co-creation workshop is conceived as a type of workshop that is primarily focused on action and where all participants collaborate and contribute to find and co-create ways to serve the objectives of the workshop. This is done through creative knowledge sharing and constructive activities where the team is invited to negotiate and generate new innovative concepts. The typical aim of co-creation workshops is the creation of new approaches to products, services or business models[293] and to enhance organisational knowledge processes, by involving the customer in the creation of meaning and value. The co-creation workshop aims to 'outsource' innovation and value creation to the customer and transforms the customer into an active partner for the creation of future value[294]. Those impacted by the design are invited to work actively with designers to shape the definition and direction of the project, as shown in the figure below.

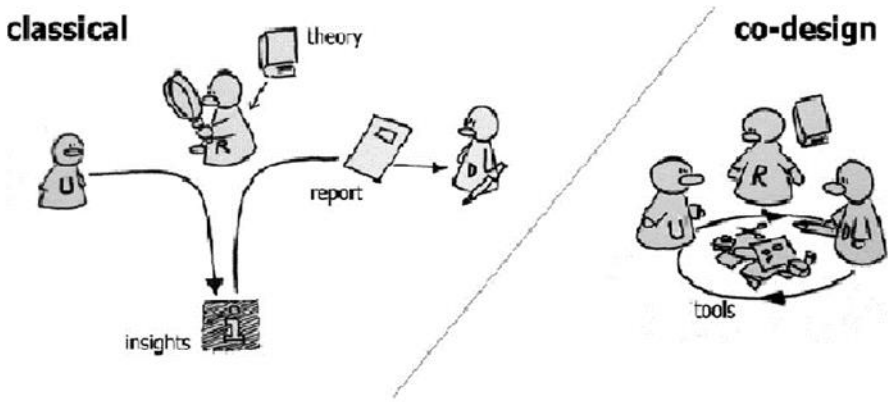


Figure 21. Classic roles of users, researchers, and designers (on the left) and how they are merging in the process of the co-creation workshops (on the right)[295].

The structure of co-creation workshops is usually based on generic process models that can be tailored towards specific project objectives and activities. There are many variations, but all co-creation structures come down to more or less the same line of activities. Regardless of the process model and tools that will be used, there is a parity in all these models' content. As such, a co-creation workshop can include the following sessions, either in this form, slightly altered or combined with other sessions:

- An initial session where participants are **introduced to the basic concepts, ideas and goals** of the respective project.
- A second session in which participants, **generate innovative concepts** that serve the objectives of the project.
- A final session, where the generated concepts are **assessed**.

Regarding specific co-creation methodologies that can be deployed within the frame of this type of workshops, there are many available methods and their selection can be defined against criteria such as: the objectives of the workshop and of the specific workshop section, the number of participants, the time available, the background of the participants, the level of training that a method might require, the venue of the workshop, etc. Some of the most

[293] Butterfly Works (2013). Co-creation Method for a better world – White Paper. http://www.butterflyworks.org/mmbase/attachments/25662/CoCreationMethod_White_paper_08-01-2013.pdf

[294] Roser, T., Valdivieso-Cruz, E., Humphreys, P. & Samson, A. (2009). Co-creation: New pathways to value. An overview, Promise Corporation

[295] Sanders, E. & Stappers, P. (2007). Co-creation and the new landscapes of design, CoDesign, 4(1), 5-18

common methodologies that are typically applied in this context are: ice-breaking exercises, brainstorming sessions, the Lego Serious Play methodology, conceptual mapping, storytelling, role playing, problem tree analysis, prototyping, etc.

Use of elements of the co-creation workshops

The approach has been applied in a wide range of contexts including among others software design, urban design, product design, and public policy planning[296]. Co-creation workshops may be used to develop a specific solution to a problem, to develop a specific product, to produce new ideas that allow for an opening of entirely new opportunities, to continuously improve existing products/services or create radically new ones.

Some relative initiatives is the Finland's Living Lab project[297], Power Matching City project in Netherlands, the InovCity project in Portugal, the Uppsol 2020 project in Sweden[298], the "Assessment of sustainable consumption in Latvia" research project in Latvia[299] and the CIRCO Business Design Track project[300].

Co-creation workshops also started to become an important asset for transport and mobility field, and particularly for opening the sector's planning and decision-making processes to the public. One of the examples of this methodology applied, in the transport and mobility field is the EU CIPTEC project[301]. Within the project, **eight co-creation workshops in four different European locations** have been organised with the aim to *"gain insights from the public transport stakeholders and users that will facilitate the emergence of new innovative concepts with the capacity to increase public transport's attractiveness and market share.*[302] Each of these workshops was organised with tailor made planning on the local public transport needs and yielded interesting results that point to the suitability of the concept for integration within the traditional processes of public transport organisations as well as to the willingness of users and citizens to take part in these workshops[303].

[296] Nambisa, S. & Nambisan, P. (2013), Engaging Citizens in Co-Creation in Public Services: Lessons Learned and Best Practices, Collaboration Across Boundaries Series, IBM Center for the Business of Government.

[297] Ibid 296

[298] S3C Project, Smartgrid Engagement Toolkit. Guideline: Co-creation, http://www.smartgrid-engagement-toolkit.eu/fileadmin/s3ctoolkit/user/guidelines/guideline_co-creation_-_collaborating_to_develop_smart_energy_solutions.pdf

[299] Schrader, U., Fricke, V., Doyle, D. & Thoresen, V.W. (2013), *Enabling Responsible Living,* Sprienger, London

[300] Circle Economy, CIRCO Business Design Track, http://www.circle-economy.com/event/circo-business-design-track-workshop-3-implement-2/

[301] CIPTEC (2017), "D3.4: Summary reports for collective intelligence initiatives ", CIPTEC project, http://ciptec.eu/deliverables/

[302] http://white-research.eu/the-first-ciptec-co-creation-workshop/

[303] http://civitas.eu/news/exploring-unknown-through-eight-co-creation-workshops-public-transport

7. Evaluation of urban interventions

This section aims to describe some common evaluation processes that are being deployed in the field of urban interventions. Furthermore, and within the same context, it seeks to provide the background framework for the use of Health Technology Assessment and the Core Outcome Set evaluation methodology, regarding the assessment of urban mobility solutions

7.1.1 Common evaluation processes in the field of urban mobility interventions

Urbanisation is one of the most dominant global trends in the last years and its growth is projected to continue. In turn, urban mobility is a field that raises concerns and challenges and, therefore, it calls for new, innovative solutions. In this context, systematic evaluation must be viewed as central to these innovative mobility interventions, since it assists to improve the measures, replicate the successful examples, learn from the process and most importantly ensure the sustainability of the interventions[304].

CIVITAS, in its practitioner's guide to evaluation "Evaluation Matters"[305] as well as the CH4LLENGE project's "Evaluation and Monitoring" report[306], line up the benefits of evaluation in sustainable urban mobility interventions in the following statements:

1. Better understand public spending by optimising the allocation of resources and saving resources,
2. Better orient bundles of measures towards specific target groups,
3. Improve future planning and optimise the allocation of resources by enhancing the empirical evidence base for project appraisal,
4. Increase the efficiency of planning processes and implementation of measures,
5. Contributing to a higher quality of a sump itself and the sump process,
6. Assess and raise the quality of measures and measure bundles and packages,
7. Fill the gap between the objectives and measurable targets, the plan and its implementation,
8. Provide quality management for all partners: planners, operators, politicians etc.,
9. Improve communication with stakeholders and the public.

Evaluation process

Typically, an evaluation process should outline the entire piloting and implementation procedure, be part of a continuous process and provide feedback about progress and outcomes. As each project varies according to the local needs, the stages of evaluation vary accordingly [307]. In sum, it can be argued that the evaluation process for sustainable urban mobility planning processes includes the following aspects[308]:

[304] CiVITAS (2013), "Evaluation matters: A practitioner's guide to sound evaluation for urban mobility measure", available at: http://civitas.eu/sites/default/files/Evaluation_Matters.pdf

[305] Ibid 304

[306] CH4LLENGE project (2016), "Monitoring and evaluation: Assessing the impact of measures and evaluating mobility planning processes"

[307] Ibid 304, 306

[308] Burggraf, K. and Gühnemann, A. (2015), "Challenge description: Why is evaluation a challenge in sustainable urban mobility planning?", CH4LLENGE project, available at: http://www.sump-challenges.eu/sites/www.sump-challenges.eu/files/page_files/ch4_challenge_description_wp5_lhd_its_0.pdf

1. **Monitoring** (i.e. data collection and data analyses before, during and after implementation)
2. **Evaluation** (i.e. evaluation of measure's progress during and after implementation-with conclusions)
3. **Appraisal** (i.e. evaluation of the impacts and worth of measures)

An overview of the abovementioned common stages and activities within a project's planning, monitoring and evaluation is illustrated in the figure below, as indicated by the CH4LLENGE project manual on measure selection for sustainable urban mobility plans.

Figure 22. Monitoring and evaluation process for SUMPs (CH4LLENGE project)[309]

According to Guhnemann, the main tasks for the steps illustrated in the figure above are[310]:

- **Planning phase**
  - Definition of objectives
  - Definition indicators
  - Definition of responsibilities, resources and timing
  - Set up a monitoring and evaluation plan
- **Implementation and monitoring phase**
  - Measuring the before conditions
  - Measuring the during and after conditions
  - Reporting
- **Evaluation phase**
  - Determining a base against which to assess the proposal
  - Analysis and interpretation

Evaluation design

There are two types of evaluation that are commonly followed in the urban mobility field: **impact evaluation and process evaluation**. **Impact Evaluation** aims to assess the project's outcomes, effects and its success in reaching its goals. **Process evaluation** is focused on the means used and processes followed for the implementation of a mobility measure.

[309] Ibid 306
[310] Ibid 308

Regarding the **impact evaluation design**, this can be based on **(i)** randomised control group designs, **(ii)** experimental designs using a control groups (i.e. Quasi experimental control group design, and **(iii)** experimental design without a control group. Typically, the evaluation design is selected on the basis of the scope of the evaluation, the framework of the mobility intervention and the cost of the method. Data collection can be categorised in **secondary data** (i.e. re use of existing data) or **primary data analysis** (i.e. data collected for the first time). The collection of data can be achieved through various face-to-face or asynchronous online and offline methods including, interviews, surveys, focus groups, observation techniques, etc. **Process evaluation** can be considered to be descriptive, continuous and flexible, requiring the collection and analysis of data during all the implementation/piloting phases of a mobility intervention. To this end, standardised forms, workshops, focus groups, interviews, etc. can be deployed[311].

Evaluation Indicators

Crucial to the evaluation process is the identification and utilisation of appropriate core indicators for which data has to be collected during and after implementation. Typically, for each indicator, practitioners should also provide the **definition, the target/aim, monitoring frequency and evaluation frequency.** Regarding sustainable mobility solutions, indicators could measure a variety of objectives including: **economic growth, low carbon effects, quality of life, equity and social inclusion, safety, environmental impact, road congestion, travel behaviour, financial costs, etc**. For measuring these objectives, a wide variety of indicators can be used. The CH4LENGE project evaluation manual "Monitoring and evaluation: Assessing the impact of measures and evaluating mobility planning processes", provides a large suite of indicators that could be linked to many strategies and objectives, along with the direction for change that would normally be expected from these indicators[312].

Overall, it seems that indicators can be grouped under the following main categories:

1. **Contextual indicators** that provide information on external developments (e.g. socio-demographic, economic, policies, etc.)
2. **Input indicators** that measure the use of resources required for a specific measure (e.g. investment costs, promotional campaign expenditure, etc.)
3. **Output indicators** that reflect direct impact and provide information on the progress of the mobility measure (e.g. car sharing schemes implemented, promotional events organised, share of barrier free public transport facilities, etc.)
4. **Outcome indicators** that reflect indirect and more long-term impact on the overall objectives of the mobility measure (e.g. mobility efficiency, inclusiveness, social inclusion, travel behaviour, etc.).[313]

Challenges in evaluating urban mobility interventions

Although systematic evolution in urban interventions can yield multiple benefits, there are some challenges with respect to monitoring and evaluation of urban interventions that practitioners need to consider in order to maximise the impact of this process[314]:

- **Attitudinal challenges with** respect to perceptions and expectations of stakeholders.
- **Institutional challenges** can occur in the co-operation with governmental institutions as well as between government and the private sector.

[311] 304
[312] Ibid 304
[313] Ibid 304, 308
[314] Ibid 304, 306

- **Financial barriers** towards an effective use of monitoring and evaluation are generally a lack of financial and staff resources.
- **Technological challenges** refer to gaps in knowledge as well as insufficient tools, techniques and technologies that can support the planning process.
- **Involvement and communication challenges** refer to insufficient involvement or awareness of the key stakeholders.
- **Political or strategic challenges** that refer to the opposition of key actors on their political or strategic motives.

Overall, there are number of case studies and tools that help to further understand how urban mobility measures are assessed. These studies and methods can be found in major urban mobility initiatives' websites, such as:

• CIVITAS, www.civitas.eu
• ELTIS, www.eltis.org
• EPOMM, www.epomm.eu
• CH4LLENGE project, http://www.sump-challenges.eu/

7.1.2 Health Technology Assessment and the Core Outcome Set evaluation methodology

In this section, we consider how insights and tools from Health Technology Assessment (HTA) and Implementation science – two health based sub disciplines – can be applied to transport and mobility. The World Health Organisation (WHO) definition of HTA refers to *"the systematic evaluation of properties, effects, and/or impacts of health technology".*[315]

According to WHO, health technology is *"the application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of lives".* [316] As such, it is most typically used in considering interventions aimed at creating improvements in health care and health care systems, rather than in considering how interventions traditionally considered to be outside the domain of health services, such as transport, affect health.

The WHO further elaborates the understanding of Health Technology Assessment and its purpose as *"a multidisciplinary process to evaluate the social, economic, organizational and ethical issues of a health intervention or health technology. The main purpose of conducting an assessment is to inform a policy decision making."* [317]

It is of course possible to use multidisciplinary processes to evaluate the social, economic, organisation and ethical issues associated with the interventions and policies outside the health sector, for example, transport and mobility interventions. More commonly, Health Impact Assessment tools are used in the context of a variety of sectors, such as in urban planning and transport and mobility.

According to WHO "*Health Impact Assessment (HIA) is a means of assessing the health impacts of policies, plans and projects in diverse economic sectors using quantitative, qualitative and participatory techniques".*[318]

[315] Health Technology Assessment http://www.who.int/health-technology-assessment/en/
[316] What is a health technology? http://www.who.int/health-technology-assessment/about/healthtechnology/en/
[317] Health Technology Assessment http://www.who.int/health-technology-assessment/en/
[318] Health Impact Assessment http://www.who.int/hia/en/

At the heart of HTA is the Core Outcome Set - an agreed standardised set of outcomes for any particular health technology. There is cross over between HTA and HIA which also has a focus on outcomes (impacts) across a range of dimensions –social, health/health equity, economic, and environmental.

Similarly, the Cities-4-People project identifies the importance of outcomes. The project will introduce an open process to co-develop a common Core Outcome Set of definitions, metrics, indicators and methods to guide the People-oriented Transport and Mobility (POTM) impact assessment and place the citizen into the equation. The project will apply the COS throughout the pilots to collect evidence that is comparable and performance measures that reflect a wider community of stakeholders including the citizen. The COS will be kept open so that the community can use it after the project ends as a step towards the first standard for POTM innovation.

Methodology for creating a Core Outcome Set

For the purpose of creating a Core Outcome Set the basic principles of implementation science can be applied, which has been defined as: *"the scientific study of methods to promote the systematic uptake of research findings and other Evidence Based Practices into routine practice, and, hence, to improve the quality and effectiveness of health services."*[319]

While commonly applied in health, principles of implementation science may also be applied to other sectors as well. Underlying implementation science in any particular sector is a theory of change, or logic model, which provides a graphic representation of the pathway to change, including what is invested, what is done, and what are the outcomes (short and longer term).

The pathway of planning starts with analysing the wider context that affects the needs of the community, the resources needed to develop the programme or intervention, the activities or outputs of the intervention or programme (what gets done, including stakeholder engagement) and outcomes, including changes in attitudes or behaviours (short term outcomes), medium term social, health and well-being and environmental impacts, and longer term social, health, and environmental impacts.

Each of these is underpinned by a set of agreed measures, or proxy measures, to allow evaluation of the process, inputs, outputs and outcomes. These can be described within the Core Outcome Set. While the logic models are generally depicted in a linear diagram, in practice the process of creating change is more complex and needs to be responsive to local and contextual dynamics with feedback loops between stages. However, co-creating pathways to change can provide a useful tool in stakeholder engagement and community empowerment.

To this end and for enabling the wide community participation in the process, the use of methods such as the Delphi method can be considered. This method comprises of sequential questionnaires answered anonymously by participants in the process. In doing so, participants will be able to suggest potential outcomes that they feel should be considered in the Delphi process, without being prompted or guided by others[320].

[319] Eccles MP & Mittman BS (2006), "Welcome to implementation science", *Implementation Science, Vol 1 (1)*

[320] Sinha, Ian P., Rosalind L. Smyth, and Paula R. Williamson (2011), "Using the Delphi Technique to Determine Which Outcomes to Measure in Clinical Trials: Recommendations for the Future Based on a Systematic Review of Existing Studies.", *PLoS Med Vol 8, No. 1 (January 25, 2011)*

Key success factors and elements to consider

This report presents a thorough literature review regarding the key notions exploited within the People Oriented Transport and Mobility (POTM) approach that the Cities-4-People project introduces. As there is currently neither a “single prescription to success” nor a “one-size-fits-all” solution with regards to these concepts, especially when integrated within a novel framework as this of the POTM, the provision of what could qualify as “success factors” and “key elements and indications” for their effective deployment in the field of urban mobility is considered more appropriate. These **success factors** and **key elements to consider** are offered as follows.

With regards to policy framework

Local authorities and policy makers are often shown to affect either positively or negatively project initiation, implementation and overall success. As such, the existence of a **supportive local and national policy framework** is vital for initiatives that aim to launch new organisational models (e.g. participatory and community-based) and provide new, innovative solutions (i.e. in this case innovative urban mobility solutions). The existence of an urban mobility strategy within each city that **acknowledges that efficient mobility and transport is a fundamental requirement of the city,** is a first step. Such policies can be reinforced when they have the **acceptance** and **engagement** of the public. To this end, frameworks that promote the citizens’ role as co-developers of urban mobility policies can be very important.

Within this report, examples of such supportive policies to the POTM are offered through the cases of the project pilot areas. In further detail, in all the Cities-4-People pilot cites, local urban mobility plans have been set up that identify the need for liveable urban environments and the transition towards more sustainable (i.e. greener, smarter, more accessible, more inclusive, more secure, etc.) urban mobility that takes into account the social aspects of mobility. Many of these plans also identify the value of social consultation, social partnership and citizen engagement as main goals and important factors for achieving their targets.

Considering the abovementioned policy perspective, a fact that could have strong positive implications on the success and uptake of people-oriented mobility initiatives, is their **alignment with the local mobility needs and priorities**, as well as **with the objectives and targets of major EU initiatives regarding urban living and mobility** (e.g. Covenant of Mayors, EUROCITIES, Smart Cities, etc.).

With regards to the application of social innovation

Social Innovation has the potential to provide effective and long-lasting solutions that address societal challenges. However, in order to foster a strong SI ecosystem, except for an **enabling legal, economic and administrative environment**, the following actions are necessary:

- Fostering the awareness of people on the targeted issue.
- Building capacity for social entrepreneurship.
- Fostering dialogue among key stakeholders.
- Ensuring the sustainability of SI schemes that is often challenged by institutional and financial constraints, through institutional support.

Overall, the first step for developing a SI scheme, is the **identification of unaddressed or inadequately met social needs,** in this case social needs interrelated with the urban mobility field. Additionally, the formed SI initiatives should demonstrate an increased level of **openness** in their processes, span **across a broad set of sectors** so as to cross-fertilise ideas and expertise, and constitute examples of **grassroots and bottom up** structures whose results are **demand-led.** Several tools that aim to facilitate SI processes are already available, while some indicative toolkits are presented in the report.

On top of these, since social challenges usually constitute complex issues, **the combination of additional forms of innovation could offer a direct boost to SI schemes**. During a period in which Information and Communication Technologies are an integral part of almost every aspect of daily life, **offering digital tools** to facilitate the processes of SI and collaborative initiatives seems to be necessary. Additionally, it is important to **consider all 4 vectors of innovation** within an ecosystem (i.e. academia, industry, citizens, finance) and foster an integrated collaboration among them through **Open Innovation 2.0 approaches and spaces** (e.g. Living Labs, Smart Citizen Labs, etc.).

With regards to the application of social innovation in the transport and mobility field

Concerning the application of social innovation **in the transport and mobility sector**, it appears that innovations that target **(i)** the inclusiveness and access aspect (e.g. reduced mobility, gender sensitive transportation, citizen initiatives, etc.), and **(ii)** the greening of the sector (e.g. fostering co-modality, usership instead of ownership, cycling, etc.) are the most sought out responses to the 2 central societal challenges of mobility: the environmental externalities of transport and mobility that result in lower quality of urban life, and the connection of people to aspects of their social life such as employment and health services.

With regards to social innovation mobility community initiatives

The main vector within an efficient SI initiative are the people. As such, the backbone of approaches that are similar to the Cities-4-People POTM framework consists of **public participation and engagement actions** towards the **formation of active community instances**. From the analysis of the relevant literature, the following factors seem to be key to an effective community development process:

- **Clearly defined framework of participation and clear goals**. People who are invited to take part in a community process should be aware of the goals of this process. It is also very important that these goals are in line with their own interests, needs and challenges. In addition, the degree that the outcomes of a participatory process will be considered by decision-makers should be clear to them. There are many participation and involvement models to consider, however the one that offers more power to the people is the **active participation model.** In this model, the people are engaged in co-decision processes with the authorities and jointly plan, initiate, implement and sustain actions.
- **Understand the motivation of people to participate.** An important precondition for the start of a SI community relates to the **motivation mix** of the prospective community. A wide variety of motives can trigger the participation of people in a mobility community including: a need for stronger sense of community, environmental motives, social motives as well as financial motives. What is important for the community projects' initiators is to identify these motives, respect them and try to satisfy them.
- **Inclusive and diverse communities**. The active involvement of **a variety of stakeholders** (i.e. in background, experience, culture, education, authority, etc.) is perhaps the most important aspect to be considered. This can ensure the representation of all the different voices as well as the support of a combination of interested stakeholders (e.g. citizens, socially excluded groups, local authorities, industry, experts, funding bodies, etc.). Moreover, it seems that the **involvement or the direct support of local authorities** (e.g. municipalities, city councils, public transport authorities) is crucial for the success of a community project and can also provide the ground for its long-term sustainability.
- **Openness, Transparency and Trust.** The participation process should be open and communicated to all, while sharing information and ideas should be done willingly and promptly. In addition, it seems that the level of trust among community members as well as the trust to the initiators of a community project **largely dictates the quality of interactions and its outcomes**. As such, it is helpful if the initiators of these projects are already "well known" and trusted members of a community or a local setting.

- **Capacity building and community empowerment.** An integral part of a community engagement and building process, is the development of skills within a community that will enable its members to innovate. The **active sharing of knowledge** (e.g. setting up info days, presentation days with experts, collaborative exercises, etc.) can facilitate capacity building within a community. On top of this, community members should be empowered to apply their newly gained knowledge and capacity and to take action for the issues that affect them. The provision of **tools and resources** (e.g. online tools, prototyping tools, methodologies on various fields, collaboration spaces, etc.) can significantly empower communities to act based on their interests and priorities.
- **Communication**. Key to all the above-mentioned aspects and a factor that can drive the active engagement and involvement of people is **communication**. Community project initiators should invest time and effort in clearly communicating their objectives, the local urban mobility challenges that their community projects can address, the framework of participation, etc. By clearly communicating all the necessary aspects and implications of their project, they can raise local awareness and increase transparency. This communication can be facilitated by online (e.g. Social Media) or face-to-face means, depending on aspects such as the local particularities, the size of the community, etc. The organisation of local events (e.g. info days, presentation days, Hack-days, Co-creation workshops, etc.) and the setup of physical open spaces (e.g. Living Labs, Fablabs, etc.) are also effective tools for enhancing communication.

With regards to citizens' participation in urban mobility processes

Regarding the participation of people in the urban mobility field, this has been gaining ground, however, according to a CH4LGENGE project survey, this participation largely stays at the stage of problem identification and is rarely transferred to later decision-making stages. Considering that the **citizens' interest in participating in sustainable urban mobility planning has been found to increase as the processes progress to the solutions' development phase**, it is important for urban mobility initiatives to engage people throughout all the stages of innovation development and within a complete process and framework.

With regards to sustainable urban mobility

The principles and implications of **sustainable urbanisation** and **sustainable urban developments**, point directly to the need for the inclusion of the sustainability element within the urban transport and mobility field. Sustainability within this context is mainly based on **3 pillars: environment, society and economy.** It is vital that all 3 aspects of sustainable urban mobility are treated with equal importance to account for all complex interrelationships and trade-offs that are involved in the sector. Several actions seem to be appropriate towards this end, including: **(i)** the promotion of greener mobility modes (e.g. cycling, walking, e-mobility, etc.), **(ii)** exploitation of the shared economy paradigm principles with the application of shared mobility schemes, **(iii)** exploitation of technological progress, **(iv)** promotion of intermodality, **(v)** developing a competitive position of public transport, **(vi)** redesigning urbanisation schemes, etc.[321].

The social aspect of sustainable urban mobility could be met through the **integration of citizens** in all the planning phases (as also suggested by the SUMPs) and their long-term engagement in the urban mobility ecosystem. In addition, **addressing and reducing the social and health inequalities should be integrated within the overall scope of sustainable urban mobility**. According to experts' opinions, urban places that promote active mobility options (e.g. walking and cycling) and provide effective public transport services are

[321] European Automobile Manufacturers Association (ACEA) (2015), "ACEA Paper on Sustainable Urban Mobility", May 2015

likely to improve health, cut carbon emissions, improve community cohesion, and enable access to services (e.g. employment, health).

With regards to the evaluation of urban mobility interventions

The development of social innovation community approaches, **requires consistent and systematic evaluation processes** in order to reveal findings regarding both the effectiveness of the process, and the quality of the innovative services/products. With regards to sustainable urban mobility solutions, indicators could measure a variety of objectives including: economic growth and costs, quality of life, equity and social inclusion, environmental impact, road congestion, travel behaviour, etc. However, according to the CH4LLENGE project, evaluation of sustainable urban mobility plans and measures, calls for a higher level of standardisation[322]. The use of Health Impact Assessment tools and the Core Outcome Set methodology (i.e. an agreed standardised set of outcomes for health technologies) in the frame of urban mobility could provide a new path for the standardisation of the evaluation of innovations in the field.

However, the application of a POTM framework, along with its accompanying concepts and approaches, does not come without challenges. Thus, **the following factors should be considered, evaluated and addressed in the framework of similar endeavours**:

- **Potential inertia or reluctance** of targeted stakeholders to engage in the mobility communities' activities. This might be based on their belief that their opinion will not count or in cases of groups that face forms of social exclusion or discrimination. These concerns could be overcome if people realise that processes are transparent and are convinced that they participation can make a difference.
- **Country or city-specific framework conditions, including state regulations or policies**, that may hinder the deployment of participatory mobility innovation processes and/or mobility solutions within their urban mobility systems. Establishing partnerships among a wide range of diverse stakeholders (including local authorities, mobility authorities, etc.), seems to be the proper way to proceed in order to address not only such political but also additional socio-economic barriers.
- The **lack of knowledge/literacy of community members on urban mobility issues**, could be addressed through the deployment of targeted awareness raising and educational actions, through effective and transparent communication as well as through knowledge sharing and capacity building actions.
- The collaboration of SI community initiatives with traditional authorities, could pose challenges fuelled by cultural and communication issues. The lack of formalisation that usually characterises a SI initiative, and the fact that established actors in the transport and mobility field might not be used in communicating with local SI initiatives could create **a communication gap**[323]. The use of targeted communication channels and actions in order to bring the community front runners in the same table with the local authorities will be needed.

[322] Ibid 308

[323] Ibid 112

Appendices

Appendix 1: Urban design principles for promoting both physical and mental health and well-being within communities[324]

Social Determinants approach	Spatial Planning		
Areas of action	'Good communities'	Health Behaviours	Environmental Health
Early Years	Develop continuous and accessible walking routes to good quality green/play areas.	• School playgrounds should stimulate active games. • Play areas should be safe and within 4 mins walk of every family home • Should be outdoor playing fields within ¾ mile.	
Skills development	Local provision of educational facilities.	Increase in skill levels in the care of green space – incl. design of health promotion initiatives	
Employment & work	• Local provision of places to work • Safe environment for those working outdoors and travelling to and from work at night time.	Environment fostering active travel to work (provision of cycling routes, facilities to park bicycles at work and shower).	
Communities & places	• Places must have distinctive character, be adaptable and diverse • Involve the local community in developing and delivering local plans. • Promote Spatial planning that encourages community participation • Basic amenities within 5 minutes • Streets that are social places: • Avoid single use buildings and categorised zoning. • Avoid locating new neighbourhoods far from	• Provide many destinations within walking distance. • Large, open public space = walking • Space for inner city farms and allotments • Mixed land use promotes physical activity – include mixed use enters embedded in settlements. • Streets that promote physical activity: ○ many street intersections ○ safe road crossings that don't remove people from their 'desire line'	• Reduce Car Speeds: ○ 20mph speed limit ○ traffic calming measures ○ decrease controls ○ make streets feel riskier • Less car use: ○ fewer bypasses and ring roads ○ limit no. of parking spaces ○ less park and ride, only in low density areas, close to traveller and

[324] Source: Based on Table in: The Marmot Review Team: Geddes, I., Allen,J., Allen,M.,Morrisey, L.. The Marmot Review: implications for Spatial Planning. http://www.instituteofhealthequity.org/resources-reports/the-marmot-review-implications-for-spacial-planning

	local shops, services and jobs. • Should be village halls/community centres in every community • Must allow possibility of anarchic activity • Ensure presence of human activity in spaces between buildings	○ reduce number of dead ends roads ○ long, wide roadways • Provide many cycle parking spaces, including in parks • Rectify loss of features in parks	promote walking/ cycling.
Standard of living			Improve energy efficiency of housing.
Prevention	• Tackle crime ○ improve street lighting ○ broken windows theory ○ should structure local through movement ○ housing should be less detached, close to other houses and less exposed	• Provide continuous and safe cycling and walking routes linking the more deprived areas with services and opportunities. • Provide Green space that people can walk to. • Improve access to healthy food options • Provide readily available area maps to promote active travel, maps should also provide details of open space, cycling/walking routes and sporting facilities • Effective public transport can increase walking – provide access to high-quality transport within 1km walk. • Government staff (police/ park employees) should cycle.	
Equality/health equity	• Busy roads and steep hills pose accessibility problems • Play areas and playing fields should be accessible to all	Improve the quality of green spaces on housing estates.	Interventions such as the Congestion Charging tackle inequalities in pollution