TRANS-URBAN-EU-CHINA

Transition towards urban sustainability through socially integrative cities in the EU and in China

Deliverable D2.1

Knowledge Base on the transformative capacity of Smart Cities and Eco Cities in China and Europe to close the planning implemention gap: innovation, good practice and success factors

WP 2 Bridging the planning-implementation gap in eco- and smart cities

This project has received funding from the European Union's Horizon 2020 Research and Innovation Program under Grant Agreement No. 770141. The material reflects only the authors' views and the European Union is not liable for any use that may be made of the information contained therein.

Deliverable type:	Report
WP number and title:	WP 2: Bridging the planning-implementation gap in eco- and smart cities
Dissemination level:	Public
Due date:	Month 12 – 31/12/2019
Lead beneficiary:	AIT Austrian Institute of Technology
Lead author(s):	Hans-Martin NEUMANN (AIT) Jianming CAI (CAS) Susanne MEYER (AIT) Daiva JAKUYTE-WALANGITANG (AIT) Gudrun HAINDLMAIER (AIT) Yan HAN (CAS) Wei HAN (CAS) Jing LIN (CAS) Empu MA (CAS)
Reviewers:	Otthein HERZOG, Buyang Cao (CIUC) Pål J. AUNE, Yu WANG, Annemie WYCKMANS (NTNU)

CONTENT

List of Tables

List of Figures

Executive Summary

This deliverable compiles the outcomes of the tasks undertaken in WP2 during the first year of the project. It is dedicated to establishing a knowledge base on good practice and success factors for the development of strategies for sustainable cities, integrative planning and implementation in China and Europe. The given report entails the description of work delivered within the first project year and serves as foundation for the consecutive tasks within WP2. The report entails a comparative analysis of the understanding of the terms “Smart City” and “Eco-City”, describes the state of play and good practice in Europe and in China and presents a new methodology for case study analysis. Following theoretical considerations of Wolfram (2016) on the nature of transformative capacity, this methodology will enable the project team to identify good practice and success factors for bridging the planning-implementation gap in smart and eco-city projects. The case study methodology was successfully tested in two pilot case studies, one on Vienna and one on Stockholm (see Annex III). The preliminary identification of key success factors from the two test case studies has exposed three categories to be further examined and elaborated:

a. Strategy

- Obtaining an early commitment from local stakeholders, bottom-up involvement and co-creation between public, private und academic stakeholders;
- Presence of stakeholders who are consistently involved in every phase of the process
- Strategy as enabler/mobiliser of ideas, vs. the traditional role of top-down steered action plan;
- Strategic planning to serve as catalyst for transformative capacity maximization.
- Horizontal and vertical alignment between different sectoral strategies
- Joint and participative alignment between city strategies (Umbrella Strategy) accompanied by strategic compliance of implementation projects

b. Planning

- Early involvement and commitment from private stakeholders
- Consistency in communication and stakeholder involvement
- Breaking-down of strategic goals, ‘translation’ and differentiation on the local level and linking to the specific actions by stakeholder group
- Considering the non-linearity of planning and implementation process
- Allowing negotiation processes in the presence of conflicting interests
- Bottom-up initiation of projects (vs. top-down) by local stakeholder groups
- Strategies are linked to specific action plans and budgetary distributions

c. Implementation

- Availability of suitable implementation instruments
- Agile Project management
- Creating clear task „ownership” and consistency in the implementation process
- Considering the non-linearity of planning and implementation processes
- Joint and participative alignment between city strategies and implementation projects

In the second year, this case study methodology will be applied to six more cities in Europe and eight cities in China to identify success factors for bridging the gap between planning and implementation in smart and eco-city projects.

1 INTRODUCTION AND OBJECTIVE

1.1 OBJECTIVES OF THE REPORT

This deliverable compiles the outcomes of the initial tasks undertaken in WP2. It is dedicated to establishing a knowledge base **on good practice and key success factors** for the development of **strategies, integrative planning and implementation for sustainable cities** in China and Europe. The given report entails the description of work delivered within the first project year and serves as foundation for the consecutive tasks within WP2.

In the European as well as the Chinese urban context the complexity of challenges, demands, stakeholder interests as well as potentials that cities are exposed to is well documented and overwhelming. A great range of existing urban strategies attempts to address and shape sustainable urban development patterns. While progress is being made in distinct cases, showcasing experimental and pioneering examples of sustainable urban development, systematic, collectively shared urban visions, followed by spatially embodied, well aligned and integrated implementation actions are still scarce and occasional. Urban planning (especially integrated urban planning) is by its very nature bound to its context and depending on actions, involvement and cooperation of a multi-actor community. Given this fact, the task of extracting, relating and understanding different good practice examples across Europe and China, requires a systematic step by step approach. Taking this context into account, the WP2 team has devoted the first project year to achieving the following objectives:

- Establishing a common and agreed understanding among the project partners concerning the definitions and terminology systematically used in WP2, while extracting and considering the different applications and meaning of featured terms in Europe and in China.
- Establishing an analysis framework, based on the theory of transformative capacity (Wolfram 2016).
- Setting up a robust and consistent methodology and argumentation for the selection of specific European and Chinese cities and case studies to serve the project as good practice examples for exposing and bridging the gap between strategy development and integrative planning and implementation.
- Selecting and agreeing on the European and Chinese case study cities to be examined and analyzed in more detail during the entire project.
- First test application of the analysis framework on one case study city.
- Extracting the good practice and success factors across the examined cities and case studies, focused on the development of strategies for sustainable cities, integrative planning and implementation.

The combined findings from cross-case examination will serve as baseline, exposing the common as well as case-specific elements of successful and integrated urban development and implementation examples, linked to overall urban strategic city-wide goal setting, outline and advancement. This knowledge base will form the backbone for the development of the toolbox for closing of the gap between urban strategies and implementation and will be tested and validated in selected Living Lab settings in China. This report summarizes the findings from two European case studies and good practice examples, Vienna and Stockholm, both of which will be

further examined in the next phase (second year) of the project. Further 6 European cases, selected by the methodology described below, will undergo the same process of examination, thus jointly forming a pool of specific, evidence-based findings. The ongoing paradigm shift from sectoral to integrative modes of strategic planning and implementation driven by numerous cities in the European context, is being illustrated and highlighted based on this work, displaying the significance of the underlying transformative capacity in different European urban settings.

1.2 STRUCTURE OF THE REPORT

The research activities planned in the project comprised three tasks covering on different levels of planning:

- Task 2.1 Strategic planning
- Task 2.2 Planning on neighborhood level
- Task 2.3 Implementation, replication & upscaling

All three levels are covered to address planning-implementation gaps in China and Europe. Each task builds a knowledge base, develops transformative knowledge and finally provides recommendations to foster transformative capacity for change (Figure 1). This report summarizes the knowledge base across all three tasks.

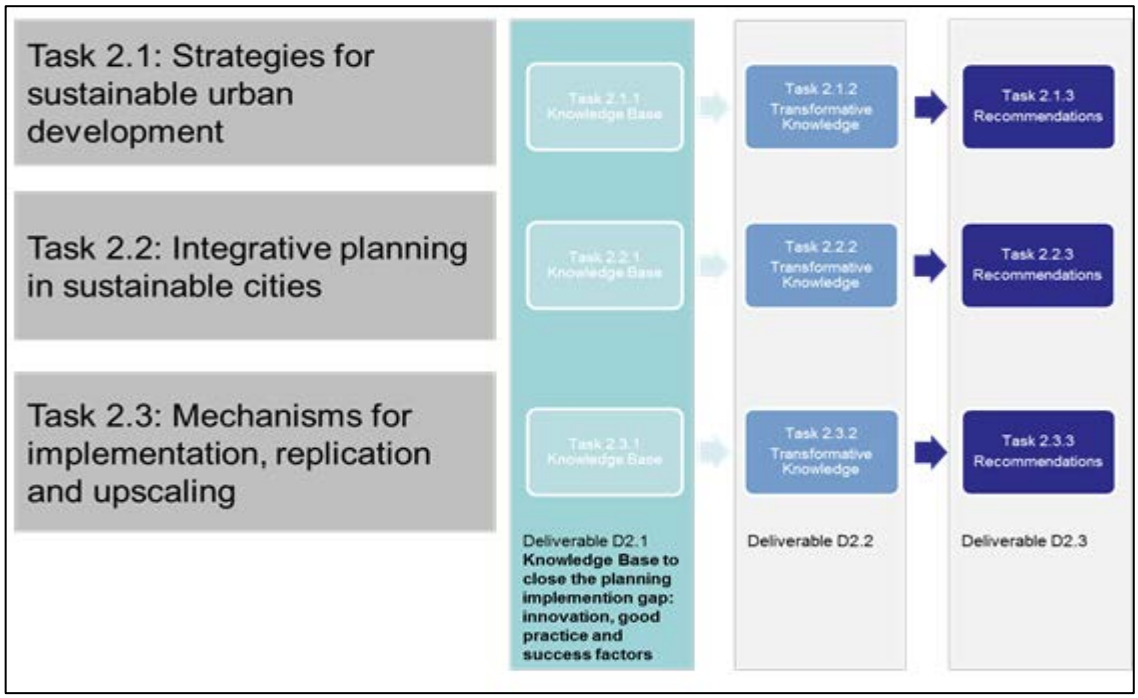

Figure 1 Structure of the Report and relation to research plan

The report is structured in nine sections. Section 2 describes the state of play and good practice in Europe to close the planning implementation gap. Section 3 identifies common aspects in Chinese and European strategic planning, neighborhood planning and implementation and upscaling as well as a definition of transformative capacity. Section 4 reveals our approach to create a knowledge base on the planning implementation gap. Section 5 and Section 6 provide a common understanding of smart

and eco-cities in China and Europe and a selection of case study cities. Section 7 outlines an analytical framework to detect innovation, good practice and success factors to close the planning implementation gap across all three levels (strategy, planning and implementation). Section 8 identifies innovation, good practice and success factors in Europe based on a pilot case study, and Section 9 provides an outlook.

This report has five annexes:

- Annex I – Glossary of key terms
- Annex II – Analytical Framework to measure Transformative Capacity in Smart and Eco Cities
- Annex III – Test city case study including strategic planning level and some elements of implementation
- Annex IV – Interview guideline
- Annex V – Comparison of European case study cities

2 STATE OF PLAY AND BEST PRACTICE IN EUROPE

The cities in Europe expose many unique and diverse cultural, spatial and social characteristics that serve as a source for innovation and transformation Cities of tomorrow (2011). The European urban transformation model often assumes an international leadership in shifting the urban development paradigm to a new, sustainable and integrative urban development practice, incorporating environmental, social, economic as well as cultural aspects in a truly integrative manner. Such transformative, sustainable urban development examples are currently being demonstrated in a variety of specific national (European) settings, providing a rich and diverse pool of local experience in shaping and demonstration innovative and sustainable urban ways of life. Despite nationally varying degrees of success in implementing urban innovation examples across Europe, there are some general features that all Best Practice examples share: a high level of interdisciplinarity, the co-creative nature of individual implementation projects, integrative involvement of public as well as private actors, tapping and activation of knowledge, creativity and capacity of local communities.

In this deliverable, European Best Practice in Sustainable Urban Development is addressed and key success factors are identified concerning the transformative capacity of selected urban development examples. As the project proceeds, selected findings from the European analysis of good practice will be tested for the transferability to China. This testing will be carried out in a series of workshops in two Chinese Living Labs.

The selected European Best Practice encompasses mostly cities that are highly active in a variety of funding programs supported by the EU, aiming not only at achieving a new level of urban resource efficiency and technological progress in smart infrastructure development, but also focused on the cross-disciplinary, cross-sectoral enabling, integration and demonstration of the sustainable urban development principles, which can be replicated in different contexts.

3 THE DEFINITION AND SIGNIFICANCE OF TRANSFORMATIVE CAPACITY OF CITIES IN CLOSING THE PLANNING IMPLEMENTATION GAP

In the first year of the research, the research team developed a TRANS-URBAN-EU-China Glossary to support the empirical work and to bring together both perspectives of Chinese and European cities with respect to the understanding of the most relevant aspects for analyzing the gap between planning and implementation in Smart and Eco-Cities. Besides other specific key terms, the glossary (Section 1) outlines our common understanding of strategy, planning and implementation within European and Chinese cities guiding the empirical analysis.

3.1 UNDERSTANDING OF STRATEGY, PLANNING AND IMPLEMENTATION OF CITIES

Aspects of strategic Planning

Strategic planning both in Europe and in China refers to the systematic and comprehensive plan aiming to pursue the vital and sustainable development of cities or regions against the rapidly changing external and internal environment in the increasingly globalized context. Strategic planning proposes the vision and strategic positioning for the city or region in an evidence-based approach and defines long-term goals, thereby reducing uncertainty about the future. Targeting the prominent challenges, it also provides action frameworks, conceptual programming and policy recommendations for city and regional development.

Strategy making plays a leading role in guiding the overall planning system (in China as a top-down process; in Europe rather as a multi-level-government approach taking partnerships, coalition building and participation into account). It shall enable optimized city development from regional balance, growth and sustainability perspective and is designed as a pro-active policy. By also including elements of monitoring, evaluation and iterative learning processes, strategy making increasingly tries to link better to the implementation phase.

Aspects of planning of urban neighbourhoods

The understanding of neighborhood planning in Europe comprises a variety of concepts and approaches, depending on the planning culture it originates from (Anglo-Saxon, Napoleonic, Germanic, Scandinavian, etc.). Neighborhood planning usually entails the technical/spatial planning documents (local/municipal plans) accompanied by corresponding planning processes.

In general, neighborhood planning (usually led by a municipality) intends to support and implement the strategic development requirements, by anchoring these in the local plans (legally binding documents) and processes and thus positively influencing local development. In Europe, integrative planning as a system of interlinked actors is often applied to ensure synergies through cross-sectoral and cross-departmental interactions and partnerships in the development of Action Plans on the local level. Neighborhood planning follows much more a bottom-up-approach than strategic planning and is therefore intertwined with an integrative approach, bringing different stakeholders and governmental bodies together.

Aspects of implementation, Upscaling and Replication

Cities worldwide are developing strategies and plans to steer their urban development towards sustainability, social integration and higher competitiveness. However, it can be observed in many cities in Europe as well as in China, that it is difficult to implement these strategies and plans, and to

develop implementation projects. It is the aim of WP2 to identify the underlying causes for this phenomenon and to develop strategies and tools to overcome them.

Examples for the planning-implementation gap can be found in China as well as in Europe:

- Building environmentally friendly, livable, healthy and energy efficient cities is becoming one of the top priorities of Chinese government's commitment to improving its environmental and urban conditions. The central government offers massive subsidies for sustainable cities initiatives, such as eco-cities, green cities, sponge cities, smart cities and healthy cities. There are currently upwards of 200 eco-city projects in the works in China. However, very few of these projects have ever been implemented or built.
- Examples for the planning-implementation gap can also be found in European projects on smart and ecological urban development. It has been a major concern of the European Commission and of its member states. In the European Smart Cities and Communities initiative in HORIZON 2020 and in the related European Innovation Partnership Smart Cities and Communities (EIP SCC), several activities were designed to specifically address and mitigate the planning-implementation gap (e.g., business model development, upscaling and replication plans etc.).
- However, obviously, the geographical, economic and social framework conditions in China are very different from those in Europe. Furthermore, there are differences in the understanding of what integrated urban planning entails and how it is implemented. Therefore, knowledge transfer needs to embrace the differences and translate good European experience into useful Chinese practice.

It needs to be stated at this point that the gap between strategy and implementation does not solely refer to the realization of pilot projects or demonstration areas, but also to replication and upscaling of specific solutions or projects.

Upscaling can involve (1) increasing the geographic scale by applying a successful pilot activity to an entire area (e.g., from a neighborhood to the entire city), or (2) increasing the policy of scope of a given solution or strategy by using a successful approach to influence policy, development and funds, or (3) increasing the institutional scale of a strategy by applying activities involving a small subset of community to the whole community level.

Replication is about transferring/replicating a specific solution to another context. Furthermore, this implies learning best practices and lessons against failures but paying attention to avoid "copy-cut strategies", which would fail wothout the consideration of the local success factors. Experiment-replication-upscaling is a common way/mode to apply new concepts and new technologies in China. Thereby, the pilot area serves as the spatial accommodation, like a region, city, county or even a community, with sightseeing visit, field trip, exchange & communication, academic seminar, training workshop and courses as the main channels to raise awareness and disseminate knowledge.

To close the planning-implementation gap from strategy, neighborhood planning to implementation and finally upscaling, **transformative capacity for change** is necessary. The concept of transformative capacity will be discussed in the next section and will later operationalized (Section 7) to apply it in form of an analytical framework to identify innovation, good practice and success factors in strategy planning, neighborhood planning and implementation to close the planning implementation gap.

3.2 UNDERSTANDING TRANSFORMATIVE CAPACITY FOR CHANGE

The term "transformative capacity", which is used in this report, originates from sustainability science, more specifically from the transition management discourse. In this scientific context, "transition" refers to discussions and practical applications regarding fundamental and lasting changes in urban societies on the way to sustainable development. Loorbach (2016), refers the term "transition" to "locked-in regimes that are challenged by changing contexts, ecological stress and societal pressure for change as well as experiments and innovations in niches driven by entrepreneurial networks, and creative communities and proactive administrators" (Loorbach 2016). Cities which are confronted with fundamental challenges, such as rapid urban growth due to migration, environmental pollution, and social fragmentation, look for unconventional solutions, unlock their innovative potential and encourage niche innovations in dealing with opportunities and threats, as well as barriers to and drivers of sustainable urban development in order to establish new institutional structures, practices and modes of action which have greater potential to successfully lead to more sustainable urbanization Frantzeskaki et al. (2016), Loorbach et al. (2016), Wolfram (2016), Wolfram and Frantzeskaki (2016).

Bridging the planning-implementation gap in European and Chinese cities calls for a transitional change of modes of urban governance, leadership and stakeholder involvement. Our hypothesis is that the fact whether urban transition emerges or accelerates to close the planning-implementation gap, depends to some extent on the urban transformative capacity. According to Wolfram (2016), urban transformative capacity is characterized by the following three categories and 10 key components (Figure 2).

Figure 2 Transformative Capacity according to Wolfram (2016)

Transition pathways for integrative planning on the level of strategy, neighborhood planning and implementation can be derived based on the understanding of transformative capacities by Wolfram (2016). In order to identify transition pathways, an analytical framework for transformative capacities (Section 1) was developed in the first year of this project, and empirical case studies conducted to detect key success factors, good practice and innovation to close the planning implementation gap of smart and eco-cities.

4 APPROACH AND ANALYTICAL STRUCTURE

The research approach to extracting and understanding the good practice and success factors for bridging the gap between the strategic development and integrated planning and implementation in Europe and China is based on five main pillars:

- **First:** Establishment of a theoretical foundation and methodological frame for the task at hand and definition of the key parameters and dimensions for the detailed screening of city-case-studies;
- **Second:** Systematic selection of specific urban areas in Europe and China, serving as distinguished city cases for detailed evaluation throughout the project;
- **Third:** Collecting and screening the exemplary city case study data as well as information concerning specific implementation projects within an exemplary city;
- **Fourth:** Integration between the conceptual, strategic and implementation dimensions in the exemplary city case study;
- **Fifth:** Synergetic cross-case linking and extraction of specific and common success factors from the exemplary city case study.

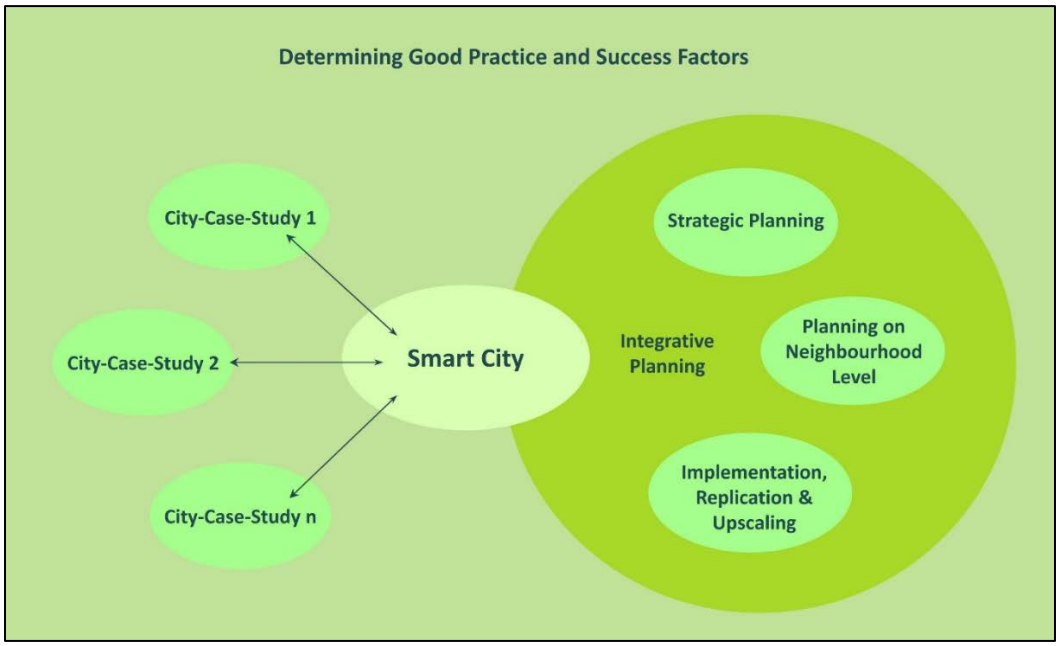

Figure 3 Determining Good Practice and Success Factors

Aiming to include the perspectives of a variety of stakeholders involved in the individual city cases, a range of methodologies was selected and applied in the work process, including (Figure 3 and Figure 4):

- Development of an analysis framework, based on the key pillars of the transformative capacity theory by Wolfram (2016).

- Development of a generic interview outline, to be followed during all interviews with designated stakeholders to attain comparability between the responses to the same questions.
- Interviewing and considering the interests and perceptions of different local stakeholders, involved in the strategic planning as well as implementation of individual urban development projects. (The stakeholders interviewed so far include representatives of public authorities, private stakeholders as well as researchers.)
- Desktop research on determining the level of strategic development and planning within the selected two exemplary city case and availability of collectively agreed sustainable urban development strategies.
- A concise stakeholder mapping, exposing the level of integration of different urban actors at the level of implementation projects.
- Synergetic evaluation of success factors for alignment and integration between the city-wide strategic set-up and planning and the individual implementation projects, based on the two exemplary city case studies.

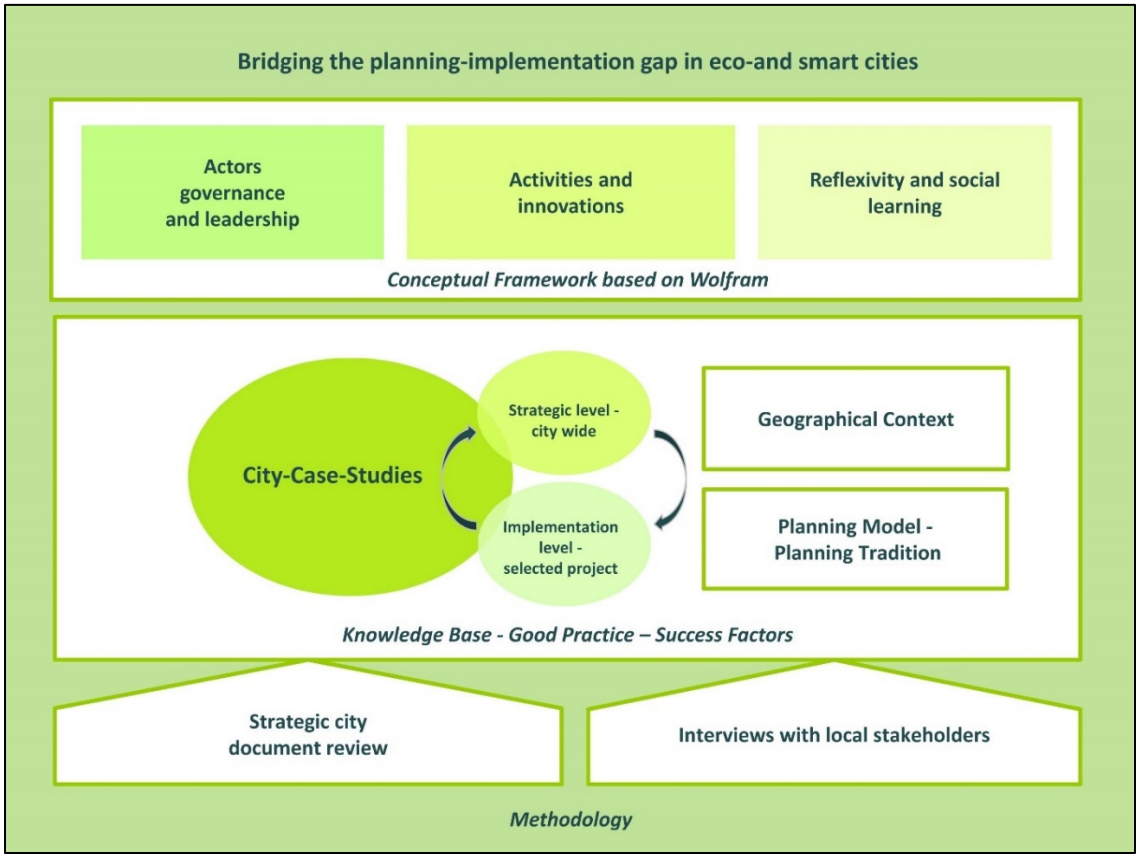

Figure 4 Overall approach and methodology

The test city case study includes both a) an examination of city-wide strategic planning elements as well as b) assessment of a selected implementation project at the level of neighborhood/district within the city. The outcomes of an in-depth assessment of the first exemplary European good practice example - Stockholm - serves as foundation for extracting and outlining common success factors, as well as specific success factors so far extracted from Stockholm case study and partial examination of

the second case. An examination of a second European case -Vienna - has been commenced, but not all necessary data could be collected and integrated in the present report, due to delayed availability of required interview partners . An in-depth analysis of city case study Vienna will be continued in the next project phase.

The knowledge base, generated by performing described tasks will inform and guide the further/ongoing assessment of the latter six European city case studies.

For a detailed structure and set-up of the test city case study please refer to Section 1.

5 COMMONALITIES AND DIFFERENCES IN THE UNDERSTANDING OF THE TERMS 'SMART CITY' AND 'ECO-CITY' IN CHINA AND EUROPE

Not surprisingly, the project team encountered differences in understanding the project's key terms „Smart City and „Eco-city" in Europe and China. Eco-city both in Europe and China is focused on the same concern, but differences occur in the underlying approaches, the addressed relationships and stakeholders as well as the spatial and structural/processual perspectives. As for Smart Cities, the origin of the term is quite similar in China and Europe, however, while its content dimensions have widened up in Europe in the meantime, in China the term is nowadays closely linked to data collection and analysis (Table 1). Consequently, we also took efforts in clarifying further key terms in the TRANS-URBAN EU-China Glossary (see Section 1 and ANNEX I).

Table 1 Understanding of the terms "Eco-City" and "Smart City" in Europe and in China

	Eco-City	
	Europe	**China**
	An Eco-City is an urban environmental system typically exposing a substantial scale and taking place **across multiple sectors**. It aims at creating an **ecologically healthy settlement** through application of socio-technical innovation, business development and cultural branding.	Eco-city refers to the **ideal urban settlement** featured by socio-economic-environmental coordinated and **sustainable developmen**t, with the emphasis on **social justice**, **economic efficiency**, and **human-nature harmony**.
Orientation towards	Problem-oriented	Problem-oriented
Focus and main concern	Addresses climate change (maximum impact through use of minimum of resources)	Combining social, economic and environmental dimension; strongly focused on economic aspects
Approach & understanding	Integrative approach	Evolutionary process and eco-diversity
Relationships & stakeholders	Cooperation between local and international stakeholders, knowledge exchange networks	Considers human-land, human-human harmonious relationship; effectiveness and efficiency in resources utilization; sustainability; integrity; coordinated development based on environmental carrying capacity
Process vs Structure	Develop, test and diffuse new processes.	Regional concept with spatial scale sensitivity; emphasis on urban-rural integration
	Smart City	
	Europe	**China**
	The understanding of Smart City in Europe entails a **variety of concepts**.	A smart city is an **urban area equipped** with various types of **sensors for data**

	The prevailing notion of Smart City targets **engineering system solutions** to urban challenges and addresses primarily **urban infrastructure**. The latest Smart City comprehension **includes environmental, social and governance related aspects** of urban development, supplementing and expanding the original concept mostly centered on the information and communication technologies.	**collection**, aiming to supply information for creation of more efficient urban assets and resource management. At the core there is a **smart platform**, utilizing information and communication technology in order to connect various physical devices and networks to **support city officials** in providing needed services and to optimize the operation of different networks, while enhancing the **efficiency and effectiveness**.
Orientation towards	Broad variety of dimensions („content-focused“)	Data collection and analysis along various sectors
Focus and main concern	• **Smart Environment**, innovation and ICT applications addressing natural resource protection and management • **Smart People**, implying creativity and open innovation • **Smart Economy**, encompassing new technologies and innovation for business developments, employment and growth • **Smart Living**, concerning innovation for enhanced quality of life and livability • **Smart Governance**, including technology for improved service delivery, participation and engagement • **Smart Services**, overarching technology and ICT for health, education, tourism, safety, etc. • **Smart Infrastructure**, including city facilities in conjunction with enhanced smart technologies • **Smart Transportation**, enveloping transport networks featuring real time monitoring and control systems	• **Civil services**: gas and water supply, waste treatments, traffic monitoring and optimization; • **Macro urban management**, e.g. e-government and capacity building; • **Interaction and communication** between government, management officials, community and city infrastructure, providing **real time monitoring** of the urban dynamics and city development.

A more detailed glossary was compiled to pave the way towards the empirical work in WP2. As indicated above, it is important to outline the key terms and to get to a common understanding for

further progress on the analysis and field work. Consequently, some terms are more important for Chinese cities than for European cities (and vice versa), some concepts face different wording ("Sponge city and water sensitive solutions"), other terms have faced different developments in Europe and China (e.g. Smart City) (Figure 5).

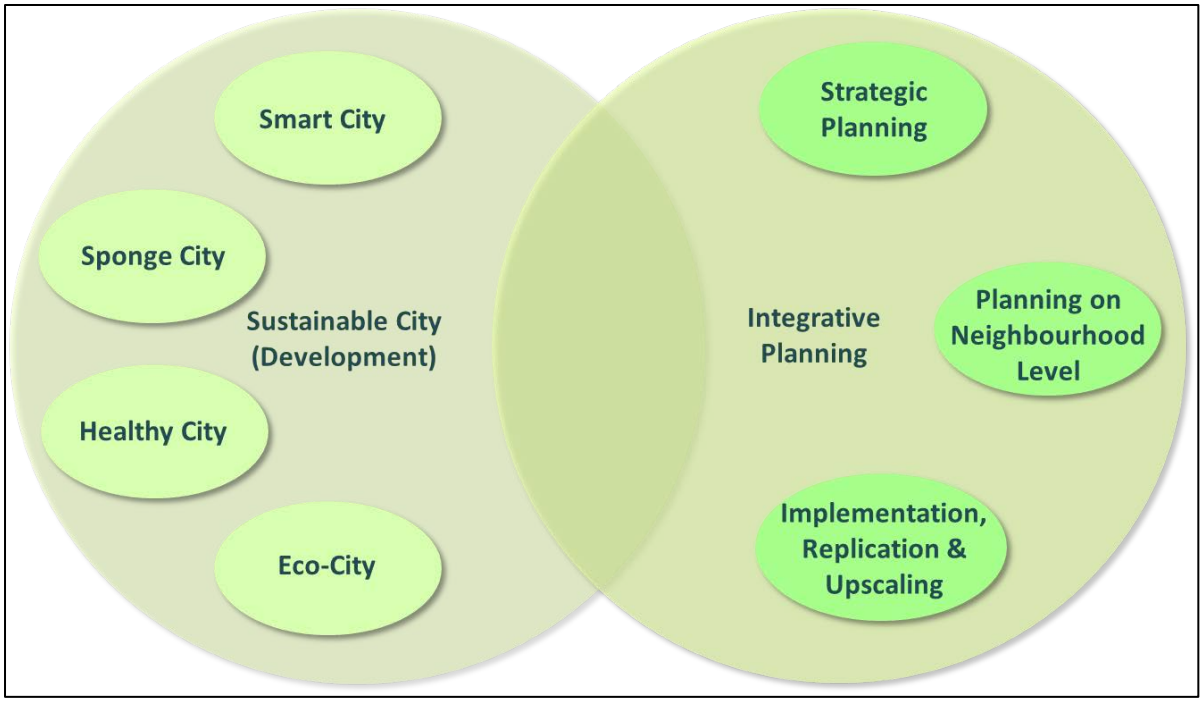

Figure 5 Key terms defined in the glossary of Trans-Urban EU-China

The Trans-Urban-EU-China Glossary contains the key terms of Eco-City, Sponge City, Healthy City, Smart City, Strategic Planning for steering urban development, Planning on Neighborhood Level as well as Implementation, Upscaling and Replication. It describes their respective definition and understanding, the drivers of the concept as well as main documents/sources of information in a comprehensive way (see ANNEX I Glossary).

6 IMPLEMENTATION OF SMART CITIES AND ECO CITIES IN CHINA AND EUROPE – REPRESENTATIVE CASES

This section identifies cities in China and Europe that already successfully bring their strategy towards implementation. These cities will serve as case studies in China and Europe to empirically identify innovation, good practice and success factors to close the planning implementation gap.

The selection approach for city cases considers successfully funded smart or eco-city innovation and implementation projects in China and Europe. All these projects aiming towards the implementation of citys strategies in an innovative way. These projects have successfully passed a project selection procedure. We can assume that the cities involved in these projects are successful implementers of their strategy and provide insights and learning material for others to close the planning implementation gap.

6.1 EUROPEAN SMART CITY PROGRAMMES AND SELECTION OF CITIES FOR CASE STUDIES

In Europe the concept of smart cities has been widely used in city strategies as it is rooted in European, national and regional policy strategies. Moreover, research and innovation programs have been targeted towards smart city development to support technological, organizational and social innovations needed. The main aim is to support research and innovation needed for the implementation of smarter cities.

European R&I Programmes dedicated to urban development

For the selection of city cases an analysis of three large European/transnational R&I programmes has been conducted to identify active cities.

- The first programme is the European research and innovation framework programme of the European Commission. In the 8th (Horizon 2020 - 2014-2020) R&I framework programme cities have been actively mobilized to apply to projects dedicated towards the development of smart cities (but also other type of cities: digital city, eco-city, etc.). Projects considered for analysis have started in the period 2013-04/2018.
- The second programme is the European URBACT III programme of the European Commission (2014-2020) that supports innovative activities in cities. Projects considered for analysis have started in the period 2013-04/2018.
- The third R&I programme is the European Joint Programming Initiative Urban Europe that funds R&I projects dedicated to sustainable development on transnational basis. Projects considered for analysis have started in the period 2013-2017.

Analysis of participating cities in European R&I programmes

In total, 273 projects dedicated to sustainable urbanization could be identified with 161 participating cities, meaning city authorities/municipalities (Figure 6). Table 2 shows that 213 out of 273 projects with city participation are funded by Horizon 2020, 33 projects by URBACT and 27 projects by JPI Urban Europe. Moreover it reveals that the identified cities vary in size, from small (<50.000 inhabitants) to large (> 1.000.000 inhabitants). However, most of the engaged cities have between 100.001-500.00 inhabitants. It also presents how the cities spread among planning families. Most of them belong to the napoleonic planning family.

Table 2 Identified cities and projects according to European R&I programme, population size and planning family

Identified European projects with city participation	**count**	**Identified cities in European R&I programmes according to population classes**	**count**
Horizon 2020 (8th European R&I framework programme)	213	< 50.000	18
Thereof related to		50.000-100.000	25
eco-city	*16%*	100.001-250.000	40
resilient city	*17%*	250.001-500.000	40
smart city	*65%*	500.001-1 Mio.	27
digital city	*2%*	> 1 Mio.	21
URBACT	33		**161**
JPI Urban Europe	27		
	273		
Planning families of identified cities			
Napoleonic	77		
Eastern	29		
Scandinavian	18		
Germanic	17		
Anglo	12		
Turkish	7		
Non-European	1		
	161		

Figure 7 shows a map of Europe with the engaged cities in projects according to the number of projects they are engaged. Torino (Italy), Madrid (Spain) and Santander (Spain) are the cities that engage in 7-8 projects. Antwerp (Belgium) and Stockholm (Sweden) are the two cities of the sample that engage in all three funding schemes.

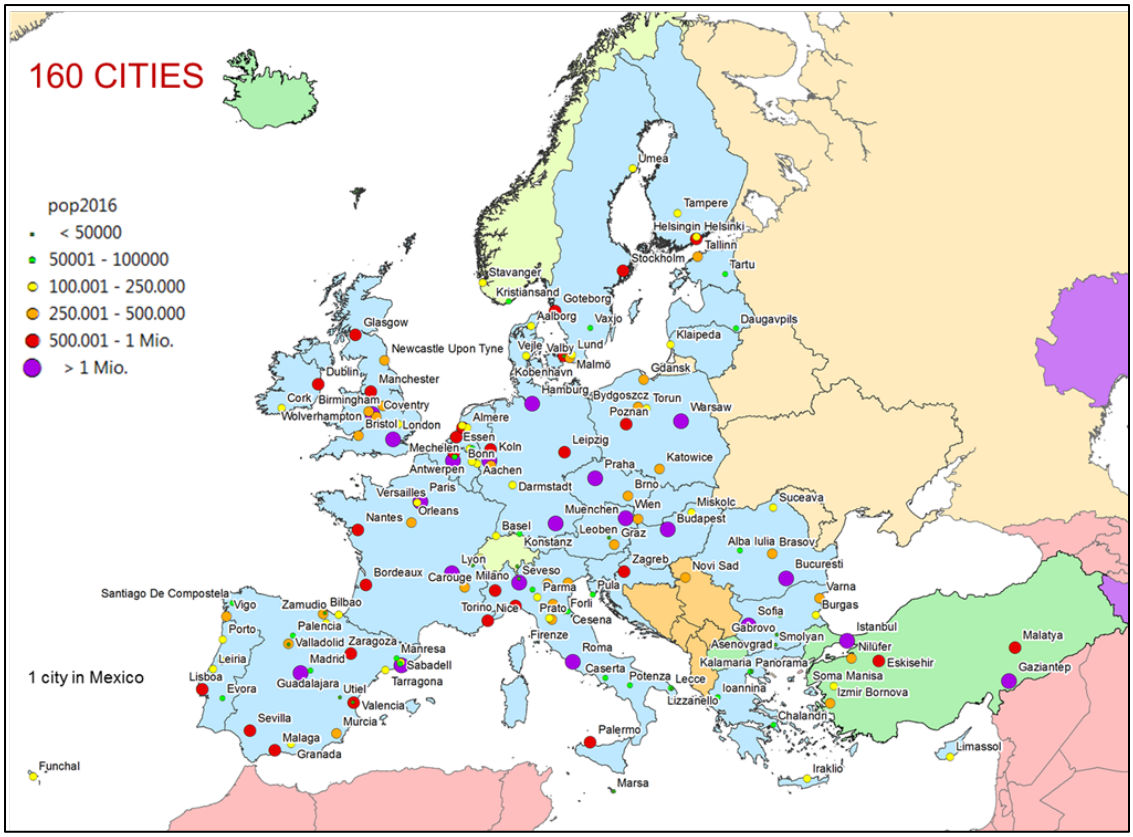

Figure 6 Identification of cities, participating in European R&I programs on sustainable urbanisation

Figure 7 Cities as project partners according to number of projects engaged

Table 3 Sample criteria and selection of cities for case studies

Sample Criteria	**Cities**	**1st Selection #19 (Assumption: different type of cities)**	**2nd Selection #8**
Cities that are most active in projects across all funding schemes	Torino (7 projects), Santander (7 projects) Madrid (8 projects)	Amsterdam Antwerp Barcelona Bratislava Bristol Budapest Dublin Genova Hamburg Ioannia Lisboa London Maastricht Madrid Rijeka Santander Stockholm Torino Vienna	AMSTERDAM BUDAPEST LONDON MADRID RIJEKA SANTANDER Stockholm Vienna
Cities that are most active in H2020 projects	Torino (7 projects), Santander (7 projects) Madrid (8 projects)		
Cities that are most active in URBACT projects	Ioannina (2 projects)		
Cities that are most active in JPI Urban Europe	Maastricht (2 projects), Amsterdam (2 projects)		
Cities that are active in all three funding schemes	Antwerp, Stockholm		
Cities that are active in the different city concepts	Smart city: Madrid, Santander Eco-city: Madrid Resilient city: Dublin, Torino, Lisbon, London Digital city: Santander		
Cities that are active in 3 or 4 of the city concepts	Santander, Torino, Genova, Lisboa, Madrid, Barcelona, London, Bristol		
Cities with many projects, but from different planning families	Napoleonic: Torino (7 projects), Santander (7 projects) Madrid (8 projects) Eastern: Budapest (2 projects), Bratislava (2 projects), Rijeka (2 projects) Germanic: Vienna (3 projects), Hamburg (3 projects)		

Selection of European smart cities for case studies

Based on the 161 cities, a selection was made. Table 3 summarizes the sample criteria for cities (column 1), the selected cities according to the different sample criteria (column 2) and a 1st selection of 19 cities (column 3) which eliminate cities that were sampled more than once. Based on this 1st

selection, a 2nd selection was made reducing the sample by cities that had similar sample criteria (e.g., Vienna and Hamburg – both are active in 3 projects, have similar size, same planning family).

Table 4 summarizes the 8 cities in Europe selected for case studies, their sample criteria, planning family, population size and the number of projects they are involved. Annex IV shows a comparison between sample (TOP 19 and TOP 8) and population to see how good the fit is between both. It becomes obvious that the fit in terms of planning families is sufficient, but in terms of population size of city the sample is biased toward large cities.

Table 4 Overview of city sample for case studies

City	Sample Criteria	Planning Family	City Population	Projects
AMSTERDAM	Many JPI UE Projects	Napoleonic	500.001 -1 Mio.	1 H2020, 2 JPI UE
BUDAPEST	Many H2020 in Eastern Europe	Eastern	> 1 Mio.	2 H2020
LONDON	Many Resilient City Projects	Anglo	> 1 Mio.	6 H2020, 3 resilient
MADRID	Many project, many H2020 projects, many smart city projects, many eco-city projects	Napoleonic	> 1 Mio.	8 H2020
RIJEKA	Many H2020 in Eastern Europe, small city	Eastern	100.001-250.000	2 H2020
SANTANDER	Active in all 3 funding schemes, planning family Scan	Napoleonic	100.001-250.000	1 smart city, 1 urbact, 1 JPI
Stockholm	Active in all 3 funding schemes, planning family Scan	Scan	500.001 -1 Mio.	1 smart city, 1 urbact, 1 JPI
WIEN	Many H2020 Projects, planning family Germanic	Germanic	> 1 Mio.	3 H2020 und 1 JPI Project

6.2 CHINESE SMART CITY PROGRAMMES AND SELECTION OF CITIES FOR CASE STUDIES

China has experienced unprecedented rapid urbanization process in the past three decades, while at the same time encountering and facing a series of big challenges such as fast population growth, acute industrial restructuring, limited environmental carrying capacity, wide environmental degradation and less well coordinated governance due to the conflicts of interests from different stakeholders. In terms of a city's routine operation and daily management, the emerging "urban diseases" such as air pollution, traffic congestion, inadequate public services and other problems pose also additional challenges to government's adoptive capacities in urban management and governance.

All these challenges call for new approaches for urban development and the transformation of the static type of urban management into a more dynamic and real-time adaptive practice. Therefore, the rising of Smart City development is logically becoming a paramount and urgent need in China's new round of urbanization and city development, where the quality and human-centered development approach is fully promoted and further emphasized.

Given China is still a developing country with a large territory, huge population and significant regional differentiation, the primary task in the Smart City development is how to efficiently facilitate and utilize the modern information technology to build digitized and synergetic linkages between urban development and urban operation systems, with the ultimate goal of improving the capabilities of resource integration and of the synergies between different actors, leading to a livable urban environment, and achieving green and sustainable development.

To scientifically explore the different approaches to construction, operation, management, services and development of Smart City in China's context, different ministries of the state council have launched a series of pilot programs to encourage incorporating Smart City practices into urban development strategies, to enhance the management and service capability at city level, and thus to improve the process of urbanization and of industrial restructuring, and to improve governance and public services towards sustainability. There are many stakeholders actively participating in those programs such as enterprises, research institutions and universities. However, due to top-down governance structures in China, at least for now, it is still the central and local governments that play the dominant role in Smart City development and practice. Because of this nature and considering government preference for demonstration cases, it can be fairly and reasonably assumed that pilot cities in China (that usually receive more policy support from central government) are more likely to become the showcases for excellent performances in Smart City construction, while its real effectiveness need to be further assessed and evaluated. But nevertheless, these pilot cases are still valuable references for understanding the Chinese approach in this regard and are be a good starting point for international comparative studies.

Pilot Programs dedicated to Smart City construction in China

To select comparable city cases in China for carrying out a comparative study with the counterpart cities in Europe in terms of smart city construction, the following five practices of pilot programs that have been launched by the Chinese government, are used for identifying the citiesthat are more active in Smart City development.

- In May 2012, the Ministry of Housing and Urban-Rural Development of the PRC (MOHURD) officially issued a "Notice on Carrying Out the National Smart City Pilot Program": Each city with application intentions is required to formulate a specialized plan coupling country-level objectives and local conditions, which shall be submitted to the MOHURD after the approval of the corresponding provincial government. From 2012 to 2015, MOHURD announced three batches of ***National Smart City Pilots (NSCP)*** with a total of 277 programs covering 179 prefecture-level or county-level cities distributed in 23 provinces, 5 national autonomous regions and 4 provincial-level municipalities.
- In Dec 2012, the National Administration of Surveying, Mapping and Geo-information (NASMG) announced the launch of a pilot program of constructing ***Smart City's Cloud Platform for Spatio-Temporal Information (CPSI)***, which mainly focuses on the construction of spatial information infrastructures. By collecting and analyzing real-time spatio-temporal information, it is supposed to make great contributions to achieving more intelligent decision making for urban development, more flexible public services for citizens, and more transparent and reliable pathways towards sustainability. Since 2013, about 10 cities are selected by NASMG for piloting each year, and the construction period for each pilot city is about 2 to 3 years. At present, up to 46 cities have been listed as pilot cities.

- In Dec 2013, ***the National Information Consumption City (NIC) Pilot Program*** was launched by the Ministry of Industry and Information Technology of PRC (MIIT). The essential criteria for pilot selection includes that the city should have solid foundations in economic performance and Information infrastructure, i.e., the city should not only be advantageous in providing information services and products for citizens, but also has excellent practices in the operation pattern, the innovation encouragement, public service function and governance capacity. Up to now, a total of 104 pilot cities (also including counties and districts) have been promulgated, among which there are more than 5 pilot cities in each of these provinces respectively, including Jiangsu, Shandong, Anhui, Guangdong, Hebei, Jilin, Sichuan and Zhejiang. By the end of 2015, 25 demonstration cities with best practices have been selected through the process of application by municipalities, pre-evaluation by provincial governments and final evaluation by national expert commission.
- ***The Technology and Standard Pilot Program for Smart City (TSPPSC) Construction*** has been jointly issued by the Ministry of Science and Technology of the PRC (MOST) and the Standardization Administration of China (SAC) since 2012 to carry out pilot demonstration work in 20 cities across the country. This program aims at providing a network platform for local governments and national science and technology programs involving Cloud Computing, Big Data, and the Internet of Things to form a general scheme for smart city development by promoting technological and economic cooperation. Each pilot city is asked to respectively formulate its concrete implementation plan for three years. By the end of implementation, their performances and achievements will be critically and thoroughly evaluated for drawing the replicable experiences. These replicable experiences from each city will then be further summarized and standardized for contributing to China's technology and standard system of smart city construction.
- In 2014, 12 national ministries or bureaus[1] *(D12)* jointly approved a list of 80 cities for pilots of ***People-Beneficial-Oriented National Information Cities (NIPC)***. The main objectives of this pilot program are to improve capabilities of/access to public services, to optimize public resource allocation, and to promote sharing of knowledge, innovation, infrastructure and business network among actors such as municipal government agencies, communities, enterprises and grassroots institutions. A wide spectrum of experts recommended by different ministries have been jointly established to provide advice on the construction and governance innovation in these pilot cities. Additionally, this program takes communities or neighborhoods as the basic spatial units to collect and integrate real-time data or information, for avoiding both extremes: unreasonably oversized information systems or the possibly emerging of "information isolated islands". Services involved in the information system cover many aspects and topics, including urban construction, social security, health care, pension, education, industry, employment and community services.

[1] 12 National departments include i) the National Development and Reform Commission (NDRC), ii) the Ministry of Finance (MOF), iii) the State Commission Office of Public Sectors Reform (SCOPSR), iv) the Ministry of Industry and Information Technology (MIIT), v) the Ministry of Education (MOE), vi) the Ministry of Public Security (MOPS), vii) the Ministry of Civil Affairs (MOCA), viii) the Ministry of Human Resources and Social Security (MOHRSS), ivv) the National Health and Family Planning Commission (NHFPC), vv) the National Audit Office (NAO), vvi) China Food and Drug Administration (CFDA) and vvii) the Standardization Administration of China (SAC).

Analysis of Pilot cities in various programs in China

As shown in Figure 8, there are in total 1,028 pilot projects on smart city and eco-city construction in China so far, distributed to 193 cities (including 189 prefecture-level cities and 4 provincial-level municipalities) of 31 provinces. Besides 5 types of pilot programs (527 out of 1,028) closely related to Smart City development discussed above, other pilot programs launched by central government on eco-city development are also considered, *as summarized in Table 1*, including ***the National Garden City (NGC), the National Ecological Garden City (NEGC), the National Climate-Dmart City (NCC), the National Sponge City (NSC)*** and ***the National Low-carbon City (NLC)***.

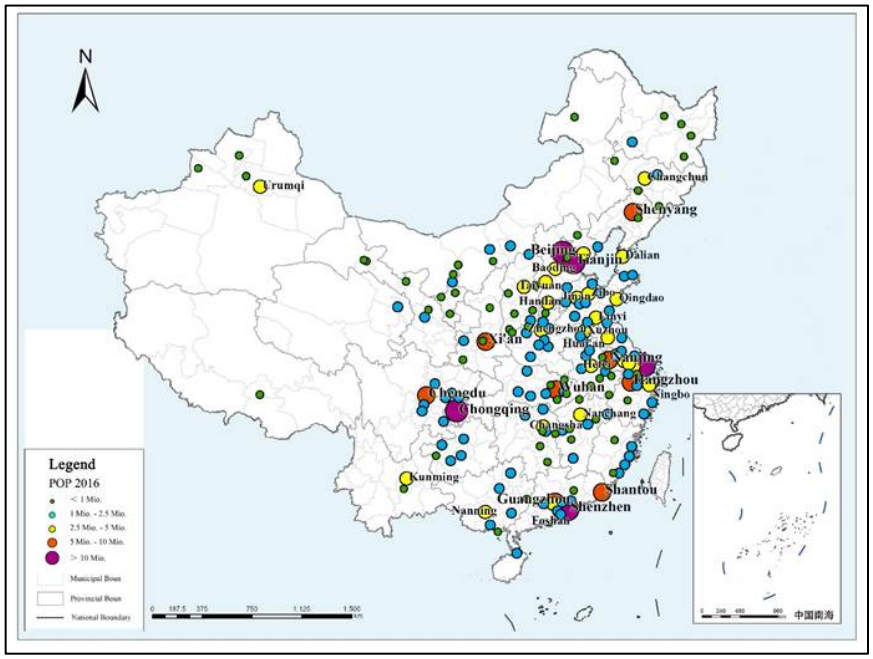

Figure 8 Pilot cities in various programs on Smart City and Eco-city in China

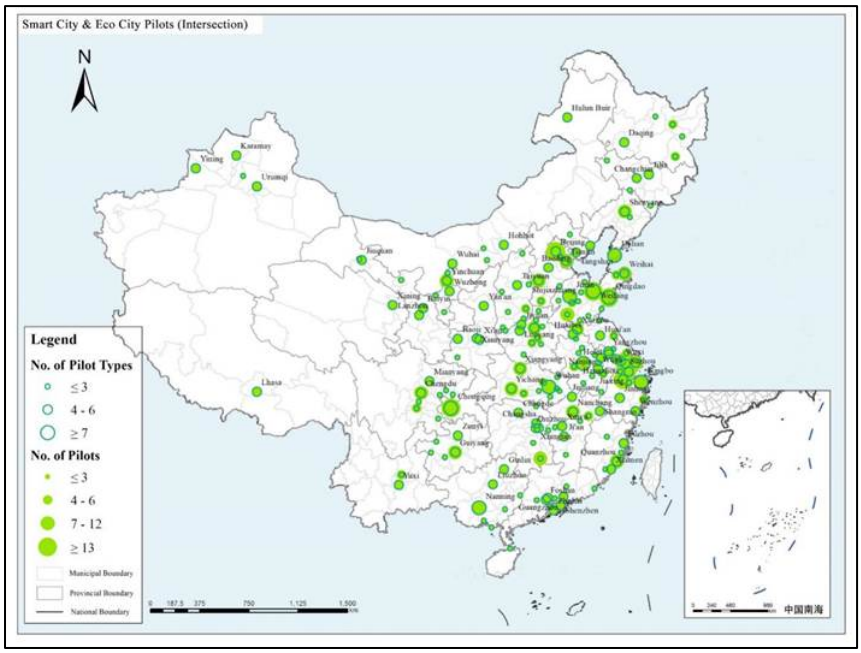

Figure 9 Pilot Cities by number of pilot projects and number of types of pilot programs

Table 5 shows the identified pilot cities by population size. Compared to the European classification, the urban population scale is much higher in general. In particular, 5 cities have populations of more than 10 million, including Chongqing, Shanghai, Beijing, Shenzhen and Tianjin. Table 6 Spatial distribution of identified cities shows the geographical distribution/city clusters to which identified cities belong to. It can be shown that the city clusters with the largest number of identified cities include the Yangtze River Delta and Middle-Yangtze river city clusters. In terms of regions, Eastern China has the largest number of identified cities.

As indicated in Figure 9, cities such as Suzhou (Jiangsu province), Chongqing (Chongqing municipality), Weifang (Shandong province), Beijing (Beijing municipality), Qingdao (Shandong province) and Hangzhou (Zhejiang province) have 13-19 pilot projects from the 9 types of pilot programs. Cities such as Dalian (Liaoning province), Chongqing (Chongqing municipality), Wuhan (Hubei province) Weifang (Shandong province), Qingdao (Shandong province), Ningbo (Zhejiang province), Ji'nan (Shandong province), Nanning (Guangxi Zhuang Autonomous Region) and Hefei (An'hui province) are all involved in 7-9 types of pilot programs.

Table 5 Identified pilot cities by various projects and population scale in China

Identified by various projects		*Identified by population scale*	
Projects with city participation	**Count**	**Population classes**	**Count**
Overall pilot projects	1028	< 1 Mio.	69
Thereof related to		1 Mio. - 2.5 Mio.	84
Smart city pilot programs	***54%***	2.5 Mio. - 5 Mio.	27
NSCP	277	5 Mio. - 10 Mio.	8
CPSI	46	> 10 Mio.	5
NIC	104		**193**
TSPPSC	20		
NIPC	80		
Other pilot programs:	***46%***		
NGC	352		
NEGC	11		
NCC	28		
NSC	30		
NLC	80		
	1028		

Table 6 Spatial distribution of identified cities[2]

Geographical Division	Count	Geographical Division	Count
Northern China	**22**	**Southern China**	**18**
Beijing-Tianjin-Hebei	8	*Pearl River Delta*	8
Hubaoeyu	3	*North Gulf*	5
Central Shanxi	1		
Northwestern China	**25**	**Southwestern China**	**19**
Guangzhong	5	*Chengdu-Chongqing*	9
Ningxia along the Yellow River	4	*Central Guizhou*	4
Northern Tianshan Slope	4	*Central Yunnan*	2
Lanzhou-Xining	3		
Eastern China	**66**	**Northeastern China**	**15**
Yangtze River Delta	24	*Harbin-Changchun*	6
Shandong Peninsula	15	*Central-Southern Liaoning*	3
West Shore	13		**193**
Southern China	**18**		
Pearl River Delta	8		
North Gulf	5		

Selection of Chinese smart cities for case studies

Corresponding to the selection principles of European cases, Table 5 shows the criteria and process of selection for case studies in China based on the 193 pilot cities identified above, including the sample criteria for cities *(column 1)*, the primary selection according to different sample criteria *(column 2)*, the first selection of 17 cities after removing those cities that have been sampled repeatedly *(column 3)*, and the final identification of 8 cities in consideration of both heterogeneity of sampling criteria and comparability with European cases *(column 4)*.

Table 6 shows the basic information and characteristics for the 8 identified cities for the further international comparative studies, including the sampling criteria, city clusters to which they respectively belong, resident population of 2016 and programs they are involved in.

The next step will be to set-up case studies in each of the 8 selected cities in China and Europe.

[2] It should be noted that some identified cities do not belong to any city clusters which are oriented by spatial planning and promoted as national development strategies. Reasonably in China's context, those cities will be easily excluded from the actual process of selection.

Table 7 Sampling criteria and selection of cities for further case studies

Sampling Criteria	Cities	1st Selection #17 (Assumption: different type of cities)	2nd Selection #8
Cities that are most active in Smart City and Eco-city pilot programs	Suzhou (19 projects), Chongqing (16 projects), Weifang (16 projects), Beijing (16 projects) , Qingdao (14 projects), and Hangzhou (13 projects)	BEIJING CHONGQING DALIAN FANYANG HANGZHOU NINGBO QINGDAO SHANGHAI SHENZHEN SUZHOU TIANJIN WEIFANG WUHAN XIANYANG XI'NING YICHANG ZHENGZHOU	SHANGHAI CHONGQING BEIJING WUHAN DALIAN SUZHOU SHENZHEN TIANJIN
Cities that are most active in Smart City pilot programs	Beijing (13 projects), Qingdao (9 projects), Suzhou (8 projects), Chongqing (8 projects), Weifang (8 projects), Tianjin (8 projects)		
Cities that are most active in NSCP	Beijing (11 projects), Tianjin (6 projects), Qingdao (6 projects), Suzhou (6 projects),		
Cities that are most active in NIC	Shanghai (3 projects)		
Cities that are active in all 5 Smart City pilot programs	Dalian, Xiangyang,		
Cities that are active in 4 Smart City pilot programs	Wuhan, Shenzhen, Zhengzhou		
Cities that are active in different pilot concepts	Garden City: Weifang, Suzhou, Shanghai		
	Ecological Garden City: Suzhou		
	Climate-smart City: Chongqing		
	Sponge City: Xi'ning		
	Low-carbon City: Wuhan		
Cities with many pilot projects by city clusters	Yangtze River Delta: Suzhou (19 projects), Hangzhou (13 projects), Ningbo(12 projects), Shanghai(11 projects)		
	Middle-Yangtze River: Wuhan (9 projects), Xiangyang (7 projects), Yichang (7 projects)		

	Shandong Peninsula: Weifang (16 projects), Qingdao (14 projects)		
	Zhongyuan: Zhengzhou (8 projects)		

Table 8 Characteristics of the 8 selected cities for further comparative studies

City	**Sample Criteria**	**City cluster**	**Urban district population**	**Projects**
SHANGHAI	Many Information Consumption City pilot projects, many eco-city programs including Garden City, Sponge City and Low-carbon City, YRD city cluster	Yangtze River Delta	20 Mio. - 30 Mio.	*Smart city:* 1 NSCP, 1 NIC *Eco-city:*3 NIPC, 4NGC, 1 NSC, 1NLC
CHONGQING	Most active in most Smart City and Eco-city piloting programs, many projects, Chengdu-Chongqing city cluster, city with the largest resident population	Chengdu-Chongqing	20 Mio. - 30 Mio.	Smart city: 5 NSCP, 1 CPSI, 1 NIC, 1 NIPC Eco-city: 4 NGC, 1NSC, 1 NLC, 2NCC
BEIJING	Most active particularly in Smart City piloting programs	Beijing-Tianjin-Hebei	20 Mio. - 30 Mio.	Smart city: 11 NSCP, 1 NIC, 1 NIPC Eco-city: 1 NGC, 1 NSC, 1 NLC
WUHAN	Many smart city projects in Middle-Yangtze River City Cluster, many low-carbon city projects	Middle-Yangtze River	5 Mio. - 10 Mio.	Smart city: 2 NSCP, 1 CPSI, 1 TSPPSC, 1 NIPC Eco-city: 1 NGC, 1 NSC, 1 NLC, 1 NCC
DALIAN	Many types of pilot projects, Harbin-Changchun city	Harbin-Changchun city cluster	2.5 Mio. - 5 Mio.	Smart city: 3 NSCP, 1 CPSI, 1

	cluster, medium-sized city			NIC, 1 TSPPSC, 1 NIPC Eco-city: 1 NGC, 1 NSC, 1 NLC, 1 NCC
SUZHOU	Active in the most Smart City and Eco-City piloting programs, many Eco-city projects	Yangtze River Delta	2.5 Mio. - 5 Mio.	Smart city: 6 NSCP, 1 NIC, 1 NIPC Eco-city: 6 NGC, 4 NEGC, 1 NLC
SHENZHEN	Active in 4 Smart-city pilot programs, Pearl River Delta city cluster	Pearl River Delta	10 Mio. - 20 Mio.	Smart city: 1 NSCP, 1 NIC, 1 TSPPSC, 1 NIPC Eco-city: 1 NSC, 1 NLC
TIANJIN	Most active in NSCP, Many Smart-city projects, Beijing-Tianjin-Hebei city cluster	Beijing-Tianjin-Hebei	10 Mio. - 20 Mio.	Smart city: 6 NSCP, 1 NIC, 1 NIPC Eco-city: 1 NGC, 1 NSC, 1 NLC, 1 NCC

7 ANALYTICAL FRAMEWORK TO DETECT THE PLANNING-IMPLEMENTATION GAP IN CITIES

The theory of transformative capacities of Wolfram (2016) was used as basis and operationalisation to finally develop an analytical framework for transformative capacities as a basis for empirical city case studies (Section 1) to detect and measure transition pathways in order to close the planning-implementation gap in smart and eco cities. The following steps were taken:

- Step I: Operationalising Wolfram's (2016) key components and development of three analysis dimensions of transformative capacity
- Step II: Identifying key aspects within the 3 dimensions to measure transformative capacities
- Step III: Developing an analytical framework to measure transformative capacities for change for strategy, planning, implementation, replication & upscaling

In the following the different steps and finally the analytical framework will be presented.

Step I: Operationalising Wolfram's (2016) key components and development of three analysis dimensions of transformative capacity

In this steps, the 10 key components of Wolfram (2016) have been clustered in 3 analysis dimensions:

- Actors, governance and leadership
- Activities and innovations
- Reflexivity and social learning

These three dimensions (Figure 10) seem to be of relevance for strategic planning, neighbourhood planning and implementation of smart and eco cities. The 3 dimensions have been identified and agreed on in an expert workshop.

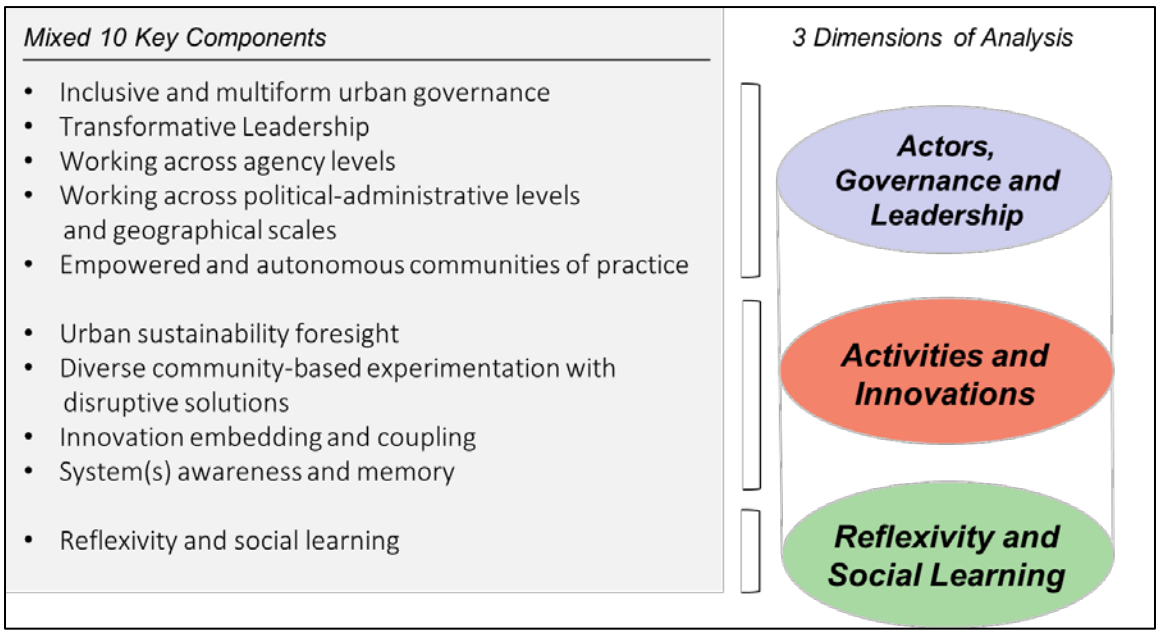

Figure 10 Operationalisation of transformative capacity for identifying transition pathways to close the planning-implementation gap

Step II: Identifying key aspects within the 3 dimensions to measure transformative capacities

Key aspects of the three dimensions were defined in an expert workshop to further operationalize transformative capacity to close the planning-implementation gap:

Dimension 1: Actors, Governance and Leadership

Inclusive and multiform urban governance

- Involvement of actors from a diversity of organizations according to quadruple helix (city authorities, research organizations, business, citizen organizations), assessment of benefits of actor involvement
- Governance structure: Establishment of platforms, bodies for strategy, planning, implementation and replication/upscaling
- Continuity of active actors across multi-level governance/bodies for strategy, planning, implementation, replication and upscaling
- Governance-modes (formal, informal) and commitment for decisions
- Resources (cash or in-kind) for actors to become active in the governance bodies
- Relevance of citizen participation

Transformative leadership

- Key actors and its organizational affiliation/bodies for SPIR (leadership and ownership)
- Competences of key actors (personal and functional competences)
- Decision making and transparency of decisions (who makes decisions - formal/informal)
- Authority of project management

Working across agency levels

- Emerging problems/conflicts during the implementation through cross-sectoral activities
- Experience/history of already existing cooperation for strategy, planning and implementation

Working across political-administrative levels and geographical scales

- City actors become active on national, European and/or global level (e.g. city networks), also for learning and know-how exchange
- Working across various departments in the city administration
- Working with other municipalities

Empowered and autonomous communities of practice

- Continuity of commitment towards implementation by actors involved in SP (communities of practice = applicants, e.g. industry, investors, etc.)

Dimension 2: Activities and Innovations

Urban sustainability foresight

- Common vision of all actors at the beginning of the strategy process or the strategy itself as a reaction to existing problems/symptoms (bottom up, top down)
- Objective of strategy, planning and projects and operationalization of objective (e.g. implementation plan for strategy, commitment for planning and implementation [e.g. via legal frameworks])

- Vision, strategy, planning and Implementation (projects) are aligned
- Alignment of different strategies within a city (e.g. energy strategy, mobility strategy, etc.)
- Alignment of content of strategy with national, European and global strategies

Diverse community-based experimentation with disruptive solutions

- Innovative components in the strategy/planning/implementation; does innovative components in the strategy support or hinder implementation
- Opportunities for experimentations/tests/Living Labs trough "new" strategy and planning processes, which were not existing
- new solutions generated in the implementation phase

Innovation embedding and coupling

- Bringing together the project results and innovations (embedding)
- Monitoring, evaluation, comparison with strategic objectives: How is it done, who is responsible, etc.

System(s) awareness and memory

- Dimensions integrated in strategy/planning/implementation (social, spatial, environmental, and economic, etc.)

Dimension 3: Reflexivity and Social Learning

Reflexivity and social learning

- Evaluation and Monitoring, feedback to strategic steering
- Learnings (positive and negative) among the active actors in SPU, integration of learnings in future processes/activities (change of behavior)
- Learnings from implementation for replication and upscaling (change of system)
- Information/Documentation of SPIR processes (transparency and process-oriented)

Step III: Developing an analytical framework to measure transformative capacities for change for strategy, planning, implementation, replication & upscaling

At this stage, it has been assumed that all identified key aspects are relevant along the entire policy cycle for integrative planning spanning from (1) urban strategy making, (2) neighborhood planning, (3) implementation, upscaling and replication (Figure 11). In order to generate empirical evidence for their relevance, as a final step the key aspects have been transferred into relevant questions for each phase along the policy cycle.

The analytical framework has been be applied to two empirical pilot case studies (Section 1). After conducting the two pilot case studies the analytical framework will be reviewed, before it will be applied for another 6 case studies (Section 0). Based on the analysis of the empirical case studiessuccess factors, good practice and innovation will be identified in the different phases of the policy cycle and along the key aspects and dimensions of transformative capacity.

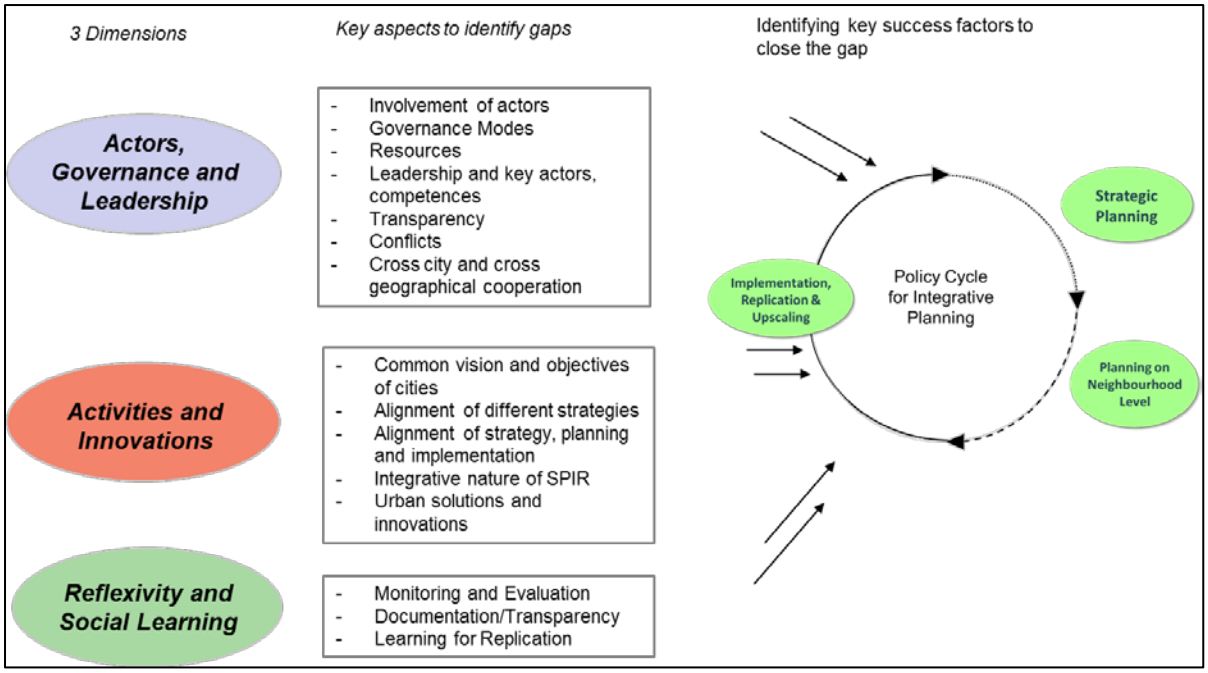

Figure 11 Analytical Framework to measure transformative capacities for change for strategy, planning, implementation, replication & upscaling

8 KNOWLEDGE BASE ON THE PLANNING-IMPLEMENTATION GAP: INNOVATION, GOOD PRACTICE AND SUCCESS FACTORS FOR STRATEGY, PLANNING AND IMPLEMENTATION

At this stage of the project, two European case study pilots have been selected and partially assessed by applying the analysis framework. The analysis framework structure and individual steps (Figure 11) have been fully examined in one defined European case: Stockholm, the case of Vienna could be assessed only partially. An in-depth evaluation of the Viennese example will be continued in the coming phase of the project. Even though the information concerning Vienna is fragmented so far, some preliminary conclusions regarding existing success factors could be already drawn and will be confirmed in comming phase of continued assessment.

The specific implementation projects in these two cities demonstrate European good practice and exemplify lighthouse project characteristics. Although the full in-depth examination of the named case studies will be accomplished in the next project phase, the testing activities, carried out to date, have disclosed initial valuable insights particularly concerning common features that both case studies share in terms of success factors, determining a successful gap closure between strategic city-wide urban development and the implementation of specific projects.

The preliminary identification of key success factors from the two test case studies exposes the following categories to be further examined and elaborated:

a. Strategy

- Obtaining an early commitment from local stakeholders, bottom-up involvement and co-creation between public, private und academic stakeholders in the strategic planning process continuing well into the implementation process and set-up;
- Presence of stakeholders who are consistently involved in all three phases: strategic, planning and implementation;
- Different/innovative roles of the strategy: Strategy as enabler/mobiliser of ideas, vs. the traditional role of top-down steered action plan;
- Paradigm shift - changing role of strategic planning - to serve as catalyst for transformative capacity maximization.
- Horizontal and vertical alignment between different sectoral strategies (Stockholm and Vienna)
- Joint and participative alignment between city strategies (umbrella strategy) accompanied by strategic compliance of implementation projects (Vienna)

b. Planning

- Early involvement and commitment from private stakeholders, engaged in planning, implementation and financing of different development steps and measures;
- Consistency in communication and stakeholder involvement (stakeholder platform)
- Breaking-down of strategic goals, ‘translation’ and differentiation on the local level and linking to the specific actions by stakeholder group
- Considering the non-linearity of planning and implementation process (Vienna SmarterTogether example)
- Allowing negotiation processes in the presence of conflicting interests (Vienna)

- Bottom-up initiation of projects (vs. top-down) by local stakeholder groups, ‚feeding' the implementation of the city-wide strategy (Vienna)
- Strategies linked to specific Action plans and budgetary distributions (Stockholm)

c. Implementation

- Availability of suitable implementation instruments;
- Agile Project management
- Creating clear task „ownership" and consistency in the implementation process (Vienna and Stockholm).
- Considering the non-linearity of planning and implementation process (Vienna SmarterTogether example)
- Joint and participative alignment between city strategies (Umbrella Strategy) accompanied by strategic compliance of implementation projects (Vienna)

9 OUTLOOK

The first year of the project has created a comprehensive knowledge base on the transition toward sustainability through socially integrative cities. The contribution of WP2 to this knowledge base can be found in this Deliverable 2.1 It entails an analysis of the commonalities and differences in the understanding of the terms “Smart City” and “Eco-City” in China and in Europe and describes the state of play and relevant research and innovation initiatives related to Smart and Eco-Cities. Furthermore, it presents a new methodology for case study analysis. Following Wolfram’s theoretical considerations on the nature of transformative capacity, this methodology enables the project team to identify good practices for strategic planning for sustainable urban development, integrative planning in eco-cites and smart cities as well as for mechanisms for upscaling and replication, and it will help to identify success factor for bridging the planning-implementation gap. One pilot case study on Stockholm was carried out and one on Vienna is still in progress of being tested.

In the second year, the project team will go deeper into the case study analysis. It is planned to carry out approximately six more case studies on European cities. Furthermore, the methodology will be applied to eight Chinese cities. Through comparative analysis of the European and the Chinese cases, success factors, drivers and levers will be identified for increasing the transformative capacity of cities in Europe and in China.

Another important task of the second year will the preparation of the activities in the Living Labs. Based on the outcomes of the case study analysis, recommendations for integrated planning that could bridge the gap between planning and implementation will be derived and suggestions for tools that could support such an approach will be given. Both the recommendations and selected tools will then be tested in a workshop environment in 1-2 Chinese cities to test their applicability in the Chinese context.

References

Cities of tomorrow (2011). Challenges, visions, ways forward. European Commission, Directorate General for Regional Policy.

Frantzeskaki, N. (et al.) (Eds.). (2016). Urban Sustainability transitions. Routledge Studies in sustainability transitions. New York.

Loorbach, D. et al. (Eds.) (2016). Governance of Urban Sustainability Transitions. European and Asian Experiences.

Wolfram, M. (2016). Conceptualizing urban transformative capacity: A framework for research. Cities 51 (2016):121-130.

Wolfram, M., Frantzeskaki, N. (2016). Cities and Systemic Change for Sustainability: Prevailing Epistemologies and an Emerg-ing Research Agenda. Sustainability 2016, 8, 0000, doi:10.3390/.

Annex

Annex I – Glossary of key terms

Annex II – Analytical Framework to measure Transformative Capacity in Smart and Eco Cities

Annex III – Exemplary city case studies including strategic and implementation level

Annex IV – Interview guideline

Annex V – Comparison of European case study cities

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Annex 1: WP2 Glossary

v1.0

19.01.2019

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Eco-City - Europe

An Eco-City is an urban environmental system typically exposing a substantial scale and taking place accross multiple sectors. It aims at creating an ecologically healthy settlement through application of socio-technical innovation, business development and cultural branding.

Key features:

- Problem-oriented
- Addresses climate change (maximum impact through use of minimum of ressources)
- integrative approach
- cooperation between local and international stakeholders, knowledge exchange networks
- Develop, test and diffuse new processes

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Eco-City - China

Eco-city refers to the ideal urban settlement featured by socio-economic-environmental coordinated and sustainable development, with the emphasis on social justice, economic efficiency, and human-nature harmony.

Key features:

- Combining social, economic and environmental dimension
- Strongly focused on economic aspects
- Evolutionary process and eco-diversity
- Considers human-land, human-human harmonious relationship; effectiveness and efficiency in resources utilization; sustainability; integrity; regional concept with spatial scale sensitivity; optimized urban-rural structure; coordinated development based on environmental carrying capacity
- Emphasis on urban-rural integration
- Focused on urban problem-solving, such as traffic congestion, air pollution, food insecurity, social injustice, economic disparity and etc.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Sponge City-Europe

The origins of the Sponge City concept go back to the Year 2013. It is strongly associated with conception of Resilient Cities. Sponge City is understood as a city, which is designed to absorb, clean and use rainfall in an ecologically friendly manner. Reduction of dangerous and polluted runoffs through provision of effective measures of water absorption is the core intention of the Sponge City.

Key elements and features:

- Effective measures to mimic the natural water cycle, increasing local evaporation and supporting cooling effects in densely populated urban areas, including permeable roads, rooftop gardens, rainwater harvesting, rain gardens, green space and blue space (such as ponds and lakes),
- Reduced frequency and severity of floods, improved water quality, enabling cities to consume less water per person,
- Improved quality of life, improved air quality and reduced urban heat islands.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Sponge City-China

Sponge City defines a city, which is resilient and can be restored to its previous status after a bad weather event or a series of flood disasters, by applying nature-based, ecological solution in building the infrastructure system and establishing monitoring management system, including urban drainage system, application of water permeable materials, river rehabilitation, flood water collection basins, etc.

Key characteristics:

- Protection and preservation of the original eco-system;
- Restoration and rehabilitation of damaged water bodies and related natural environment;
- Urban eco-system protection through implementation of low-impact developments.
- Water run-off management, through comprehensive design and optimization of water penetration, retention, storage, purification, utilization and drainage.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Healthy city - Europe

The Healthy City is understood as a city that continually creates and improves its physical and social environments and expands the community resources that enable people to mutually support each other and to develop to their maximum potential.

Key characteristics:

- Primarily influenced by the World Health Organization
- Promote health by good quality of life, provision of sanitation and hygiene needs & access to health care
- Implementation by health policy, intersectoral collaboration & community participation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Healthy City - China

A Healthy city is a city where a better economic and social environment can be increasingly developed to help urban residents to enjoy their life and fully realize their potential.

Key characteristics:

- Mainly adopted from the World Health Organization
- Ultimate goal of urban development since 2008
- Supported by a series of initiatives, such as hygiene city, national action plan of healthy China 2030 etc and aligned with SDGs by UN

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Smart City-Europe

The understanding of Smart City in Europe entails a variety of concepts. The prevailing notion of Smart City targets engineering system solutions to urban challenges and addresses primarily urban infrastructure. Smart City understanding has however, evolved over time. The latest Smart City comprehension includes environmental, social and governance related aspects of urban development, supplementing and expanding the original concept mostly centered on the information and communication technologies.

Smart City features a variety of dimensions, including :

- Smart Environment, innovation and ICT applications addressing natural resource protection and management;
- Smart People, implying creativity and open innovation;
- Smart Economy, encompassing new technologies and innovation for business developments, employment and growth;
- Smart Living, concerning innovation for enhanced quality of life and livability;
- Smart Governance, including technology for improved service delivery, participation and engagement;
- Smart Services, overarching technology and ICT for health, education, tourism, safety, etc.;
- Smart Infrastructure, including city facilities in conjunction with enhanced smart technologies;
- Smart Transportation, enveloping transport networks featuring real time monitoring and control systems.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Smart City-China

A smart city is an urban area equipped with various types of sensors for data collection, aiming to supply information for creation of more efficient urban assets and resource management.

Establishment of a smart platform, utilizing information and communication technology in order to connect various physical devices and networks, is the core aim of Smart City. The intention behind the installment of smart platform is to support city officials in providing needed services and to optimize the operation of different networks, while enhancing the efficiency and effectiveness of serving the citizens and city as a whole.

The smart city related data collection and analysis envelops various sectoral systems, including:

- Civil services: gas and water supply, waste treatments, traffic monitoring and optimization;
- Macro urban management, e.g. e-government and capacity building;
- Interaction and communication between government, management officials, community and city infrastructure, providing real time monitoring of the urban dynamics and city development.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Strategic planning - Europe

Strategic planning provides a general context and defines long-term goals. It can be understood as an iterative learning process, revisions and an accompanying optimization process. The main objectives of strategic planning are to provide local and regional actors more orientation and to activate and motivate key actors within the planning process.

Key characteristics:

- Provide a guideline for coordinated and aligned acting and decision making
- Strongly influenced by the prevailing planning culture (differences in Europe)
- Not necessarily legally binding
- Can be formulated on/for different spatial levels/scale
- Offers room for negiotiations; cross-sectorally orientated, reinforces coalition-building

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Planning on Neighbourhood Level

The understanding of Neighbourhood Planning contains a variety of concepts and approaches, depending on the planning culture it originates from (Anglo-Saxon, Napoleonic, Germanic, Scandinavian, etc.). Neighbourhood planning usually entails the technical/spatial planning documents (local/municipal plans) accompanied by corresponding planning processes. The extent to which Neighbourhood Plans are legally binding differs from planning tradition to planning tradition.

Ideally, Neighbourhood Planning intends to support and implement the strategic development requirements, by anchoring these in the Local Plans and processes and thus positively influencing local development.

Key features:

- legally compliant and take account of wider policy considerations (e.g. urban policy, national policy, etc.)
- Aims at improving the quality of life and wellbeing in the local area/neighbourhood
- Most often accommodates citizen participation
- Usually led by a Local Authority

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Strategic Planning (for steering urban development) - Europe

Characteristics:

- Provides a general context and defines long-term goals
- Reduces uncertainty about the future
- Iterative learning process, revisions, accompanying optimization process
- Evidence based & future looking methods
- Rather flexible
- Pro-active policy
- Needs "institutional density" and inner-government agreements
- Partnerships, coalition building, participation
- Multi-level-government

Indicators/dimensions for analysis framework:

- degree of legal enforceability (legal obligation)
- Formal/informal planning
- Initiation by whom/which policy/issue?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Strategic Planning (for steering urban development) - China

Strategic planning refers to the systematic and comprehensive plan made by the policy makers in an aim to pursue the vital and sustainable development of cities or regions against the rapidly changing external and internal environment in the increasingly globalized context. Strategic planning proposes the vision and strategic positioning for the city or region by and towards the in-depth multi-dimensional analysis of the nature, function, scale, spatial structure, and development dynamic of the city or region. Targeting the prominent challenges, it will also provide action framework, conceptual programming and policy recommendations for city and regional development.

Key features of strategic planning:

- plays a leading role in guiding the overall planning system (In China top-down);
- focuses on optimized city development from regional balance, growth and sustainability perspective;
- stresses the consistent value orientation towards the vision with relatively stable programming and action planning providing competitive edge;
- centers on enhancing long term urban competitiveness to stand out in competition, rather than ordinary planning mainly aiming to improve the current situation;

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Integrative Plan(ning)

Key characteristics of integrative planning:

- System of interlinked actors
- Synergies between all elements ("more than the sum of its parts")
- Multi-level/scale
- Cross-sectoral
- Cross-departmental
- Includes a wide range of actors/networks
- Replaces technocratic planning approaches
- Focuses on learning systems and feedback loops (top down and bottom up)
- Large scale impacts

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Integrative Plan(ning)

Integrative planning refers to the integration of various planning aspects, including national economic and social development planning, urban and rural planning, land use planning and other specific planning (e.g., ecological environment, comprehensive transportation, culture and tourism) into one systematic framework in terms of spatial, institutional, platform, technology and governance & management.

It is an innovative initiative and process regarding the planning regime and mechanism, with an aim to make all the planning from different aspects of society and departments align with each other and consistent/compatible in parameters in development boundary, city scale and etc., thus realizing the spatial optimization, effectively allocating resources and enhancing governance capacity.

Conceptual context: i) from scale perspective: the current spatial planning system mainly covers the national, provincial and city level; ii) from planning maker perspective: for example, national economic and social development planning (5-year plan) made by NDRC, urban and rural planning made by MoHURD, land use plan made by Ministry of National Natural Resources. Various plans at different scales exist and overlap with each other, resulting in the challenge of implementation difficulties.

Some main types of understanding of integrated planning: i) one plan integrates all the

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770141.

Implementation, Replication, Upscaling - Europe

Upscaling can involve (1) increasing the geographic scale by applying a successful pilot activity to an entire area (e.g. from a neighborhood to the entire city), or (2) increasing the policy of scope of a given solution or strategy by using a successful approach to influence policy, development and funds, or (3) increasing the institutional scale of a strategy by applying activity involving a small subset of community to the whole community level

Replication is about transferring/replicating a specific solution to another context (more than copy-paste!)

Analytical Framework to measure Transformative Capacity in Smart and Eco Cities

Trans-Urban-EU-China Project, WP2, Annex to Deliverable 2.1

			Policy Cycle			
New Dimensions	Categories by Wolfram (2016)	Key Aspects	Strategy	Planning	Implementation	Replication & Upscaling
Actors, Governance and Leadership	Inclusive and multiform urban governance	Involvement of actors from a diversity of organisations according to quadriple helix (city authorities, research organisations, business, citizen organisations)	Who are main stakeholders? What disciplines are represented in the development? What are the interests of the stakeholders?	Who are main stakeholders? What disciplines are represented in the development? What are the interests of the stakeholders?	Who are main stakeholders? What disciplines are represented in the development? What are the interests of the stakeholders?	
		Governance structure: Establishment of platforms, bodies for strategy, planning, implementation and replication/upscaling	Is an Urban Innovation Platform available? If yes, who's responsibility is to run the Plattform? What activities are being performed through the plattform?			
		Continuity of active actors across multi-level governance/bodies for Strategy, Planning, Implementation, Replication and Upscaling				
		Governance-Modes (formal, informal) and commitment for decisions	Are the activities formalized or informal?	Are the activities formalized or informal?	Are the activities formalized or informal?	Are the activities formalized or informal?
		Resources (cash or in-kind) for actors to become active in the governance bodies	What ressources are available to the stakeholders? What ressources are necessary in the process? (financial, technical, know-how, staff-related, etc.)	What ressources are available to the stakeholders? What ressources are necessary in the process? (financial, technical, know-how, staff-related, etc.)	What ressources are available to the stakeholders? What ressources are necessary in the process? (financial, technical, know-how, staff-related, etc.)	
		Relevance of citizen participation	What is the extent of citizen participation? When and in what form? Is there a systemic approach and continuity or is the process of highly fragmented nature? Does the development benefit all stakeholders or are some stakeholders excluded from receiving any benefits?	What is the extent of citizen participation? When and in what form? Is there a systemic approach and continuity or is the process of highly fragmented nature? Does the development benefit all stakeholders or are some stakeholders excluded from receiving any benefits?	What is the extent of citizen participation? When and in what form? Is there a systemic approach and continuity or is the process of highly fragmented nature? Does the development benefit all stakeholders or are some stakeholders excluded from receiving any benefits?	

	Transformative leadership	Key actors and its organisational affiliation/bodies for SPIR (leadership and ownership)	Who are the key stakeholders and what are their organisational ancor points?	Who are the key stakeholders and what are their organisational ancor points?	Who are the key stakeholders and what are their organisational ancor points?	
		Competences of key actors (personal and functional competences)	Are some of the key actors/stakeholders affected by a system lock-in? Do these stakeholders posess key expertice and competence, but can not move beyond the 'old' framework conditions and limitations? What competences are innate to driving stakeholders? (Competence definition of key stakeholders/actors) / What competences are innate to the key decision makers? (Comeptence definition of the key decision makers)	Are some of the key actors/stakeholders affected by a system lock-in? Do these stakeholders posess key expertice and competence, but can not move beyond the 'old' framework conditions and limitations? What competences are innate to driving stakeholders? (Competence definition of key stakeholders/actors) / What competences are innate to the key decision makers? (Comeptence definition of the key decision makers)	Are some of the key actors/stakeholders affected by a system lock-in? Do these stakeholders posess key expertice and competence, but can not move beyond the 'old' framework conditions and limitations? What competences are innate to driving stakeholders? (Competence definition of key stakeholders/actors) / What competences are innate to the key decision makers? (Comeptence definition of the key decision makers)	
		Decision making and transparency of decisions (who makes decisions - formal/informal)	Wer trifft die Entscheidungen? Wie werden diese getroffen (formell/informell) Handlungsarena; Wie wird mit Konflikten umgegangen?	Wer trifft die Entscheidungen? Wie werden diese getroffen (formell/informell) Handlungsarena; Wie wird mit Konflikten umgegangen?	Wer trifft die Entscheidungen? Wie werden diese getroffen (formell/informell) Handlungsarena; Wie wird mit Konflikten umgegangen?	
		Authority of project management				
	Empowered and autonomous communities of practice	continuity of commitment towards implementation by actors involved in SP (communities of practice=applicants (industry, investors, etc.)				Do the strategy-, planning- and implementation processes result in sustainable policy communities of practice (also networks driving and implementing sustainable actions and measures/implementing change) /Do the communities of practice serve as catalysts for the actual implementation of strategies and planning?
	Working across agency levels	Emerging problems/conflicts during the implementation through cross-sectoral aktivities	What person groups are affected? Are any of those groups involved in the process? Are any groups excluded? How are the conflicts being treated?	What person groups are affected? Are any of those groups involved in the process? Are any groups excluded? How are the conflicts being treated?	What person groups are affected? Are any of those groups involved in the process? Are any groups excluded? How are the conflicts being treated?	
		Experience/history of already existing cooperations for strategy, planning and implemenation				
	Working across political-administrative levels and geographical scales	City actors become active on national, European and/or global level (e.g. city networks), also for learning and know-how exchange	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources? Do city partnerships exist? If yes, on what level of intensity and with whom? In what Networks is the city (formally) involved? (national and international)	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources? Do city partnerships exist? If yes, on what level of intensity and with whom? In what Networks is the city (formally) involved? (national and international)	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources? Do city partnerships exist? If yes, on what level of intensity and with whom? In what Networks is the city (formally) involved? (national and international)	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources? Do city partnerships exist? If yes, on what level of intensity and with whom? In what Networks is the city (formally) involved? (national and international)
		Working across various departments in the city administration (policy community of practice)	What disciplines are represented in the process?	What disciplines are represented in the process?	What disciplines are represented in the process?	
		Working with other municipalities	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources?	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources?	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources?	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources?

Activities and Innovations	System(s) awareness and memory	Dimensions integrated in Strategy/Planning/Implementation (Social, spatial, environmental, economical, etc.) Initiation/stimulation of strategies and implementation project?				
	Urban sustainability foresight	Common vision of all actors at the beginning of the strategy process or strategy as reaction to existing problems/symptoms (bottom up, top down) Objective of strategy, planning and projects and operationalization objective (e.g. implementation plan for strategy, commitment for planning and implementation [e.g. legal frameworks]) Vision, Strategy, Planning and Implementation (Projects) are aligned Alignment of different strategies within a city (e.g. energy strategy, mobility strategy, etc.) Alignment of content of strategy with national, European and global strategies	What challenges and problems have triggered the process of development? What is the collective Vision behind that? What goals are being aimed for? Have alternative scenarios been defined/developed? If yes, which?	What goals are being aimed for? Have alternative scenarios been defined/developed? If yes, which?	What goals are being aimed for? Have alternative scenarios been defined/developed? If yes, which? What is the expected added value for the society? Are any groups of actors being disadvantaged by the effects of the development?	Are any groups of actors being disadvantaged by the effects of the development? Do any actor groups fall short in receiving any benefits form the aimed development?
	Diverse community-based experimentation with disruptive solutions	Opportunities for experimentations/Tests/Living Labs trough "new" strategy and planning processes, which were not existing new solutions generated in the implementation phase Innovative components in the Strategy/Planning/Implementation; does innovative components in the strategy support or hinder implementation	Have the development aims/objectives/effects been already tested/validated?	Have the development aims/objectives/effects been already tested/validated?	Have the development aims/objectives/effects been already tested/validated?	
	Innovation embedding and coupling	Bringing together the project results and innovations (embedding) Monitoring, Evaluation, comparison with strategic objectives: How is it done, who is responsible, etc.				

Reflexivity and Social Learning	Reflexivity and social learning	Evaluation and Monitoring, feedback to strategic steering	How are the activities being evaluated? /Were any goalsettings been missed, not achieved? What are the resons for that?	How are the activities being evaluated? /Were any goalsettings been missed, not achieved? What are the resons for that?	How are the activities being evaluated? /Were any goalsettings been missed, not achieved? What are the resons for that?	How are the activities being evaluated? /Were any goalsettings been missed, not achieved? What are the resons for that?
		Learnings (positive and negative) among the active actors in SPU, integration of learnings in future processes/activities (change of behaviour)	Are any awareness building measures in place?	Are any awareness building measures in place?	Are any awareness building measures in place?	
		Learnings for replication and upscaling (change of system)				
		Information/Documentation of SPIR processes (transparency and process-oriented)	Are the ongoing activities being sufficiently documented? If yes, in what form? How are the resulting streams of information being continuously processed? Are any actors being limited in accessing specific types of Information?	Are the ongoing activities being sufficiently documented? If yes, in what form? How are the resulting streams of information being continuously processed? Are any actors being limited in accessing specific types of Information?	Are the ongoing activities being sufficiently documented? If yes, in what form? How are the resulting streams of information being continuously processed? Are any actors being limited in accessing specific types of Information?	Are the ongoing activities being sufficiently documented? If yes, in what form? How are the resulting streams of information being continuously processed? Are any actors being limited in accessing specific types of Information?

New Dimensions	Categories by Wolfram (2016)	Key Aspects	Questions for Strategies	Strategy 1 The Stockholm Environment Programme (2016-2019)	Strategy 2 The Strategy for a fossil-fuel free Stockholm by 2040 (2016)	Strategy 3 Green IT-Strategy for Stockholm (2009)	Strategy 4/Planning Document 1 Stockholm City Plan (2018)
				Content/Notes: 57 pages; First comprehensive environmental programme in 1976; environmental programme 2016-2019 is the ninth consecutive effort; much effort to show sub-targets and indicators; upcoming climate strategy for Stockholm |*Problem bei der Einordnung: Operationalisierung der Ziele, Evaluierung & Monitoring, sowie Dokumentation dasselbe?*	the environmental programme is a city-wide regulatory document	**Content/Notes:** 46 pages; published in December 2016; Targets which were tasked to specific Stakeholders are described; the climate strategy lays down a long-term road map for Stockholm's route to a fossil-fuel free future by 2040 and describes the challenges the city faces to attain this goal; the strategy presents calculations of the emissions reductions required to achieve the climate targets	**Content/Notes:** 19 pages; strategy from 2009; Green IT is a collective name for the measures designed to reduce our environmental impact with the aid of IT. It involves both using information technology to reduce the environmental impact, and reducing the energy consumption and environmental impact of the IT sector as a whole; indicators and environmental barometer mentioned	**Content/Notes:** 172 pages; A city plan is to provide guidance and support in making decisions on the use of land and water areas and how the built environment is to be developed and protected.| Timeframe: long-term perspective; sets out urban development opportunities for the next 25 years (p. 14); time horizon 2040 (p. 38)	many of the strategic focuses included in earlier City Plans are still desirable but have not yet been realised, they have therefore also been included in this City Plan (p. 14)	The City Plan also has an important communicative role in that it clearly sets out the view of the City of Stockholm on future development. This makes it possible for Stockholmers, agencies and other stakeholders to gain a view on how the city might react to future proposals to change the urban environment and the effects this may have. (p. 14)
				Interviewed Person: **Gustaf Landhal - Head of Department Planning & Environment at the Environment and Health Administration**			Interviewed Person: **Joel Edding - Strategic City Planner**
Actors, Governance and Leadership	Inclusive and multiform urban governance	Involvement of actors from a diversity of organisations according to quadriple helix (city authorities, research organisations, business, citizen organisations)	Who are main stakeholders? What disciplines are represented in the development? What are the interests of the stakeholders?	Excecutive Office | Main contact: Strategic Urban Development| Environment and Health Administration (Gustaf Landahl) | The City Council (Budget) | Other City departments - City authorities. | City hall as the steering group | Universities | NGO's | Business organizations (6 groups (5-10 people from different departments, business groups, etc.) were formed, one group was responsible for each environmental target (or each area); it worked very well (Interview))	*Collaboration with residents, industry and commerce, academics and the regional forums and international contexts in which the city partcipates is essential to achieve the goals of the strategy (p. Foreword)* | City Executive Board | Environment and Public Health Committee - City authorities.	*If the city's environmental goals are to be achieved, it must work in partnership with it's inhabitants, private industry, and other players. The employees of the City have an important part to play, both in terms of the internal environmental work and inthe context of their roles and dealings with the city's inhabitants and private industry. (p. 7)* | The strategy applies to the city's administrations and Stockholm Stadhus AB, including its subsidiary companies. The strategy has been adopted by the City Council and is administered by the Executive Office. (p. 7)	City Planning Administration - City authorities.
		Governance structure: Establishment of platforms, bodies for strategies	Is an Urban Innovation Platform available? If yes, who's responsibility is to run the Plattform? What activities are being performed through the platform?	x	x	x	x
		Continuity of active actors across multi-level governance/bodies for strategies		yes! (Gustaf Landhal involved in the Royal Seaport Project, GrowSmarter Project)	yes (?)		
		Governance-Modes (formal, informal) and commitment for decisions	Are the activities formalized or informal?	The environmental programme does not state which concrete measures should be carried out within operations, nor calculate the costs of these. A committee or board that has the explicit responsibility for a sub-target is responsible for formulating committee targets of the environmental programme and independently choose the most cost-effective measures. (p. 8) | No Actionplan, but very detailed; defined Targets and Sub-Targets and how they can be achieved; responsibility for the sub-targets and responsibility for a coordinated follow-up of the sub-target are named	Measures designed to achieve the 2020 milestone target are more action oriented; those for a fossil-fuel free Stockholm by 2040 are more strategic in character (p. 15) | the strategy states where a strategically important basis for decision needs to be produced and when decisions need to be taken (p. 15) | The City of Stockholm seeks to reduce consumption-based emissions through information and mandatory impoitions, but these activities fall outside the scope of this strategy (p. 15) | responsibilities are named	No Actionplan; Action areas are defined, as well as their requirements; no stakeholders adressed; not very detailed; strategic character	City Plan is not legally binding, but plays a central role in the city's development by virtue of it's guidline function. It's focus is translated into detailed development plans and permits on land and water use, which are legally binding. (p. 14) | no Actionplan.
		Ressources (cash or in-kind) for actors to become active in the governance bodies	What ressources are available to the stakeholders? What ressources are necessary in the process? (financial, technical, know-how, staff-related, etc.)	City Budget - investment strategy: The indicators are determined in conncection with the budget of the city council and should be continuously evaluated and supplemented, and revised if they are found to be less thant adequate and appropriate for the follow-up (p. 8) | more resources would be needed to reach the goals better, it is a political process (Interview)	City Budget	City Budget	City Budget?
		Relevance of citizen participation	What is the extent of citizen participation? When and in what form? Is there a systemic approach and continuity or is the process of highly fragmented nature? Does the development benefit all stakeholders or are some stakeholders excluded from receiving any benefits?	In some way there were (citizens') participation; very wide reviewing process (internal and external); discussions about the draft with NGO's, business organziations, universities, etc.; they were happy with the programme; comments were discussed with politicians; (pressure by the politicians, why it took so much time for developing the programme?); good political common view on the programmes (environment programme and climate strategy); very difficult to get people involved on the strategic level (Interview) | more Information instead of Participation	Residents are being informed through communication initiatives such as the "Climate-smart Stockholmers" project that provides tools to help residents reduce their climate impact. (p. 46) - not directly related to the strategy	?	The views of citizens and others were taken into account through consultation and a public exhibition phase. (p. 14) | Presentation of the draft version of the masterplan during one month in 14 areas in Stockholm at different public places (for example Shopping Malls); gathering ideas, seeking for different views and input from the public; citizens can leave comments; it was possible to reach approximately 12 000 people; it was very appreciated; results: grouped the different opinions to issues; was not possible to fulfil all the wishes/opinions (Presentation/Participation was the first consolidation, the second one (before legislation starts) was about "this is what we got, what is wrong, what could we do better") (Interview) | More Information instead of Participation
	Transformative leadership	Key actors and its organisational affiliation/bodies for SPIR (leadership and ownership)	Who are the key stakeholders and what are their organisational ancor points?	(not in the strategy, but: respective committees or boards are responsible for the implementation and follow-up of the sub-targets of the environmental programme (p. 8)) | City Council responsible for the budget and for the majority of the indicators (in connection with the establishment of the City council's budget), thereby establishing both the indicator's contents, target values and which committees and company boards are required to report (p. 8) | Gustaf Landahl - Head of Department Planning & Environment. This department is responsible for environmental control in Stockholm as well as environmental issues in land use planning and traffic. His department is responsible for the City's work on Climate protection and energy efficiency.	The City Executive Board was tasked, together with the Environment & Public Health Committee, with producing a strategy for the 2020 milestone target and a road map leading to fossil-fuel freedom by 2040. The results of these assignments are presented in the strategy, the City Executive Board's overarching strategy for a fossil-fuel free Stockholm by 2040. (p. 15) | The City Executive Board has overall responsibility for strategic climate work in Stockholm and plays a key role in supporting and encouraging the implementation and follow-up of the City's climate goals. It is proposed that the City Executive Board reviews this strategy in connection with its revisions of the Environment Programme. (p. 46)	Executive Office: responsible for the planning and implementation aspects of the establishment and launch of the city's steering documents in the IT sector; executive level of administrations and companies (ensuring compliance with and monitoring of the Green IT strategy; Executive Office is responsible for ensuring that directives and regulations are issued, descibing how the follow-up and monitoring work is to be carried out)	The City planning Administration is responsible for creating the city plan; City Council has to approve the city plan (Interview)
		Competences of key actors (personal and functional competences)	Are some of the key actors/stakeholders affected by a system lock-in? Do these stakeholders posess key expertice and competence, but can not move beyond the 'old' framework conditions and limitations? What competences are innate to driving stakeholders? (Competence definition of key stakeholders/actors) / What competences are innate to the key decision makers? (Comeptence definition of the key decision makers)				
		Decision making and transparency of decisions (who makes decisions - formal/informal)	Who makes decisions within the process? How are they made (formal, informal)? Are there any conflicts? How are conflicts considered?	The steering group (?) (decided as well, if it's the environment or sustainable programme) (Interview) | The environment Programme is more seen as an internal document	Strategy for a fossil-fuel free Stockholm by 2040 has been produced in two stages. Gustaf Landahl (City Executive Office/Environment and Health Administration) led the work of producing reports on which the strategy is based, and was assisted in this work by Emma Hedberg (Environment and Health Administration), Charlotta Hedvik (Environment and Health Administration), Linda Holmström (City Executive Office) and Jonas Tolf (Environment and Health Administration). Linda Holmström and Björn Hugosson were responsible for the final wording of the strategy. The Steering Committee for the work comprised Ingela Lindh (City Executive Office), Gunnar Söderholm (Environment and Health Administration) and Anders Egelrud (Fortum Värme AB). The Reference Group comprised Marita Arnheim (City Development Administration), Andreas Jaeger (Stadshus AB), Mattias Lundberg (Traffic Administration) and Niklas Svensson (City Planning Administration). (p.2)		Main work ist done by the building department (= project group) with inputs from other departments (= steering group); City council has to approve the plan; there is also collaboration with other stakeholders from the city (for example with people from construction companies, etc.) (Interview)

		Authority of project management	-	-	-	-	-
		Project ownership	-	-	-	-	-
	Empowered and autonomous communities of practice	continuity of commitment towards implementation by actors involved in SP (communities of practice=applicants (industry, investors, etc.)		yes (?)	yes (?)		
	Working across agency levels	Emerging problems/conflicts during the implementation through cross-sectoral aktivities	What person groups are affected? Are any of those groups involved in the process? Are any groups excluded? How are the conflicts being treated?	no conflicts mentioned	?		
		Experience/history of already existing cooperations for strategy, planning and implemenation	Are there already existing cooperations/formations for the implementation of some strategies?				
	Working across political-administrative levels and geographical scales	City actors become active on national, European and/or global level (e.g. city networks), also for learning and know-how exchange	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the resources be provided without complications? What are these resources? What institutions can provide such resources? Do city partnerships exist? If yes, on what level of intensity and with whom? In what Networks is the city (formally) involved? (national and international)		it is mentioned that the regional perspective is important, but the strategy is city-oriented (geographical boundaries are set)		
		Arbeit über Fachbereiche hinweg in der Stadtverwaltung (policy community of practice)/ Working across various departments in the city administration	Which departments of the city administration are represented?	6 groups (5-10 people from different departments, business groups, etc.) were formed, one group was responsible for each environmental target (or each area); it worked very well (Interview)	?		There is a good collaboration with other departments; difficulties to get all together; not only one department can develop the masterplan itself, it needs collaboration ("there is a big understanding and will to collaborate with others") – but still (unspoken) boundaries; there are meetings though, would be much easier if they are under one roof; additionally there had been meetings with construction companies etc. to reach all relevant people
		Working across scales			no! One important limitation of the strategy is that it deals only with energy use within the geographical boundaries of the city (p. 15) | It is also important to consider the regional perspective. The goal of a fossil-fuel free Stockholm must not be achieved by relocating emissions in other municipalities. On the contrary, Stockholm's actions should inspire others and mobilise a coordinated response of similar measures elsewhere in the region. The City of Stockholm also contributes to regional planning to phase out fossil fuels. (p. 15)		
		Working with other municipalities	Is the collaboration with different/other institutions planned considering the different dimensions of the development? Are the planning and implementation activities depending on the "external" ressources, which the city can not provide? Can the ressources be provided without complications? What are these ressources? What institutions can provide such ressources?		?		
Activities and Innovations	System(s) awareness and memory	Dimensions integrated in Strategy/Planning/Implementation (Social, spatial, environmental, economic, etc.)	What different dimensions are considered in the strategy?	The environmental programme constitutes the backbone of the City's efforts within the ecological dimension of sustainability, and the policy target "An eco-smart Stockholm" (p. 7); fokus is on the ecological part (Interview) | spatial dimension is not considered	focus is on the ecological part (transport sector and production of renewable energy), spatial dimension is not considered	*environmental technology and information technology are two particulary important areas when it comes to realising a sustainable society (p.7)* - focus is on the environmental part | spatial dimension is not considered	Spatial, social, environmental and economical dimensions are considered (?)
	Urban sustainability foresight	Common vision of all actors at the beginning of the strategy process or strategy as reaction to existing problems/symptoms (bottom up, top down)	What challenges and problems have triggered the process of development? What is the collective Vision behind that?	"Vision 2040 - A Stockholm for everyone" (p. 6) - focus on the climate-smart Stockholm (Interview)	"Vision 2040 - A Stockholm for eveyone" (p. 15) - focus on the climate-smart Stockholm (p. 15) | Transport sector as the toughest challenge and most urgent (p. 7) - in 2040 residual fossil fuel is most likely to be found in the aviation and shipping industries, sectors governed by international agreements and regulations over which the City of Stockholm has limited powers; energy sector as well	Vision 2030: becoming one of the world's cleanest, safest and most beautiful cities where Stockholm is a world leader in information technology and int the development, commercialisation and application of new environmental and energy related technologies; also ensolving Stockholm as an energy efficient city where the use of non-fossil fuel reduces the city's total emissions of green house gases (p. 5) | strategy aims to create "a citywide, standardised and modern IT infrastructure" (Website) | focus on environmental issues (p.7) | *In many cases, people must change the way they live and work and adopt a new attitude towards environmental issues. (p. 7)* - change of behavior	"Vision 2040 - A Stockholm for everyone" | The focus is more on the goals, not on the vision; distinguishing between "what is desirable" and "what is possible" (Inverview) | "The city plan is not a vision. It is a goal!" (Interview)
		Objectives of the strategy and operationalization of the objectives (e.g. implementation plan for strategy, commitment for planning and implementation [e.g. legal frameworks])	What goals are being aimed for? Have alternative scenarios been defined/developed? If yes, which?	(1) Sustainable energy use (2) Environmentally friendly transport (3) Sustainable land and water use (4) Resource-efficient recycling (5) a non-toxic Stockholm (6) A healthy indoor environment | the programme consists of 6 enviornmental targets (above), 30 sub-targets and 40 indicators (p. 7) |The implementation and follow-up of the sub-targets of the environmental programme takes place in the action plan od the respective committee or board (p. 8) | T*he environmental programme does not state which concrete measures should be carried out within operations, nor calculate the costs of these. A committee or board that has the explicit responsibility for a sub-target is responsible for formulating committee targets in its operations plan, as well as indicators and actions that aim to fulfil the targets of the environmental programme and independently choose the most cost-effective measures. In this way, the indicators set by the city council are supplemented by indicators et by committees and company boards. For each operations area target in the city counil's budget, the committees will set their own local targets. A committee target with corresponding committee indicators and/or activities will, together wtih the indicators set by the city council, ensure the implementation of the sub-targets and follow-up in the environmental programme. A local target can be set in such a way that it covers several sub-targets in the programme. In some cases, the implementation is managed throug different guidelines. These stipulate in detail how the environmental programme should be carried out. All the guidlines are outlined under their respective target sections. (p. 8f.)*	(1) Sustainable Energy Use (2) Environmental friendly transport (3) Resource-efficient recycling (p. 15) | The City of Stockholm has set the goal of becoming fossil-fuel free by 2040, with the milestone target of a maximum of 2,3 tonnes of CO2 per resident by 2020 (p. 13)	Action areas: (1) energy-efficient buildings (2) illustrate and visualize enegy and electricity usage (3) environmentally efficent transport (4) eco-friendly travel (5) digital meetings (6) development of e-services (7) digital caase and document processing (8) eco-friendly IT procurement (9) greent workplaces (10) more efficient printouts	City planning goals: (1) A growing city (2) A cohesive city (3) Good public spaces (4) A climate-smart and resilient city (p. 6) | Expansion strategy and implementation: The expansion strategy is to be a tool for planning and implementation, describing how the city is to prioritise its efforts to meet the need for housing in the short and long term. The four elements of the strategy (p. 7) are designed to steer urban development towards the city's vision - Stockholm for everyone. (p. 6)
		Vision, Strategy, Planning and Implementation (Projects) are aligned		Vision and Strategy are aligned	Vision and Strategy are aligned	Vision (2030) and Strategy are aligned	Vision and Strategy are aligned
		Alignment of different strategies within a city (e.g. energy strategy, mobility strategy, etc.)		Alignment with the investment strategy (p. 6) | City Plan of Stockholm	Alignment with the Environment Programme 2016-2019 (p. 15)	Alignment with the Environment Programme 2008-2011 (The programme's goals steer the environmental work of the city as a whole and act as guidelines for individual committees and administrations. The environmental programme is based on the city's previous environmental programmes and surveys, which have highlighted the city's most important environmental issues an health risks. (p. 5,7))	Alignment with the Investment Strategy | Environment Programme 2016-2019 | Fossil fuel free Stockholm 2040 | Urban Mobility Strategy | Greener Stockholm 2017 | Action plan for good water stats 2015| Other cross-sectoral steering documents, like Stockholm's e-strategy, stromwater strategy and the sports policy programme (p. 17)
		Alignment of content of strategy with national, European and global strategies		The environmental programme is centred around six comprehensive environmental targets which consitute a local specification of the 16 National environmental quality objectives that are most relevant for Stockholm (p.7)	Climate Summit in Paris in December 2015 (p.13) | In it's national environmental quality objective "Reduced Climate Impact", the Swedish parliament recognises that atmospheric concentrations of greenhouse gases must be stabilised at a level that is not hazardous to the climate system. In connection with the Paris summit the Swedish government launched its Fossil Free Sweden inititive, which aims to make Sweden the world's first fossil-free welfare nation. (p. 13) | Alignment with national objectives	not mentioned	As well as tying in with the city's vision, goals and steering documents, the City Plan also needs to relate to the plans and strategies at regional, national and global level. (p. 16) | Aligned with the Sustainable Development Goals (SDGs), adpoted from the UN in 2015; at EU level: alignment with urban agenda, particularly 2014-2020 programme period, where urban development issues were prioritised from the Europan Commission; Sweden: the government appointed the Agenda 2030 Delegation to support the implementation of the SDG's. The SDG' are largely in line wih the objectives previously laid down by the Riksdag, including public health objectives and the national environmental quality objectives. (p. 16) | Regional Development Plan, RUFS 2010; RUFS 2050: the plan is to be available for decision-making during 2018
	Diverse community-based experimentation with disruptive solutions	Opportunities for experimentations/Tests/Living Labs through "new" strategy and planning processes, which were not existing	Have the development aims/objectives/effects been already tested/validated?				
		new solutions generated in the implementation phase		not relevant on the strategic level	not relevant on the strategic level	not relevant on the strategic level	not relevant on the strategic level
		Innovative components in the Strategy	Does innovative components in the strategy support or hinder implementation?	annual report (about the sub-targets and their progress), which is done by the departments [for the city hall] - puts extra effort for the stakheolders, it improves the work though (Interview)			
	Innovation embedding and coupling	Bringing together the project results and innovations (embedding)		not relevant on the strategic level	not relevant on the strategic level	not relevant on the strategic level	not relevant on the strategic level
		Monitoring, Evaluation, comparison with strategic objectives: How is it done, who is responsible, etc.		not relevant on the strategic level	not relevant on the strategic level	not relevant on the strategic level	not relevant on the strategic level

Reflexivity and Social Learning	Reflexivity and social learning	Evaluation and Monitoring, feedback to strategic steering	How are the activities being evaluated? /Were any goalsettings been missed, not achieved? What are the resons for that?	Indicators for follow-up are specified for the sub-targets as a way to monitor the progress of the environmental work. The indicators are determined in connection with the budget of the city council and should be continously evaluated and supplemented, and revised if they are found to be less than adequate and appropriate for the follow-up (p. 8) | majority of the indicators are decided by the city council in connection with the establishment of the City council's budget, thereby establishing both the indicator's contents, target values and which committees and company boards are required to report; the different indicators are followed up by the local government administration through the City's intergrated management system, followed up by way of **four-monthly reports and annual reports**just as with othe follow-ups of operations and budget, there are possibilities for committees and company boards to comment on the results of the indicators (p. 8) | the indicators set by the city council are supplemented by indicators set by committees and company boards (p. 8) |"Follow-up of the sub-targets will enable constant improvements" - report every year about the implementation of the sub-targets together with the annual report, it should specify a prognosis for it the sub-target will be met during the programme period, as well as suggestions regarding amendments or supplements to facilitate its completion (p. 9) || The local government administration, through the City Executive Board, will analyse the reports from all committees and companies responsible for follow-ups (p. 9)	each of the committees and the board of each company involved is **responsible for ratifying, implementing and following up**measures that will lead to the required reduction in emissions. This includes responsibility for analysing which measures are most cost-effective for the City. The Environment Programme's emissions ceiling of 2.3 tonnes of CO2e by 2020 applies to all committees and company boards. As a consequence of the adoption of this strategy, various **named committees and company boards**are made responsible for the implementation of a number of prioritised measures. Municipal committees are urged to make use of the funds specially earmarked for climate investments in the City's budgets up to and including 2018. The strategy provides guidance about areas prioritised for the allocation of these funds and indicates the need for budget priorities over the longer term. It is also recommended that the City seeks state investment funds to achieve its climate goal. The measures proposed by the strategy are in line with the Stockholm Environment Programme and are therefore implemented in the City's integrated management system (IMS). This places responsibility for implementation and follow-up with the respective committee and the business plan of the boards concerned. Follow-up takes place in connection with **tertial reports and activity reports** in the same way as other activities and		Not clear yet how the monitoring/evaluation will looks like in the end. However, the master plan itself has to be approved/re-designed every few years and this is not possible without evaluation (Interview)
		Learnings (positive and negative) among the active actors in SPU, integration of learnings in future processes/activities (change of behaviour)	Are any awareness building measures in place?	more seen as an internal document			Local newspaper. Journalists, who write about the masterplan (advertisement); digital channels (facebook, website, etc.); communication at school to get the kids' perspective
		Learnings for replication and upscaling (change of system)		not relevant on the strategic level	not relevant on the strategic level	not relevant on the strategic level	not relevant on the strategic level
		Information/Documentation of the Strategy development process (transparency and process-oriented)	Are the ongoing activities being sufficiently documented? If yes, in what form? How are the resulting streams of information being continuously processed? Are any actors being limited in accessing specific types of Information?	Follow-up of the sub-targets: four monthly reports and annual reports (p. 8) | Those committees and committees and company boards who will contribute to the implementation of the sub-target will report to the committee or company board responsible for the follow-up. This report should be presented for the on-going year in connection with the annual report. It should specify a prognosis for if the sub-target will be met during the programme period, as well as suggestions regarding amendments or supplements to facilitate its completion. (p. 9) | There is an environmental barometer on the City's website where the targets are presented in a transparent way with the help of assessments and indicators; it also presents data regarding the environmental situation in Stockholm; The Environment and Health Committee is responsible for the barometer (p. 10)	?		x

Annex IV: Template for Interviews (analysis framework, WP2)

Date: Name of interviewer:

Name of interviewed person:

Position of interviewed person:

Interviewee represents/has main knowledge in (tick):

strategy	planning	implementation	replication&upscaling

Interview questions pool *(most important ones to be picked/highlighted before the interview)***:**

Tell briefly about the background of TRANS-URBAN EU China

1) To understand better the gap between planning and implementation, we'd like to know more about *strategy xy and the process/the project xy and its path towards implementation etc.* **Can you please give a short overview on the current status and the background of xy?**
   - What are the goals, time scope and spatial dimension of xy?
   - Is there a collective vision behind xy? What has triggered the development of xy?
2) **Who are the key actors/main stakeholders for xy and what is their specific role?**
   - Who has initiated xy?
   - Why are those stakeholders involved (what is their motivation/background)?
   - Who takes the main decisions?
   - How are the stakeholders organized (a platform, regular meetings, formalized or informalized activities etc.) and what resources (money, time etc.) do they have available?
   - *If there is a platform:* who runs the platform, who is responsible? Is it a permanent or temporary platform?
3) **Has there been citizens' participation for xy?**
   - *If so*, how, when and why did it take place?
   - *If not*, why?
4) **Is there a collaboration going on with any other city departments or other cities?**
   - *If so*, in which way and how is it helpful?
   - *If not*, why not?
5) **How does the communication internally and externally regarding xy look like?**
   - Are there any awareness building measures?
   - Are there any feedback loops within the whole process?
6) **How is xy documented? Is there an evaluation/monitoring of xy?**
   - *If yes*, for what purpose and how?
   - *If not*, why not?
7) **Do you think that xy is successful?**
   - If yes, in which way?
   - What did not work so well, what worked very well?
   - From your personal view: what needs to happen/come true that you are satisfied with xy?
   - From your experience/learning with xy: What would be the most important message that you'd give someone new in your position?

In the end, ask for additional material/documents and/or additional interview partners

ANNEX V: COMPARISON OF EUROPEAN CASE STUDY CITIES

Table 1 Sample and population according to population size

Population class	total (n=161)	share (n=161)	TOP 19 (n=19)	share (n=19)	TOP 8 (n=8)	share (n=8)
< 50.000	18	**11%**	0	0%	0	**0%**
50.000-100.000	25	**16%**	1	5%	0	**0%**
100.001-250.000	40	**25%**	3	16%	2	**25%**
250.001-500.000	40	**25%**	2	11%	0	**0%**
500.001-1 Mio.	27	**17%**	7	37%	2	**25%**
> 1 Mio.	21	**13%**	6	32%	4	**50%**
	161		**19**		**8**	

Table 2 Sample and population according to planning family

Planning family	total (n=161)	share (n=161)	TOP 19 (n=19)	share (n=19)	TOP 8 (n=8)	share (n=8)
Napoleonic	77	**48%**	10	53%	3	**38%**
Eastern	29	**18%**	3	16%	2	**25%**
Scan	18	**11%**	1	5%	1	**13%**
Germanic	17	**11%**	2	11%	1	**13%**
Anglo	12	**7%**	3	16%	1	**13%**
Turkish	7	**4%**	0	0%	0	**0%**
Mexican	1	**1%**	0	0%	0	**0%**
	161		**19**		**8**	