

Smart City Governance in Practice – the Example of mySMARTLife Project in Hamburg

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1 ABSTRACT

The concept of the “smart city” has become increasingly popular in recent years and a large number of cities globally follow smart city strategies. The Free and Hanseatic City of Hamburg has also adopted the aim to become a smart city. With the project mySMARTLife under the framework of the European Union’s Horizon 2020 programme Hamburg received the status of a smart city lighthouse project, and local actors from politics, administration, private economy, and civil society began collaborating to transform the district of Hamburg-Bergedorf towards a smart city. By experimenting with innovative technologies on-site, the project follows an applied and implementation-oriented approach.

The purpose of this paper is to analyse under which institutional framework conditions the smart city project mySMARTLife is implemented in Hamburg. In particular, it is examined which forms of governance characterise the implementation process of the project in the district of Bergedorf. Based on a study of current literature on smart city governance an analytical framework will be developed and applied on the example of the mySMARTLife project. The empirical findings of the paper elaborate institutional and actor-related challenges of putting a smart city initiative into practice and identify which factors promote and hinder these intentions. Being part of the mySMARTLife consortium the authors gathered knowledge from the inside perspective of the project as well as from interviews with relevant stakeholders.

Keywords: smart city, lighthouse project, governance, Hamburg, Horizon 2020

2 INTRODUCTION

Due to rapid urban growth, cities around the world are currently facing unprecedented challenges including air pollution, traffic congestion, waste management and deteriorating population health (OECD, 2012). The ambitious climate and energy goals set by the international community and national states have placed pressure on cities, to address sustainable development objectives.

The opportunities afforded by digitisation and the use of smart technologies are often considered as promising approaches to tackle the current challenges. Thus, the concept of the “smart city” has become increasingly popular in the last decade. Globally, a large number of cities follow smart city strategies by implementing smart technologies and digital infrastructures that are intended to smooth local processes, improve the quality of life for citizens, or enhance sustainable development (VANOLO 2016, GOLDSMITH & CRAWFORD 2014, TOWNSEND, 2013). Smart cities generally consider a conceptual urban development model, which focuses on the “utilisation of human, collective, and technological capital for the enhancement of development and prosperity in urban agglomeration” (ANGELIDOU, 2014: 3).

In this context, the Free and Hanseatic City of Hamburg has adopted the aim to become a smart city. With the project mySMARTLife under the framework of the European Union’s Horizon 2020 programme Hamburg received the status of a smart city lighthouse project, and a local consortium began to transform the district of Hamburg-Bergedorf towards a smart city. By experimenting with innovative technologies on-site, the project follows an applied and implementation-oriented approach.

Until now, there has been little research delving into practical smart city experiences and its implications on the local level (MORA et al. 2017). In this regard, the purpose of this paper is to analyse under which institutional framework conditions the smart city project mySMARTLife is implemented in Hamburg. In particular, it is examined which forms of governance characterise the implementation process of the project in the district of Bergedorf. Being part of the mySMARTLife consortium the authors from HafenCity University Hamburg gathered knowledge from the inside perspective of the project as well as from interviews with relevant stakeholders. The first part of the paper presents the theoretical framework of the further investigation. On this basis, an analytical framework is developed and applied on the example of the mySMARTLife project. The last part of the paper presents the empirical findings by elaborating institutional and actor-related challenges of putting a smart city initiative into practice and identifying which factors promote and hinder these intentions.

3 THEORETICAL BACKGROUND

The following part presents the theoretical background on smart city as well as on approaches of organisation and governance relevant for the implementation of smart city projects. On this basis, precise research questions that form the analytical frame will be differentiated.

3.1 The concept of the smart city

The concept of the “smart city” has become increasingly popular in recent debates and a large number of cities globally follow smart city strategies (SUJATA et al., 2016). Although numerous attempts were made to further define smart cities considering different aspects and perspectives, the term remains fuzzy and is inconsistently used by practitioners and scientists (TRANOS & GERTNER, 2012). MEIJER & RODRIGUEZ BOLIVAR (2015) propose to differentiate three types of notions in the literature: “Smart cities as cities using smart technologies (technological focus), smart cities as cities with smart people (human resource focus) and smart cities as cities with smart collaboration (governance focus) (MEIJER & RODRIGUEZ BOLIVAR, 2015: 396). A fourth type is the combination of these three elements. As a comprehensive concept they propose to refer the smartness of a city “(...) to its ability to attract human capital and to mobilise this human capital in collaborations between the various (organised and individual) actors through the use of information and communication technologies“(MEIJER & RODRIGUEZ BOLIVAR, 2015: 398).

Today, there is a widespread enthusiasm for technologies and the tendency to believe that the use of digital technologies automatically transforms a city into smart one (ALBINO et al. 2015; MEIJER & RODRIGUEZ BOLIVAR, 2015; ANGELIDOU, 2014). As there is no clear classification of smart cities or differentiation to similar city concepts many municipal practitioners label their cities as smart (HOLLANDS, 2008). Reacting on the rapid rise of popularity of the smart city concept more and more studies, which focus on the risks and drawbacks of smart cities and digital technologies in urban development, have been published recently (e.g. GREENFIELD, 2013; TOWNSEND, 2013; BAURIEDL & STRÜVER, 2018).

Analysing different case studies HOLLANDS (2008) warns that smart cities are especially interesting markets for private entrepreneurs with economic purposes. According to BAURIEDL (2018) actors of the digital transformation tend to pursue management and technology oriented approaches of urban development for only privileged parts of a city. Besides, several scholars criticise that the perspective and the actual needs of citizens are often neglected in smart city initiatives (HOLLANDS, 2008; KOSTAKIS et al. 2015; ENGELBERT et al., 2018).

3.2 Smart Cities in the EU Horizon 2020 programme

In Europe, the vision of becoming a smart city has been, inter alia, institutionalised by the European Union (EU) tendering competitive calls for funding smart city projects (SPÄTH & KNIELING, 2018). Seeking to improve the quality of life as well as the economic performance, and competitive position of cities the EU funds smart city projects by the Horizon 2020 programme for research and innovation. The programme of Smart Cities and Communities (SCC) aims to demonstrate solutions on a district scale, which are cost-effective as well as replicable at the interface of energy, mobility and ICT (EC, 2016). The SCC-Calls ask for applications from consortia consisting of different European cities and respective public and private partners. Cities that were chosen to receive the EU funding for a smart city project are designated with the title of a 'Smart City Lighthouse City'.

3.3 Smart City Governance

Conventional organisational and institutional theories of the smart city claim that governance forms an essential part of the construct (RUHLANDT, 2018). The concept of governance describes the processes of coordinating complex activities or systems (SEYLE & KING, 2014). It refers to relationships between stakeholders and the role of the government in these coordination efforts. On the one hand, this includes the capacity of the public sector to manage the society and economy through political brokerage, targets and priority definition. On the other hand, it involves the coordination and self-governance of various formal and informal types of public-private interaction within policy networks (PETERS, 1997; PIERRE, 2000). Governance therefore describes a generic term, which seeks to capture all social-political arrangements

within public and private actors aiming to solve societal problems or exploiting opportunities (KOOIMAN, 2003).

Literature specific to smart cities provides a variety of approaches investigating and conceptualising governance in this field. First of all, it must be understood that becoming a smart city signifies a huge challenge for cities regarding “(...) capacities, capabilities, and reaches of their traditional institutions and their classical processes of governing, and therefore new and innovative forms of governance are needed to meet these challenges” (RODRIGUEZ BOLIVAR, 2015: 1f.). An appropriate governance system for following the aim of becoming a smart city should allow the connection of all forces at work, enabling knowledge transfers, and facilitating decision-making (RUHLANDT, 2018).

The involvement of multiple stakeholders from different sectors and policy levels as well as their interaction is a key feature of governance processes in smart cities and considers various administrative challenges (RODRIGUEZ BOLIVAR, 2015; MOSANNENZADEH et al., 2017). In contrast to other city concepts, smart cities are not only characterised by the focus on stakeholders but also on citizens (CALDERONI, 2012). In this context, FERNANDEZ-GÜELL et al. (2016) stress the importance of considering the human dimension of a city in processes of smart city governance. According to RODRIGUEZ BOLIVAR (2015) it is important that cities are recognised as a network of multiple systems, which are altogether connected in order to meet the needs of citizens.

3.4 Experimental governance of urban living labs

EU smart city lighthouse projects are usually implemented on-site in form of “urban living labs”. As temporary organisations urban living labs offer room for dealing with innovation and trying out new forms of governance, often with the intention to promote the transition towards sustainability on a local scale (HOSSAIN et al., 2018). Thus, urban living labs can be seen as approaches of politics of experimentation in the field of urban sustainability governance (BULKELEY et al., 2015; KRONSELL & MUKHTAR-LANDGREN, 2018). Such local experiments and respective experiences are suitable to be replicated and applied in other contexts, in order to bring forward a broader change of system (GEELS, 2011; VAN DER HEIJDEN, 2016).

From an organisational perspective urban living labs deal with the form of “experimental governance”. Experimental governance in urban living labs is characterised by multi-actor collaboration and permits the actors to try out new forms of cooperation and to deal with innovation (BULKELEY & CASTÁN BROTO, 2013; VOYTENKO et al., 2016). Within the network of actors in urban living labs the role of the municipalities can vary from only participating as a partner to actively enabling collaboration and promoting change of system (KRONSELL & MUKHTAR-LANDGREN, 2018). Various studies have proven that the respective role of the municipality in experimental governance strongly influences the type and performance of urban living labs (BULKELEY & CASTÁN BROTO, 2013; VAN DER HEIJDEN, 2015). In order to conceptualise the roles that municipalities can take in this context VANGEN et al. 2015 propose to distinguish between collaborative governance on the one hand and governing cooperation on the other hand.

3.5 Differentiation of an analytical framework

In order to follow-up with the institutional framework conditions under which the project mySMARTLife is implemented in Hamburg, it is useful to consider a broader analytical frame that covers all relevant aspects and dimensions of the complex subject. By revealing the general smart city approach the project can be initially classified concerning its overall vision and aim of transformation. Subsequently, the analysis of actor roles and relations as well of organisational characteristics will deliver decisive conclusions regarding the implementation of the project on site. Finally, examining the role of citizens is crucial for the overall assessment of the implementation and acceptance of mySMARTLife.

4 THE MYSMARTLIFE PROJECT AND ITS OBJECTIVES

The project mySMARTLife started in December 2016 and will last until November 2021. Funded under the EU’s Horizon 2020 programme for research and innovation the project receives an overall budget of 20 Million Euros, with 6 Million allocated to Hamburg. Apart from Hamburg, the cities of Helsinki (Finland) and Nantes (France) also take part in mySMARTLife project as lighthouse cities and the cities of Palencia

(Spain), Rijeka (Croatia) and Bydgoszcz (Poland) have the role of the follower cities in which project outcomes are replicated. In total, the mySMARTLife consortium consists of 28 partners from 7 countries.

Following the approach of the smart city, the lighthouse cities deploy a variety of different “smart solutions” in form of specific interventions that aim to reduce CO₂ emissions, promote the use of sustainable energy resources and mobility, and raise the quality of life for citizens. The interventions range from technical solutions, such as buildings refurbishment, usage of renewable energies, clean transport, and use of ICT solutions, to supporting social actions like citizen engagement.

In its external communication the project emphasis the “vital role” citizens are considered to play in urban development. In this context, the concept of “smart people” is developed. Moreover, the mySMARTLife programme focuses on the “smart economy” by aiming to realise a robust economic framework to boost well-paid employment opportunities in a variety of service sectors. By implementing these innovative and dynamic concepts, new business models for the smart city will be developed.

In Hamburg, the demonstration area of mySMARTLife is located in Bergedorf, an outer district with around 130.000 inhabitants. As Hamburg is a city and a federal state at the same time, the responsibilities of the Bergedorf district’s public bodies are comparable to local municipal level. In the coordination of mySMARTLife activities, the Bergedorf administration has established a new administrative department to facilitate innovation and smart city initiatives. The mySMARTLife consortium of Hamburg has 12 partners in total, comprising four Hamburg authorities, two universities and six private partners. The project consortium represents a variety of relevant sectors for smart city development from public bodies in energy, mobility and ICT and experts in public participation and from research institutions.

The specific smart interventions that are carried out in Hamburg-Bergedorf consider four different thematic fields. In the field of mobility the project is promoting e-mobility (purchase of electronical busses, cars and bikes). Moreover the charging infrastructure will be expanded and new offers for car-sharing are established. In the energy sector mySMARTLife project aims to foster energetic refurbishment of old building, construction of new innovative buildings with renewable energy and heating supply and the implementation of smart home systems, smart metering and intelligent street lights. The extension of the existing urban platform and the connection with further data systems summarises the project objectives in the ICT sector. In the field of communication mySMARTLife anticipates the implementation engagement strategies for citizens and stakeholders and public relation work that fosters the publicity and social acceptance of the project.

5 DISCUSSION

In the following, the institutional framework that characterises the implementation process of mySMARTLife project in Hamburg is examined from different perspectives and factors that promote or hinder the respective process are elaborated.

The grant agreement between the EU as a public financier and the Free and Hanseatic City of Hamburg and project partners as contractors constitutes the basis for the implementation of mySMARTLife project in the district of Bergedorf. It considers a contract prescribing the objectives, interventions, and responsibilities for putting the project into practice. While the specific interventions are defined very precisely (e.g. number of houses to be refurbished, number of cars and busses to be purchased) the overall smart city strategy remains rather vague. An overall vision with long-term development objectives for the district of Bergedorf hardly exists. Some of the project interventions tie up and create linkages to already existing developments in Bergedorf (e.g. renewables for the new building area and refurbishment of old houses) and some are newly developed for mySMARTLife (e.g. infrastructure for e-mobility, intelligent street lights).

The focus on the implementation of individual technical solutions emphasises that mySMARTLife is essentially driven by a technological approach. MEIJER & RODRIGUEZ BOLIVAR (2015) consider the sole implementation of smart interventions without a deep change in governance arrangements as a low level of transformation into a smart city. After AL-HADER et al. (2009) the technology infrastructure is only a pre-requisite of representing a smart city.

The content and action field of mySMARTLife are limited in time and space. These circumstances emphasise that the implementation frame of the project rather considers the characteristics of an urban living lab rather than a contribution to contemporary integrative urban development. As conditions for action in

standardised urban living labs normally do not represent everyday reality (BAURIEDL 2018), it remains to be seen which experiences of mySMARTLife can be taken along to the planning practice in Hamburg.

Focusing on competences for decision-making, actor roles, and networks in mySMARTLife project the grant agreement plays a decisive role again. The grant agreement, which anticipates most of the project decisions, was initially developed in the application phase in the form of a project proposal. Under pressure of time, a few actors from Hamburg developed the mySMARTLife concept for Bergedorf according to the advices of the Spanish lead partner. Thus, ideas concerning smart city development in Bergedorf have mostly been tailored to the specific requirements of the project call. Thus, the approach of mySMARTLife has a rather hierarchical and top-down character. While the project proposal was mainly driven by the senate chancellery of Hamburg political decision-makers of the district Bergedorf hardly had the chance to contribute to the project regarding the content and interventions to be implemented. This creates the impression that the project has a quite low level of democratic legitimacy.

The compilation of local partners for the project consortium took place in accordance to the need of the project and existing connections in Hamburg. In the course of time, further actors who could contribute to the success of mySMARTLife were identified. Unfortunately, the rigid structure of the project makes it nearly impossible to add new partners to the consortium at a later point of time. Thus, the project partners form a rather exclusive and inflexible network. However, in the course of this process a network of external stakeholders involved in the development of an innovation park in Bergedorf could be established and now serves as a platform for exchange regarding the implementation of innovative technologies in Bergedorf and Hamburg. During the on-going implementation processes of several interventions it could be recognised that different public bodies are responsible for digital technologies in urban development and require new actor cooperations. Thus, in the course of the mySMARTLife new intersectoral cooperations between different authorities as well as between private companies and public bodies could be experienced.

As the grant agreement consists of a legal document precisely prescribing the project content, it does not offer much flexibility and room for short-term modification. However, the implementation of innovative technologies must be seen as a complex process that might be determined by many factors. In case of mySMARTLife it became clear that some of the initially foreseen interventions strongly depended on external factors, such as economic framework or willingness of private owners who were not considered by the project. Thus, in Hamburg-Bergedorf a combined heat and power network could not be realised as the currently low gas price gives few incentives for private developers to invest in renewables. The lack of flexibility negatively affected the overall success of the project, as content-related changes required enormous administrative efforts. Moreover, it can be noted that the implementation of such policies requires harder instruments that legally oblige investors and building owners to implement e.g. specific energy standards.

In its external communication and self-presentation mySMARTLife considers itself as a project in which citizens play a central role. The project proposes the concept of “smart people” who are intended to be actively involved in planning processes. Moreover, it is a central objective of the project to create more inclusive cities. As the main targets of the project were already specified in the grant agreement, citizens as well as stakeholders are more likely to be informed and activated to take part in pre-established project activities rather than to contribute to mySMARTLife with their own ideas. ENGELBERT et al. (2018) believe that especially smart city projects tailored to be successful in European grant applications have the tendency to exclude the citizen perspective but are rather focusing on technological aspects in a top-down manner. This statement seems to apply to mySMARTLife project as well. As the citizens of Bergedorf were not involved in the development of the project actions, it is not sure if the interventions carried out really meet the needs and wishes of the local population. Moreover, mySMARTLife does not show intensive approaches of dealing with socially weak people that might be negatively affected by the project, e.g. in the form of rising costs for energy and rent. In order to inform the citizens of Bergedorf about project activities and related topics, mySMARTLife has developed different information modes. Overall, the project sees citizens more like passive consumers of the implemented technological solutions and the information events cannot be seen as sufficient to reach the self-imposed objectives in this field.

6 CONCLUSION

This paper analyses local institutional framework conditions for smart city implementation using the example of the project mySMARTLife in the Free and Hanseatic City of Hamburg. Focusing on the special characteristics of EU smart city projects many critical points but also potentials can be revealed.

First of all, it can be stated that mySMARTLife needs to be classified as a temporary project that is implemented in form of an urban living lab rather than to be considered as an aspiration for a comprehensive smart city development over the long-term.

As mySMARTLife receives large funding from the EU, the project offers unique options for institutions and actors in the field of urban development to gain experiences in the implementation of innovative technologies and digitisation of infrastructure. Such comprehensive experimentations could not have been carried out without the frame status of a EU smart city lighthouse project. However, as these conditions for smart city development hardly represent the reality, it is questionable if all project experiences can be transferred to the urban planning practice in other places.

The broad contextual framework that was applied to the analysis revealed that many weaknesses of the project are caused by the general structure of the project with strict obligations to the contractual grant agreement with the EU. Through this, many project objectives are developed in a top-down process and a lack of flexibility appears. Due to this structure, there are few options for active participation of citizens apart from information campaigns. Moreover, it can be seen as very critical that the actions of the project influencing the development of the district of Bergedorf have a lack of democratical legitimation. It is of further research interest how other cities participating as lighthouse cities in a EU-funded smart city project

cope with similar obstacles. As smart cities are considered an extremely complex subject, which requires the involvement and co-determination of many actors, and strongly relies on many external factors, open bottom-up approaches, room for flexibility, and constant modification is needed. These critiques emphasise that the EU is requested to rethink the general conditions and ways under which smart city projects are tendered and implemented in future.

Finally, the free and hanseatic city of Hamburg benefits from the project as it comes along with the title “smart lighthouse city of Europe”. Due to the prestigious character and the corresponding external interest in the project, large numbers of stakeholders can be inspired for cooperation and commitment to the subject of smart city.

7 ACKNOWLEDGEMENTS

The Institute of Urban Planning and Regional Development of the HafenCity University Hamburg is a partner of mySMARTLife project. The research on smart cities of the HafenCity University in the project mySMARTLife has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731297. For requests and further information please contact:

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