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Local Environment

The International Journal of Justice and Sustainability

ISSN: 1354-9839 (Print) 1469-6711 (Online) Journal homepage: http://www.tandfonline.com/loi/cloe20

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To cite this article: Lucie Zvolska, Matthias Lehner, Yuliya Voytenko Palgan, Oksana Mont & Andrius Plepys (2018): Urban sharing in smart cities: the cases of Berlin and London, Local Environment, DOI: 10.1080/13549839.2018.1463978

To link to this article: https://doi.org/10.1080/13549839.2018.1463978

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Published online: 18 Apr 2018.

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LOCAL ENVIRONMENT, 2018
https://doi.org/10.1080/13549839.2018.1463978

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Urban sharing in smart cities: the cases of Berlin and London

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ABSTRACT
Addressing urban sustainability challenges requires changes in the way systems of provision and services are designed, organised and delivered. In this context, two promising phenomena have gained interest from the academia, the public sector and the media: "smart cities" and "urban sharing". Smart cities rely on the extensive use of information and communications technology (ICT) to increase efficiencies in urban areas, while urban sharing builds on the collaborative use of idling resources enabled by ICT in densely populated cities. The concepts have many similar features and share common goals, yet cities with smart city agendas often fail to take a stance on urban sharing. Thus, its potentials are going largely unnoticed by local governments. This article addresses this issue by exploring cases of London and Berlin – two ICT-dense cities with clearly articulated smart city agendas and an abundance of sharing platforms. Drawing on urban governance literature, we develop a conceptual framework that specifies the roles that cities assume when governing urban sharing: city as regulator, city as provider, city as enabler and city as consumer. We find that both cities indirectly support urban sharing through smart agenda programmes, which aim to facilitate ICT-enabled technical innovation and emergence of start-ups. However, programmes, strategies, support schemes and regulations aimed directly at urban sharing initiatives are few. We also find that Berlin is sceptical towards urban sharing organisations, while London took more of a collaborative approach. Implications for policy-makers are discussed in the end.

ARTICLE HISTORY
Received 27 March 2017
Accepted 5 April 2018

KEYWORDS
Urban governance; urban sharing; sharing economy; smart cities; sustainability

Introduction

In 1950, 30% of the world's population was living in cities. By 2050, this figure is expected to rise to 66% (UN 2015). Such rapid urbanisation bears with it a number of sustainability challenges. Urban population is currently contributing to as much as 80% of overall energy consumption, 75% of carbon emissions and 75% of global natural resource consumption (UNEP 2013). At the same time, over 80% of the global gross domestic product is generated in cities (Grübler and Fisk 2013). Thus, cities offer many socio-economic benefits and have become centres of research and education (König and Evans 2013; Trencher et al. 2014), catalysing a change from the unsustainable status quo. In recent years, two concepts that promise to tackle urban sustainability challenges have emerged: smart cities and the sharing economy.

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Smart cities and information and communications technology (ICT)-enabled urban sharing[1] boast somewhat similar values and all-encompassing goals and exhibit a potential to contribute to digitally enabled green urbanism (Hollands 2008; McLaren and Agyeman 2015). Gori, Parcu, and Stasi (2015) presented several common features of the sharing economy and smart city concepts. They framed the concepts as innovations led by citizens' and consumers' needs, functioning in well-defined communities, whose aim is to share resources, be it material resources, skills, time or data, through ICTs.

The European Union defines the concept of smart cities as the utilisation of "scalable solutions that take advantage of information and communications technology (ICT) to increase efficiencies, reduce costs, and enhance quality of life" (EC 2013, 5). It has also been described as an innovative concept, which is expected to provide solutions to many societal challenges. While it lacks a definitional precision, it is often associated with the utilisation of solutions based on ICT that increase efficiencies and bring together public actors, citizens and private companies (Höjer and Wangel, 2015). However, smart cities are criticised for being corporatised (Hollands 2015). Some researchers are also questioning its true potential to improve economic, environmental and social conditions for urban dwellers. Furthermore, Vanolo (2014) demonstrates on a case from Italy that the smart city idea creates an uncritical consensus that limits cities' planning approaches to a single concept. Hollands (2015) further argues that if cities are to address social problems, they need to shift from the "technologically driven, corporately controlled, heavily marketed" smart city to citizen-led, participatory governance. One way to ensure that smart cities live up to their expectations is to support small-scale, bottom-up initiatives.

Similarly, Dyer, Gleeson, and Grey (2017) argue that the abundance of ICT in cities alone is not necessarily sufficient to deliver more inclusive governance processes known as "collaborative urbanism", which builds on the engagement of citizens and local actors in governing the city. Therefore, there is still a need for "a culture of Internet inspired citizen participation" to become mainstream (Gleeson and Dyer 2017). One way to ensure that smart cities live up to their expectations is for the city governments to support small-scale, bottom-up initiatives (Hollands 2015), as well as to engage in co-creation processes with local actors through partnerships, experimental arenas (Bulkeley and Castán Broto 2013) and urban living laboratories (cf. Evans and Karvonen 2014; Menny, Voytenko Palgan, and Mccormick 2018; Voytenko et al. 2016).

Within the wide landscape of smart technologies, initiatives and solutions that emerge in cities, the ICT-enabled urban sharing is a particularly promising example of smart innovation that offers a novel way of interaction and resource use between urban actors. Urban sharing encompasses a wide array of communal and commercial urban sharing organisations (USOs) that employ ICT to reduce transaction costs and make sharing of resources among peers easily accessible. One of the first urban sharing programmes was bike sharing schemes, such as Barcleys Cycle Hire. Nowadays, a wide array of resources is being shared in cities; from garden tools and food to apartments and cars. A large population density and an accumulation of resources in cities have resulted in a rapid growth of USOs in many urban areas. Much of the attention of the media, city officials and academics have been on larger platforms, which have been successful in scaling up and even disrupting the incumbent industries (Guttentag 2015; Laurell and Sandström 2016). However, their potential to deliver sustainable solutions in cities remains to be realised (Cohen 2016; Schor 2014). Similarly to the smart city concept, it is bottom-up, small-scale organisations that have been praised for their potential to contribute to sustainable cities built on social justice, democratic collaboration and trust, but they either have difficulties multiplying or scaling up (Cohen 2016; Schor 2014; Sundararajan 2016) or lack the intention to do so.

City governments around the world are increasingly adopting policies to regulate some forms of USOs, and a number of municipalities are even taking legal action against them due to breached employment, zoning, and health and safety laws and licensing rules (Orsi 2013). Consequently, official reports and academic texts have emerged with suggestions on how cities should regulate these platforms (cf. Katz 2015; Sundararajan 2016; Wosskow 2014). In general, they suggest ways to promote innovation while also protecting USOs' consumers, but often neglect to take into consideration the sustainability merits of various urban sharing models.

City governments have the power to encourage or discourage certain types of sharing, but there is a lack of understanding of how cities govern USOs, and what role smart city agendas play in their dissemination (Agyeman, McLaren, and Schaefer-Borrego 2013; Cohen and Kietzmann 2014). This article seeks to address this gap by drawing on urban governance literature, specifically on its stream that deals with the role of cities in tackling sustainability challenges (Bulkeley and Kern 2006; Bulkeley et al. 2010; Evans and Karvonen 2010; Kern and Alber 2008). This literature emerged from the realisation that cities provide a fruitful ground for technical, social and political innovation (Cattacin and Zimmer 2016; Oecd 2008). In particular, we build on frameworks that describe four modes of urban climate governance (Bulkeley and Kern 2006; Kern and Alber 2008): self-governing, governing by authority, governing by provision and governing through enabling. Although these earlier versions of the urban climate governance frameworks tended to side-track participatory governance and the notion of social justice, we find them helpful to understand not only how municipalities seek to address the challenge of sustainable development, but also how they intervene in socio-technical processes by engaging with different types of innovations, including smart cities and urban sharing. In this article, we analyse the modes of urban governance in relation to urban sharing in two case cities: Berlin and London. These two ICT-dense cities have clearly articulated smart city agendas, a vibrant urban sharing landscape with the different prominence of for-profit and non-profit sharing organisations, and distinct ways of governance and engagement with urban sharing. While London has for a long time been a test-bed for a great number of business model innovation projects and sharing start-ups, Berlin has been known for hosting grassroots sharing organisations and has an ambition to become the sharing capital of Europe.

The paper is guided by the following research question: *How do city governments of Berlin and London govern ICT-enabled urban sharing organisations?*

Section 2 provides an overview of urban governance literature and describes the modes of urban governance in more detail. Section 3 deals with the methodological approach employed in this paper. It is followed by a case analysis of Berlin and London (section 4), discussion (section 5) and conclusions (section 6).

Conceptual framework

In seeking to capture the current political processes unfolding in European cities, scholars have moved from the term "government" to "governance" (Bulkeley and Kern 2006; Cattacin and Zimmer 2016). Governance describes "non-hierarchical modes of coordination, steering and decision-making" (Cattacin and Zimmer 2016), which apart from the representatives of formal government structures include an array of urban actors from private and public domains. Governance processes are thus pictured as regulations through "networks of agents" (Khan, 2013; Powell 1990). When analysing how governance of climate change is exercised at the municipal level in the U.K. and Germany (Bulkeley and Kern 2006) and in multi-level systems across the globe (Kern and Alber 2008), four distinct governance modes have been identified: governing by authority, governing by provision, governing through enabling and self-governing.

Governing by authority is the most traditional process of governance that builds on formal planning, control and regulation, and relies on legal sanctions by the jurisdiction to assure implementation. Kern and Alber (2008) label this mode more narrowly as "governing by regulation", which encompasses the formal authority of the city to steer by laws and policies. While being the most traditional governance mode, it is not the most popular one in climate change governance, as municipalities seek to avoid resistance and possible conflicts as a result of exercising their authority (Bulkeley and Kern 2006; Kern and Alber 2008).

Governing by provision focuses on the delivery of particular forms of services and resources through infrastructure and financial policy (Kern and Alber 2008). It is often identical to the role of the municipality as a shareholder in a local utility company for the provision of energy, transport, water or waste management services. It appears to be a common practice in more socially oriented

countries with high taxes and the resulting high municipal budgets. This mode has not been found very prominent in relation to climate change governance because energy markets are experiencing increased liberalisation, and the ownership of utilities is being transferred to business actors (Bulkeley and Kern 2006).

Governing through enabling is a "softer" and less resource-intensive approach to municipal governance. It is reflected in the actions of municipalities that coordinate and facilitate partnerships with private actors and encourage community engagement. It relies on persuasion, argument and incentives (Bulkeley and Kern 2006). This mode has various dimensions, including public education, awareness campaigns and promotional activities by municipalities, developing external ties (e.g. co-operation by the city with other actors) and facilitating co-operation between stakeholders (e.g. the establishment of public–private partnerships for the provision of services and infrastructure) (Kern and Alber 2008). Khan (2013) refers to this governance role as "network governance", in which "the municipality is a facilitator rather than commander and implementer" (133). Co-operation and trust are essential for this way of governing (Khan 2013).

Self-governing refers to the municipality governing its own activities, for example, by improving energy efficiency in municipally owned buildings (Kern and Alber 2008). It relies on reorganisation, institutional innovation and strategic investments. It reflects two roles of a municipality: as a consumer through public procurement, and as a role model by visualising the feasibility of desirable solutions to other urban actors. Through self-governing and enabling, municipalities had the most discretion and decision-making power (Kern and Alber 2008). At the same time, self-governed activities only resulted in marginal contributions to urban climate change mitigation due to their small scale.

Drawing on the urban governance modes, we conceptualise four roles city governments may assume when working with a broad range of issues, either by supporting and promoting or by inhibiting them: city as regulator, city as provider, city as enabler and city as consumer (Figure 1). We suggest that these roles are relevant in addressing how municipalities engage with urban sharing.

"City as regulator" employs a range of regulatory mechanisms that include laws, taxes, bans, policies and other formal documents that regulate the establishment and operation of urban sharing initiatives. "City as provider" offers financial (i.e. "city as investor") and infrastructural (i.e. "city as host") support to USOs. Municipal funding programmes can be used by USOs to invest in their

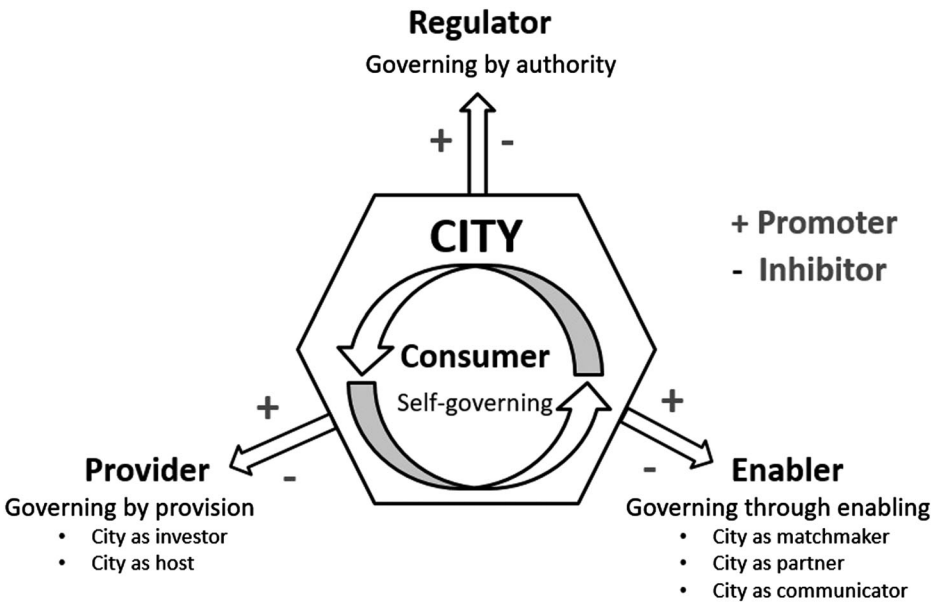

Figure 1. Roles and modes of municipal governance (after Bulkeley and Kern 2006; Kern and Alber 2008).

core activities (e.g. technology, infrastructure) or in their development work (e.g. personnel, research, communication and education) (Kern and Alber 2008). "City as enabler" may facilitate collaboration among USOs (i.e. "city as matchmaker") or creation of partnerships with municipal actors (i.e. "city as partner"). The city may organise competitions, awards and voluntary certification schemes to recognise the best sharing practices. It may also get engaged in disseminating the best urban sharing practices and in marketing them to different stakeholders (i.e. "city as communicator"). The role of "city as consumer" can be exemplified by municipalities adopting urban sharing practices in their own operations, such as procurement.

The city government can employ any of the four roles and combine them to varying degrees when dealing with any one issue (Bulkeley and Kern 2006). In addition, the roles can be played out as either promoting or inhibiting the emergence and operation of USOs. Both promotion and inhibition could be explicit, e.g. when cities incentivise or ban a certain activity, or subtle, e.g. when cities choose to support an alternative activity, which results in side-tracking or de-prioritising other USOs. This gives city governments a high degree of freedom to adopt the most suitable portfolio of methods and ways of working with urban sharing. At the same time, the course of action by a city government is affected by how the government is organised, by the local and national contexts, and the socio-technical configurations of the city, such as infrastructure, culture and economy (Hodson and Marvin 2010). Municipalities are also constrained in their actions by a world of multi-level governance where local decision-makers are dependent on both higher political levels and other actors in the society (Kern and Alber 2008; Khan 2013). Therefore, the city's capacity to deploy different modes of governance differs considerably (Bulkeley and Kern 2006). Following this framework, we conduct a comparative analysis of how municipalities engage with ICT-enabled sharing employing multiple governance roles.

In the context of this study, it is necessary to be aware of the administrative differences between Berlin and London. Berlin is located in the Federal Republic of Germany. It is one of three "city-states" in Germany with broad executive rights. This implies that it has executive power on two out of three executive levels within Germany; the municipality and the region.

The local government in London takes place in two tiers. The upper tier consists of The Greater London Authority (GLA) led by the Mayor of London who provides city-wide leadership, and the 25-member London Assembly who review the Mayor's policies, actions, strategies and budget plans. In addition to promoting economic, social and environmental development in the Greater London area, the GLA is responsible for policies on transport, buildings and land use (GLA 2016). Mayoral policies may influence daily operations of USOs, as was the case of changing private hire regulations or lobbying the national parliament to enforce stricter rules for short-term rentals (BBC 2016; Sullivan 2016). The GLA shares local government powers with the lower tier, which consists of the City of London Corporation and 32 boroughs that provide a large variety of services, including education, housing, planning, social services, environmental health or collection of council tax.

Berlin is located in Germany, a federal state. This system gives broad executive rights to regional (Bundesland) and local (Stadt, Gemeinde) authorities. Berlin, being the capital of the Federal Republic of Germany, is also one of only three so-called city-states in Germany. This implies that the city of Berlin has legislative power on two out of three legislative levels within Germany; the municipality and the region. The city of Berlin is further divided into 12 so-called Bezirke. These sub-units of the municipal government are executive bodies of the municipality. Their function is to institute the federal, regional and municipal legislation. Due to the federal nature of Germany, the elected government of Berlin has legislative powers in areas such as transport, rent, tourism and trade, and thus a significant influence over the nature of the sharing economy within Berlin.

Methodology

This research uses a deductive research strategy in which literature analysis is combined with case studies of Berlin and London as two cities promoting smart and sustainable agendas.

First, a *literature analysis* was conducted that identified existing knowledge about the roles cities can play in governing different types of developments (Bulkeley and Kern 2006; Gibson, Robinson, and Cain 2015; Kern and Alber 2009; Kronsell and Mukhtar Landgren 2017). The literature analysis included a review of data from multiple sources including academic publications, scientific and business reports, grey literature, periodicals and online sources, including official webpages for London and Berlin, and organisations dealing with smart agendas in these cities. We make use of online databases, such as Web of Science, SCOPUS, Google Scholar, EBSCO Host, LUBRIS and Research Gate. Keywords for searching in secondary sources included "sharing economy", "smart cities", "sharing city", "urban sharing" and "governance".

Second, based on the literature analysis, an *analytical framework* was developed that was used for data collection and data structuring. It was first employed for developing two interview guides and then for categorising and presenting the findings. One interview guide was designed for sharing organisations and one for city governments. Each guide comprised eight open-ended questions (Appendix 1).

The interviews were semi-structured, giving a possibility to the interviewed societal actors, both USOs and authorities, to put forward their insights and to elaborate on interpretations. In Berlin, the interviews were conducted in German, and in London in English.

Third, case studies from two cities, London and Berlin, were developed with data collected via a comprehensive literature analysis of city initiatives within smart and sharing agendas, complemented with *24 interviews* with 26 relevant stakeholders representing city governments, sharing organisations and stakeholders collected through chain sampling (Appendix 2).

Ten interviews were conducted in London and 14 in Berlin (please see Appendix 2 for an anonymised list of all interviewees). The interviews were conducted by phone and lasted between 30 and 90 minutes. One interview was conducted via email with a public officer from the GLA. The interviews were recorded and thematically transcribed. The different roles of cities presented in the analytical framework were tested either "in vivo", i.e. through direct words and framings used by the interviewees, or by summarising the concepts discussed by them. Detailed findings from Berlin and London are presented below.

Findings and analysis

Berlin declared itself a "smart city" and adopted the Smart City Berlin Strategy in 2015. It has since dedicated resources to the development of the smart city agenda, for example, by creating a cross-departmental unit within the municipality. The sharing idea has also received some attention and resources from the city of Berlin, particularly in late 2014 and early 2015, when the business development unit of Berlin organised meetings, workshops and commissioned a report on the potential of urban sharing. However, unlike the smart city agenda, the interest in sharing has not been pursued further. Instead, actors within and outside of the municipality have carried the work forward via commercial sharing projects (e.g. for-profit sharing platforms), civil-society movements (e.g. non-profit USOs) and the initiatives of municipal organisations and sub-units (Bezirk).

London published the Smart London Plan (SLP) in 2013 as a response to its population growth, which the city expects will exacerbate congestion and the resulting air pollution, and increase the strain on healthcare and the management of utilities (Mayor of London, 2013). To deliver solutions inclusive of all London citizens, the plan stresses the importance of collaboration between citizens, businesses, researchers, investors and other stakeholders. However, while the city is making efforts to engage citizens; for example, by managing the Talk London website, which invites citizens to help design policies; the focus of the SLP has been mainly on collaboration with businesses to deliver technological innovations, such as street lighting or smart congestion charges. At the same time, one of the objectives of the SLP is promoting the start-up scene in London by operating a number of support programmes, such as the online platform for tech start-ups Tech.London, or the information and statistics website London DataStore. USOs are included in the GLA's efforts to support innovative start-ups, but the

city currently does not have a sharing agenda. The majority of USOs has developed independently of the local government, although mobility organisations have received much attention from the GLA, which is responsible for operating Transport for London (TfL) – the public transport authority in London, and is heavily involved in the smart mobility plan for London.

In this section, empirical data on the governance of USOs in Berlin and London are analysed in line with the conceptual framework developed in section 2. The four distinct roles that a city may undertake in governing USOs are discussed.

City as regulator

Efforts to regulate USOs in both London and Berlin seem to correlate with the size of USOs and the degree of public interest in them. Large for-profit organisations, such as Airbnb and Uber, have received much regulatory attention in Berlin in 2015, and thereafter also in London. The difference is that London has enforced these regulations on a city level, while the enforcement in Berlin remains fragmented and is up to each Bezirk. In some Bezirks, the operations of both platforms are now inhibited by regulations with the motivation that some forms of sharing, including intensive renting of private apartments, have negative consequences for the city and its citizens because they increase gentrification. An interviewee from a B2C car sharing organisation in London, who spends considerable time in discussions with the local government, speaks similarly about the attitude of the city government towards regulating USOs:

> The city is very well aware that some of these innovations will be positive, while others may come with downsides and there is need to make sure that the city understands both (…) They're trying to remain outward facing, looking at the innovations as they come along (…). They evaluate each on its merits and make sure that what they deliver is good for our city.

Both municipalities were found to introduce regulations to reduce the negative impacts of specific USOs, rather than employing one-size-fits-all regulations. In 2017, TfL suspended the licence of the peer-to-peer (P2P) car sharing organisation Uber. TfL deemed the company as "not fit and proper" to hold the licence primarily on the grounds of its approaches to reporting serious criminal offences, obtaining medical certificates, information disclosure and unsatisfactory software standards "able to block regulatory bodies from gaining full access to the app and prevent officials from undertaking regulatory or law enforcement duties" (TfL 2017). Now, all companies operating a P2P taxi service in London must comply with a new regulation, tailor-made for them, while the incumbent taxi industry is regulated by a different, much stricter scheme called the black cab regulation. Interestingly, car sharing clubs, including Carplus and Zipcar, are regulated by licences issued by individual London boroughs. A car sharing club that complies with the rules can be issued a licence to operate.

Food sharing organisations in Berlin and London are also regulated based on their business models. In Berlin, a non-profit organisation that came into focus of regulators was *Foodsharing.de*. One of their food saving initiatives, freely accessible fridges and cupboards in the urban space received a lot of positive media attention. However, the health authorities in a district municipal body Bezirk Pankow demanded a formal structure around the initiative to guarantee food safety. After much discussions and a public conflict between the responsible city representatives ("Lebensmittelaufsicht"), the public food exchanges in the district had to close.

While Foodsharing.de is fighting regulation in Berlin, the London-based food sharing social enterprise Olio complained about the lack of regulatory directions in London. After having contacted the borough of Islington's Food and Safety Authority, Olio was assured that they were not bound by any regulations. At the same time, Olio registered as a food business and applied for a food licence, to make sure it complies with any future regulations. In Berlin, we found another USO that expressed their frustration about the lack of legal clarity. This USO facilitates online sharing of things (anything from video games to drills and cars). According to its founder, there has always been legal ambiguity, but with the rapid development of ICT, it has reached a noticeable impact:

> There is a total legal uncertainty about when the activity starts to be commercial and when it remains private. If I rent out my car on Drivy five times, it is private, but if I rent it out ten times it becomes commercial. This is totally (…) unclear.

Legal ambiguity was also found to be an issue for an interviewee from a P2P accommodation sharing platform, who believes that the regulatory framework in Berlin is strict, as well as vague. Currently, home owners in Berlin can rent out no more than 50% of their apartments without a permit. The law, enforced by a €100,000 fine, only applies to Airbnb-type of rentals, while home exchanges are not affected by it (this also demonstrates the case-by-case approach to regulating USOs).

> It's a very, very strict rule. (…) It makes any short-term accommodation subject to permits. (…) Everybody agrees that [the law] was designed and should be targeted at unwelcome, commercial operators who are misusing private accommodation and just renting it year-round to tourists. (…) But (…) there is a huge divergence in perspectives. (…) Some district officials and the elected politicians in the municipal districts of Berlin would tell you that the law doesn't apply to somebody's primary home. Others would say it does apply to primary homes but you can get a permit for it. Others would tell you that it does apply and you can't get a permit because you're not allowed to do it. And others just have no idea. So it's difficult to reach consensus on what the law does and doesn't cover. (…) There is now total confusion about when you're allowed to host, how often you're allowed to host, whether you need a permit, what the grounds are and which district will grant these permits, and the whole thing is a total mess.

Interviewees from much smaller USOs in Berlin expressed their opinion that their platforms were too small to be of interest for authorities, but believed that their growth would lead to stricter municipal scrutiny. They hoped that they would remain outside of the municipality's focus so their platform could develop further within the current regulatory settings.

It appears that the willingness of local governments to engage in a discussion with USOs about regulations differs in London and in Berlin. Although we found one case where a Berlin city district engaged in a discussion with a USO and changed its attitude from restrictive to supportive, overall, the municipality turns to regulatory modes of government when dealing with USOs, and is not very willing to negotiate with them. This could be attributed to the de-homogenised governmental set-up of Berlin, which contributes to a high level of bureaucracy. The non-profit initiative Mundraub, which runs an online platform mapping publically available edible plants, and which received an award by the German Environmental Protection Agency, described the bureaucratic reality it faces when dealing with municipal sub-units: "Indeed, we have to go from Bezirk to Bezirk to present our project, and surely it will take a while for a decision to be made every time (…). The process looks different in every Bezirk."

In contrast, an interviewee from a car sharing USO in London believed that regulations imposed by the local government in London were not too restrictive: "Uber and Airbnb are banned by the legislation in some countries (…), whereas here, it is more of a two-way conversation, which is far more collaborative and productive." This view was also supported by an interviewee from an accommodation sharing platform, who appreciated that, compared to Berlin, London city officials are open to discussing short-term rentals and work together with USOs. For example, local authorities negotiated with Airbnb to change the formerly very restrictive regulation regarding short-term lettings.[2] Our interviewee appreciates that it gives a clear direction on what can be rented: "The position in London from 1973 onwards was that all short-term rentals needed to get a permission. So, (…) the 90-night rule is an enabling legislation, not a restricting legislation."

The two-way communication between London city governments and USOs is further demonstrated by a discussion between London city councils and an organisation that connects drivers with owners of empty parking spaces:

> We did have a few cases with the councils where [they] were threatening to fine us and proceed with legal action against people renting out their driveways because they claimed it was turning their home into a business. But through negotiations and discussions with councils, we managed to get that legislation reversed.

The aforementioned examples demonstrate the attempts of USOs to engage in collaborative urban governance and change regulations in their favour through negotiations with city councils.

This mode of governance, however, still represents the old tradition of a top-down policy approach when the city authorities make selective decisions in relation to certain USOs. Another way for USOs to engage in the co-production of regulations and policies is through joining efforts with other USOs and delegating third-party actors to negotiate with city governments on their behalf. While examples of such action exist (e.g. a car sharing association in Berlin lobbying for changes in parking regulations, or the industry association Sharing Economy UK based in London representing the voice of USOs), the co-production of regulation by USOs remains nascent.

In summary, in their role of *city as regulator*, the cities tend to focus on selected USOs. Both cities mainly regulate "the big" and "the loud," such as Airbnb and Uber, while neglecting smaller USOs. USOs themselves report struggling with legal ambiguity in both cities, which can be explained by the novelty of the urban sharing phenomenon. While London seems to be open to negotiations with USOs, the Berlin municipality was found to be less interested in dialogue. Efforts of third-party actors to represent the interests of USOs in city governments and to co-produce policies and regulations are emerging, but remain rather marginal.

City as provider

One of the roles a city can take to support USOs is that of an investor. However, financial support for niche start-up initiatives has not been easily available in either of our case cities. Thus, cities have had to find creative ways to support urban sharing.

In the U.K., sharing is promoted through a tax break for users of sharing platforms across the U.K., which was introduced by the national government. According to one of the interviewees, it was based on the needs of London citizens and was pushed for by London's politicians. The overall tax-free allowance is £2000 with a maximum of £1000 per USO. This means that users can, for example, earn £1000 on Airbnb and £1000 on JustPark before having to declare income from these sources.

Some of our interviewees in both cities believe that the main reason for the lack of funding options is large financial cuts for local authorities. This view was supported by Berlin city officials, who stated that the funding they could potentially give to USOs was very small:

> We do not have the manpower or the financial means to be proactive (…). The official position is that we should support this (sharing as waste prevention), but it is not supported with the necessary manpower and funding (…). Only if (supporting a project) does not cost anything and the employee is willing to put in the time, then a fast decision is possible.

Among municipal funding options for urban sharing in Berlin, the most prominent is the funding for business start-ups through the Investment Bank Berlin (IBB), owned by the "Land Berlin".[3] However, our interviewees in Berlin revealed a low level of interest in direct financial support from the city government. Some sharing organisations focused on funding from other sources, such as the federal government, crowdfunding or the EU. Overall, the interviews in Berlin revealed a low level of direct financial support for sharing organisations.

While London also has limited financial means, an interviewee from the GLA said that the city supports "(…) new innovations in the sharing and collaborative economy that tackle London's challenges in many ways, from crowdfunding, innovation investment, and co-creation of digital products with Londoners [to] increase their access to public services and information."

However, similarly to Berlin, the city government is not running any funding programme directly aimed at USOs. Instead, much of the funding is open to all start-ups, including USOs. Of interest are two Mayor's projects supporting innovation: the London Co-investment Fund and the Mayor's Crowdfunding Pilot. The former is financed jointly by the London Mayor and the London's Enterprise Panel. It has sponsored a number of tech start-ups, including two USOs: Hubble, a business-to-business online platform for office space and Flat Club, an online platform for medium-term stays. The Crowdfunding Pilot offers an online platform where local groups can propose and crowdfund

community project ideas. Once a project reaches a desired number of backers, the Mayor pledges the remaining money needed to develop it. According to an interviewee from the GLA, the Crowdfunding Pilot "(…) was recently singled out by the World Government Summit as one of the leading government innovations from around the world." While the project has potential to fund future sharing projects, no USO has received funding yet.

An organisation directly targeting USOs in the U.K. is Nesta, a London-based independent charity supporting innovation. It receives funding from corporations, foreign governments, local governments and charities, and has recently launched the ShareLabFund with the aim to diversify the portfolio of collaborative economy platforms in the U.K., and to support the development of sharing innovations based on the ideas of collaborative consumption, production and learning. It is offering between £10,000 and £40,000 to sharing organisations that deliver public services and social impact.

Apart from offering funding, municipalities can also support USOs through the provision of premises or space. For example, London boroughs are granting parking spaces to car clubs. Compared to the general fleet, car clubs have a more environmentally sound fleet (Bundesverband Carsharing 2010), thus contributing to the aim of GLA to tackle air pollution in the city. An interviewee from the GLA noted:

> London is now getting completely away from private car ownership. The idea of renting cars is taking hold (…). Londoners are happy to share a car with each other because we are happy to sit on the public transport with each other as well.

However, boroughs are selective in allowing access to parking spaces. For example, the City of Westminster[4] has dedicated parking spaces to a sole car club operator, Zipcar. At the same time, Zipcar has been collaborating with the city government and TfL on the next public transport strategy. It has also been lobbying for the introduction of congestion charges for all private vehicles as well as for taxation of private cars in London. The company uses data about car sharing collected by TfL and the car sharing sector to make their benefit for the municipality evident:

> We wanted to prove that the outcomes of car sharing were positive for the city. The studies show that after joining a car club, people drive less compared to when they owned their own car and they take sustainable modes of transport: walking, cycling, public transport, more. So we managed to prove to them that car sharing has merits for the city. The studies were used by the TfL to fund the London boroughs to put in the parking spaces. London takes a data-driven approach to what is good for it so it was very much in the sector's best interest to demonstrate with data how positive our service was.

However, not all types of car sharing clubs are treated equally in London. Currently, there are two business-to-consumer car sharing models operating in London, a station-based model[5] (Carplus and Zipcar), and an A-to-B model[6] (DriveNow). The station-based model is encouraged by London councils, and was given parking permissions across all of London boroughs. On the other hand, the A-to-B model has only succeeded in North-East London as it was not successful in negotiating parking permissions with the councils in other parts of the city. The difficulty of expanding the A-to-B car sharing model is attributed to insufficient communication between London boroughs, and absence of a London-wide strategy for the allocation of parking spaces.

In Berlin, the role of city as provider can be illustrated by its involvement with issues about premises and space. Our interviewees discussed the problem of increasing gentrification that has led to growing property prices in Berlin, making it challenging to develop creative ideas and continue their operations. The city of Berlin was mentioned as often favouring commercial interests over civil-society interests in conflicts over property access. However, where enough local pressure was generated by well-organised civil-society and inhabitants, Berlin municipality had been cooperative and ensured that property or space remained available to civil-society organisations.

In summary, the role of *city as provider* can be divided into two sub-sections: city as investor and city as host. The role of the city as investor is currently limited in both cities. In Berlin, USOs receive financial support from federal government and EU funds or through crowdfunding. In London, there are two funding projects run by the Mayor, as well as opportunities to receive finance through

crowdfunding and charities, such as Nesta, which supports innovative ideas in the U.K. In its role as a host, the city of London provides parking spaces to car sharing companies. Some London boroughs remain selective in terms of granting access to public parking spaces, which makes the expansion of an A-to-B car sharing model somewhat contested. In Berlin, when civil-society groups and citizens lobbied for access to property rights, the city government demonstrated higher degrees of co-operation and inclusiveness.

City as enabler

According to the interviewees, there are hopes from USOs that municipalities would take a more proactive role as enablers for their operations. The sharing activists in Berlin own the domain www.sharingcityberlin.org, but they would like the city to take charge of it and develop a broader political vision for urban sharing in Berlin. The interviewees expressed a wish for the municipality to organise workshops and other events for the sharing movement in Berlin. They called for more clarity about who to contact in the city government about issues regarding urban sharing. Only one for-profit USO interviewed in this study was satisfied with the amount of support from the municipality, but conceded that the support came from the business development division of the municipality, which focuses on business start-ups. Interestingly, the interviewees felt that the Berlin municipality showed a higher interest in the sharing idea and development of USOs before 2015 when the municipality funded a feasibility study to investigate the potential of the sharing economy in Berlin, and organised workshops with stakeholders. However, the study was never published, and municipal support of sharing disappeared soon thereafter.

Current municipal support of USOs in Berlin appears mainly at a district level. The previously mentioned "Bezirk Pankow" is a good example of city engagement with food sharing. Officials working for this district labelled it as an "edible area" with a public profile and a homepage and funded a non-profit sharing organisation to run the homepage. Furthermore, the organisation was able to access data about edible plants from the municipality and integrate it into their homepage.

Due to the perceived lack of municipal willingness to coordinate USOs in Berlin, civil-society organisations, primarily OuiShare, were described as the coordinating and driving force behind the development of urban sharing in Berlin. This, however, was primarily true for non-commercial USOs, while for-profit organisations perceived that they received better support from the city. In this sense, there seems to be a reinforced justice dilemma with Berlin municipality being more supportive of commercial USOs rather than non-profit ones, which could have negative implications for social sustainability in the city.

All of the interviewed USOs facilitate sharing through an online platform. Consequently, creating online content was identified as being of critical importance by several of the USOs based in Berlin. Many of them sought assistance in terms of expertise and funding to make their online appearance more professional:

> I plan to expand (the platform) so that free things can be identified and additional services offered (…) I have a whole set of add-ons, and I am talking to a number of (programmers) from Common Bookings Tool to implement it.

Perhaps a lesson about fostering ICT knowledge can be learnt from the city of London. As part of the smart city agenda, London organises hackathons for entrepreneurs to learn from each other and share their ICT skills. As a smart city, London is also creating extensive data infrastructure in a project called Sharing Cities. The GLA envisions the data infrastructure to be useful for many of the London start-ups, including those specialising in sharing. The data will be accessible to them for free or for a small fee.

Similarly to Berlin, there are many expectations from London-based USOs about the ways London can enable their activities. For example, sharing clubs have benefited from GLA's and TfL's overall willingness to support car sharing as the GLA gives them strategic direction and helps promote their

activity. On the other hand, other USOs find it difficult to catch the attention of municipal governments. The previously mentioned food sharing organisation Olio seeks to become more visible on local authorities' websites, but has only been successful outside of London; and a time sharing organisation Echo has helped a local council team, which supports innovation in the area, build a P2P business network, but has not received incentives from the council in return. A London interviewee from the municipality believes that the lack of interest from the councils is one of the reasons behind the slow development of small, non-profit sharing platforms: "I've seen people trying to set up tool-sharing initiatives but when they try to find people to help and support them, councils do not feel like it is their responsibility."

In Berlin, recognition by the municipality was among the most favoured ways of municipal support expressed by the interviewees. However, several interviewees voiced their frustration about the municipality's lack of knowledge about USOs' efforts. This was particularly important as online sharing often takes place among strangers and the platform depends on trustworthiness. The USOs therefore hoped that if the municipality recognised them, they would reach more participants in the city:

> One needs marketing; one needs money. We are a small business and we only got a small amount of investment. That money is gone and we will need to see how to develop further. Sharing is very marketing intense. One needs to reach to private people, and this costs money, and therefore we are not able to implement the [P2P] concept as we thought.

In London, the platforms JustPark and GetTuxi tell a different story. Thanks to the SLP, they have been able to benefit from direct attention from the Mayor of London:

> We were representing London at the Smart City Expo World Congress (…) in Barcelona, championing tech and smart cities (…) [B]eing selected by the Mayor of London was a big step for us. There was a London Smart City stand together with GetTuxi and a few other forward-thinking tech start-ups, which represent the Mayor of London's prerogative of London as a smart city.

While these two larger, established USOs received support from London government, their smaller, not-for-profit counterparts still struggle to get attention from the municipality. Contrary to both London and Berlin promoting themselves as smart cities, neither of the city governments describes itself as a sharing city and consequently does not have dedicated employees working with USOs. An interviewee from an accommodation sharing platform stated:

> A couple of years ago, there was lots of talk about sharing in the cities and shareable cities, and that's still going on, but that thought got mashed together with smart cities as if it was the same thing, and it's obviously not. We've never had a discussion in London, nor in Berlin, where it's made clear what their specific definition is, or what part we can play in it, if any.

Similarly, another interviewee[7] from a civil-society group did not perceive the concept of smart cities as facilitating any real development of USOs:

> The majority of smart city agenda in London is focused on data collection and analysis, and not on collaborative economy and sharing. That is why London is not at the forefront of smart cities. It is a very traditional smart city project. It is about a better flow of traffic and people to lower the negative impact on the city and the environment.

In summary, the role of *city as enabler* can be divided into two roles: city as matchmaker and city as communicator. In Berlin, USOs expressed the need for a more proactive city government, and a more active role of the city as matchmaker and organiser of workshops and sharing events. Berlin was more active in the realm of sharing before 2015, but current municipal support appears to take place mainly at a district level. In London, larger for-profit USOs were more likely to gain municipal endorsement, while non-profit USOs went unnoticed. In its role as a matchmaker and under the smart city agenda, London organises hackathons and runs the Sharing Cities project. Both Berlin and London-based USOs seem to expect a much more active city role as an enabler. Another important

observation is that the fragmented governmental structure of both cities makes city-wide support for any given USO a challenging task.

City as consumer

The lack of a coherent and committed strategy towards sharing in the city of Berlin is probably a key reason behind the absence of any attempts by the municipality to engage with USOs for internal purposes. Neither does the municipality exercise its role as a role model in visualising the feasibility of sharing innovations.

When analysing the role of Berlin as a consumer, it is worth highlighting one peculiar case of the *Berliner Stadtreinigung* (BSR), a quasi-public institution under the regional government of Berlin, which is in charge of waste handling in the city. The BSR's work is informed by the regulatory guidance from the EU, as well as by federal and municipal legislation. Legislative focus on waste prevention has led to an online second-hand exchange, as well as the support of some offline-based USOs in Berlin in 2014. BSR also supports a project run by an apartment block association and the organisation *Pumpi Pumpe*, which aims to help neighbours share their resources by distributing door stickers to indicate what things they own and are willing to share. BSR also publishes a magazine where sharing has been discussed several times. While BSR is not a unit of the Berlin municipality in a narrow sense, it is tasked with implementing political decisions and has, in practice, facilitated sharing in Berlin on multiple levels.

The role of London as a consumer of USOs is also rather small, although some councils procure mobility services from commercial car sharing clubs. For example, the Croydon council is collaborating with Zipcar to procure car club services to their employees. The aim of this partnership is to achieve reductions in the council's car usage, CO_2 emissions and travel costs.

In summary, neither London nor Berlin have any pilot or demonstration project on sharing that would demonstrate the city's *role as consumer*, although they do experiment with smart city pilots.

Summary of findings

Our conceptual framework draws on the literature on urban climate governance (Bulkeley and Kern 2006; Kern and Alber 2008). It specifies four roles cities may undertake in their efforts to govern ICT-enabled urban sharing: city as regulator, city as provider, city as enabler and city as consumer. The framework proved to be useful for both data collection and analysis, and we were able to confirm the roles cities may assume when governing urban sharing.

Overall, the general conclusion is that both cities indirectly support ICT-enabled urban sharing as part of their smart agenda that aims to facilitate ICT-enabled technical innovation and the emergence of start-ups. Larger, for-profit USOs may receive support, endorsement and sometimes even promotion by the city governments; however, non-profit USOs are often left without support.

At the same time, we found that it is usually larger USOs that come into the focus of city regulators, particularly when they are perceived to be negatively affecting the cities and their citizens. This is sometimes also the case for small USOs, especially when they attract media attention and for example public health and safety is brought to the attention of the municipality.

Overall, our comparative analysis shows that London and Berlin assume different roles in their engagement with the urban sharing phenomenon. We found examples that help operationalise the general roles and modes of municipal governance. The conceptual framework can therefore be customised to urban sharing.

Discussion and conclusions

A shared perception of our interviewees from USOs, municipalities and third-party organisations was that the cities do not relate to "urban sharing" or "the sharing economy" as such. Instead, they engage

with USOs as with other business start-ups. However, if the USOs are part of waste prevention initiatives (Berlin) or mobility-related solutions (London), they tend to attract more attention and support from the local governments. The crucial aspect that motivates Berlin municipality to offer support for USOs is the potential impact in terms of innovation and economic development. This makes it very difficult to discuss the possible contributions of the sharing concept to the city. The drawback is somewhat overcome by the vibrant landscape of civil-society organisations working with urban sharing, partly by soliciting support from a higher political (state) level, and party by looking towards other municipalities, which are more positive towards sharing. London, on the other hand, seems to take more of a pragmatic and collaborative approach with USOs, and is open to, for example, discuss issues around regulation. The city representatives understand that some USOs will have positive impact, while others might give raise to problems. Thus, they support or regulate USOs based on a case-by-case basis.

Our study shows that some modes of urban sharing governance are more prominent than others. For example, both cities often engage with urban sharing in their role as regulators, following their mandate to represent and guard the interests of the city and its inhabitants regarding, for instance, quality of life, economic prosperity, environmental quality, social justice or health and safety.

This happens, however, in a traditional manner of top-down policy approach, while the role of third-party actors lobbying for the interests of USOs in city governments remains marginal. At the same time, unionising into inter-field (e.g. mobility USOs) and intra-field (e.g. mobility with accommodation USOs) networks could ensure a transition to more efficient and inclusive collaborative urban governance processes. Such processes would empower USOs by making their voices heard by the city councils, which in turn would support the institutionalisation of the urban sharing phenomenon.

The role of city as provider is currently rather limited, especially in its role as an investor. Both cities undertake a slightly more prominent role as hosts by providing premises or spaces to selected USOs. So far, we have identified only a handful of strategic projects that promote urban sharing in London, while most of the supporting and enabling activities in Berlin take place at the local, district level. We only found one example of city as consumer and a role model, which means that there is clearly an opportunity for improvement if cities are interested to capitalise on urban sharing within their smart agendas, or to advance waste reduction, social cohesion, improve air quality or fulfil other sustainability ambitions.

Both cities appeared to be interested in USOs due to their environmental and social potentials. While sharing is not officially talked about in the municipalities of Berlin and London as a tool for sustainable development, it is acknowledged as such in various cases of concrete action to promote sustainability. Perhaps, the most prominent example is car sharing. Despite the fact that both cities took decisive action to regulate Uber, they nonetheless acknowledge the potential of other types of car sharing for sustainable urban development. In early 2017, the new coalition government in Berlin consisting of the Social Democratic party, the Left party and the Greens expressed challenge for the municipality to distinguish car sharing that is beneficial for the municipality (i.e. reduced traffic or parking space requirements) and that is potentially harmful (such as A-to-B car sharing). In London, car sharing organisations such as CarPlus, Zipcar, or DriveNow thrive and enjoy an overwhelming support from the GLA. It became apparent from the interviews that the municipality supports car sharing in London for its potential to decrease congestion and air pollution.

Another way both cities are dealing with air pollution is through their bike sharing schemes. Berlin is an increasingly bike-friendly city, and acknowledges bike sharing as an essential part of this development. "Bike sharing is quite strongly supported by the municipality, both through various public services, but also the support of private services. Sure, there is a lot more potential, but the municipality looks at it in a favourable way." (Municipal employee)

The Berlin municipality also supports other types of sharing projects, such as food sharing and stuff sharing, when it believes it can improve urban sustainability.

As discussed earlier, if managed properly, USOs have a potential to contribute to sustainable urban development, and advance social justice and environmental sustainability. Although the goal of both

cities is to support sustainable innovation as part of their smart city agendas, the support for USOs, which could potentially lead to improved environmental and social conditions in the cities, remains fragmented. Often, USOs are lumped together with smart, innovative start-ups, which could possibly lead to their sustainability potentials remaining untapped.

Both cities have succeeded in regulating unwanted, disruptive activities on a case-by-case basis. However, the regulatory action was not balanced with systems of provisions or enabling policies targeted at USOs, which hold the potential to bring environmental and social justice to cities. Therefore, we suggest cities continue regulating larger USOs on a case-by-case basis, but also introduce supportive mechanisms for smaller, bottom-up USOs, which hold social justice at the core of their operations. This intervention would even up the level-playing field between small USOs and large-scale USOs. A failure to distinguish among sizes and purposes of USOs risks that cities will become the dystopian future that Hollands (2015, 73) describes when he argues that

> [w]e should be wary of corporately inspired smart scenarios where urban problems have all been solved by technology and all of its inhabitants are happy and prosperious; however, tantalising this vision is. Underlying this idea is a more manipulative notion that cities are just "machines for making money out of" or that global competitiveness between cities will automatically make them better places to live.

Urban sharing is interpreted in many ways in London and Berlin, but if the focus of municipalities remains on larger platforms, there is a risk of streamlining sharing to mean primarily "making money"; a development that suppresses many other functions USOs can fulfil in an urban space.

As many USOs complained about unclear rules, efforts could also be made by the municipalities to give a clear signal about which types of USOs are welcome in the city, and which are not. Municipalities also have the potential to expand their role as consumers and become role models by directly engaging with sharing, but we found that they did not take advantage of this mode of governance. As an inspiration, this suggestion can be demonstrated on a case from Malmö, Sweden, where the municipality developed an online platform where public organisations (e.g. such as schools or hospitals) can share unwanted and surplus furniture and office equipment. The platform allows them to reduce economic and environmental costs by utilising the idling capacity of second-hand assets.

Interestingly, when we compare the prominence of certain roles in our urban sharing cases with urban climate governance literature, we see significant differences. For example, Kern and Alber (2009, 171) report that "municipalities do not fully exploit their authoritative powers and are reluctant to apply authoritative modes of governing through regulatory measures and strategic planning". On the other hand, our findings suggest that both cities are actively engaged in developing regulations for USOs.

Furthermore, in climate governance, municipalities undertake prominent roles as facilitators, but we our findings show that the role of a municipality as a facilitator of sharing is quite limited. The reasons for these divergent situations are worth exploring in future research.

Overall, we found that the smart city agendas are not strategically coupled with urban sharing as cities do not have explicit policies or strategies for urban sharing. Although their smart city agendas might mention urban sharing as an example of how businesses and grassroots sharing organisations capitalise on the penetration of ICT infrastructure and on the availability of ICT solutions, they lack strategic engagement with USOs.

We can conclude that cities indirectly support USOs as innovations that can contribute to smart city agendas, and inhibit them when they are perceived as having a negative impact on their citizens. Future research could potentially explore the justice dilemma that emerges in the light of cities supporting larger USOs, which promise to advance economic development, while neglecting smaller USOs, which often adhere to the principles of environmental sustainability and social justice. Another direction for future research is to explore how the roles of cities in sharing and smart agendas are changing over time, identifying dynamic institutional processes and reasons behind them.

Notes

1. In this paper, we use the term 'urban sharing' instead of 'the sharing economy' to discuss our contribution as we see it as less delimiting in terms of the types of sharing initiatives included under its umbrella.
2. The regulation allows/restricts "entire home" lettings to 90 days in a calendar year. It does not apply to rooms in a property where people normally live.
3. Berlin is both 'Land' and 'Gemeinde' at the same time, combining two legislative levels in Germany.
4. The City of Westminster is one of London's boroughs, but holds a city status.
5. In a station-based model, a car is picked up and delivered at the same place.
6. In an A-to-B model, a car can be picked up at the nearest pick-up point and left in another part of the city.
7. This interviewee departs from the notion that smart cities are not merely ICT connected hubs but should also be built on collaboration and sharing between their citizens.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This paper is a result of two projects at the IIIEE at Lund University: Urban Sharing funded by Riksbankens Jubileumsfond and Urban Reconomy funded by the Swedish Research Council FORMAS.

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Appendices

Appendix 1: Interview guides

Sharing organisations
How do you interact with the municipal government?
How does the municipal government encourage your work?
How does the municipal government discourage your work?
How does the local government's position on urban sharing look like?
What are the driving forces for development of sharing initiatives in the city?
How does the local government distinguish between sharing initiatives to encourage and to discourage?
Which are the main constraints for the development of sharing initiatives in the city?
Is there anything else you would like to mention that we have not touched upon yet?
City government
How does the local government's position on urban sharing look like?
How is the work with sharing formalised in the municipality?
What are examples of sharing initiatives that the local government engages in?
How does the local government distinguish between sharing initiatives to encourage and to discourage?
How does the government engage with sharing initiatives (both encourage/discourage)?
What are the driving forces for the development of sharing initiatives in the city?
Which are the main constraints for the development of sharing initiatives in the city?
Is there anything else you would like to mention that we have not touched upon yet?

Appendix 2: Anonymised list of interviewees

Table A1

Organisation	Position	Location
P2P time sharing organisation	Founder	London
P2P space sharing organisation	Director	London
P2P space[a] sharing organisation	PR & marketing manager	London
P2P food sharing organisation	Manager	London
Municipality	Politician	London
Research Program	Researcher	London
Consultancy	Researcher	London
B2C car sharing organisation	Manager	London
Municipality	Public official	London
B2C space sharing organisation	Founder	London
P2P sharing organisation[b]	Founder	Berlin
P2P sharing organisation	Municipal employee	Berlin
P2P sharing organisation	Founder	Berlin
P2P space sharing organisation	Founder	Berlin
P2P sharing organisation	Founder	Berlin
P2P sharing organisation	Founder	Berlin
P2P food sharing organisation	Leading Member	Berlin
Municipality	Public official working with the sharing city	Berlin
P2P food sharing organisation	Leading member	Berlin
Online news site	Employee who composed a summary of sharing initiatives in Berlin	Berlin
International grassroots group	Leading member	Berlin
P2P bike sharing organisation	Founder	Berlin
Council for Sustainable Development	Employee	Berlin
Municipality	Public official working with sharing	Berlin

[a]"Space" refers to rooms, apartments/houses, offices, or parking spaces.
[b]"Sharing organisation" refers to any smaller items that can be shared, from kitchen, garden and sports equipment to books and toys.