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Social innovation for sustainable and equitable transport: the case of Commons Cargo Bikes

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Socially innovative civil society initiatives are seen as promising to address societal and environmental problems such as those encountered in the transport sector. However, many social innovators struggle when it comes to growth and achieving broader system-level impact. These problems are often ascribed to challenges associated with organizational structures. This paper investigates the scaling process and organizational development of a European social innovation in the transport sector, Commons Cargo Bikes. Empirically, the study primarily builds on two quantitative surveys with initiatives and users as well as qualitative interviews with spokespersons of an overarching network. The results indicate that social innovations can provide important complements to technological and market-based innovations by providing alternative solutions that reach geographical regions and users not typically addressed by traditional services. Furthermore, the study highlights that rather formal structures can be necessary for successful social innovation networks at a certain point. As the present case study indicates, tensions associated with organizational changes might, however, be anticipated and addressed proactively by combining different organizational archetypes in one structure.

Keywords: social innovation; grassroot initiatives; cargo bikes; shared mobility; sustainable transport; transport equity

Introduction

Over the past couple of years, interest in *innovative* transport solutions has risen rapidly. Under terms such as "new mobility", this mostly refers to concepts such as car sharing, Mobility as a Service, or autonomous driving, which are driven by advancements in the field of information and communication technology (Shibayama and Emberger 2020). This technology focus, however, neglects that the concept of "innovation" is much broader. Specifically, a review of more than 200 definitions revealed that innovation is defined heterogeneously and that the general term "new" stands out as the connecting element (S. Singh and Aggarwal 2022). Against this background, after having been overshadowed by technological innovation in the twentieth century, *social* innovation (SI) has

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regained attention (Galego et al. 2022; Grimm et al. 2013). At its core, SI describes creative *new* solutions to address societal challenges (Westley et al. 2014).

While passenger transport plays an important role for individuals and societies as a prerequisite for participation in many aspects of social, cultural, and economic life, it also imposes major societal challenges (Jones 2011; Lucas 2012; Vergragt and Brown 2007). These challenges relate to environmental, social, and economic sustainability (Steg 2003) and all result in distributional impacts (Jones and Lucas 2012). In view of these complex and diverse challenges, the ability of technological innovations alone to achieve environmental and social sustainability is called into question (Ferreira, Bertolini, and Næss 2017; Lucas 2019; Nikolaeva et al. 2019; Ziegler 2017). At the same time, the interest of governments has increasingly been drawn to the potential of SI for sustainable development, with transport being highlighted as a promising area of potential (BEPA 2010; 2014; European Commission 2012, 2013).

A central question in SI research concerns scaling to achieve system-level change (Moore, Riddell, and Vocisano 2015). Closely connected is the organizational structure (Mulgan et al. 2007; Westley 2010). This article contributes to this field of research by analyzing Commons Cargo Bikes (CCB) in a case study. Initiated in 2013, CCB represent a civil society-led SI network which aims at contributing to more sustainable and equitable transport by lending cargo bikes to private users at no cost or based on voluntary donations (Becker and Rudolf 2018b; Rublack 2020).

This article analyses the concept of the CCB movement, its scaling success, and organizational changes over time from an SI perspective. While previous studies that investigated CCB focused on a single initiative or analyzed the movement at an early stage (Becker and Rudolf 2018b; Rublack 2020), this article provides a comprehensive overview on the entire network and its development since its start approximately ten years ago. Thus, to the best of our knowledge, this study is the largest study on CCB in terms of participating initiatives and users, the study with the most comprehensive discussion of CCB in the context of SI, and the first study that addresses the organizational development of the network over time.

Methodically, our research builds on the triangulation of multiple methods. This includes quantitative surveys, qualitative interviews, document reviews, and field observations. On this basis, the paper aims to derive implications for SI literature within and beyond the transport sector. To do so, we address two research questions:

(1) How successful has the initial organizational structure been regarding scaling Commons Cargo Bikes and what impact has been achieved?
(2) Which implications for scaling social innovation can be drawn from changes to the organizational structure of Commons Cargo Bikes over time?

In the following, we first provide an overview about the relevant literature and state of research. Secondly, we describe and conceptualize CCB as the subject of the case study in this paper and summarize the methodological approach. Finally, the empirical results are presented and discussed in light of previous research.

Literature review

While SI research represents the analytical frame of this case study, the study also builds on research on sustainable and equitable transport. As will be pointed out in this section, both literature streams intersect and also connect with transition literature (Nikolaeva et al. 2019; Seyfang and Smith 2007).

Sustainable and equitable transport

The transport sector significantly impacts environmental, social, and economic sustainability (Nikolaeva et al. 2019; Steg 2005). As one of the largest emitters of greenhouse gases, primarily from road transport and cars, the sector is a major contributor to climate change (EEA 2022a, 2022b). Additional challenges include noise, air pollution, accidents, and congestion (Lucas 2019; Steg 2003). These impacts can relate to multiple dimensions of sustainability. On all dimensions, distributional disparities between individuals and societal groups in spatial, temporal or socio-demographic terms occur (Jones and Lucas 2012).

Distributional consequences affect both the negative externalities of transport and the opportunities it provides (Karner et al. 2020). Thus, *transport equity* addresses the distribution of transport's burdens and benefits across society, including disadvantaged groups (Karner et al. 2020; Verlinghieri and Schwanen 2020). For instance, access to transport options like public transport or shared mobility is often limited for lower-income citizens and those outside urban areas (Button and Nijkamp 1997; Lucas 2019). Besides accessibility, equitable transport also requires considering individual capabilities (Martens 2017; Pereira, Schwanen, and Banister 2017; Verlinghieri and Schwanen 2020). Ignoring these aspects entails the risk of transport-related social exclusion (Lucas 2012, 2019).

While this article focuses on transport equity, it is essential to distinguish this term from related concepts that are sometimes used interchangeably (Pereira, Schwanen, and Banister 2017). First, transport *justice* expands on transport equity by including procedural and recognition dimensions (Verlinghieri and Schwanen 2020). Second, *mobility justice* encompasses a broader scope, addressing multiple dimensions, spatial scales (including global mobility), and the circulation of goods, resources, and information. In addition, a "commoning" of mobility by providing alternatives to individualized and privatized ownership within the logic of capitalism is proposed (Sheller 2018; Verlinghieri and Schwanen 2020).

Social innovation

To shape a sustainable and equitable future, the transformative potential of SI has been widely discussed (Vadrot 2020; Wedel 2020). In view of climate change, for instance, SI highlights ways in which the civil society can take action and develop alternatives to unsustainable practices and unmet social needs (Bartels 2022).

Defining and differentiating social innovation. While various SI definitions exist, many scholars refer to Murray, Caulier-Grice, and Mulgan's (2010, 3) definition that social innovations are "new ideas (products, services and models) that simultaneously meet social needs and create new social relationships or collaborations" (BEPA 2010; Bosworth et al. 2016; Grimm et al. 2013). Phills, Deiglmeier, and Miller (2008, 36) expand this definition by adding that socially innovative solutions need to be "more effective, efficient, sustainable, or just" than existing solutions. Moreover, they stress that "the value created accrues primarily to society as a whole rather than private individuals". In more detail, Murray, Caulier-Grice, and Mulgan (2010) identify three characteristics of SI and four characteristics of the broader social economy which are summarized in Table 1. Notably, these characteristics also include procedural aspects which underscores that SI refers to both means and ends of action (Grimm et al. 2013).

SI initiatives can be started by different actors and coalitions including civil society based, community-led grassroot initiatives (Bartels 2022; Seyfang and Smith 2007).

Table 1. Definition of SI and the social economy.

#	Dimension
1	*Measuring success* goes beyond traditional metrics such as profit or growth
2	*Organizational forms* are social and open, welcoming input from anyone
3	*Coalitions and networks* are key to success and wide networks are important
4	*Distributed networks* and communication technology for relationship-building
5	*Blurred boundaries* between production and consumption
6	Emphasis on *collaboration, care and maintenance* instead of one-time use
7	High importance of *values and missions*

Note: Based on Murray, Caulier-Grice, and Mulgan (2010). # 1–3 refer to SI and # 4–7 to the social economy.

Embedding social innovation in transitions: Although criticized in the transport equity literature for its technocentrism (Nikolaeva et al. 2019), socio-technical transitions research and particularly the concept of niches provide valuable perspectives to understand how innovative ideas can contribute to system-level impact (Martin, Upham, and Budd 2015). Niches are protected spaces to experiment with new ideas and "provide the seeds for systemic change" (Geels 2012; Geels et al. 2017; Martin, Upham, and Budd 2015). In contrast to niches for market-based innovations, which are protected with tax breaks or subsidies, the social economy and its characteristics form the protecting boundaries of grassroot niches (Bartels 2022; Seyfang and Longhurst 2013; Seyfang and Smith 2007).

While innovations emerge in niches and some of them have the potential to change the dominant "socio-technical regime", transition models such as the Multi-Level-Perspective (MLP) describe that stability, lock-in, and path dependence often prevent large-scale adoption. In the case of transport, several regime aspects such as car infrastructure hinder moving away from car-centric cities (Geels 2012).

Scaling social innovation: In SI research, the interaction of niche innovations with "regimes" is conceptualized as scaling process (Haxeltine et al. 2013; Westley et al. 2014). In the case of consumer goods, scaling focuses on numerical and geographical diffusion which is termed scaling out in SI literature. Due to the complexity of societal challenges, scaling out is insufficient for large-scale change. Instead, changing institutional barriers is crucial which is called scaling up (Moore, Riddell, and Vocisano 2015; Westley et al. 2014). Moore, Riddell, and Vocisano (2015) define scaling deep as a third type of scaling addressing values, norms and beliefs.[1] In the context of transport, this dimension affects aspects such as cultural preferences for private property. Notably, scaling SI is often challenging. In particular, organizational, resource, and institutional tensions can occur (Manganelli and Moulaert 2018; Seyfang and Smith 2007).

Social innovation in the context of sustainable and equitable transport

Finding new ways of encouraging citizens to exchange cars for bikes and providing transport options for vulnerable groups are highlighted as areas of action for SI in the transport sector (Butzin, Rabadjieva, and Emmert 2017). Citizen-led public transport or repair initiatives such as "bike kitchens" represent exemplary initiatives (Butzin, Rabadjieva, and Emmert 2017; Campos et al. 2020). In addition, initiatives that foster cycling via gamified community interaction (Nikolaeva et al. 2019) can be considered socially-innovative.

A third field of SI in transport is "enabling shared access to cars" (Butzin, Rabadjieva, and Emmert 2017). Thus, research on the sharing economy and SI is closely intertwined

(Domanski and Kaletka 2017). In principle, shared mobility solutions challenge the dominant regime of privately owned cars and therefore represent niche innovations (Geels 2012; Martin, Upham, and Budd 2015). However, the contribution to sustainable and equitable transport as well as the classification as SI must be critically scrutinized case-by-case (Nikolaeva et al. 2019).

The ride-sharing platform Uber, for instance, was classified as SI as it creates new relations between citizens by linking passengers and private drivers (Butzin, Rabadjieva, and Emmert 2017). However, due to its profit-orientation and the undermining of labor laws (Martin, Upham, and Budd 2015; Rabadjieva and Butzin 2017), it is questionable whether the majority of value is created for society. The same holds true for car sharing services established as new business models of automotive companies (Firnkorn and Müller 2012). In this context, the risks of substituting more sustainable transport modes (Tarnovetckaia and Mostofi 2022), functioning as a "gateway drug" to car ownership (Giesel and Nobis 2016), and benefiting only a limited, already privileged user group (Dill and McNeil 2021) needs to be mentioned. Finally, with regard to bike sharing, research shows that equity is typically not the focus of planning, which is reflected in the location of stations, available payment options, as well as the size and shape of bikes or the availability of child seats (Dill and McNeil 2021; Henriksson, Wallsten, and Ihlström 2022; Nixon and Schwanen 2019; Shaheen et al. 2014; Y. J. Singh 2020). These disparities are, at least partly, ascribed to the need for commercial providers to generate profits (Henriksson, Wallsten, and Ihlström 2022; Nixon and Schwanen 2019).

Thus, not all shared mobility projects represent unequivocally sustainable and equitable solutions (Dill and McNeil 2021). In addition, it is important to note that not all shared mobility projects can automatically be classified as SI. Vice versa, by no means all SI projects in the transport sector involve shared mobility.

In view of the drawbacks of many shared mobility projects, the importance of alternative bike sharing systems outside the logic of markets and profitability is highlighted (Henriksson and Wallsten 2020). Historically, a number of community-led initiatives that aim at "commoning" cycling evolved in different European countries (Nixon and Schwanen 2019). These initiatives come closest to definitions of SI in the narrow sense (Murray, Caulier-Grice, and Mulgan 2010; Phills, Deiglmeier, and Miller 2008) and of grassroot associations (Smith 2000). While these initiatives focus on traditional bicycles, a discussion of cargo bikes and CCB is provided in the following.

Materials and methods

Following Simons (2009, 21) definition, a case study is "an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project (…)". Doing so requires an analytical frame (Thomas 2016, 15), which, as discussed before, in our study is presented by SI research.

While the focus of a case study is on analyzing a particular subject, it is neither the objective nor possible to generalize from it (Thomas 2016, 23). It is, however, possible to test theories (Thomas 2016, 139) and to make inferences from one case to other contexts (Simons 2009, 24). By involving users, local initiatives and network spokespersons, this study follows the objective of studying multiple perspectives of actors actively engaged in the CCB movement. In addition, as will be described later, theoretical assumptions informed the empirical investigation. Finally, connections to other SI contexts and previous research, including community-supported agriculture and repair cafés are drawn (Bonfert 2022a; 2022b; Spekkink, Rödl, and Charter 2022).

Case study description and conceptualization

Cargo bikes, in general, are bicycles built specifically for transport purposes. They are often used to transport groceries and bottle crates (Becker and Rudolf 2018a, 2018b; Dorner and Berger 2020). For this reason, cargo bikes are seen as a sustainable alternative to cars (Börjesson Rivera and Henriksson 2014; Pearce 2016). Figure 1 shows two exemplary models used by fLotte Berlin, an initiative in the current study.

In recent years, several cargo bike sharing services emerged, influenced, inter alia, by the high prices of cargo bikes. Previous research highlighted the potential to reduce car trips and to facilitate first contacts with cargo bikes (Becker and Rudolf 2018b; Dorner 2020). A pioneering movement is Commons Cargo Bikes which describes civil society initiatives that provide access to cargo bikes for private users without fixed fees. In short, CCB is an interesting SI case as it represents a new idea (community-led cargo bike sharing) that meets social needs (sustainable and equitable transport) and creates new relationships within initiatives, with hosts, and with users (Becker and Rudolf 2018a; Rublack 2020). The hosts (e.g. local shops or cafés) are essential for the concept as they allow for direct interaction and provide short instructions on how to use cargo bikes for first time users (Becker and Rudolf 2018a). Table 2 compares Murray, Caulier-Grice, and Mulgan's (2010) SI definition with CCB characteristics (Becker and Rudolf 2018a, 2018b; Rublack 2020).

In line with Phills, Deiglmeier, and Miller's (2008) definition, the CCB concept clearly benefits the society rather than individuals due to the non-commercial, community-based approach and the focus on sustainability and equity. Hence, CCB can be understood in the tradition of previous non-commercial bike sharing projects (Nixon and Schwanen 2019). The concept, thus, combines three niches in the transport sector: shared mobility, cargo bikes, and non-profit grassroot initiatives.

While cargo bikes in general, irrespective of sharing, represent a niche, they do not fall under Murray, Caulier-Grice, and Mulgan's (2010) SI definition. Instead, although they can look back on a turbulent history and are sometimes considered a cultural phenomenon (Cox and Rzewnicki 2015), cargo bikes represent a long-established technological artefact (Cox 2015) whose dissemination is supported by CCB in a socially-innovative process (Seyfang and Smith 2007).

Figure 1. Examples of CCB cargo bike models (Picture: fLotte Berlin).

Table 2. Conceptualization of CCB as SI.

#	Dimension	Exemplary CCB characteristics
1	New metrics of measuring success	Alternative metrics include, for instance, replaced car trips
2	Social and open organizational forms	Collaboration with hosts and open forum to provide input and start discussions
3	Coalitions and networks	Network within CCB movement, with local actors and beyond (e.g. cycling association)
4	Distributed networks and communication technology	Distributed system connected with online forum and wiki
5	Blurred boundaries between production and consumption	Users are invited to engage in CCB initiatives
6	Collaboration, care and maintenance	Concept of sharing focuses on collaboration and resource efficiency
7	Values and missions	CCB movement is guided by strong values and strong mission

Note: # 1–3 refer to SI and # 4–7 to the social economy (Murray, Caulier-Grice, and Mulgan 2010)

The first CCB initiative was established in Cologne, Germany, in 2013. Since then, the idea has been adopted by independent initiatives across Germany and other European countries. To support new initiatives, the initiators created an online wiki, made their booking software "Commons Booking" available as open source, and connected existing initiatives in a knowledge exchange network. The network was organized in an informal umbrella organization, the "Commons Cargo Bike Forum", which organized annual meetings and an online forum (Becker and Rudolf 2018b; Rublack 2020).

Methodology

As proposed by Seyfang and Smith (2007) for SI research and typical for case studies (Bonfert 2022b; Spekkink, Rödl, and Charter 2022; Thomas 2016), multiple research methods were combined to investigate the subject comprehensively.

First, two quantitative surveys were conducted. An *initiative survey* aimed at investigating initiatives' operations, organization, and funding. In parallel, a *user survey* focused on understanding the adopter perspective (Hölsgens 2022). The research questions were developed in consultation with the spokespersons of the forum, guided by the principles of transdisciplinary research (Lang et al. 2012). The consultations helped to ensure that questions were relevant and well formulated for the target group (Spekkink, Rödl, and Charter 2022). For instance, with regard to the user survey, the spokespersons recommended using the term "borrow" instead of "rent" to accurately reflect the relationship between users and local initiatives.

For the initiative survey, initiatives were invited by the authors via e-mail, at an in-person meeting, in online information sessions hosted by the authors and via the online forum. In total, 78 of 165 initiatives listed on the CCB website at the time of the study completed the survey. After completion, initiatives forwarded an e-mail with the user survey to all registered users. Some items were adapted from previous studies (Becker and Rudolf 2018b) for benchmarking (Spekkink, Rödl, and Charter 2022). The final sample consisted of $n = 2549$ users. Data collection of both surveys took place from June to August 2022, between two countrywide CCB meetings.

To gain insights into challenges and organizational changes, semi-structured interviews were conducted with three CCB spokespersons. Potential interviewees were selected based

on observations from several CCB events. All contacted persons agreed to take part in the interviews. The interviews were implemented as a group interview (Bortz and Döring 2015). This allowed for interactions between interviewees to obtain more precise and holistic answers (Thompson and Demerath 1952). The interview was conducted in person at a CCB meeting in February 2023. A topic guide for the interview was developed theory-driven building on previous SI research (Westley et al. 2014) in combination with information from CCB documents. The interview was voice-recorded and transcribed. Afterwards, it was iteratively coded using ATLAS.ti combining deductive approaches based on a literature-driven reference frame and inductive approaches based on the collected material (Knott et al. 2022). The qualitative content analysis was guided by Gläser and Laudel (2010).

The study was also informed by a review of public and non-public documents. This includes internal presentations and statutes as well as presentations and documents publicly available on the CCB website. Finally, these insights are supplemented by informal conversations and field observations (Thomas 2016, 196). Field observations took place at three CCB network meetings in June 2022, October 2022, and February 2023. While the first and the last field observation took place in person, the meeting in October 2022 was carried out online. As is typical for case studies, these field observations were conducted as participant observations (Thomas 2016, 198). One of the authors attended the meetings as a participant to gain first hand-hand impressions of current topics, challenges and dynamics (Bonfert 2022b). These observations served to complement and validate findings from the other methods.

Results

Building on the described methods, the results are reported in line with the research questions stated in the introductory section.

Analyzing commons cargo bikes historical scaling process

In the following, the scaling process of CCB is assessed with regard to overall numerical and geographical diffusion, underlying operations of initiatives as well as the structure and behavior of CCB users.

Numerical and geographical diffusion of initiatives

As Figure 2 shows, CCB experienced rapid growth. After 46 initiatives in 2016 (Becker and Rudolf 2018b), 170 initiatives are listed in 2023 (Forum Freie Lastenräder 2023).

While most initiatives (159) were established in Germany, others can be found in Austria (7) as well as in the UK, Hungary, Sweden and Italy (1 initiative per country). As Figure 3 illustrates, initiatives are located in all parts of Germany with a slight focus on the western region. Drawing on the RegioStaR typology (BMVI 2018), initiatives were set up in different regional types. Most (44%) are located in metropolitan urban regions and 23% in regiopolitan urban regions. For rural regions, 19% of initiatives are located in rural regions close to an urban region and 13% in peripheral rural regions.

Number of cargo bikes, registered users and annual borrowings

The official list of CCB initiatives results in a sum of 1109 cargo bikes for 150 initiatives that provided data (Forum Freie Lastenräder 2023). Detailed information is analyzed

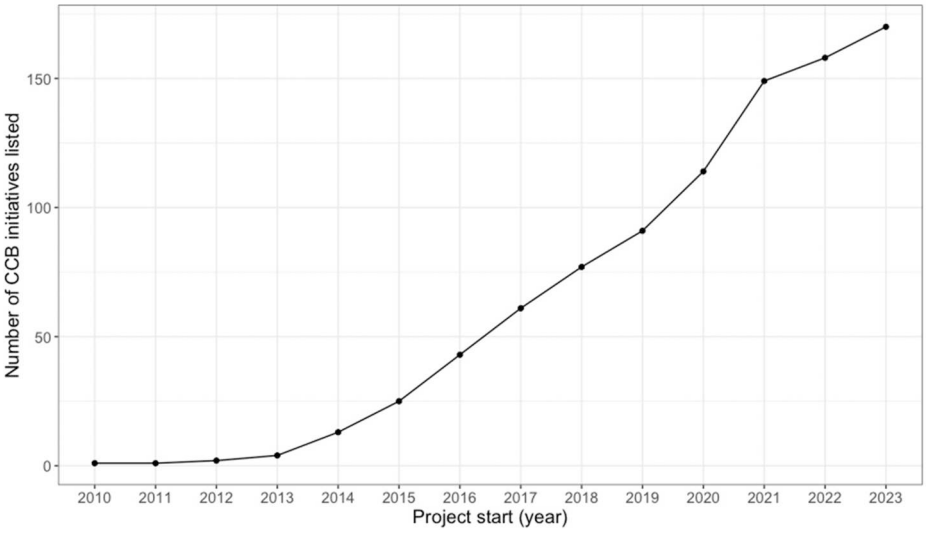

Figure 2. Number of CCB initiatives listed at www.dein-lastenrad.de. Note: 2023 includes 10 initiatives 'in preparation' as well as 1 initiative without specified start year.

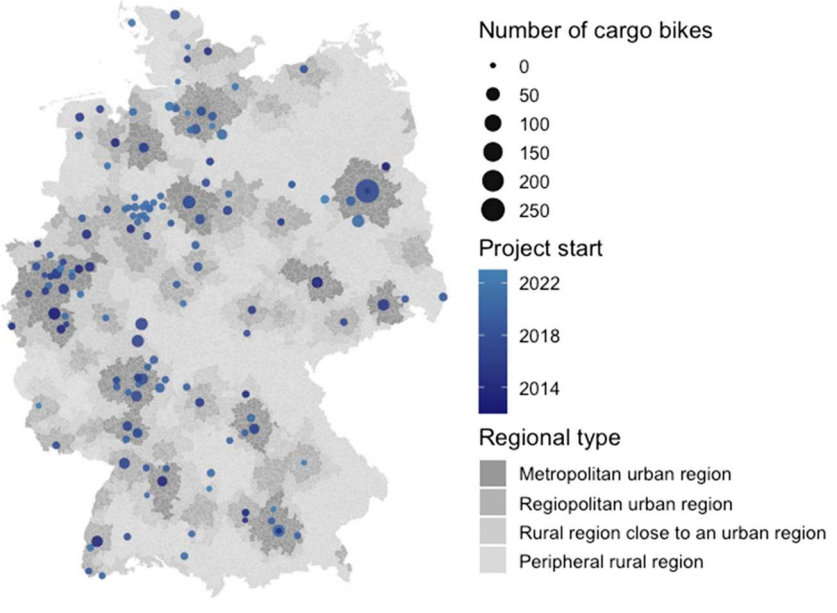

Figure 3. Geographical distribution of CCB initiatives in Germany. Note: 11 initiatives from Austria, UK, Hungary, Sweden and Italy were excluded to improve readability. Shapefiles stem from GeoBasis-DE / BKG 2022. Geocoding and mapping performed by authors.

from the 78 initiatives that completed the initiative survey. Taken together, these initiatives provide 831 cargo bikes. While the largest initiative offers 230 cargo bikes, half provide 5 or less. In total, 91,111 users are registered with the initiatives. While the median is 200 users per initiative, the minimum number of users is 5 and the maximum 25,000. In terms of

annual borrowings, responses add up to a sum of 53,693 for all initiatives in 2021. While half of initiatives handle 200 borrowings or less, the minimum is 14 and the maximum is 14,000. As the graphical distribution of these indicators in Figure 4 underscores, CCB initiatives are characterized by strong heterogeneity. The by far largest initiative on all three indicators is fLotte Berlin (see also Figure 3) which is therefore depicted separately.

Of the 831 cargo bikes, 66% are single-lane, while 34% are multi-lane cargo bikes. Of all cargo bikes, 49% are equipped with a supporting electric drive. Regarding cargo bikes for special purposes, 66 initiatives (85%) report that they offer cargo bikes that are equipped for child transportation. This corresponds to 68% of all cargo bikes. In contrast, rickshaws, sociables (cargo bikes driven by two persons side by side), or cargo bikes for wheelchair transportation each account for only about 1% of all cargo bikes.

Comparisons between initiatives

In view of this heterogeneity, additional analyses focus on comparing initiatives. Firstly, a correlation analysis reveals no significant relationship between the number of cargo bikes offered and average borrowings per bike, $r(65) = -.02$, $p = .882$. Thus, bikes from small and large initiatives are used similarly often. Secondly, with respect to geographical context, positive correlations were found between number of inhabitants on the one hand and provided cargo bikes ($r(62) = .73$, $p < .001$), registered users ($r(60) = .79$, $p < .001$), and annual borrowings ($r(54) = .73$, $p < .001$) on the other. Thus, in absolute terms, CCB is more widespread in larger cities. However, we did not find a significant relation between inhabitants and the average number of borrowings per cargo bike, $r(54) = .07$, $p = .617$. Therefore, relatively speaking, cargo bikes are borrowed as frequently in smaller cities as in larger ones.

Operation of initiatives

Regarding funding, private donations are used by 81% of initiatives. Moreover, 54% receive municipal funding and 46% sponsoring. Also, 37% are supported by state or

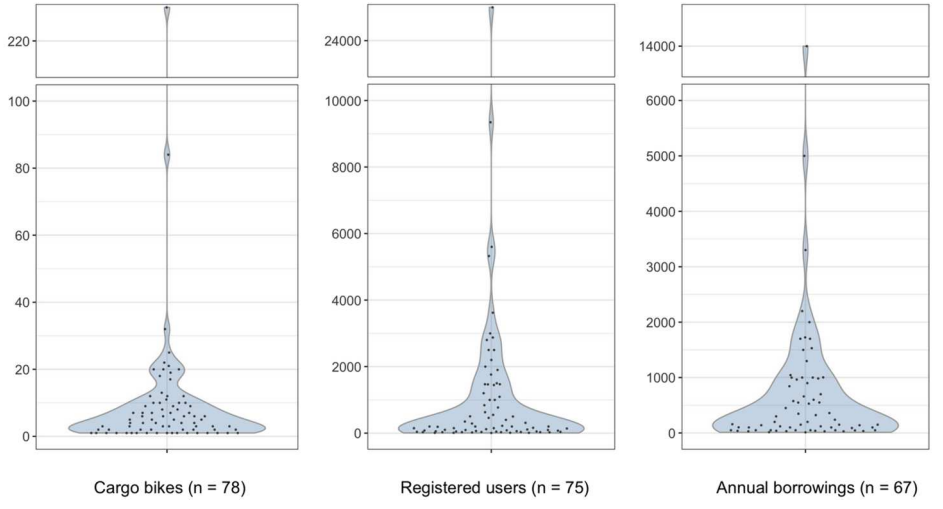

Figure 4. Distribution of key indicators among initiatives. Note: Violin plots include data points of all initiatives that provided respective data in the initiative survey.

federal government funding and 18% by foundations. Notably, 72% of initiatives indicate at least two different types of funding. With respect to the workforce, 95% of initiatives indicate working with volunteers. At the same time, 17% indicate having paid positions of some form and 5% full-time positions. Finally, more than two-thirds (71%) use the open source booking software.

User structure

To investigate scaling to different user groups, analyzing the user structure is useful. Regarding experience, about a third (31%) are first-time users. Further, 27% have ridden a cargo bike two or three times, 16% between four and seven times and one-fifth (19%) eight times or more. In contrast, 6% have never used a cargo bike. Answers from these 163 persons were excluded from further analyses, resulting in a sample of $n = 2386$.

Regarding socio-demographics, 43% identified as female and 54% as male. 1% identified as gender diverse and 2% did not answer. The mean age is 41.6 years. More than half of users (58%) use conventional bicycles as main transport mode. In contrast, less than one in ten (8%) mostly use cars. Consistently, most users have access to a bike (95%) and about half can access a car (46%) while a rather small share (14%) can use their own cargo bike.

First contacts with CCB

Analyzing communication channels helps to understand how users learn about CCB. Regarding the first contact with CCB, friends and acquaintances were the primary channel for 24% of users. 22% learned about it from hosts or from seeing cargo bikes. Further, 17% conducted active research. 13% indicated learning about CCB from the cycling association. Regarding media, 8% mentioned traditional newspapers, radio and TV, and 7% social media.

User behavior

With regard to usage reasons, Figure 5 shows that carrying foodstuffs is the most common use case which is mentioned by 37% of users. Moreover, nearly one-third of respondents (32%) use CCB for transporting children. A selective analysis of gender differences reveals that women (39%) use cargo bikes significantly more often to transport children than men (28%), X^2 $(1, N = 2308) = 30.78$, $p < .001$.

Figure 6 summarizes results regarding substitution of transport modes. Notably, most users (45%) state that they would have used a car if CCB were not available.

Intention and barriers for future cargo bike usage and ownership

Most users (94%) agree or rather agree with the intention to use cargo bikes again. Regarding barriers, availability of shared cargo bikes is mentioned most often with 56% of users perceiving it as a strong or very strong barrier. More than one-third (39%) state deficits with bicycle infrastructure such as local bicycle lanes. Moreover, 23% note a lack of parking facilities for cargo bikes in the city. Riding difficulty and low perceived safety are mentioned less often (8%).

With regard to purchases of own cargo bikes, less than one-third (31%) of respondents without their own cargo bike agrees or strongly agrees with the intention to buy a cargo

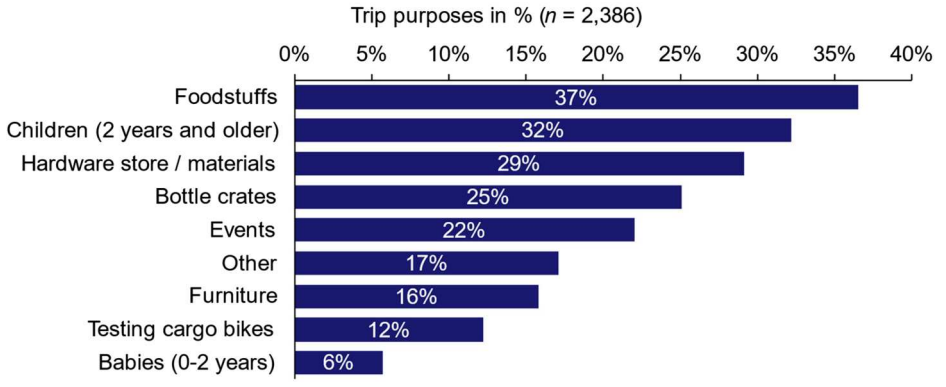

Figure 5. Overview of trip purposes and transported goods. Note: Selection of multiple trip purposes was possible.

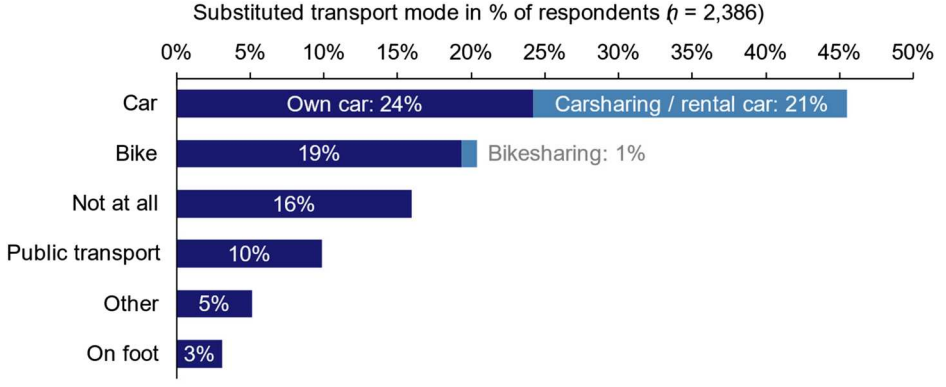

Figure 6. Overview of substitution effects of CCB.

bike. The price is identified as the most common barrier with 74% of users considering it a strong or very strong barrier. Moreover, 57% of participants cite parking the cargo bike at home as a difficulty. Finally, 44% of users have no need beyond sharing and 11% can co-use a cargo bike of others.

Assessing changes in the organizational structure of CCB

With regard to the initial informal umbrella network, the interview with CCB spokespersons underscored the understanding as a "grassroot movement" (R1). However, having operated with an informal umbrella structure for 10 years, the CCB network eventually decided to change its organizational structure. The updated structure is illustrated in Figure 7.

The revised organizational structure consists of a new formally registered association. Local CCB initiatives can join the association with an optional membership fee and send delegates to a general meeting. The general meeting is responsible for strategic decisions and elects a board. Board members, in turn, represent the association to external actors and coordinate internal work. In principle, working for the association can be renumerated.

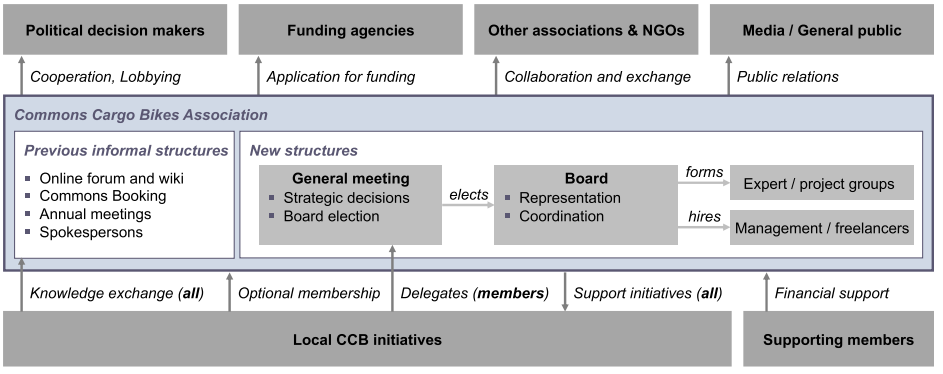

Figure 7. Illustration of new CCB structure with integrated previous informal structures. Note: Own illustration based on document analysis and consultation with CCB spokespersons.

The main tasks of the association include political work, acquiring central funding and interacting with other associations as well as the media. Previous informal structures are integrated in the association.

The reasoning behind the organizational change and its implications are investigated based on interviews with the CCB spokespersons. Firstly, it becomes clear that the described growth of the CCB movement resulted in organizational, resource, and institutional tensions. In terms of organizational tensions, interviewees noted increasing scope and complexity of managing the CCB network:

> In the beginning, it was a limited group of initiatives that could be managed, coordinated and spread on a purely voluntary basis. But in the meantime, the CCB community has become so large that this voluntary work is overburdened. (R2)

These tensions apply to management in general as well as to specific functions such as the support of the booking platform and external communication. For instance, as one interviewee notes, the booking platform is still supported by the same group of persons even though the number of initiatives and support requests has multiplied in recent years (R2). This tension also became evident through observations at the annual meetings, for example, in the context of progress reports by the affected team. In addition, the same interviewee stresses the rising demand to respond to new forms of media inquiries as a result of increased public awareness of cargo bikes (R2).

Moreover, resource tensions evolved regarding the acquisition of long-term funding by local initiatives and the distribution of resources. The latter includes compensation for additional working hours. According to one interviewee, this is essential to prevent people from burning out and to support them in their voluntary commitment (R1). In line with this, several discussions on remuneration, for instance, regarding the developers of the booking platform, were observed.

Finally, respondents note institutional tensions such as not being recognized and able to collaborate with other organizations due to a lack of perceived legitimacy:

> In the press, one frequently hears ‘association XYZ’ […]. And if you gather more information, then this is also an association of some, but of course not of all. But they are visible because they are being consulted and involved in decisions. And that has not been the case for us so far, because we are so intangible. (R1)

This tension is also reflected by one initiator of the first CCB initiative in Cologne. Precisely, issues of applying for funding or support from the public sector due to the non-commercial character of the movement were mentioned (Egermann 2022).

Against this background, three key benefits of the new structure are stressed: recognition by external actors, professionalization, and new funding options. Despite these benefits, interviewees also anticipate possible risks. These risks primarily refer to potential organizational tensions. For instance, the interviewees mention possible identity or value conflicts of existing members:

> Many people are also a bit afraid that things are becoming too formalistic, too structured. This sort of association bureaucracy. And that it will suddenly become so formal that you might no longer be able to evolve freely as an initiative, because you may no longer fit in with the association's principles. (R2)

Regarding potential coordination and organizational difficulties, interviewees mention the risk that the organization could become more complicated and formalistic (R3).

Finally, the risk of impeding the development of new initiatives was mentioned and interviewees highlighted the importance of stimulating the creativity of new initiatives instead of restricting them with guidelines (R2). This corresponds to the metaphorical description of another interviewee, stressing the importance that …

> […] the small seedlings are brought to blossom by giving them everything we have and not putting any obstacles in their way. (R1)

These perceived risks reflect the heterogeneity of organizations with regard to size, age, and structures that were identified both in the survey and during field observations. For this reason, the spokespersons stress explicit countermeasures to address these risks. These measures include integrating and strengthening all existing formats (such as the annual forum) within the association. Moreover, support from the new association is deliberately and explicitly open to all CCB initiatives:

> The association sees itself as a supporter of the CCB concept in general, regardless of whether you are a member of the association and support it or whether, for example, […] it is a new initiative that is just being founded and perhaps has no financial resources to purchase booking software. (R2)

Finally, the spokespersons highlight a focus on preserving the "grassroot" culture on the inside. This particularly affects internal communication clarifying that the association structure is a formal supplement that does not replace the existing grassroot movement and should not affect modes of internal collaboration (R2).

Discussion

The objective of this study was to analyze CCB from an SI lens focusing on scaling and organizational aspects. The following discussion is structured according to the two research questions of this article.

Scaling process and impact of Commons Cargo Bikes

With regard to the first research question, the results indicate that CCB successfully scaled out relying on the initial informal umbrella network. The movement experienced

numerical and geographical diffusion as the number of initiatives rose from 46 in 2016 to 170 in 2023. In addition, more than 1100 cargo bikes, close to 100,000 registered users as well as more than 50,000 annual borrowings from the initiatives in our sample underscore the size and growth of the network. Notably, the results of the initiative survey indicate that this development has been driven by volunteers.

The geographical analysis revealed CCB initiatives in different regional types. Thus, CCB has been proven to be a viable concept even beyond urban metropolises which typically represent the focus of profit oriented bike sharing systems (Henriksson, Wallsten, and Ihlström 2022). In this respect, the decentralized structure appears as a strength as it enables the strong heterogeneity with regard to size of initiatives, funding, workforce and partners that was revealed in the initiative survey. This supports the perspective of a CCB initiator arguing that adaptation to local characteristics and the independent "brands" have been a success factor (Egermann 2022). Notably, analyses indicate similar relative demand for initiatives of different sizes and local contexts.

Besides scaling out on initiative level, the study allows for analyses on user level. Regarding user structure, the user survey indicates a gender imbalance towards men. However, this gap is considerably smaller compared to a previous study on CCB (Becker and Rudolf 2018b). In general, the share of female users in our sample was higher compared to most studies on cargo bikes and cargo bike sharing (Carracedo and Mostofi 2022) as well as traditional bike sharing (Fishman 2016). Some hypotheses can be derived to explain this finding. Firstly, as noted earlier, cargo bikes in CCB initiatives are handed over personally by hosts. In view of research showing different perceptions of safety regarding cycling for women (Heesch, Sahlqvist, and Garrard 2012; Riggs and Schwartz 2018) and the potential of personal support (MacArthur et al. 2020), this could contribute to increased perceived safety. Secondly, our results indicate that transporting children is the second most frequent usage reason and that women use cargo bikes significantly more often than men to transport children. This corresponds to previous research (Riggs and Schwartz 2018; Y. J. Singh 2020; Uteng 2019). Notably, the initiative survey revealed that more than two-thirds of cargo bikes are equipped for child transportation which is rarely the case in traditional bike sharing systems but might substantially facilitate child transportation (Y. J. Singh 2020). Both aspects form essential cornerstones of the socially innovative concept of CCB and go beyond a mere focus on physical accessibility (Dill and McNeil 2021).

Moreover, the share of frequent cyclists was lower than before (Becker and Rudolf 2018b). It thus appears that CCB, to a certain degree, also scaled to new user groups. Similarly, approximately similar levels of users with little experience (first contacts), a high share of substituted car trips and strong intentions to re-use cargo bikes point towards unbroken satisfaction and relevance of CCB (Becker and Rudolf 2018b). Since the price was identified as the most prevalent barrier to purchase an own cargo bike, CCB seems to improve access to cargo bikes also for less affluent groups.

On the other hand, heterogeneity of funding sources and different sources per initiative stress the challenge for local and informal structures to acquire long-term funding which is supported by the interviewees. In addition, attracting new users is driven by informal communication which poses limitations as some individuals might be harder to reach than others (Ruhrort and Allert 2021). Furthermore, the analyses of cargo bikes for special needs reveals limited availability of rickshaws, sociables and cargo bikes for wheelchair transportation. These types of bikes, however, could make an important contribution to transport equity (Henriksson, Wallsten, and Ihlström 2022; MacArthur et al. 2020). Against this background, the newly established CCB initiative "fLotte Social" in Berlin should be mentioned which specializes on cargo bikes for persons with impaired mobility options (fLotte Berlin 2023).

With regard to usage frequency, our results indicate less than one borrowing per user and year on average. In principle, this ratio could be driven by inactive users, by infrequent usage of active users and by the fact that most initiatives allow borrowings for multiple days. It should be noted, however, that inactive members seem plausible (e.g. due to low barriers of registration and the use case of testing cargo bikes) and not necessarily negative (due to the absence of profit orientation). In addition, infrequent CCB usage might be driven by overall low demand for transporting goods which is supported by the relatively low proportion of frequent car users.

In summary, the results indicate that socially innovative concepts like CCB can make a substantial contribution to a more sustainable and equitable transport sector. While CCB successfully spread, it must be stressed that its impact is not limited to direct consequences (e.g. absolute number of substituted car trips) but also comprises indirect impacts such as providing opportunities for testing, increasing the visibility of cargo bikes, and highlighting alternatives to commercial transport systems (Dorner and Berger 2020; Egermann 2022). In this sense, our results imply that CCB can reach regions and user groups that are typically not addressed by commercial shared mobility services (Henriksson, Wallsten, and Ihlström 2022).

At the same time, the demand and potential for cargo bike sharing might exceed the current offering. To address this demand, the wide range of heterogenous cargo bike sharing operators, including profit-oriented cargo bike sharing start-ups and public organizations (Becker and Rudolf 2018a; Carracedo and Mostofi 2022), seems valuable. This also underscores the need for new forms of collaboration between different actors (e.g. the private, public and social sector) to ensure sustainable and equitable (cargo) bike sharing and transport. Achieving greater integration into a prevailing regime, e.g. by connecting cargo bike sharing with public transport provision (Rublack 2020), could facilitate further spread (Henriksson and Wallsten 2020).

General implications for scaling and organizing social innovations

In view of the second research question, this study offers multiple implications for SI research. Firstly, it confirms informal and open network structures as an efficient and effective strategy for scaling out SI (Moore, Riddell, and Vocisano 2015). Particularly, the network was effective for scaling to different geographical contexts (Bosworth et al. 2016). At the same time, tensions with regard to, inter alia, resources and organization evolving due to the experienced growth were noted (Manganelli and Moulaert 2018).

Against this background, the organizational change to a more structured and professionalized association is noteworthy. As the interviews show, the informal network's difficulty in acquiring long-term and central funding, being present in the public discourse and achieving policy impact were the main reasons for this adjustment. Importantly, all these aspects refer to sustaining SI as well as to scaling up and deep. These dimensions were less pronounced before the change (Rublack 2020). The organizational refinement supports notions that a formal structure is essential for scaling up as these aspects provide legitimacy and a political voice (Bonfert 2022a, 2022b).

However, several risks of the organizational change are anticipated, which underscores the challenge of changing organizational structures and simultaneously addressing multiple scaling objectives in one structure. In general, these concerns appear plausible and correspond to previous research on other case studies (Martin, Upham, and Budd 2015; Westley et al. 2014). The countermeasures of the CCB network to mitigate these risks and combine the strengths of informal and formal archetypes in the new structure

therefore offer valuable implications. Namely, three countermeasures were identified. These comprise (1) integrating all existing elements in the new organization, (2) making the new organization and its support accessible to all CCB initiatives irrespective of membership and (3) maintaining the culture of a grassroot movement internally by focusing the association's work to external stakeholders. By explicitly analyzing these countermeasures, our study extends previous research on organizational changes in SI networks (Bonfert 2022b).

Limitations and avenues for future research

Some limitations of the study should be noted. With regard to the initiative survey, about half of the listed initiatives participated. Results therefore underestimate the scope of the CCB movement. The survey also does not claim to be representative, even though the distribution of the sample across regional types appears similar to the overall distribution. With regard to analyses, results including population data are indicative as the areas of operation do not necessarily match the geographical city boundaries. In parallel, the user survey might also not be representative. For instance, "heavy users" can be overrepresented (Firnkorn and Müller 2012). The rather small number of interviewees reflects the overall small group of spokespersons. The sample size is similar to comparable mixed methods research on single case studies (Bonfert 2022b; Henriksson and Wallsten 2020). Thus, typical for case studies, a comprehensive view emerges from combining multiple methods.

With regard to future research, the perspectives from CCB spokespersons, which were the focus of this study, could be complemented by interviewing existing local initiatives, new initiatives or stakeholders such as policy makers. The latter would provide a complementary external perspective. Also, the success of the refined structure could be assessed. Since such questions can only be investigated once the effects of the organizational change are visible, they are not in scope of this study.

Secondly, while this study provided new insights on "scaling out" and valuable indications on the impact of CCB with regard to equitable transport (e.g. with regard to geographical locations or gender), future research should examine this impact in more detail. For instance, this could include aspects such as income, education or migration background, which were not covered in our survey due to their sensitive character. In addition, the causalities with regard to the high proportion of women should be further investigated. On a similar note, investigating temporal discrepancies in terms of seasonal differences appears valuable (Fishman 2016).

Finally, future research could extend beyond the focus on transport equity. Regarding transport justice, for instance, the research could analyze CCB operations in terms of procedural justice and, more precisely, questions of inclusivity of internal processes as described in the SI definition (Murray, Caulier-Grice, and Mulgan 2010). From the broader perspective of mobility justice, in parallel, CCB's impact on values and norms of users could be investigated. This focus would relate to the "scaling deep" dimension in SI terminology (Moore, Riddell, and Vocisano 2015).

Conclusion

This study aimed at contributing to existing research by assessing CCB as a case study for SI in the context of sustainable and equitable transport. To do so, multiple methods were combined. Based on the results, implications are derived regarding the potential of community-based SI networks and their organizational development.

Firstly, the results underscore that socially innovative initiatives can (a) provide novel and alternative solutions to pressing social and environmental needs, (b) scale fast with decentralized umbrella networks, and (c) reach geographical regions and users not addressed by traditional services. Doing so, the study shows that SI initiatives can represent important complements to technological and market-based innovations within the transport sector as well as beyond.

Secondly, the study highlights that (a) more formal structures are required at some point during the scaling of SI due to internal and external tensions, (b) such organizational changes are associated with various risks, which, however (c) may be addressed proactively by combining different organizational archetypes in one structure and by developing countermeasures.

Note

1. This conceptualization is used in this paper as it has also been applied in other case studies on community-led SI (Bonfert 2022a) as well as on CCB (Rublack 2020). However, the terminology for scaling SI is not sharply defined. For instance, some scholars use the term scaling up for spatial outreach which is here referred to as scaling out (Kazepov, Saruis, and Colombo 2020; Loorbach et al. 2020; Westley et al. 2014).

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CRediT author statement

Michael Bissel: conceptualization, methodology, investigation, data curation, formal analysis, writing – original draft preparation, writing – reviewing and editing, visualization, project administration. Sophia Becker: supervision, resources, funding acquisition, writing – reviewing and editing.

Ethics declaration

This study was conducted in consultation with relevant parties for research ethics at Faculty 1 of the TU Berlin. The authors sought ethical guidance and oversight at the faculty prior to data collection. It was decided that an ethical vote was not required due

to the general characteristics of the study. A confirmation of this was submitted together with the manuscript. Informed consent was obtained from all participants. The study did not target vulnerable groups (e.g. minors). It did not involve sensitive topics and did not expose participants to risks. All participants were fully informed about the research objectives. No personal information was collected, with the exception of first names in the three qualitative interviews. The interviews were therefore anonymized during transcription. All data were securely stored without access for third parties.

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References

Bartels, Koen P.R. 2022. "Experiential Learning: A Relational Approach to Sustaining Community-Led Social Innovation." *Innovation: The European Journal of Social Science Research* 2022:1–20. https://doi.org/10.1080/13511610.2022.2121268.

Becker, Sophia, and Clemens Rudolf. 2018a. "The Status Quo of Cargo-Bikesharing in Germany, Austria and Switzerland." In *Framing the Third Cycling Century. Bridging the Gap between Research and Practice*, edited by Katherina Grafl, Heike Bunte, Katrin Dziekan, and Holger Haubold, 168–180. Dessau-Roßlau: German Environment Agency.

Becker, Sophia, and Clemens Rudolf. 2018b. "Exploring the Potential of Free Cargo-Bikesharing for Sustainable Mobility." *GAIA - Ecological Perspectives for Science and Society* 27 (1): 156–164. https://doi.org/10.14512/gaia.27.1.11.

BEPA. 2010. *Empowering People, Driving Change: Social Innovation in the European Union.* Bruxelles: Bureau of European Policy Advisers (BEPA). European Commission. https://ec.europa.eu/migrant-integration/sites/default/files/2011-01/docl_17731_35611801.pdf.

BEPA. 2014. *Social Innovation: A Decade of Changes.* Luxembourg: Bureau of European Policy Advisers (BEPA). European Commission.

BMVI. 2018. "Regionalstatistische Raumtypologie (RegioStaR) Des BMVI Für Die Mobilitäts- Und Verkehrsforschung." Working Paper. Bonn: Bundesministerium für Verkehr und digitale Infrastruktur. https://bmdv.bund.de/SharedDocs/DE/Anlage/G/regiostar-arbeitspapier.pdf?__blob=publicationFile.

Bonfert, Bernd. 2022a. "Community-Supported Agriculture Networks in Wales and Central Germany: Scaling Up, Out, and Deep through Local Collaboration." *Sustainability* 14 (12): 7419. https://doi.org/10.3390/su14127419.

Bonfert, Bernd. 2022b. "'What We'd like Is a CSA in Every Town.' Scaling Community Supported Agriculture across the UK." *Journal of Rural Studies* 94 (August): 499–508. https://doi.org/10.1016/j.jrurstud.2022.07.013.

Börjesson Rivera, Miriam, and Greger Henriksson. 2014. "Cargo Bike Pool: A Way to Facilitate a Car-Free Life?" In *Resilience – the New Research Frontier. Proceedings of the 20th Annual International Sustainable Development Research Conference (ISDRC 2014) Trondheim 18-20 June* 2014, 273–80. Trondheim.

Bortz, Jürgen, and Nicola Döring. 2015. *Forschungsmethoden und Evaluation: für Human- und Sozialwissenschaftler.* 5. Aufl. Springer-Lehrbuch. Berlin: Springer.

Bosworth, Gary, Fulvio Rizzo, Doris Marquardt, Dirk Strijker, Tialda Haartsen, and Annette Aagaard Thuesen. 2016. "Identifying Social Innovations in European Local Rural Development Initiatives." *Innovation: The European Journal of Social Science Research* 29 (4): 442–461. https://doi.org/10.1080/13511610.2016.1176555.

Button, Kenneth, and Peter Nijkamp. 1997. "Social Change and Sustainable Transport." *Journal of Transport Geography* 5 (3): 215–218. https://doi.org/10.1016/S0966-6923(97)00018-5.

Butzin, Anna, Maria Rabadjieva, and Sophie Emmert. 2017. *Final Report: Social Innovation in Mobility and Transport*. Dortmund: TU Dortmund.

Campos, Zapata, María José, Patrik Zapata, and Isabel Ordoñez. 2020. "Urban Commoning Practices in the Repair Movement: Frontstaging the Backstage." *Environment and Planning A: Economy and Space* 52 (6): 1150–1170. https://doi.org/10.1177/0308518X19896800.

Carracedo, Diego, and Hamid Mostofi. 2022. "Electric Cargo Bikes in Urban Areas: A New Mobility Option for Private Transportation." *Transportation Research Interdisciplinary Perspectives* 16 (December): 100705. https://doi.org/10.1016/j.trip.2022.100705.

Cox, Peter. 2015. "Object in Focus: The Cargo Bike." *Viewpoint*. http://hdl.handle.net/10034/556116.

Cox, Peter, and Randy Rzewnicki. 2015. "Cargo Bikes: Distributing Consumer Goods." In University of Chester Press. http://hdl.handle.net/10034/554288.

Dill, Jennifer, and Nathan McNeil. 2021. "Are Shared Vehicles Shared by All? A Review of Equity and Vehicle Sharing." *Journal of Planning Literature* 36 (1): 5–30. https://doi.org/10.1177/0885412220966732.

Domanski, Dmitri, and Christoph Kaletka, eds. 2017. *Exploring the Research Landscape of Social Innovation – A Deliverable of the Project Social Innovation Community (SIC)*. Dortmund: Sozialforschungsstelle.

Dorner, Fabian. 2020. "Mit dem Lastenrad mobil - Nutzung und Sharing im Kontext privater Haushalte." Doctoral dissertation, Wien: Technische Universität Wien. reposiTUm. https://doi.org/10.34726/hss.2021.92535.

Dorner, Fabian, and Martin Berger. 2020. "Peer-to-Peer Cargo Bike Sharing: Findings from LARA Share Project." In *Proceedings of 8th Transport Research Arena TRA* 2020, 1–11. Helsinki: Liikenne- ja viestintävirasto Traficom. https://doi.org/10.26226/morressier.5e4fe9c16bc493207536f8ed.

EEA. 2022a. "Decarbonising Road Transport: The Role of Vehicles, Fuels and Transport Demand." No 02/2022. EEA Report. Luxembourg: Publications Office of the European Union. https://data.europa.eu/doi/10.280068902.

EEA. 2022b. "Trends and Projections in Europe 2022." No 10/2022. EEA Report. Luxembourg: Publications Office of the European Union. https://data.europa.eu/doi/10.280016646.

Egermann, Florian. 2022. *In Bewegung Setzen. Von Einer Initiative Zu Einer Bewegung*. Edited by wielebenwir e.V. 1st ed. Köln: wielebenwir e.V.

European Commission. 2012. "Strenthening Social Innovation in Europe: Journey to Effective Assessment and Metrics." Luxembourg: European Commission. Directorate General for Enterprise and Industry. https://data.europa.eu/doi/10.276953098.

European Commission. 2013. "Guide to Social Innovation." Luxembourg: European Commission. Directorate-General for Regional and Urban Policy. https://doi.org/10.2776/72046.

Ferreira, Antonio, Luca Bertolini, and Petter Næss. 2017. "Immotility as Resilience? A Key Consideration for Transport Policy and Research." *Applied Mobilities* 2 (1): 16–31. https://doi.org/10.1080/23800127.2017.1283121.

Firnkorn, Jörg, and Martin Müller. 2012. "Selling Mobility Instead of Cars: New Business Strategies of Automakers and the Impact on Private Vehicle Holding." *Business Strategy and the Environment* 21 (4): 264–280. https://doi.org/10.1002/bse.738.

Fishman, Elliot. 2016. "Bikeshare: A Review of Recent Literature." *Transport Reviews* 36 (1): 92–113. https://doi.org/10.1080/01441647.2015.1033036.

fLotte Berlin. 2023. "Die fLotte SoziaL Legt Los." *Neues von Der fLotte* (blog). September 18, 2023. https://flotte-berlin.de/die-flotte-sozial-legt-los/.

Forum Freie Lastenräder. 2023. "Freie Lastenräder." 2023. https://dein-lastenrad.de/wiki/Freie_Lastenräder.

Galego, Diego, Frank Moulaert, Marleen Brans, and Gonçalo Santinha. 2022. "Social Innovation & Governance: A Scoping Review." *Innovation: The European Journal of Social Science Research* 35 (2): 265–290. https://doi.org/10.1080/13511610.2021.1879630.

Geels, Frank W. 2012. "A Socio-Technical Analysis of Low-Carbon Transitions: Introducing the Multi-Level Perspective into Transport Studies." *Journal of Transport Geography* 24 (September): 471–482. https://doi.org/10.1016/j.jtrangeo.2012.01.021.

Geels, Frank W., Benjamin K. Sovacool, Tim Schwanen, and Steve Sorrell. 2017. "The Socio-Technical Dynamics of Low-Carbon Transitions." *Joule* 1 (3): 463–479. https://doi.org/10.1016/j.joule.2017.09.018.

Giesel, Flemming, and Claudia Nobis. 2016. "The Impact of Carsharing on Car Ownership in German Cities." *Transportation Research Procedia* 19:215–224. https://doi.org/10.1016/j.trpro.2016.12.082.

Gläser, Jochen, and Grit Laudel. 2010. *Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen*. 4. Auflage. Lehrbuch. Wiesbaden: VS Verlag.

Grimm, Robert, Christopher Fox, Susan Baines, and Kevin Albertson. 2013. "Social Innovation, an Answer to Contemporary Societal Challenges? Locating the Concept in Theory and Practice." *Innovation: The European Journal of Social Science Research* 26 (4): 436–455. https://doi.org/10.1080/13511610.2013.848163.

Haxeltine, Alex, Flor Avelino, Julia Wittmayer, René Kemp, Paul Weaver, Julia Backhaus, and Tim O'Riordan. 2013. "Transformative Social Innovations: A Sustainability Transition Perspective on Social Innovation." *Social Frontiers*.

Heesch, Kristiann C, Shannon Sahlqvist, and Jan Garrard. 2012. "Gender Differences in Recreational and Transport Cycling: A Cross-Sectional Mixed-Methods Comparison of Cycling Patterns, Motivators, and Constraints." *International Journal of Behavioral Nutrition and Physical Activity* 9 (1): 106. https://doi.org/10.1186/1479-5868-9-106.

Henriksson, Malin, and Anna Wallsten. 2020. "Succeeding without Success: Demonstrating a Residential Bicycle Sharing System in Sweden." *Transportation Research Interdisciplinary Perspectives* 8 (November): 100271. https://doi.org/10.1016/j.trip.2020.100271.

Henriksson, Malin, Anna Wallsten, and Jonas Ihlström. 2022. "Can Bike-Sharing Contribute to Transport Justice? Exploring a Municipal Bike-Sharing System." *Transportation Research Part D: Transport and Environment* 103 (February): 103185. https://doi.org/10.1016/j.trd.2022.103185.

Hölsgens, Rick. 2022. "Introducing the Adopter Perspective in Social Innovation Research." *Innovation: The European Journal of Social Science Research* 35 (2): 245–264. https://doi.org/10.1080/13511610.2021.1964351.

Jones, Peter. 2011. "Conceptualising Car 'Dependence'." In *Auto Motives*, edited by Karen Lucas, Evelyn Blumenberg, and Rachel Weinberger, 39–61. Leeds: Emerald Group Publishing Limited. https://doi.org/10.1108/9780857242341-002.

Jones, Peter, and Karen Lucas. 2012. "The Social Consequences of Transport Decision-Making: Clarifying Concepts, Synthesising Knowledge and Assessing Implications." *Journal of Transport Geography* 21 (March): 4–16. https://doi.org/10.1016/j.jtrangeo.2012.01.012.

Karner, Alex, Jonathan London, Dana Rowangould, and Kevin Manaugh. 2020. "From Transportation Equity to Transportation Justice: Within, Through, and Beyond the State." *Journal of Planning Literature* 35 (4): 440–459. https://doi.org/10.1177/0885412220927691.

Kazepov, Yuri, Tatiana Saruis, and Fabio Colombo. 2020. "Consolidating Social Innovation." In *Local Social Innovation to Combat Poverty and Exclusion*, edited by Stijn Oosterlynck, Andreas Novy, and Yuri Kazepov, 1st ed., 189–216. Bristol: Bristol University Press. https://doi.org/10.46692/9781447338451.010.

Knott, Eleanor, Aliya Hamid Rao, Kate Summers, and Chana Teeger. 2022. "Interviews in the Social Sciences." *Nature Reviews Methods Primers* 2 (1): 73. https://doi.org/10.1038/s43586-022-00150-6.

Lang, Daniel J., Arnim Wiek, Matthias Bergmann, Michael Stauffacher, Pim Martens, Peter Moll, Mark Swilling, and Christopher J. Thomas. 2012. "Transdisciplinary Research in Sustainability Science: Practice, Principles, and Challenges." *Sustainability Science* 7 (S1): 25–43. https://doi.org/10.1007/s11625-011-0149-x.

Loorbach, Derk, Julia Wittmayer, Flor Avelino, Timo von Wirth, and Niki Frantzeskaki. 2020. "Transformative Innovation and Translocal Diffusion." *Environmental Innovation and Societal Transitions* 35 (June): 251–260. https://doi.org/10.1016/j.eist.2020.01.009.

Lucas, Karen. 2012. "Transport and Social Exclusion: Where Are We Now?" *Transport Policy* 20 (March): 105–113. https://doi.org/10.1016/j.tranpol.2012.01.013.

Lucas, Karen. 2019. "A New Evolution for Transport-Related Social Exclusion Research?" *Journal of Transport Geography* 81 (December): 102529. https://doi.org/10.1016/j.jtrangeo.2019.102529.

MacArthur, John, Nathan McNeil, Austin Cummings, and Joseph Broach. 2020. "Adaptive Bike Share: Expanding Bike Share to People with Disabilities and Older Adults." *Transportation Research Record: Journal of the Transportation Research Board* 2674 (8): 556–565. https://doi.org/10.1177/0361198120925079.

Manganelli, Alessandra, and Frank Moulaert. 2018. "Hybrid Governance Tensions Fuelling Self-Reflexivity in Alternative Food Networks: The Case of the Brussels GASAP (Solidarity Purchasing Groups for Peasant Agriculture)." *Local Environment* 23 (8): 830–845. https://doi.org/10.1080/13549839.2018.1477745.

Martens, Karel. 2017. *Transport Justice: Designing Fair Transportation Systems*. New York, NY: Routledge, Taylor & Francis Group.

Martin, Chris J., Paul Upham, and Leslie Budd. 2015. "Commercial Orientation in Grassroots Social Innovation: Insights from the Sharing Economy." *Ecological Economics* 118 (October): 240–251. https://doi.org/10.1016/j.ecolecon.2015.08.001.

Moore, Michele-Lee, Darcy Riddell, and Dana Vocisano. 2015. "Scaling Out, Scaling Up, Scaling Deep: Strategies of Non-Profits in Advancing Systemic Social Innovation." *Journal of Corporate Citizenship* 2015 (58): 67–84. https://doi.org/10.9774/GLEAF.4700.2015.ju.00009.

Mulgan, Geoff, Rushanara Ali, Richard Halkett, and Ben Sanders. 2007. *In and out of Sync: The Challenge of Growing Social Innovations*. London: NESTA.

Murray, Robin, Julie Caulier-Grice, and Geoff Mulgan. 2010. *The Open Book of Social Innovation*. London: NESTA.

Nikolaeva, Anna, Peter Adey, Tim Cresswell, Jane Yeonjae Lee, Andre Nóvoa, and Cristina Temenos. 2019. "Commoning Mobility: Towards a New Politics of Mobility Transitions." *Transactions of the Institute of British Geographers* 44 (2): 346–360. https://doi.org/10.1111/tran.12287.

Nixon, Denver V., and Tim Schwanen. 2019. "Bike Sharing beyond the Norm." *Journal of Transport Geography* 80 (October): 102492. https://doi.org/10.1016/j.jtrangeo.2019.102492.

Pearce, Jane L. M. 2016. Carrying Cargo and Affording Decarbonised Urban Mobility - the Integration of Cargo Bikes into Urban Load-Carrying Practices." Doctoral dissertation, Canterbury: University Of Canterbury. UC Research Repository. https://ir.canterbury.ac.nz/handle/10092/12915.

Pereira, Rafael H. M., Tim Schwanen, and David Banister. 2017. "Distributive Justice and Equity in Transportation." *Transport Reviews* 37 (2): 170–191. https://doi.org/10.1080/01441647.2016.1257660.

Phills, James A., Kriss Deiglmeier, and Dale T. Miller. 2008. "Rediscovering Social Innovation." *Stanford Social Innovation Review* 6 (4): 34–43. https://doi.org/10.48558/GBJY-GJ47.

Rabadjieva, Maria, and Anna Butzin. 2017. *Social Innovation in Mobility and Transport: Case Study Results.*. Dortmund: TU Dortmund.

Riggs, William, and Jana Schwartz. 2018. "The Impact of Cargo Bikes on the Travel Patterns of Women." *Urban, Planning and Transport Research* 6 (1): 95–110. https://doi.org/10.1080/21650020.2018.1553628.

Rublack, Esther. 2020. "Strategic Design for Social Innovation. Mapping a Road for Commons Cargobike." Unpublished Manuscript. Delft. https://dein-lastenrad.de/ images/9/95/Esther_Rublack_Mapping_a_road_for_Commons_Cargobike.pdf.

Ruhrort, Lisa, and Viktoria Allert. 2021. "Conceptualizing the Role of Individual Agency in Mobility Transitions: Avenues for the Integration of Sociological and Psychological Perspectives." *Frontiers in Psychology* 12 (April): 623652. https://doi.org/10.3389/fpsyg.2021.623652.

Seyfang, Gill, and Noel Longhurst. 2013. "Desperately Seeking Niches: Grassroots Innovations and Niche Development in the Community Currency Field." *Global Environmental Change* 23 (5): 881–891. https://doi.org/10.1016/j.gloenvcha.2013.02.007.

Seyfang, Gill, and Adrian Smith. 2007. "Grassroots Innovations for Sustainable Development: Towards a New Research and Policy Agenda." *Environmental Politics* 16 (4): 584–603. https://doi.org/10.1080/09644010701419121.

Shaheen, Susan A., Elliot W. Martin, Nelson D. Chan, Adam P. Cohen, and J. M. (Mike) Pogodzinski. 2014. "Public Bikesharing in North America During a Period of Rapid Expansion : Understanding Business Models, Industry Trends and User Impacts." MTI Report 12-29. San José: Mineta Transportation Institute. Dot:28115. https://rosap.ntl.bts.gov/view/dot/28115.

Sheller, Mimi. 2018. *Mobility Justice: The Politics of Movement in the Age of Extremes*. London: Verso.

Shibayama, Takeru, and Günter Emberger. 2020. "New Mobility Services: Taxonomy, Innovation and the Role of ICTs." *Transport Policy* 98 (November): 79–90. https://doi.org/10.1016/j.tranpol.2020.05.024.

Simons, Helen. 2009. *Case Study Research in Practice*. Los Angeles: SAGE.

Singh, Yamini J. 2020. "Is Smart Mobility Also Gender-Smart?" *Journal of Gender Studies* 29 (7): 832–846. https://doi.org/10.1080/09589236.2019.1650728.

Singh, Sanjay, and Yogita Aggarwal. 2022. "In Search of a Consensus Definition of Innovation: A Qualitative Synthesis of 208 Definitions Using Grounded Theory Approach." *Innovation: The European Journal of Social Science Research* 35 (2): 177–195. https://doi.org/10.1080/13511610.2021.1925526.

Smith, David Horton. 2000. *Grassroots Associations*. Thousand Oaks, CA: Sage Publications.

Spekkink, Wouter, Malte Rödl, and Martin Charter. 2022. "Repair Cafés and Precious Plastic as Translocal Networks for the Circular Economy." *Journal of Cleaner Production* 380 (December): 135125. https://doi.org/10.1016/j.jclepro.2022.135125.

Steg, Linda. 2003. "Can Public Transport Compete With the Private Car?" *IATSS Research* 27 (2): 27–35. https://doi.org/10.1016/S0386-1112(14)60141-2.

Steg, Linda. 2005. "Car Use: Lust and Must. Instrumental, Symbolic and Affective Motives for Car Use." *Transportation Research Part A: Policy and Practice* 39 (2-3): 147–162. https://doi.org/10.1016/j.tra.2004.07.001.

Tarnovetckaia, Rozaliia, and Hamid Mostofi. 2022. "Impact of Car-Sharing and Ridesourcing on Public Transport Use: Attitudes, Preferences, and Future Intentions Regarding Sustainable Urban Mobility in the Post-Soviet City." *Urban Science* 6 (2): 33. https://doi.org/10.3390/urbansci6020033.

Thomas, Gary. 2016. *How to Do Your Case Study*. 2nd ed. Los Angeles: Sage.

Thompson, James D., and Nicholas J. Demerath. 1952. "Some Experiences with the Group Interview." *Social Forces* 31 (2): 148–154. https://doi.org/10.2307/2573399.

Uteng, Tanu Priya. 2019. "Smart Mobilities: A Gendered Perspective." *Kart Og Plan* 112 (4): 258–281. https://doi.org/10.18261/issn.2535-6003-2019-04-03.

Vadrot, Alice B.M. 2020. "Re-Thinking the Conditions for Social Change and Innovation." *Innovation: The European Journal of Social Science Research* 33 (1): 1–3. https://doi.org/10.1080/13511610.2020.1713455.

Vergragt, Philip J., and Halina Szejnwald Brown. 2007. "Sustainable Mobility: From Technological Innovation to Societal Learning." *Journal of Cleaner Production* 15 (11-12): 1104–1115. https://doi.org/10.1016/j.jclepro.2006.05.020.

Verlinghieri, Ersilia, and Tim Schwanen. 2020. "Transport and Mobility Justice: Evolving Discussions." *Journal of Transport Geography* 87 (July): 102798. https://doi.org/10.1016/j.jtrangeo.2020.102798.

Wedel, Marco. 2020. "Social Change and Innovation for Times of Crises." *Innovation: The European Journal of Social Science Research* 33 (3): 277–279. https://doi.org/10.1080/13511610.2020.1789313.

Westley, Frances. 2010. "Strategies for Scaling Social Innovation for Greater Impact." *The Innovation Journal: The Public Sector Innovation Journal* 15 (2): 2–19.

Westley, Frances, Nino Antadze, Darcy J. Riddell, Kirsten Robinson, and Sean Geobey. 2014. "Five Configurations for Scaling Up Social Innovation: Case Examples of Nonprofit Organizations From Canada." *The Journal of Applied Behavioral Science* 50 (3): 234–260. https://doi.org/10.1177/0021886314532945.

Ziegler, Rafael. 2017. "Social Innovation as a Collaborative Concept." *Innovation: The European Journal of Social Science Research* 30 (4): 388–405. https://doi.org/10.1080/13511610.2017.1348935.