



DIE ERDE

Journal of the  
Geographical Society  
of Berlin

# Just transitions through digitally enabled sharing economies?

**Julia Affolderbach, Cyrille Médard de Chardon**

Julia Affolderbach, Trier University, Universitätsring 15, 54296 Trier, Germany, affolderbach@uni-trier.de

Cyrille Médard de Chardon, Luxembourg Institute of Socio-Economic Research, 11 Portes des Sciences, Maison des Sciences Humaines, 4366 Esch-sur-Alzette, Luxembourg, cyrille.mdc@liser.lu

Manuscript submitted: 20 April 2021 / Accepted for publication: 17 October 2021 / Published online: 23 November 2021

## Abstract

Digital technologies have become central to social interaction and accessing goods and services. Development strategies and approaches to governance have increasingly deployed self-labelled 'smart' technologies and systems at various spatial scales, often promoted as rectifying social and geographic inequalities and increasing economic and environmental efficiencies. These have also been accompanied with similarly digitalized commercial and non-profit offers, particularly within the sharing economy. Concern has grown, however, over possible inequalities linked to their introduction. In this paper we critically analyse the role of sharing economies' contribution to more inclusive, socially equitable and spatially just transitions. Conceptually, this paper brings together literature on sharing economies, smart urbanism and just transitions. Drawing on an explorative database of sharing initiatives within the cross-border region of Luxembourg and Germany, we discuss aspects of sustainability as they relate to distributive justice through spatial accessibility, intended benefits, and their operationalization. The regional analysis shows the diversity of sharing models, how they are appropriated in different ways and how intent and operationalization matter in terms of potential benefits. Results emphasize the need for more fine-grained, qualitative research revealing who is, and is not, participating and benefitting from sharing economies.

## Zusammenfassung

Digitale Technologien sind zu einem zentralen Bestandteil sozialer Interaktion geworden und spielen auch beim Zugriff auf und bei der Nutzung von Gütern und Dienstleistungen eine zentrale Rolle. Dabei setzen Entwicklungskonzepte und Governance-Strategien auf verschiedenen räumlichen Ebenen zunehmend Technologien und Systeme ein, die als ‚intelligent‘ plakatiert werden und ausdrücklich als Lösungsansätze zur Überwindung von sozialen und räumlichen Ungleichheiten sowie zur Steigerung wirtschaftlicher und ökologischer Effizienzen angesehen werden. Diese Ansätze werden häufig auch durch digital gestützte kommerzielle und gemeinnützige Angebote, vor allem im Bereich der sogenannten Sharing Economy, begleitet. Diese werden jedoch zunehmend auch als Ursache möglicher Ungleichheiten angesehen. Der Beitrag diskutiert verschiedene Ausprägungen der Sharing Economy kritisch hinsichtlich inklusiverer sowie sozial und räumlich gerechterer Transitionsprozesse. Konzeptionell baut der Beitrag auf Diskursen zu Sharing Economies, smartem Urbanismus und ‚Just Transitions‘ auf. Anhand einer explorativen Datenbank von Sharing-Initiativen im luxemburgisch-deutschen Grenzgebiet werden Aspekte der Nachhaltigkeit in Bezug auf Verteilungsgerechtigkeit durch räumliche Erreichbarkeit, be-

Julia Affolderbach, Cyrille Médard de Chardon 2021: Just transitions through digitally enabled sharing economies? – DIE ERDE  
152 (4): 244-259



DOI:10.12854/erde-2021-569

absichtigten Zweck bzw. Nutzen und deren Operationalisierung diskutiert. Einblicke verdeutlichen die Vielfalt von Sharing-Modellen, ihre verschiedenen Aneignungsstrategien und -formen sowie die Bedeutung von Absicht und Operationalisierung hinsichtlich potentieller Mehrwerte. Die Ergebnisse unterstreichen den Bedarf an detaillierteren und qualitativen, weiterführenden Untersuchungen zur Verbesserung der Rolle von Sharing Economies, die sich vor allem damit beschäftigen, wer an Sharing-Initiativen teilnimmt und wer von ihnen profitiert.

**Keywords** sharing economies, just transition, social sustainability, digitalization, Germany, Luxembourg

## 1. Introduction

Sharing economies are seen as a diverse field of innovations which “promote sharing and collaboration between citizens; empower citizens, communities and grassroots organisations; and decentralize power structures across the economy and society” (Martin 2016: 154). As Belk (2014: 1599) states, “sharing makes a great deal of practical and economic sense for the consumer, the environment, and the community”. Despite this it has become clear that digital platforms facilitating sharing are often yielding alternative outcomes. Over the past 20 years we have witnessed a rise of digitally mediated sharing economies driven by innovations in the information and communication technology (ICT) sector. Whether as peer-to-peer exchange platforms for goods (e.g., eBay, Freecycle, Gumtree, craigslist), software (e.g., Github, SourceForge), labour (e.g., Mechanical Turk, TaskRabbit), information (e.g., Wikipedia, OpenStreetMap), currencies (e.g., Bitcoin, Ethereum), lodging (e.g., Couchsurfing, AirBnB), private spaces (e.g., JustPark, AirGarage), financing (e.g., Kickstarter, Indiegogo), or personal mobility (e.g., bikesharing, e-scooter sharing, ridesharing, carsharing), digital technologies have enabled new, faster, cheaper, and more efficient ways to share, connect, access, and consume. Even though consumers have gained in choice, reduced costs, and even mobility, the impacts on workers, society, and the environment have been mixed (e.g., Martin et al. 2018).

While significant research has focused on the opportunities of digitally mediated initiatives for economic and low-carbon development (e.g. see discourses on smart urbanism), much less is known about the diversity of sharing economies and their social and justice implications. In this paper we critically ask: What types of digitally enabled sharing economies are present and how consistent are stated just sustainability intents and organizational and operational structures? In doing so we highlight how sharing

economies, through the digitally mediated acts of sharing, using, and consuming, generate social and environmental benefits and describe what frictions exist between spatial, social, economic and environmental dimensions (e.g., connectivity and proximity vs. exclusion and fixity).

We use an exploratory study of sharing economy examples in the cross-border region of Luxembourg and Rhineland Palatinate in Germany, generated through desk-based research. The initiatives all share the criteria of relying on a tangible presence within the study area, being represented online, and aiming to share, redistribute or reuse goods, services or other less tangible aspects. We particularly focus on transport and food sharing examples due to more initiatives stating social and environmental intent and as mobility and practices of food growing and sharing have a high need of spatial proximity for access and have higher numbers of stated intent.

This paper is structured as follows. The next section discusses the role of digital technologies in sustainability transitions before turning to discourses on sharing economies that concern tensions between economic, environmental and social objectives. Section 3 introduces the methods used to construct an exploratory database. Analysis and findings from the database are presented and discussed in Sections 4 and 5, placing a particular focus on mobility and food sharing examples. The conclusion highlights future research directions.

### 2. Smart transitions, sharing economies and justice

#### 2.1 Smartness as pathway of sustainability transitions

The need to respond to the climate crisis has led to a lot of ‘transition talk’ that calls for more profound changes to existing socioeconomic systems in order to address environmental and social problems (Affolderbach and Schulz 2016; Newell et al. 2020). Markard et al. (2012: 959) describe work on sustainability transitions as focused on “institutional, organizational, technical, social, and political aspects of far-reaching changes in existing socio-technical systems [...] which are related to more sustainable or environmentally friendly modes of production and consumption.” Discussions around green and just transitions are prominent but variegated spanning from technocentric approaches to justice and equity driven ones (e.g. Newell and Mulvaney 2013). A strong emphasis has been placed on the role of technological innovation and ICT through increased digitalization which are seen as key to resource efficiencies at multiple scales. For example, the central actions of the EU Green Deal include investments in environmentally-friendly technologies, smart transport, and supporting industry innovation (European Commission 2019). At the urban scale, smart urbanism has been promoted as a flexible and responsive means to address challenges of urban development, climate change and social inequality (Martin et al. 2019). For example, resource efficiencies are to be achieved by linking households, buildings, appliances and urban services in real time through ICT.

At the same time, major institutions have emphasized the need to understand the social and economic impact and implications of the increased use of automation technologies, artificial intelligence, and platform-based economies to identify challenges and potentials to realize green and just transitions (e.g., WBGU 2019; OECD 2020). The actual social implications of these shifts towards environmentally friendly smart technologies, however, are often poorly understood (Schor and Attwood-Charles 2017).

In respect to environmental sustainability, Martin et al. (2018) criticize insufficient evidence of efficiency gains through smart urbanism, the risk of greenwashing, and the lack of addressing central problems such as consumer culture. Graham and Marvin (2001)

describe the uneven distribution of individual ability to access central services, even digital infrastructures, in urban spaces and the resulting potential disadvantages to particular social groups or individuals (e.g., by paywalls, uneven internet access, required means of mobility, privatized spaces, language barriers, or other skills-related impediments). This contradiction between the allegedly egalitarian and inclusive ‘platform’ or ‘sharing’ technologies and their selective availability and use has become increasingly criticized (Martin et al. 2018; Bauriedl and Strüver 2017). In addition, under the umbrella of what is promoted as the ‘Smart City’, the implications of Artificial Intelligence (AI) and ‘deep learning approaches’ are hardly reflected in political debates, particularly who will be able to use and share these technological advancements, the existing gendered and racist bias within (Green 2019), who will and will not profit from them, who may be exploited by them, and how these developments will re-shape the socio-economic geography of our cities and regions (Bauriedl and Strüver 2017). Work on ‘just transitions’ that emphasizes the need for justice and equity driven change brings these frequently neglected social and spatial justice dimensions into focus (Newell and Mulvaney 2013; Schwanen 2020; Heffron and McCauley 2019). Green and just transitions hence capture endeavours that seek to re-balance arguably biased sustainability thinking and strategies from an emphasis on ecological and economic objectives (see above) to one that emphasizes social needs and welfare, participation, inclusion and diversity as objectives within the limits of supporting ecosystems (e.g. Agyeman 2013). The following section discusses how just and green transitions have been proposed through sharing economies.

#### 2.2 Sharing economies

Sharing practices have existed for a long time (e.g. in the form of communal resources, commoning and cooperatives), but with increasingly varied meanings (e.g. taking the form of private corporate endeavours) (Belk 2010, 2014). We hence refer to sharing economies in plural to highlight the heterogeneity in practices. The recent rise of sharing economies, collaborative economies, or collaborative consumption has been facilitated by ICT and the internet to allow connecting and sharing beyond family, friends and communities (Basselier et al. 2018). The shift in the internet (Web 1.0) from an information consumption or contribution platform where content was generated

by providers to existing websites (Web 2.0), where content is user-generated and interactive, has enabled the rise of variegated digitally mediated sharing economies (Geissinger et al. 2019). These allow, for example, sharing of knowledge (e.g., Wikipedia), listing of items and services people wish to share or pass on to others (e.g., TaskRabbit, Airbnb, Couchsurfing), or as systems that rely on smart technologies, such as smartphones, for real-time interaction by users in shared spaces (e.g., car- and bike-sharing) (Botsman and Rogers 2011).

Definitions of the sharing economy vary quite significantly. Basselier et al. (2018: 58) understand the sharing economy to only include “activities facilitated by digital platforms which enable individuals to share or exchange goods, services, resources, or skills which were previously unused or underused” but exclude platforms that are dominated by market exchanges. Where a central organization provides shared use of goods (i.e., renting or membership access), which Benoit et al. (2017) refer to as a dyadic relationship, would per this definition be excluded, while digital platforms mediating and matching services or goods (named triadic), would be included. Basing this exclusion or a dichotomy based on ‘underuse’ is questionable however, given that the sharing economy has likely resulted in increased individual purchasing of goods to provide service within the sharing economy (Ward et al. 2021), mimicking that of rental enterprises. It is reasonable therefore that other studies are more encompassing (Geissinger et al. 2019; BMWi 2018).

In terms of sustainability transitions, sharing economies have been framed in multiple ways: as a more environmentally sustainable form of production and consumption, an economic opportunity but also as more equitable and decentralized economies (Martin 2016; Basselier et al. 2018). We will discuss these three aspects – ecological, economic and social – in turn. A number of contributions have focused on assessing or highlighting the potential for environmental sustainability (e.g., Geissinger et al. 2019; Botsman and Rogers 2011), arguing that sharing leads to reduction of consumption-induced resource depletion. The often mentioned example of the rarely used power drill owned by many households illustrates the point that sharing underused items can, when scaled more widely, result in increased access for those without and significant reductions of production-led resource use, space saving, and household expenditure. Hinrichs (2013) identifies a number of sustainability perspectives includ-

ing the relevance of materialist and postmaterialist values on consumer practices, the influence of environmental and sustainability awareness on changing habits and practices, and changed understandings of growth through quality of life. While there are common expectations to gain resource efficiencies through digitalization and sharing, outcomes vary between sectors (e.g., Harris et al. 2021). Criticism of ride-hailing services, for example, includes increased vehicle purchase, miles travelled and a shift away from public transit (Henaio and Marshall 2018; Ngo et al. 2021; Schaller 2021; Ward et al. 2021). A study of Swedish web-based sharing platforms counted only around 30% of platforms identifying themselves as sustainable of which most were small or new platforms (Geissinger et al. 2019).

While sharing economies have been heralded as one pathway towards climate neutrality, people participate in the sharing economy because of economic benefits and enjoyment, but, supporting the belief-practices gap, intrinsic good is a weak motivator (Hamari et al. 2016). A study by Hartl et al. (2018) on carsharing shows that while users consider peer-to-peer carsharing to be environmentally sustainable, their main arguments relate to financial considerations. Conversely, perhaps given the generally low costs and more privileged users, for bikeshare convenience is the main driver above environmental benefits and savings (Fishman 2015). Minami et al. (2021) describe socially mediated sharing as more driven by experiential value while triadic platform sharing is driven by extrinsic factors, such as economic benefit. This may suggest that triadic platforms exploit the appeal of social sharing. Meanwhile, if social sharing practices are being replaced by digitally mediated economic rewards (Hamari et al. 2016), this appears to be the commodification of social interaction.

Sharing economies allow for a range of new business models and activities. They facilitate processes of prosumption which blur the lines between consumption and production with contested outcomes (Ritzer and Jurgenson 2010; Zwick et al. 2008). As part of sharing and collaborative consumption, consumers fulfil functions that were previously associated with paid work. This includes writing content for Wikipedia or product reviews which ultimately help the retailer to market their products (Eden 2017). By engaging with digitalized platforms users also provide personal information that can be sold and used to optimize advertisement and other business strategies.

New challenges and problems arise where sharing economies are opportunistically used to increase economic interests of specific actor groups. Most prominently, Airbnb and Uber have been used to illustrate how alternative conceptions of the sharing economy have been co-opted by corporate interests (*Benítez-Aurioles and Tussyadiah 2020; Horn and Merante 2017; Wachsmuth and Weisler 2018*). In respect to Uber and other gig economies, criticism has in particular related to the casualisation of labour through precarious work (*Zwick 2018; Martin 2016*). There is hence a risk that professionalism or platform capitalism undermines and transforms the original idea of the sharing economy as interests are shifted away from collaborative provisioning towards private economic interest.

While platform-based economies have become criticized as new expressions of neoliberal capitalism (*Martin 2016*), there are also a growing number of urban collaborative and community-based initiatives that go beyond “techno-fixes and smart digital solutions on their own” (*Chatterton 2019: 2*). They seek to deliver more profound transformations based on civic innovations, in which digital technologies are harnessed from a social and environmental justice perspective to address inequalities and exclusions through just and green transitions from the bottom up. Similarly, the literature on diverse economies (*Gibson-Graham 2008*) and just sustainabilities (*Agyeman 2013*) emphasize bottom-up processes and acknowledge the diversity of activities with transformative potential. Central here are questions of distribution of benefits, accessibility and inclusion which in the environmental justice literature is mostly framed through the notion of distributive justice (*Walker 2012*).

Distributive justice focuses on the equal distribution of environmental goods (e.g. resources) and protection from environmental harm. In respect to sharing economies, the questions we seek to address relate to the distribution, accessibility, and use-benefits of shared goods, services and less tangible goods in particular through stated intent and spatial offers. Digital platforms are seen as enabling connectivity and exchange between individuals overcoming physical and other constraints (e.g., geographic proximity, social class, gender, age, ethnicity). Despite being digital, access to the internet is not quite ubiquitous, particularly where cell phones with data plans are required. Questions arise as to who has the resources and capabilities to harness smart technologies towards sharing

objectives. Further, the sharing economy frequently consists of digitally facilitated interaction of tangible objects which are spatially bound. This means a lot of sharing initiatives constrain use upon the location of the individual, the shared good, and the former’s ability to reach the latter. Space is however (increasingly) exclusive. *Thebault-Spieker et al. (2017)* highlight how ride-hailing and TaskRabbit offer higher quality service at lower cost to areas of higher socio-economic status and higher density. Some sharing economies provide services that only people in certain areas have the ability or need to use (e.g., proximity to food redistribution points, or BSS stations in certain business or high-income residential areas), have the skills or resources to participate (e.g., can cycle or ski or have the accompanying gear to do so), or can access due to economic and other barriers (e.g., racial and cultural). Community and social interaction hold or enable additional value beyond improvements to quality of life, such as creating innovation (*Longhurst 2015*). This evokes governance questions regarding whether some forms of sharing should be discouraged or facilitated, particularly when considering how marginalized groups may suffer as a result.

As outlined above, exclusions and inequalities may also be linked to benefits resulting from facilitating or enabling sharing. Corporatization and private profiteering from sharing economies may not only be exclusive but also disadvantage others as illustrated above. Operationalization through community or non-profit initiatives are often considered to be more inclusive. In the field of food studies, this is reflected in studies on community food projects and community supported agriculture (*Ramsden 2021; Morrow 2019*). Justice dimensions are also addressed in the energy and mobilities literature (*Schwanen 2020; Sheller 2018; Williams and Doyon 2019*). Looking at transport justice in London, *Schwanen (2020)* argues how justice is challenged by the difficulty to consider different transport-related needs, values, understandings and customs. Profit-oriented sharing economies have the tendency to marginalize specific groups as they are focused on customers or peers who have the necessary resources and capabilities to engage. *Schwanen (2020: 133)* identifies grassroots initiatives, based on sharing of knowledge, skills, and experiences, such as “bicycle-riding, -mechanics instruction, bicycle provision, collective rides and group walks” as those who cater towards specific and disadvantaged groups.

To summarize, significant attention has been paid to the potential of digitalization towards sustainability transitions but with a strong focus on technocentric and efficiency perspectives neglecting social and justice dimensions. The literature on just transitions and alternative economies has emphasized social sustainability dimensions but only marginally focused on digitally mediated sharing economies. In the following, we seek to assess aspects of distributive justice to help fill this gap. We do so with a focus on stated intent/objectives, spatial distribution and operationalization of sharing economies.

### 3. Methods

Our discussion is based on an online exploratory study of sharing economies in the Luxembourgish-German border region (*Fig. 1*). Exploratory studies are suitable where fields of inquiry are developing. They allow first insights and provide a basis for further analysis (*Stebbins 2001*). Websites are important sources and 'field' sites for research but are not without challenges (*McMillan 2000; Wilkinson and von Benzon 2021*). For example, online information can change quickly just as websites (and sharing initiatives) are ephemeral. The approach builds up on comparable work that seeks to render the diversity of sharing initiatives visible (e.g. *Davies et al. 2017a; Geissinger et al. 2019*). The region was chosen due to its established and institutionalized cross-border cooperation within the wider Greater Region. While the region focuses on solving common challenges, improving quality of life and integration in the region, and developing a shared regional identity, the region is marked by different socioeconomic and national (i.e. political and cultural) contexts. Mobility and residential injustice are pervasive here, as in other free-market regions of high income and wealth. A focus on the region also brings peripheries and medium and small cities into the focus of (urban) sharing economies as research to date has predominantly focused on larger cities (e.g. *Davies et al. 2017a*). Additionally, familiarity with the region, established networks and previous research experience facilitated the research process.

The database was constructed as an exploratory study through online searches using an emergent research approach. Additionally, unstructured conversations with representatives of participants in local initiatives through already established contacts helped us to identify further examples of sharing initi-

atives following the logic of opportunistic or snowball approaches in research. This emergent approach allowed us to add search terms and adjust search strategies over time as unanticipated examples and clues were discovered in the process. Data collection was conducted in German as this is the official language in both countries. As an exploratory study, the database is not representative and is limited in its explanatory power.

Based on relevance to our research question of sharing economies' intents and practices, case studies had to meet the three following criteria. First, sharing had to be the primary intent of the initiative, which we defined as augmenting or replacing existing usage through more efficient usage by sharing, renting, re-using and selling goods, services or other less tangible aspects. This excluded conventional renting such as hotel rooms and car rental which do not seek to augment or replace existing usage. Second, initiatives had to be accessible within the defined study area. In the case of local appropriation of national or international sharing schemes and models, the scheme was identified as one case regardless of the multitude of local initiatives under the same branding. In the case of food sharing, the national umbrella organization for community fridges and food baskets (*foodsharing.de*), for example, was counted once rather than each physical location. Third, examples needed to have a digital presence, beyond being a constraint of our search methodology but as part of the research design of digitalization impacts.

Based on these search criteria, we identified 130 sharing initiatives. We coded within the identified cases the sector or area of the activity (mobility, food, clothing, various goods, lodging, workspace, and activities and special interests), the spatial scale (local, regional, national, international), whether sharing initiatives had a tangible presence within the study area, the type of digital platform (e.g., informative vs. exchange between peers), stated intent differentiating between environmental and social benefits, digital access medium (e.g., website, smartphone application), and ownership (e.g., private, non-profit, public administration). We then, building on the previous selection criteria, only further studied those case studies that shared a tangible presence resulting in a list of 94 cases. This eliminated exchange platforms for various goods and clothing that relied on shipping. The following analysis presents findings from an analysis of website content conducted in German as well as

French and English where necessary. We first present some general findings based on the 94 cases before we discuss the examples of mobility and food sharing in more detail.

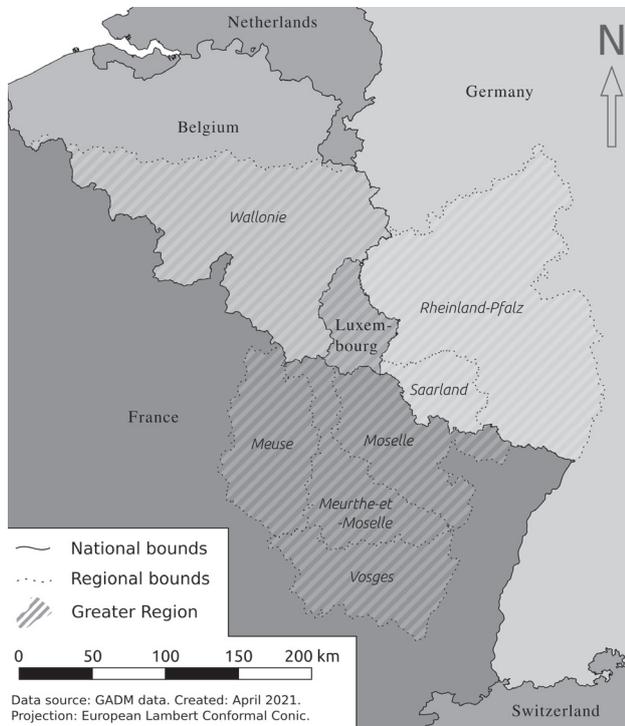


Fig. 1 The Greater Region, of which our study area focuses on the Luxembourgish and German regions. Source: own drawing

#### 4. Results

We outline here the frictions between digitalization and sharing based on examples from the exploratory database. As discussed above, these relate to overcoming geographic constraints and addressing spatial injustices as well as protecting sharing objectives (e.g. against platform capitalism). We do so through a content analysis of the identified websites related to their stated intent or objectives, spatial distribution and operationalization or organization.

The 94 sharing initiatives of the exploratory database were categorized by sector (Table 1). The largest number was related to mobility (n=43) including car, caravan, ride, bike and e-scooter sharing as well as a freight platform followed by various goods which included primarily peer-to-peer platforms supporting the sharing, exchange or selling of a wide range of goods (n=21). Activities and special interests sharing (n=12) involved, for example, gardening and sports activities frequently supported through Facebook pages. Sharing of workspace, food and lodging all include less than ten examples. Most of the sharing economies were privately owned (n=55) of which the majority fell into the mobility sector, about a third (n=35) were not for profit initiatives (formal and informal) with the rest being public enterprises. The privately owned sharing economies included a number of examples that achieved or aimed at achieving sustainability certification including B Corporation, Blauer Engel, Gemeinwohlökonomie and carbon neutral business.

In terms of stated intent, environmental and/or social references were only found on 45 of the 93 platforms. In their study on sharing economies in Sweden which also analyzed online content, Geissinger et al. (2018) identified only 29% of their 121 platforms as presenting themselves as sustainability oriented. Both numbers suggest that many sharing economies may not be motivated by altruism and community concern (Geissinger et al. 2018; Hamari et al. 2016). Amongst the 45 platforms we identified, most environmental statements in the form of objectives or missions remained very vague. Vague and nonspecific references included adjectives such as ‘sustainable’, ‘environmentally friendly’, ‘resource saving’ and ‘ecological’ to describe the sharing offer without including further details. Examples with vague descriptors were also often indistinguishable from comparable sharing initiatives which did not feature any references to sustainability intent on their websites. For example, only half of the

Table 1 Sharing economies in the case study region. Source: own elaboration

Sector	Number of sharing initiatives	Social intent	Environmental intent	Digital mediation platform
Mobility	43	8	26	19
Various goods	21	5	8	16
Activities & special interests	12	4	4	10
Workspace	8	3	0	2
Food	7	5	7	3
Lodging	3	3	0	2
Total	94	28	45	52

ride sharing platforms mentioned CO<sub>2</sub> reductions. Yet, those with reference to sustainability intent and those without appeared to operate in a similar way. While there may be resulting sustainability benefits, these are less likely to be core objectives. The most common and more specific intent related to reduction in waste and in consumption through sharing or redistribution of food and goods. The majority of websites stating environmental intent were privately owned initiatives while those identifying social sustainability objectives were almost half run as non-profit organizations or community endeavours. In terms of social sustainability objectives, stated intents were more specific and varied. These included inclusivity with the aim to connect participants (or users) within neighbourhoods, across generations and cultures but also in terms of ensuring equality and diversity within the workforce of corporate sharing initiatives. Providing a platform for like-minded people was a more frequent descriptor of initiatives focused around special interests (e.g. hacking and making). Other objectives involved aspects of empowerment and inclusion through knowledge sharing, education and democratic decision making.

Only two sectors, mobility and food, had more than half of sharing economies stating an environmental intent. Food sharing also had the highest proportion of stated social intent. As both sectors rely on a high level of spatial proximity for sharing, we focus on these two sectors to assess stated intents against organizational and operational structures.

### 4.1 Mobility sharing

The 43 mobility sharing initiatives were coded according to their mobility offer, actor types and relationships, and spatial constraint, among a few others. Some initiatives have likely been missed due to the increasing tendency of micro-mobility coverage areas only being provided through smartphone app registration and their ephemeral nature in terms of their short existence or shifting geographical presence.

The distribution and characteristics of mobility sharing economies differ in the study area. Beyond established taxi services, ride-hailing is not present in our study area due to multiple factors: Luxembourgish and German policy constrain this model; the region lacks larger cities; and some taxi companies are making booking easier through apps (e.g., WebTaxi). A diversity of shared use cycling models (Petzer et al.

2020) have not yet appeared in the region, likely due to the area being practically and politically car-centric and due to insufficient housing supply at centres of employment (e.g., Luxembourg City).

Within our study area micro-mobility consists exclusively of centralized short-term renting (dyadic), while ride sharing, for intercity or commuting trips, is only shared between peers (triadic). Ride sharing is unique for having two instances mediated through non-specialized platforms (Facebook groups). Car sharing, unlike other types, is divided between dyadic and triadic. This distribution of offers is again representative of the region's car dominance coupled with, or caused by, the presence of smaller agglomerations.

While some services provide points to take and return vehicles (e.g., stadtmobil CarSharing), others, particularly micro-mobility, allow one-way trips between stations (e.g., vel'OH!) or areas (e.g., Wind e-scooters). In the latter case, permissible zones within public spaces to return or park vehicles (without penalty) are defined by maps with the service apps. Accessing digital platforms is typically mediated through websites and smartphone apps, with interaction with the physical mode of transport requiring either an app or smart-card (e.g., BSS). Again, the more corporatized initiatives, which in our study area are more dyadic, tend to require interaction through apps, while triadic systems, particularly ridesharing, are website accessible in parallel with some apps.

A majority of the mobility case studies are private with a small number being nonprofits or public. Some ride-sharing services have unclear business models suggesting data collection may be a revenue source. Similar behaviour has been observed for BSS (*van Waes et al. 2018*) and (previously) the fitness tracking app Strava, to gather and sell location and path data.

Most mobility sharing case studies are for-profit operations and only a few have clear environmental or social good intents. The exception is the non-profit BSS Vël'Ok provider (CIGL Esch) which has the goals "to help people without employment find work again and reintegrate themselves in social society" and "to develop services that respond to the unsatisfied needs of the population" (CIGL Esch 2021: para. 2). This is operationalized through their hiring practices and not as a result of the sharing practices. While Call-a-bike does promote the "green mobility" benefits of their BSS, stating you can "actively contribute to reducing

pollution levels ... zero emission ... [and] fewer cars on the road" (*Call a bike* 2021: para. 1), they also highlight the convenience of their other offers such as carshare. Carsharing providers, some of which also provide other mobility modes, generally highlighted their intents in providing convenience (e.g., Moovee, Getaround), reduce car ownership (e.g., SnappCar), reduce environmental pollution (e.g., Getaround) or provide "more space in the city" (*Cambio* 2021: para. 4). It's not clear how their services aim to provide their desired benefits other than depending on sharing practices replacing personal ownership. Within the shared mobility cases, stated environmental objectives regularly focus on impacts of individual change, not society as a whole. Shared mobility outcomes, even with significant adoption, ignore latent demand aspects that undermine environmental impacts (*Hymel* 2019; *Orsi* 2021).

We now focus on differences between two bicycle sharing systems (BSS) in Luxembourg to illustrate how identical sharing models with different intents can have alternative benefits. Luxembourg City's first BSS, named vel'OH!, was subcontracted to JCDecaux, the outdoor advertising company, in 2008 with a 10-year contract partially subsidized by advertising panels. The system had roughly 70 stations (and equivalent advertising billboards) (*JCDecaux* 2015) and 700 mechanical bikes in service, covering 28 km<sup>2</sup> of an increasingly economically exclusive area. Pricing is extremely accessible at €15 (later raised to €18) for a year, allowing an unlimited number of 30-minute trips. Riders incur increasing costs for every additional 30 minutes. Contract renewal in 2018 brought replacement of mechanical bikes with electric bicycles and removal of the associated advertising. Previously, the BSS intent had been to "target active and trendy" demographics for advertising (*JCDecaux* 2015: para. 6).

In 2009 a non-profit organization with funding from the local commune, launched the Vël'OK BSS initiative in Esch, a historically working class region of southern Luxembourg. This BSS aims to reduce carbon emissions and, through its hiring, train and reintroduce the unemployed in work and society. The system expanded to eight neighbouring communes in 2015 and transitioned to electric bicycles. The system is free to join and use, with usage limits of two hours per trip. Members are contacted if they exceed the usage limit, there is no penalty.

While both systems have expanded since then, vel'OH! to 97 stations and Vël'OK to 117 stations (but with a rather low density of stations and half the number of bicycles), they continue to have relatively low usage rates compared to other systems (*Médard de Chardon et al.* 2017), with bicycles being used less than once per day on average annually. Both systems, now mainly subsidized by their communes, have a similar number of registered members. While both systems provide a pro-cycling message, associated with environmental benefits, it is cycling infrastructure that is a stronger determinant of such outcomes rather than access to bicycles (*Buehler et al.* 2016). Few environmental impacts are likely based on the number of trips and associated emissions of management vehicles (*Fishman et al.* 2014). Advertising for both initiatives have promoted cars at some point, contradicting associations of environmental benefits (*Médard de Chardon* 2019).

Despite both BSS offering the same micro-mobility service, one has a social intent that is satisfied through their organizational practices. Vël'OK's social reintegration practice is a concrete benefit, while the environmental benefits of BSS are disputed. In the sharing economies mobility domain we see identical services offered, in some cases associated with car reduction intentions. The inconsistency between such claims of environmental benefits suggests that they are opportunistic and, based on principles of mobility, only plausible but likely of limited impact. Additionally, the latter system serves a lower income area, making it more likely deprived income groups can benefit.

### 4.2 Food sharing

We coded cases as food sharing initiatives that were restricted to the growing and sharing of edible goods but excluded platforms that facilitated exchange of food amongst other items. The seven food sharing initiatives identified in the region included two peer-to-peer food sharing platforms (Olio, UXA), one platform redistributing surplus restaurant and supermarket meals and perishable food items (Too Good To Go), two community fridge/food basket initiatives relying solely on informative websites (foodsharing.de and foodsharing.lu), one community-supported food growing initiative (Solawi), and a crowd-sourced map locating edible plants in support of foraging (Mundraub) (*Table 2*).

Table 2 Food sharing initiatives in the study area. Source: own elaboration

Food sharing initiatives	UXA, Olio	Too Good to go	Foodsharing Luxembourg, Foodsharing Germany	Solawi	Mundraub
<b>Type</b>	P2P surplus food exchange	Surplus restaurant meal share	Community fridges / food baskets for surplus food redistribution	Community garden for food production	crowdsourced mapping of edible plants to promote foraging
<b>Ownership</b>	private	private	non-profit (registered association)	non-profit (registered association)	non-profit (social enterprise)
<b>Spatial constraint - area of offer and access to service</b>	Based on user location (individuals), determined by spatial proximity	Based on supplier location (private business incl. restaurants & grocery stores)	Fixed through infrastructure (fridges) or identified exchange points (proximity to sharers), various locations in the German study region & Luxembourg	Fixed through physical location of agriculture plot, various locations in the Germany study region	Based on user input and location
<b>Digital tool</b>	App supporting user exchange (triadic)	App providing real time information	Informative website, chat forum	Informative website	App for crowdsourced mapping
<b>Stated environmental objective</b>	Reduce food waste	Reduce food waste, Certified B Corporation	Reduce food waste	Sustainable agriculture	Understanding of seasonal food and edible landscape, build regional awareness
<b>Stated social objective</b>	Explicitly inclusive supporting diversity (Olio)	Certified B Corporation	Collaborative initiative, sustainability education (GER)	Community building, solidarity, democratic decision-making	Community building, connect people with shared interests

In terms of tangible assets and compared to sharing of other goods, food sharing relies strongly on spatial proximity due to the perishable nature of food items and meals. All cases consist of nationally or internationally established models, networks or platforms that rely on tangible assets through local participation and appropriation. UXA, Olio, Too Good To Go and Mundraub depend on participation of individuals and businesses and are open and inclusive allowing any interested user to participate. Foodsharing involves direct redistribution through the peer network, the establishment of community fridges in physical locations and in collaboration with local grocery stores

and/or individual donations to identify surplus produce. While community fridges rely on the concept of open-access commons which are available to everyone (Morrow 2019), access is solely constrained by physical availability, accessibility, and information thereof. In Luxembourg and Germany, the initiative is carried by registered associations that rely on local volunteers. The community-supported food growing initiative (Solawi) is also a registered association formed at the individual locations and based on membership. As such, spatial constraints are shaped by participation and engagement of citizens and (non-)profit institutions. The higher the number of users, the higher the

opportunities to match users across space as already discussed in the case of mobility sharing. The example of Too Good To Go illustrates the uneven access through user location. Participating businesses in many cities are largely located in the city centre, providing discounted food before closing, making it harder for users in the outskirts to participate or benefit. The same geographic constraints apply to the location of community fridges. While population, service and good density increase the number of potential users, sharing participation and support is also driven by the local context. *Longhurst (2015)*, for example, argues that more fertile contexts can be characterized by a high density of alternative institutions and structures linked to certain values and norms that question the status quo. These alternative milieux result in more active citizens who share similar values and norms increasing the number of users as well as initiators anchoring national or international models locally. As a result and in contrast to mobility sharing, smaller communities may feature higher numbers of sharing initiatives and users than regions with higher population density due to higher levels of community organization.

Food sharing is often associated with generating environmental and social benefits (see *Dixon 2010* and *Ramsden 2021* on community gardening and food projects) which is reflected in the stated intent of identified cases in our exploratory study. All initiatives stated an environmental objective. Environmental objectives included two different foci. The five food exchange and food sharing initiatives (Uxa, Olio, Too Good To Go, Foodsharing.de, and Foodsharing.lu) emphasized the objective to reduce food waste by redirection of surplus and unused goods. Progress towards the goal is in some cases documented on the website but data availability relies on volunteers' records (e.g., see [foodsharing.de/statistik](https://www.foodsharing.de/statistik)). The community gardening (Solawi) and foraging (Mundraub) initiatives emphasize enhanced connections with nature through sustainable agriculture and "establishing an understanding of regional and seasonal food" and our "edible landscape" (*Mundraub 2021*: para. 1, own translation). The latter seek to change food practices themselves through local food production and changing eating habits towards seasonal produce. In terms of social benefits, the two food sharing initiatives are also the only ones identifying community building as a social objective on their website. While the German foodsharing.de initiative, using community fridges and food baskets, highlights the collaborative nature

of the endeavour and states the objective of sustainability education, the Luxembourgish Foodsharing.lu website only emphasizes food waste reduction objectives. Yet, they use similar structures to operationalize the initiative. Both Olio and Too Good To Go identify social objectives through their business models, similarly to Vël'OK, through commitment to inclusivity and diversity and in the case of Too Good to Go as a Certified B Corporation, placing social and environmental benefits at the core of business operations.

In comparison to mobility sharing, food sharing is less likely to be driven by convenience or time efficiency. Foodsharing, for example, relies on significant time commitment from volunteers to pick up surplus produce and bring it to identified redistribution points. Beneficiaries receive free produce but with limited choice. Redistribution points such as community fridges (ranging from shelves to cooled fridges) also require maintenance and cleaning. Similarly, peer-to-peer food exchange or foraging offer less choice and convenience compared to our usual shopping experience. Instead, initiatives are supported by like-minded volunteers and members who share goals but also see potential social benefits whether through relationship building with peers, community organization or self-fulfilment.

## 5. Discussion

Our findings suggest that local and regional sharing initiatives mostly use established models. These may involve adoption and use of specific apps and schemes at the local level (e.g., Olio, Too Good To Go, Mundraub) or the appropriation of sharing ideas which are translated into localized models (e.g., foodsharing.lu, Vël'OK). Whether and how models are being adopted and changed at the local scale then depends on the enabling actors involved such as non-profit, private companies, municipal actors and individuals as illustrated in the discussed examples above and on their operationalization. In the case of mobility sharing, these involve largely private companies while the food sharing sector is dominated by not for profit initiatives. It is therefore *how* sharing templates are being used, adapted and implemented that vary outcomes and potential benefits.

Convenience plays a different role in different types of sharing economies. While convenience in bikesharing is the main driver (*Fishman 2015*), food sharing may

require significant commitment in particular in terms of time from users redistributing surplus produce. Time commitment, financial benefits and convenience for users vary across sharing economy sectors and sharing models. Additionally, matches may not always be optimized whether across space, time or in terms of what goods or services are available. While (market exchange) car sharing between individuals appears currently less convenient than that of dyadic digital platforms, perhaps that necessary social interaction has important social value that should be promoted or protected.

Objectives expressed through stated social and environmental intent, or lack thereof, provide information on stated priorities. Supporting previous studies (Geissinger et al. 2018), a large portion of sharing economies in our exploratory database do not include any stated social and environmental objectives (Fig. 2). While these sharing economies may generate social and/or environmental benefits (e.g., Harris et al. 2021), profit generation as discussed in the literature of corporatization of sharing initiatives are key. However, where stated (environmental and/or social) sustainability intent is provided, this may primarily be used as a marketing strategy rather than for intrinsic benefits. Where local government approval is necessary, stated intents of social and environmental outcomes may be necessities for policy makers and providers (While et al. 2010), regardless of outcome realism, as found in public contract bidding (White et al. 2020). Similar to that of environmental sustainability, many shared use services stretch the sharing

nomenclature, using ‘sharing’ to be associated with positive connotations (Minami et al. 2021; Belk 2014). Sharing practices do not provide social benefits by themselves. Rather, more in-depth analysis of selected examples suggests that operationalization through organizational structures and principles are needed to ensure objectives are being met (e.g. Affolderbach and Krueger 2017 on just entrepreneurship).

The Luxembourg bikesharing examples illustrate that how stated intent is operationalized makes a significant difference to generated benefits. It is the initiative’s operations that provide equity benefits more clearly than any (shared) mobility enabled justice or environmental benefits. Hence sharing initiatives, even though seemingly similar at first glance, do not imply similar intents nor potential impacts as models and ideas may be appropriated in very different ways. Sustainability benefits hence may be attached to the organization or business model, rather than in the act of sharing (as illustrated in Fig. 2), as in the cases of Vël’OK and Too Good To Go. Benefits are present independently of the enabling institution’s acts of sharing, through work, interaction with others, sharing of goals, and shared identity (e.g., as a foodsaver).

While digitalization offers new possibilities in organizing disenfranchised groups within virtual spaces, propositions sharing tangible goods face structurally uneven (urban) spaces as barriers to such intents. The sharing economy’s tangible assets are spatially distributed in a variety of ways that may, for example, target economic efficiency or spatial coverage. The quantity of shared use initiatives in a region is dependent on the participation supply, infrequency of use of the good by the owner (making sharing possible), desire or belief in sharing, and trust (now facilitated and measured by credit cards and their companies) (Botsman and Rogers 2011), among additional factors. Areas of denser populations are more able to provide peer-to-peer sharing and are likewise more lucrative for exploitation by dyadic operators. It appears dyadic organizations, typically larger corporations, are positioned more centrally, particularly around mobility hubs, to either provide micromobility or automobility services in collaboration (or not) with municipalities. Triadic services tend to be more dispersed, but due to population density are still more common in urban areas. This likely explains why triadic offers appear to be more spatially diverse than dyadic ones. The examples of food sharing, however, highlight how alternative milieus can equally act as seedbeds for sharing economies.



Fig. 2 Sharing economies initiatives often lead to the typical economic practices. Core just sustainability intents can be intrinsic ensuring some desired benefits. Source: own drawing

### 6. Conclusion

Our objective was to explore sharing practices within our case study region with an emphasis on social sustainability dimensions focusing on stated intents and operationalization. Findings suggest that a large majority of sharing economies consist of local adoption or appropriation of existing sharing models, with the highest number related to mobility. Of the 94 identified examples, 48% state environmental and 30% social objectives on their website. Potential sustainability benefits are, however, dependent on how sharing is operationalized. Insights from the secondary data analysis suggest that benefits will be generated through models of operation rather than through the act of sharing (*Fig. 2*). Forms of operationalization through non-profit or community initiatives or clear anchoring in business models (e.g. through certification) which protect stated objectives differ between sectors and are less common than references to social and/or environmental intent. While labelled as sharing economy, many initiatives represent digitally enabled renting models (particularly mobility sharing) rather than sharing between peers.

While environmental and social benefits are commonly stated, some sharing initiatives' goals promote individual behaviour change benefits. However, it is likely that other individuals replace or reproduce impacts, resulting in little change at the societal level. Most sharing economies were either privately owned or non-profit organizations. Municipalities appear to be relatively absent from mediating and regulating local sharing economies considering associated benefits for local communities. Municipal coordination can help pair intent with the plurality of necessary changes to provide desired results. Like libraries and their book browsing, reservation, and queuing system, the digitalization of sharing, when municipally managed, can have enormous benefits. Without policy action or co-ordination to replace, for example mobility modal changes with alternative land use priorities, efficiency gains through sharing are unlikely to provide net gains.

This study is limited by its exploratory character and its constraints to a secondary, desk-based analysis. While this helps make the diversity of sharing economies visible, it can only be a first step in understanding the role of sharing economies within just transitions. We hence echo *Davies et al. (2017b)* that there is a need for rich, qualitative research on sharing initia-

tives that assess actual social benefits perceived and experienced by users, organizers and other relevant institutions. Specifically, this needs to involve qualitative and quantitative inquiries of individuals' needs, their ability and motivation to participate in sharing economies as well as economic benefits and less tangible benefits through community building, social networking, sense of belonging and empowerment involving in depth case studies of initiatives as well as larger scale questionnaire studies. Similarly, further research is needed that focuses on those who are not engaging with sharing economies to identify possible barriers. This also involves a better understanding of the role of digital tools in facilitating access, inclusion and participation.

### Acknowledgements

We thank two anonymous reviewers as well as Christian Schulz for their valuable comments on a first version of the paper as well as Katharina Dietze for research assistance constructing the exploratory database.

### References

- Affolderbach, J. and C. Schulz* 2016: Mobile transitions: Exploring synergies for urban sustainability research. – *Urban Studies* **53** (9): 1942-1957, doi:10.1177/0042098015583784
- Affolderbach, J. and R. Krueger* 2017: 'Just' ecopreneurs: Re-conceptualizing green transitions and entrepreneurship. – *Local Environment* **22** (4): 410-423, doi:10.1080/13549839.2016.1210591
- Agyeman, J.* 2013: Introducing just sustainabilities: Policy, planning and practice. – London/New York
- Basselier R., G. Langenus and L. Walravens* 2018: The rise of the sharing economy. – *Economic Review* **3**: 57-78
- Bauriedl S. and A. Strüver* 2017: Smarte Städte. Digitalisierte urbane Infrastrukturen und ihre Subjekte als Themenfeld kritischer Stadtforschung. – *sub\urban. Zeitschrift für Kritische Stadtforschung* **5** (1/2): 87-104, doi:10.36900/suburban.v5i1/2.272
- Belk, R.* 2010: Sharing. – *Journal of Consumer Research* **36** (5): 715-734, doi:10.1086/612649
- Belk R.* 2014: You are what you can access: Sharing and collaborative consumption online. – *Journal of business research* **67** (8): 1595-1600, doi:10.1016/j.jbusres.2013.10.001
- Benítez-Aurioles, B. and I. Tussyadiah* 2020: What Airbnb does to the housing market. – *Annals of Tourism Research* **90**:

- 103108, doi:10.1016/j.annals.2020.103108
- BMW* (Bundesministerium für Wirtschaft und Energie) 2018 Sharing Economy im Wirtschaftsraum Deutschland. – Online available at: [https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/sharing-economy-im-wirtschaftsraum-deutschland.pdf?\\_\\_blob=publicationFile&v=3](https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/sharing-economy-im-wirtschaftsraum-deutschland.pdf?__blob=publicationFile&v=3), accessed 2021/09/28
- Botsman, R.* and *R. Rogers* 2011: What's mine is yours: How collaborative consumption is changing the way we live. – London
- Buehler, R., J. Pucher, R. Gerike* and *T. Götschi* 2016: Reducing car dependence in the heart of Europe: lessons from Germany, Austria, and Switzerland. – *Transport Reviews* **37**, 4-28, doi:10.1080/01441647.2016.1177799
- Call a Bike* 2021: Say goodbye to transport troubles. – Online available at: <https://www.callabike.de/en/goodreasons>, accessed 2021/09/21
- Cambio* 2021: Welcome to cambio Germany. – Online available at: <https://www.cambio-carsharing.de/cms/carsharing/en/>, accessed 2021/09/21
- Chatterton, P.* 2019: Unlocking sustainable cities: A manifest for real change. – London
- CIGL Esch* 2021: CIGL ESCH: Vos besoins, nos projets. – Online available at: <https://www.ciglesch.lu/>, accessed 2021/09/21
- Davies, A.R., F. Edwards, B. Marovelli, O. Morrow, M. Rut* and *M. Weymes* 2017a: Making visible: Interrogating the performance of food sharing across 100 urban areas. – *Geoforum* **86**: 136-149, doi:10.1016/j.geoforum.2017.09.007
- Davies, A.R., F. Edwards, B. Marovelli, O. Morrow, M. Rut* and *M. Weymes* 2017b: Creative construction: crafting, negotiating and performing urban food sharing landscapes. – *Area* **49**: 510-518, doi:10.1111/area.12340
- Dixon, J.* 2010: Diverse food economies, multivariant capitalism, and the community dynamic shaping contemporary food systems. – *Community Development Journal* **46**: i20-i35, doi:10.1093/cdj/bsq046
- Eden, S.* 2017: Environmental publics. – Abingdon
- European Commission* 2019: A European Green Deal. – Online available at: [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en#policy-areas](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en#policy-areas), accessed 2021/03/08
- Fishman, E., S. Washington* and *N. Haworth* 2014. Bike share's impact on car use: Evidence from the United States, Great Britain, and Australia. – *Transportation Research Part D: Transport and Environment* **31**: 13-20, doi:10.1016/j.trd.2014.05.013
- Fishman, E.* 2015: Bikeshare: A Review of Recent Literature. – *Transport Reviews* **36**: 92-113, doi:10.1080/01441647.2015.1033036
- Geissinger, A., C. Laurell, C. Öberg* and *C. Sandström* 2019: How sustainable is the sharing economy? On the sustainability connotations of sharing economy platforms. – *Journal of Cleaner Production* **206**: 419-429, doi:10.1016/j.jclepro.2018.09.196
- Gibson-Graham, J.K.* 2008: Diverse economies: performative practices for 'other worlds'. – *Progress in Human Geography* **32** (5): 613-632, doi:10.1177/0309132508090821
- Graham, S.* and *S. Marvin* 2001: Splintering urbanism: networked infrastructures, technological mobilities and the urban condition. – London/New York
- Green, B.* 2019: The Smart Enough City. – Cambridge
- Hamari, J., M. Sjöklint* and *A. Ukkonen* 2016: The sharing economy: Why people participate in collaborative consumption. – *Journal of the Association for Information Science & Technology* **67** (9): 2047-2059, doi:10.1002/asi.23552
- Harris, S., É. Mata, A. Plepys* and *C. Katzeff* 2021: Sharing is daring, but is it sustainable? An assessment of sharing cars, electric tools and offices in Sweden. – *Resources, Conservation and Recycling* **170**: 105583, doi:10.1016/j.resconrec.2021.105583
- Hartl, B., T. Sabitzer, E. Hofmann* and *E. Penz* 2018: "Sustainability is a nice bonus". The role of sustainability in carsharing from a consumer perspective. – *Journal of Cleaner Production* **202**: 88-100, doi:10.1016/j.jclepro.2018.08.138
- Heffron, R.J.* and *D. McCauley* 2019: Beyond energy justice: towards a just transition. – In: *Jaria-Manzano, J.* and *S. Borrás* (eds.): *Research Handbook on Global Climate Constitutionalism*. – Cheltenham: 302-313
- Henao, A.* and *W.E. Marshall* 2019: The impact of ride-hailing on vehicle miles traveled. – *Transportation* **46**: 2173-2194, doi:10.1007/s11116-018-9923-2
- Hinrichs, H.* 2013: Sharing economy: a potential new pathway to sustainability. – *GAIA – Ecological Perspectives for Science and Society* **22** (4): 228-231, doi:10.14512/GAIA.22.4.5
- Horn, K.* and *M. Merante* 2017: Is home sharing driving up rents? Evidence from Airbnb in Boston. – *Journal of Housing Economics* **38**: 14-24, doi:10.1016/j.jhe.2017.08.002
- Hymel, K.* 2019: If you build it, they will drive: Measuring induced demand for vehicle travel in urban areas. – *Transport Policy* **76**: 57-66, doi:10.1016/j.tranpol.2018.12.006
- JCDecaux* 2015: JCDecaux: Offres et Services. – Online available at: <http://www.jcdecaux.lu/offres-et-services/offres-et-services>, accessed 2015/09/11
- Longhurst, N.* 2015: Towards an 'alternative' geography of innovation: Alternative milieu, socio-cognitive protection and sustainability experimentation. – *Environmental Innovation and Societal Transitions* **17**: 183-198, doi:10.1016/j.eist.2014.12.001
- McMillan, S.J.* 2000: The Microscope and the Moving Target: The Challenge of Applying Content Analysis to the World

- Wide Web. – *Journalism and Mass Communication Quarterly* **77** (1): 80-98, doi:10.1177/107769900007700107
- Markard, J., R. Raven and B. Truffer 2012: Sustainability transitions: An emerging field of research and its prospects. – *Research Policy* **41** (6): 955-967, doi:10.1016/j.eist.2014.12.001
- Martin, C.J. 2016: The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism? – *Ecological Economics* **121**: 149-159, doi:10.1016/j.ecolecon.2015.11.027
- Martin C.J., J. Evans and A. Karvonen 2018: Smart and sustainable? Five tensions in the visions and practices of the smart-sustainable city in Europe and North America. – *Technological Forecasting and Social Change* **133**: 269-278, doi:10.1080/13549839.2019.1624701
- Martin, C., J. Evans, A. Karvonen, K. Paskaleva, D. Yang and T. Linjordet 2019: Smart-sustainability: A new urban fix? – *Sustainable Cities and Society* **45**: 640-648, doi:10.1016/j.scs.2018.11.028
- Médard de Chardon, C. 2019: The contradictions of bike-share benefits, purposes and outcomes. – *Transportation research part A: policy and practice* **121**: 401-419, doi:10.1016/j.tra.2019.01.031
- Médard de Chardon, C., G. Caruso and I. Thomas 2017: Bicycle sharing system 'success' determinants. – *Transportation research part A: policy and practice* **100**: 202-214, doi:10.1016/j.tra.2017.04.020
- Minami, A.L., C. Ramos and A.B. Bortoluzzo 2021: Sharing economy versus collaborative consumption: What drives consumers in the new forms of exchange? – *Journal of Business Research* **128**: 124-137, doi:10.1016/j.jbusres.2021.01.035
- Morrow, O. 2019: Sharing food and risk in Berlin's urban food commons. – *Geoforum* **99**: 202-212, doi:10.1016/j.geoforum.2018.09.003
- Mundraub 2021 Über uns. – Online available at: [www.mundraub.org/über-uns](http://www.mundraub.org/über-uns), accessed 2021/11/02
- Newell, P. and D. Mulvaney 2013: The political economy of the 'just transition'. – *The Geographical Journal* **179** (2): 132-140, doi:10.1111/geoj.12008
- Newell, P., M. Paterson and M. Craig 2020: The Politics of Green Transformations: An Introduction to the Special Section. – *New Political Economy* (online first), doi:10.1080/13563467.2020.1810215
- Ngo, N.S., T. Götschi and B.Y. Clark 2021: The effects of ride-hailing services on bus ridership in a medium-sized urban area using micro-level data: Evidence from the Lane Transit District. – *Transport Policy* **105**: 44-53, doi:10.1016/j.tranpol.2021.02.012
- OECD (Organisation for Economic Co-operation and Development) 2020: Beyond Growth: Towards a New Economic Approach. *New Approaches to Economic Challenges*. – Paris
- Orsi, F. 2021: On the sustainability of electric vehicles: What about their impacts on land use? – *Sustainable Cities and Society* **66**: 102680, doi:10.1016/j.scs.2020.102680
- Peck, J. and A. Tickell 2002: Neoliberalizing Space. – *Antipode* **34** (3): 380-404, doi:10.1111/1467-8330.00247
- Petzer, B.J.M., A. Wieczorek and G. Verbong 2020: Cycling as a service assessed from a combined business-model and transitions perspective. – *Environmental Innovation and Societal Transitions* **36**: 255-269, doi:10.1016/j.eist.2019.09.001
- Ramsden, S. 2021: "It's one of the few things that ... pulls us together when the outside world is really tough." Exploring the outcomes and challenges of a charity-led community garden in a disadvantaged English city. – *Local Environment* **26**: 283-296, doi:10.1080/13549839.2021.1886067
- Ritzer, G. and N. Jurgenson 2010: Production, consumption, prosumption: The nature of capitalism in the age of the digital 'prosumer'. – *Journal of Consumer Culture* **10** (1): 13-36, doi:10.1177/1469540509354673
- Schaller, B. 2021: Can sharing a ride make for less traffic? Evidence from Uber and Lyft and implications for cities. – *Transport Policy* **102**: 1-10, doi:10.1016/j.tranpol.2020.12.015
- Schor, J.B. and W. Attwood-Charles 2017: The "sharing" economy: labor, inequality, and social connection on for-profit platforms. – *Sociology Compass* **11** (8): e12493, doi:10.1111/soc4.12493
- Schwanen, T. 2020: Low-Carbon Mobility in London: A Just Transition? – *One Earth* **2** (2): 132-134, doi:10.1016/j.oneear.2020.01.013
- Sheller, M. 2018: Mobility justice: The politics of movement in an age of extremes. – Croydon
- Stebbins, R.A. 2001: *Exploratory Research in the Social Sciences*. – London
- Thebault-Spieker, J., L. Terveen and B. Hecht 2017: Toward a Geographic Understanding of the Sharing Economy: Systemic Biases in UberX and TaskRabbit. *ACM Transactions on Computer-Human Interaction* **24** (3): 21, doi:10.1145/3058499
- van Waes, A., J. Farla, K. Frenken, J.R.J. de Jong and R. Raven 2018: Business model innovation and socio-technical transitions. A new prospective framework with an application to bike sharing. – *Journal of Cleaner Production* **195**: 1300-1312, doi:10.1016/j.jclepro.2018.05.223
- Wachsmuth D. and A. Weisler 2018: Airbnb and the rent gap: Gentrification through the sharing economy. – *Environment and Planning A: Economy and Space* **50** (6): 1147-1170, doi:10.1016/j.jclepro.2018.05.223
- Walker, G. 2010: *Environmental Justice: Concepts, Evidence and Politics*. – London
- Ward, J.W., J.J. Michalek, C. Samaras, I.L. Azevedo, A. Henao,

- C. Rames and T. Wenzel 2021: The impact of Uber and Lyft on vehicle ownership, fuel economy, and transit across U.S. cities. – *iScience* **24** (1): 101933, doi:10.1016/j.isci.2020.101933
- WBGU (*Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen*) (2019): Towards our common digital future. German Advisory Council on Global Change. – Berlin
- While, A., A. Jonas and D. Gibbs 2010: From sustainable development to carbon control: eco-state restructuring and the politics of urban and regional development. – *Transactions of the Institute of British Geographers* **35**: 76-93, doi:10.1111/j.1475-5661.2009.00362.x
- White, C., D. Bloyce and M. Thurston 2020: The double-bind of competitive funding: Exploring the consequences of state-funded bidding processes in a locally managed cycling infrastructure project. – *European Journal of Transport and Infrastructure Research* **20** (4): 173-193, doi:10.18757/EJTIR.2020.20.4.4364
- Wilkinson, C. and N. von Benzon 2021: Selecting and analysing publicly generated online content. In: von Benzon, N., M. Holton, C. Wilkinson and S. Wilkinson: Creative methods for human geographers. – Los Angeles: 325-336
- Williams, S. and A. Doyon 2019 Justice in energy transitions. – *Environmental Innovation and Societal Transitions* **31**: 144-153, doi:10.1016/j.eist.2020.10.001
- Zwick, A. 2018: Welcome to the Gig Economy: neoliberal industrial relations and the case of Uber. – *GeoJournal* **83**: 679-691, doi:10.1007/s10708-017-9793-8
- Zwick, D., S.K. Bonsu and A. Darmody 2008: Putting Consumers to Work: Co-creation and new marketing governmentality. – *Journal of Consumer Culture* **8** (2): 163-196, doi:10.1177/1469540508090089