

White Paper

Collaboration in Cities: From Sharing to 'Sharing Economy'

In collaboration with PwC

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Contents

4	Foreword
6	Collaboration in Cities: From Sharing to 'Sharing Economy'
6	1. What does the sharing economy mean for cities?
9	2. Who are the actors of the sharing economy?
10	3. What are the drivers of sharing?
11	4. What is being shared in cities?
13	5. How can cities share?
15	6. What are the issues and challenges in the sharing economy?
19	7. How should sharing be regulated?
21	Conclusion
22	References
23	Contributors
25	Acknowledgements
26	Endnotes

Foreword



The concept of sharing is as old as human civilization. It has existed for centuries but has recently attracted a lot of attention focused on the ways in which digital technologies have opened avenues for sharing and collaboration. In cities, new digital technologies are revolutionizing the ways in which we use transport, housing, goods and other services – whether driven by economic or social reasons. Sharing has also changed the way we work. The sharing economy has virtually disrupted all sectors, creating a multitude of platform-based marketplaces that connect individuals, enterprises and communities at a peer-to-peer level.

The sharing economy is making cities redefine land-use strategies, minimize their costs, optimize public assets and collaborate with other actors (for-profits, non-profits, social enterprises, communities and other cities) in developing policies and frameworks that encourage continued innovation in this area. This paper focuses on the drivers of sharing in a city and how cities can embark on the sharing journey.

While citizens have reaped benefits from sharing, there have also been concerns regarding trust, safety, security, social equality and regulatory challenges that will have to be addressed as sharing becomes ubiquitous through these platforms. We hope this paper will inspire cities to take a cue from our case studies and guide future discussions on how cities share and collaborate in achieving their public goals effectively and efficiently.

Gregory Hodkinson
Chairman, Arup Group



The technology-enabled sharing economy has become a reality around the world, particularly in cities where citizens and government leaders are embracing innovation. It has also attracted interest from many stakeholders, notably organizations aiming to exploit the potential of the new business models presented.

The emergence of digital platforms has enabled sharing on a scale that could not have been achieved by offline mechanisms. While mobility and short-term rental platforms have largely dominated this sector, opportunities in on-demand household services and professional services are also on the rise. Money-lending platforms, peer-to-peer insurance, loaner products, meal sharing and peer-to-peer learning are some examples on the breadth of services now offered under the sharing economy.

Beyond economic reasons, several social and environmental motivators are driving communities to behave collaboratively in sharing access to municipal spaces and other civic assets. City governments are also sharing municipal equipment and collaborating to provide municipal services, examples of which we have covered in this paper.

The benefits of sharing go beyond enhancing the use of assets. Sharing encourages community interaction and can lead to greater social inclusion. The rise in the number of digital sharing platforms encourages micro-entrepreneurship, provides employment opportunities and improves digital literacy. However, the fallout of sharing, if not properly regulated and monitored, can be safety incidents, social inequality and concerns from traditional markets. Regulatory and tax structures need to be revisited to address these concerns as sharing platforms begin to scale across different sectors of the economy. At the same time, developing a culture of sharing within cities to improve services with accountability and transparency would go a long way in shaping the “sharing cities” of the future.

Hazem Galal
Global Cities and Local Government Sector Leader, PwC



Today's urban environments present extraordinary opportunities for how we can share and collaborate. The wealth of ideas, products and skills available in cities makes them a fertile ground for exchange, with new technology platforms connecting users and facilitating transactions at a rate never before imaginable.

The approach of a sharing (and collaborative) economy marks a significant turn from our traditional methods of consumption. Choosing transport based on safety record, loaning household tools rather than buying them and getting home-cooked food from a neighbour rather than a restaurant are just some of the ways in which sharing practices are evolving in cities.

While sharing may often decrease the cost of access, it also has the potential to address long-term societal challenges such as making cities more inclusive and building social connections between groups that might otherwise never have interacted. In experimenting with sharing practices, however, cities will also have to be agile in addressing externalities and disruption to their planning processes, policy formulation and regulatory structures.

We hope this paper will help city administrators make the most of new sharing models while also bearing in mind the cultural context, emerging behavioural changes and usage patterns that will draw the most benefit for each city's unique urban ecosystem.

Cheryl Martin

Head of Industries, World Economic Forum

Collaboration in Cities: From Sharing to ‘Sharing Economy’

1. What does the sharing economy mean for cities?

Nothing is new about “sharing”, except when the word “economy” is added. According to Google Trends, the popularity of the phrase “sharing economy” has increased 16-fold since 2013. However, the concept of sharing has not fundamentally changed: people have benefited from sharing since the beginning of civilization. The practices of voluntarily reselling, gifting and swapping goods and services have been observed in nearly all societies around the world, usually in intimate groups of trusted individuals. But the potential pool of people with whom to share is now growing exponentially, as technology-enabled platforms connect and vouch for new members from around the globe. Collaboration that once required years of friendship now requires only a background check and financial guarantee.

What has allowed sharing practices to scale so efficiently, and what does it mean for the future of urban communities? This report aims to provide insight into the opportunities and challenges.

The decline in sharing and the subsequent rise of the ‘sharing economy’

One theory on sharing (Volker & Flap, 2007) suggests there is an inverse relationship between sharing and ownership: that is, people share only when they are unable to afford goods individually, and sharing practices decline once enough wealth is acquired for ownership. Studies have confirmed that social networking in communities is greater when resources are scarce (Marsh, 2010). The developed world in the early twentieth century, for example, that saw advances in technology and increased production gave rise to higher rates of individual consumption and ownership. Combined with a cultural shift towards self-reliance, this saw sharing practices in wealthy communities decline (Agyeman, et al., 2013). Laundromats were replaced by in-home washing machines, public transport by private vehicles and concerts by individual recordings.

Since the internet became mainstream two decades ago, trends and mindsets about sharing have evolved again. A renewed enthusiasm for community – driven by the proliferation of peer-to-peer social networks, increased environmental awareness and global recession (Gruszka, 2017) – has driven users to “do more with less”, giving rise to a new breed of owners who also seek to rent, lend, swap and barter goods, either in search of economic benefits or in support of a greater social cause. Many of these practices rely on online platforms for facilitation. Where physical exchange is concerned, the population density of cities has created especially fertile ground.

What is the sharing economy?

The term “sharing economy” does not yet have a universally agreed definition. However, it generally refers to organized interactions in which individuals or entities exchange with others the untapped “surplus” or “idle” capacity of their assets, typically for some type of payment or service. Three features distinguish the sharing economy from traditional markets or community sharing practices:

- **The use of digital technologies to match buyers and sellers.** Online platforms or marketplaces can enable accurate, real-time (or near real-time) measurement of “idle capacity” and dynamically connect potential users of an asset with its owners.
- **Capitalizing on idle capacity.** Owners of an asset can capitalize on its spare capacity when not in use, either monetarily or in exchange for another resource. Goods that are purchased with inherent surplus capacity – such as computer memory or processing power, or seats in a privately owned car – can be commercialized through a time-share model: each individual payment for access is much less than the cost of ownership, but the aggregate of all payments over time is greater.
- **Trust-verification.** People build trust through a model that allows transacting partners to limit counterparty verification and liability expenses while reaping the benefits of sharing. Peer review ratings, third-party validation and liability insurance are the most common ways of establishing such trust between users and the platform and also among users themselves.

The sharing economy is often used as a general term for new business models or confused with similar emerging concepts such as the “collaborative economy”, the “peer-to-peer economy”, the “gig economy”, the “on-demand economy” and “crowd economies”.ⁱ Many of these terms simply refer to relatively new methods of interaction facilitated by centralized online platforms, whereas a true “economy” involves the management of resources by individual actors to optimize productivity.ⁱⁱ

Collaborative consumption

Collaborative consumption encompasses any economic model based on sharing, swapping, trading or renting products and services – enabling access over ownership and continuous group interaction rather than one-time, linear buyer/seller relationships. Three distinct systems under the collaborative consumption model are:

1. **Efficient redistribution markets** – efficient transfer of ownership for previously owned products based on existing demand, rather than new production. This can include private exchange (at flea markets or via online platforms) or the release of used assets held in the public domain. An example is ThredUp, through which consumers buy and sell second-hand clothing online.
2. **Product-service systems** – professionalized service for infrequently used resources, which are mainly employed to accomplish a task or objective. Pay-per-use models include schemes for car-sharing (e.g. Zipcar), tool libraries (e.g. Peerby), rental systems (e.g. Turo), and equipment-sharing (e.g. YardClub).
3. **Collaborative lifestyle motivation** – the cultural practice of providing communal access to both tangible and non-tangible resources such as physical goods, time, space, skills and food between peers. Examples include online communities such as LendingClub and Helping (Botsman, 2013).

The focus of this model is on continuous exchange within a community, where the role of “owners” and “users” is interchangeable since each individual’s unique portfolio of assets has been contributed to the group. For example, someone selling a hammer or charging for its use within a communal group may also buy or pay for the use of a screwdriver within the same group. The important factor is that the community maintains a permanent presence, which establishes trust, whether through an online platform or a physical point of interaction.

Peer-to-peer (P2P) economy

The peer-to-peer economy refers to a decentralized economic model that has no formal marketplace for buying/selling assets or services, but instead is directly dependent on an online P2P platform. P2P platforms facilitate transactions by matching anonymous or semi-anonymous supply and demand requests between private individuals and allowing the parties to settle the arrangements at will. The exact method of exchange is up to the users. Sharing is an activity of the P2P economy, rather than a synonym for it: P2P can also accommodate one-time buyer/seller transactions with no further community established (Aslam & Shah, 2017). In P2P, the platform is primarily used for matching and may not necessarily validate transactions or create trust, so all liability for resolving conflicts in such cases falls on transacting parties. An example is EasyRoommate, a flatshare and room rental finder that connects landlords with tenants.

Collaborative economy

The collaborative economy builds on P2P platforms to include “economic systems of decentralized networks and marketplaces that unlock the value of underused assets by matching needs and haves, in ways that bypass traditional

institutions”. Within the collaborative economy trade takes place between individuals. Outside the collaborative economy trade takes place between companies, among companies and individuals (ShareNL, 2016). The essential difference is that P2P is a simple platform connecting individuals, whereas the collaborative economy systemizes and scales P2P connections through digitally enabled ways of transacting. Examples include borrowing and renting private consumer goods through Peerby to bypass traditional retailers; renting accommodation through Airbnb to bypass hotels; or requesting a ride through Uber to bypass taxi services. Collaborative economy practices can therefore canvass P2P and P2B2P (business acting as intermediary between two peers) schemes, as long as all parties are registered on the platform and there is the intention of ongoing interaction. For instance, ParkFlyRent uses a community platform to match cars left by members departing from European airports to those arriving and seeking to rent during their stay (ShareNL, 2016).

Gig economy

In the “gig economy” a platform connects potential employees with employers looking to fill temporary contract-based roles. Similar to the way in which collaborative-economy platforms divide timed access to a resource, making it profitable both for owners and users, gig-economy platforms facilitate access to a skilled worker’s time. From a service provider’s perspective, the platform centralizes opportunities for work and allows for the advertising of skills. From a contractor’s perspective, the platform offers short-term access to specialized skillsets which may be very costly to maintain on a full-time basis. Examples include Udemy, Feastly and Freelancer.

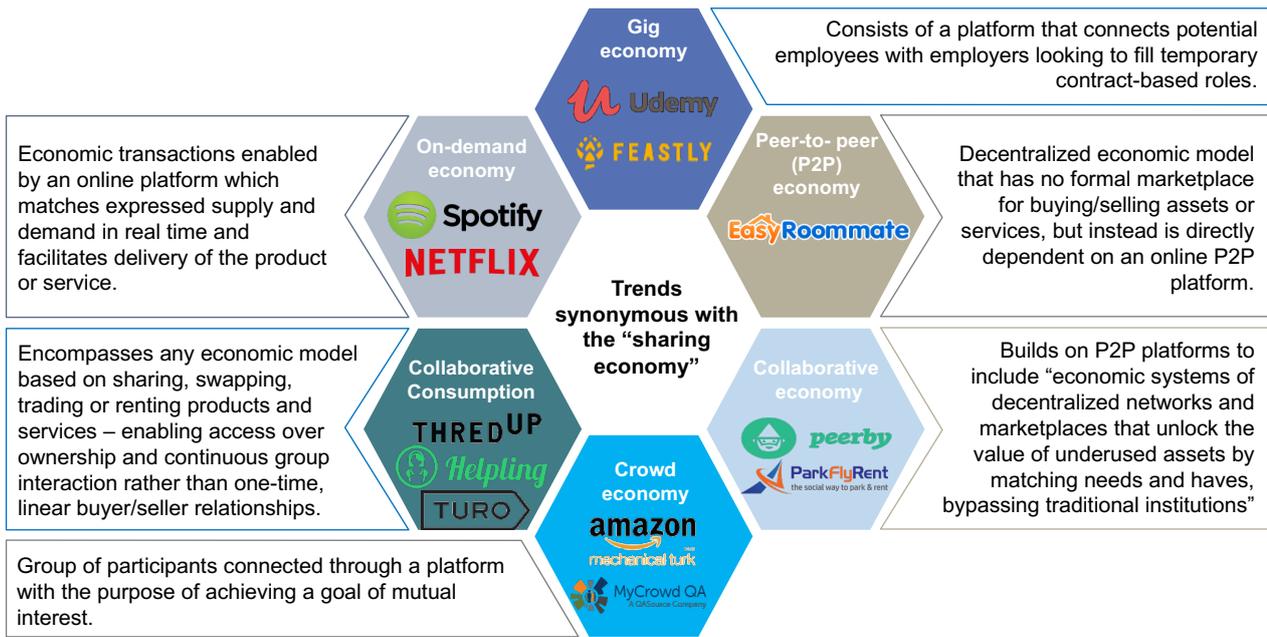
On-demand economy (ODE) / access economy

The “on-demand economy” or “access economy” refers to economic transactions enabled by an online platform that matches expressed supply and demand in real time and also facilitates the delivery of the product or service. Going beyond P2P and gig-economy platforms, which simply connect users, ODE platforms deliver a service – and often collect data to customize the service or offer dynamic pricing. ODE refers to the speed of response in providing the service, and can include sharing and community elements or not. Spotify and Netflix are examples of ODE services that deliver immediately upon request.

Crowd economy

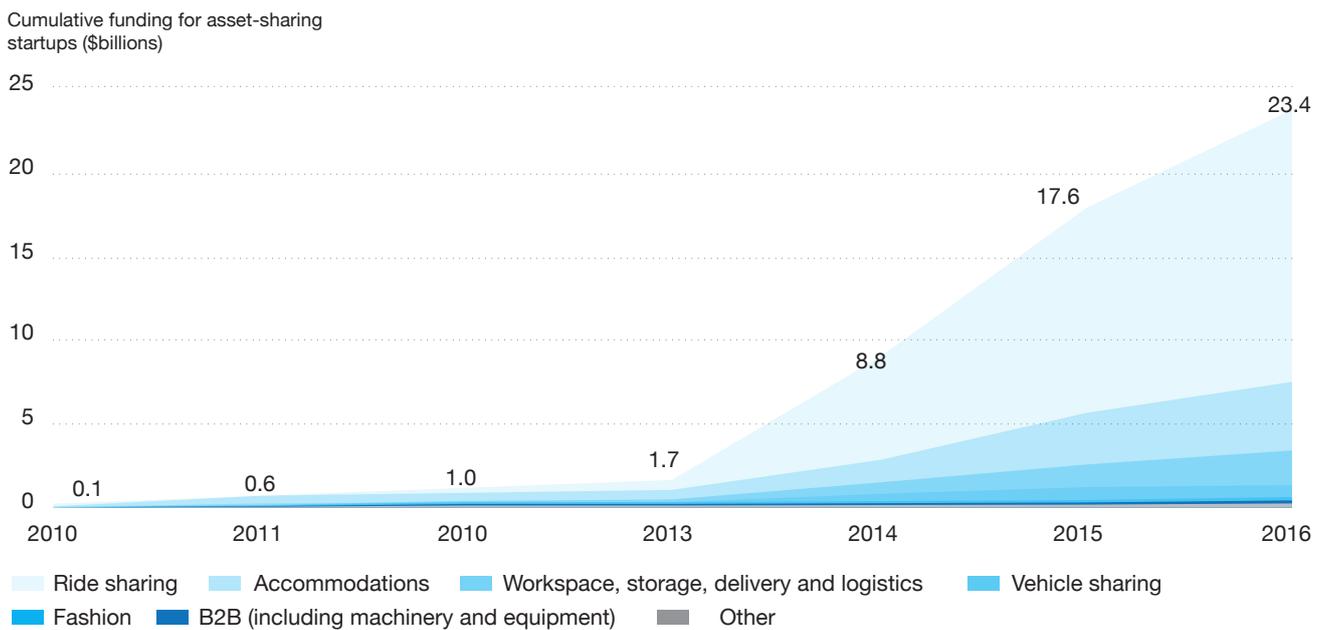
The “crowd economy” refers to a group of participants connected through a platform with the purpose of achieving a goal of mutual interest (Nekaj, 2014). The crowd economy has taken many forms including “crowdsolving”, “crowdfunding” and “crowdvoting”, where the incentive may be monetary or take the form of recognition for accomplishing an outcome. The sharing element of crowd economies is the formation of a community of common purpose that can gain access to a greater variety of resources (knowledge, money or otherwise) to accomplish collectively set goals. Examples include MechanicalTurk and crowdsourced testing sites like MyCrowd.

Figure 1 - Sharing Economy and related concepts



Source – Logos sourced from respective company websites

Figure 2 – Cumulative Funding of Asset-Sharing Start-ups Since 2010



Source – Wallenstein & Shelat (2017)

The sharing economy in cities

The collaborative dynamics of the sharing economy have creative implications for cities. Sharing can create a sense of community among strangers, which helps to facilitate trust and social inclusion. From an environmental perspective, sharing can reduce overall use of resources through practices such as carpooling and co-working facilities.

Sharing can also supplement supply in periods of peak demand: for instance, a tourist location can benefit from a sharing platform through which multiple owners make accommodation available during peak season, rather than turning to additional construction. However, sharing models

can also result in excess supply: for instance, in China, companies like MoBike (bike-sharing) and Molisan (umbrella-sharing) have created a surplus of bikes and umbrellas at rental stations, rather than improving the use of existing assets, in the belief that a large inventory will help them to dominate an extremely competitive market (Yan, 2017).

Sharing-economy platforms have experienced rapid growth, with a 2016 global survey showing that platform companies have a total market value of \$4.3 trillion and directly employ 1.3 million people. They are also one of the biggest catalysts of innovation in recent years: in 2014, only nine platforms were responsible for 11,585 patents in the USA (Evans & Gawer, 2016). Most platforms are funded directly or through

incubators, venture funds, accelerators and other investment models. However, of the \$27 billion raised for sharing-economy platforms since 2007, more than half was for Uber and Airbnb. Nearly \$2 billion in funding has also been invested into peer-to-peer lending ventures (Wallenstein & Shelat, 2017) (Figure 2).

The sharing economy is gaining global momentum

An estimated 55 million Americans (one in six) used a sharing service in 2017 (Larmer, 2017). A survey of 3,000 US citizens and 130 public-service leaders found that two-thirds believed sharing could lead to identical levels of user satisfaction as ownership (Accenture, 2016). PwC projects a 20-fold increase between 2016 and 2025 – reaching €570 billion (\$674 billion) – in five key sectors: collaborative finance, peer-to-peer accommodation, peer-to-peer transportation, on-demand household services and on-demand professional services (PwC, 2016). In the UK alone, the activity of sharing platforms is expected to expand at over 30% each year over the next decade, facilitating £140 billion (\$188 billion) worth of transactions per year by 2025 (PwC, 2016).

The Yano Research Institute estimates that transactions on Japan’s sharing platforms will grow from 29 billion yen (\$260 million) in 2016 to around 60 billion yen (\$540 million) by 2020 (Takeo, 2017). The Kuwait National Fund has pledged \$7 billion as government-backed funds allocating assets to sharing-economy companies for SME development (Strategy&, 2017). In China, the government promotes sharing to “improve efficiencies in resource usage” and “[make] people more affluent”: its Sharing Economy Research Institute suggests the market value of China’s sharing activity will grow at 40% per year and account for 10% of GDP by 2020 (Yan, 2017). In Latin America, a survey found that Brazil, Mexico, Argentina and Peru are leading the way in sharing initiatives (Inter-American Development Bank, 2016).

In the US, cities are using sharing practices to increase inclusiveness: Los Angeles launched an electric car-sharing programme in 2015 in economically disadvantaged communities; Minneapolis placed bike-sharing kiosks in low-income neighbourhoods, providing subsidized memberships; and San Francisco, West Hollywood and Denver have created working groups to explore sharing potential.

2. Who are the actors of the sharing economy?

A wide range of actors participate in the sharing economy, as summarized in Figure 3 below.

Figure 3 - Actors of the Sharing Economy



Source: Adapted from OneEarth (2015) with icons sourced from 'The Noun Project' and logos from respective company websites.

Melbourne's sharing economy

Melbourne is ranked in the top three globally for its food-sharing sector, with some 144 technology-mediated food-sharing initiatives. The city has a strong start-up and sharing-economy culture driven by entrepreneurial knowledge workers in co-working environments. Increasingly, this is becoming the cornerstone of the central city economy and its real-estate market. Jobs growth in this sector is expected to increase by 25% over the next decade. The sector itself is now an important driver of the office market demand in the central city.

Melbourne-based enterprises have been vital contributors to the local economy and social causes with their platforms scaling to different parts of the world. For example, **99 designs** is a for-profit model that offers an online marketplace connecting producers and consumers of graphic design. It has a turnover of \$60 million and sees a new design uploaded every 1.5 seconds. **Bright Sparks** is a social enterprise that repairs or reuses small electronic appliances, thereby diverting them from landfill waste. **3000 Acres** is a community-sharing initiative that facilitates community access to unused city sites, enabling neighbours to establish communal gardens. The City of Melbourne Open Data platform is a public-sector platform that releases municipal data to encourage innovation by businesses, researchers, students, programmers and data scientists.

Source – City of Melbourne contribution to World Economic Forum study

3. What are the drivers of sharing?

The economic, social and environmental drivers of participating in the sharing economy vary across sociodemographic groups and between users and providers (as shown in Figure 4). A recent survey in Amsterdam, for example, revealed that accommodation sharing was economically motivated, whereas car and food sharing was more motivated by social drivers. Young, low-income groups are more economically motivated whereas young, higher-income and higher-educated groups are more socially motivated; and women are more environmentally motivated than men. The survey also found that users are more economically driven than owners or providers (Bocker & Meelen, 2016).

The popularity of smartphones, lower data costs and high population density in cities facilitate the use of sharing platforms, which can scale quickly with the right business model. The multitude of resources concentrated in urban areas also create ideal conditions for monetizing idle or excess capacity, skills contracting and optimizing the match of supply and demand. Additionally, with uncertainty around pension systems across the world, sharing assets has the potential to augment pension income and can help prevent old-age poverty. Thought one step further, this might mean old people are less likely to leave cities (which have a greater supply of potential asset users) than they otherwise would. For example, a person living in New York who owns a car that helps him/her earn a monthly income via ride sharing might not move out of the city where he/she can save some money on rent but can't monetize the car that can probably earn him/her much more than the amount saved in rent after moving out.

Several countries have now dedicated offices or strategies for promoting sharing. Japan's Sharing Economy Promotion Office provides information and counselling for companies and municipalities (CIO Japan, 2017). Denmark recently launched its sharing-economy strategy, addressing issues such as rules for unemployment benefits in the context of the sharing economy (Prelsler, 2017).

Figure 4 - Motivations for sharing for different actors

	 Economic	 Social	 Environmental
 For Users	<p>Recession driving people with financial difficulties to revisit consumption patterns.ⁱⁱⁱ</p> <p>Access to superior quality goods that are too costly to own.</p>	<p>Expanding their social circle with like-minded new connections.</p> <p>Altruistic reasons.</p> <p>Anticipation of reciprocation</p>	<p>Leading a healthy lifestyle.</p> <p>Engaging in environment-friendly, sustainable consumption practices</p>
 For Providers	<p>Monetary benefits from capitalizing on idle capacity or unused asset.</p> <p>Self-employment or freelancing opportunities with flexible working hours.</p> <p>Tap customer base in creating new market offerings</p>	<p>Establish a network of loyal customers for repeat transactions.</p> <p>Access wider markets with higher transaction volumes through user recommendations.</p>	<p>Increased environmental consciousness, where not utilizing spare capacity is perceived as counterproductive to sustainability.</p>

Source – Icons sourced from 'The Noun Project'

Other city governments have institutionalized sharing-economy practices through innovation offices (Seoul and Amsterdam), working groups (Vienna), a task force (Denver) or similar institutions dedicated to advocacy, awareness and furthering the agenda of sharing in cities. Many cities are also looking for regulatory solutions to best address their specific social, economic and cultural context.

4. What is being shared in cities?

What are individuals and collectives (social enterprises, cooperatives, for-profits, non-profits and communities) sharing?

The sharing economy has entered nearly all urban spheres, as illustrated by Figure 5.

Figure 5 - Some of the key sectors of the sharing economy



Source – Adapted from Ricart & Berrone (2017) with icons sourced from 'The Noun Project' and logos from respective company websites.

What are city governments sharing?

Like individual sharing practices, cities can also leverage the potential of the sharing economy in municipal goods, municipal spaces, civic assets, municipal services and skills and talent of city residents such as:

1. **Municipal goods.** City-owned equipment, machinery, vehicles and other goods can be shared among departments or with neighbouring municipalities. Munirent is one example of a company that facilitates equipment-sharing within and between governments.

myTurn – Tracking asset use

The myTurn platform combines asset-tracking, rental and sale features to manage surplus equipment. It creates lending libraries that can be free (e.g. for internal lending and tracking usage) or charged on a subscription or per-use basis. Discounts, length of rental and the maximum number of items can be set based on subscription type, allowing for different options. The platform allows reservations and inventory-tracking and generates reports to help organizations identify underused resources.

Cities, non-profits and businesses use myTurn to create product subscription services, from specialized “tool libraries” (primarily power tools), to kitchen libraries and more general “libraries of things” (any type of item that is used infrequently). Several cities rent out energy-efficiency tools (solar trackers, infrared cameras, light and temperature loggers etc.) to help builders complete energy-efficient retrofit projects. There are more than 300 community-level sharing programmes around the world, and the platform is also being used by universities, non-profits and enterprises.

Seattle, for example, now has six community-level tool libraries or libraries of things. None is run directly by the government, but most have received support through grants or in-kind services to get started. Many are in lower- and mixed-income areas, providing affordable access to tools and other items that help with everything from community resilience to job creation.

Source – myTurn contribution to World Economic Forum case study

2. **Municipal spaces and civic assets.** These include civic amenities or spaces such as gardens, subways, city-run schools, hospitals and libraries, and city recreational centres. Idle capacity in municipal spaces can be used for urban farming, pop-up shops, parking and start-up hubs, supporting local business and culture. For example, Seoul operates a website^{vii} to reserve sports facilities, lecture halls and meeting rooms for educational and cultural events.

New York – 596 Acres: Reclaiming public land for communities

New York City has more than 1,000 vacant plots, primarily in low-income neighbourhoods. In 2001, the programme’s founder discovered that 596 acres of public space needed transformation and established 596 Acres, which advocates for access to community land to gather, grow food and play. It places signs on fences around vacant lots stating “This land is your land” in English and Spanish, encouraging locals to get permission to transform the lot into a garden, park or farm, giving the plot’s identifier in the city’s land title register and stating the phone number of the responsible agency to contact.

The signs also direct people to the organization’s website – but while 596 Acres provides support and advocacy, residents lead the process and each space is ultimately managed autonomously by volunteers and local-community partners. Since 2011, 596 Acres has transformed 200 sites and created 39 new community-managed spaces. Nearly all have become valuable enough for the NYC municipal government to declare them community spaces. The concept has now been extended to other cities, including Melbourne (3000 Acres) and Philadelphia (Garden Justice Legal Initiative/ GJLI).

Source – Adapted from Shareable (2017)

3. **Municipal services.** Municipal governments in many areas have collaborative agreements to facilitate providing services to the citizens they serve, and have been working together in this way since long before the sharing economy.

Intermunicipal Collaboration Framework – Alberta, Canada

The Municipal Government Act in Alberta, Canada, provides for municipalities to engage in cooperative initiatives with their neighbours, and the state government wants to mandate municipalities to work together on delivering services and cost-sharing through the Intermunicipal Collaboration Framework – a “forum for neighbouring municipalities to work more closely together to better manage growth, coordinate service delivery and optimize resources for citizens”.

The province is looking to collaborate with stakeholders to develop regulations on minimum requirements regarding intermunicipal land-use planning; a minimum list of services to be considered for collaborating on a regional basis; a dispute-resolution process for when partnering municipalities cannot agree; timelines for completion; and the authority to exempt municipalities in certain cases. The legislation and the regulation will come into effect in 2018, and the framework in 2020.

Source - (Government of Alberta, 2017)

4. **Municipal residents.** Municipalities can organize the sharing of residents' skills, talent and professional experience to fill a short-term need in a specific area or subject. In Seoul, for example, the "My Real Trip" platform connects tourists with local guides. Also popular is municipal time-banking, in which citizens give up their time for tasks of public interest to the city and are given access to civic resources.

Time banks in Barcelona

In Barcelona, the "Programme of Time and Caring Economy" is driving a time bank project in cooperation with the community network of neighbourhoods and "Associació Salut i Família" (Health and Family Association). Time is exchanged between people doing everyday tasks: for example, taking care of a sick child, reading books to old people, helping with school homework, taking care of domestic pets or plants, repairing things or simply accompanying people on a walk. Citizens can redeem the time they invest for time from others to perform services for them.

The city currently has 28 time banks listed on its website. Peer-to-peer networks on the internet help in supporting time banks, knowledge-sharing networks, exchange markets and other collaborative consumer initiatives to optimize the management of time and resources. Such civic initiatives at the community level promote values of solidarity, reciprocity and cooperation.

Source - (Barcelona City Council, 2017)

5. How can cities share?

Some cities directly facilitate sharing practices, while in others non-government entities such as the private sector, local communities, non-profits and social enterprises lead the way on developing a sharing city, according to what best suits their individual culture. There two main steps are:

Step 1 – Focus on the purpose of a sharing city

- **Economic** – Cities use sharing to strengthen economic growth and create jobs. There are three models – centralized, decentralized and composite – differing in ownership, methods of generating revenue, the level of capital investment and scalability – the extent to which the enterprise can be grown (Table 1). In each, cities can play a series of roles, which will be addressed in the following section.
- **Sociocultural development or environmental sustainability** – Cities can look to strengthen participatory governance by engaging communities and civil society in developing a "collaborative" approach to the sharing economy. Cities are providing platforms to engage citizens in city development, crowdsourcing proposals that can bring a fresh perspective based on understanding local conditions. Similarly, crowdfunding can support city objectives by aligning the public, for-profit and non-profit sectors with citizens, bringing value beyond the financial as organizations and citizens share skills, expertise and resources.

Table 1 - Different models of market driven sharing

Approach	Centralized	Decentralized	Composite
Type	Business-to-consumer	Consumer-to-consumer	Hybrid
Asset owner	Business	Consumer, business provides only a platform.	Consumer
Pricing control & terms of service	Business	Consumer	Pricing based on standards set by business, with either the consumer or business specifying terms of service.
Revenue share	Mostly to business, which is also the asset owner.	Greater share for consumer. Business generates revenue from access to the platform in the form of small fees, supplementary services or monetizing user-generated data or content.	Greater share for consumer. Business generates revenue from access to the platform in the form of small fees, supplementary services or monetizing user-generated data or content.
Direct capital investment for assets	High, with business bearing the costs of assets as well as platforms.	Low, for marketplace platforms to match consumers to supply.	Medium, for building platform and facilitating asset ownership.
Scalability & viability	Difficult and dependent on high levels of use.	Easy, with focus primarily on adding more consumers to the platform.	Moderate, as focus is on adding more consumers but with control over pricing and revenue.
Example(s)	Zipcar	Airbnb, BlaBlaCar	Uber, Lyft, OlaCabs

Crowdfund London

Crowdfund London is an experiment in a more collaborative approach to regeneration. Groups of citizens can propose project ideas directly to City Hall, and gain access to funding and support to realize them. The programme is administered by online crowdfunding platform Spacehive, which presents ideas and their funding targets and invites the public to “pledge” towards them – if enough people back an idea, the project goes ahead.

The Mayor has pledged up to 75% of the total project cost (up to £50,000) for the ideas that demonstrate local support, with a budget of £4 million in funding from 2018 to 2022 as part of the Good Growth Fund. In four rounds of funding to date, Londoners have submitted 269 ideas. The Mayor has pledged £1.24 million across 82 projects, and the combined project pipeline is worth roughly £12 million, with support from a further 9,543 backers. The Mayor’s pledge has proved a key catalyst: 95% of campaigns succeed after mayoral backing, but even without mayoral support an average of 47% have met their targets.

Source – City of London contribution to the World Economic Forum study

Some cities are also discussing the idea of the “urban commons”, and looking for new ways to share responsibility for goods and services that promote collective well-being (Bologna, 2014). Examples of projects inspired by this ideology include Reimagining the Civic Commons in the US, the Civic Assets Project in Montreal, the FabCity distributed manufacturing initiative in Amsterdam, the Superblocks initiative, Barcelona’s “Reglamento de Participación Ciudadana” (Regulation for Citizen Participation) and Naples’ regulation on urban civic uses (Foster & Iaione, 2017).

‘Co-City’ protocol

The Co-City protocol is based on “urban co-governance”, in which “environmental, cultural, knowledge and digital urban resources are co-managed through contractual or institutionalized public-private-community partnerships”. Five kinds of actor may be involved: citizens, public authorities, businesses, civil-society organizations and knowledge institutions such as schools, universities and museums.

The protocol has three phases: **mapping** the socioeconomic and legal characteristics of the urban context; **experimenting** through “co-working sessions” to generate ideas and a “collaboration day” to test them; and **prototyping**, in which guidelines generated from the experimenting phase are turned into draft laws or public policy. The objective is to transform the city, or parts of it, into a laboratory by creating a legal and political ecosystem for shared, collaborative, polycentric urban governance schemes.

At present, 12 cities in Europe and North America are working on the Co-City Protocol. They include Bologna, which has passed a resolution on collaboration between citizens and the city for the care and regeneration of urban commons and developed a “collaborative city” programme.

Source - (<http://www.commoning.city/>, n.d.), (Foster & Iaione, 2016) and inputs from Sheila Foster for the World Economic Forum study

Step 2 – Focus on government role(s) in a sharing city –

City governments can take a combination of roles depending upon the socioeconomic environment in the city. The different roles and activities associated with each role along with purpose-based interventions are illustrated in Figure 6 below.

Seoul – the ‘sharing city’

The “Sharing City Seoul” project resulted from the city government organizing a “sharing promotion committee” of private-sector experts and heads of city government to develop a sharing model that is appropriate for Seoul. It has introduced policies including car-pooling, public bicycle sharing, parking lot sharing and children’s clothing sharing, and spread them across the city’s 25 autonomous districts. It also facilitates those districts’ own sharing-promotion projects, providing administrative and financial support. The city has certified 97 sharing enterprises and groups as of November 2017.

Seoul is also collaborating with other cities to provide sharing services. In November 2016, the city government and seven other local governments adopted a joint declaration on policy cooperation for the sharing city, including developing and promoting joint programmes for sharing enterprises and groups, exchanging policies, improving the legal system and strengthening cooperation with domestic and overseas cities.

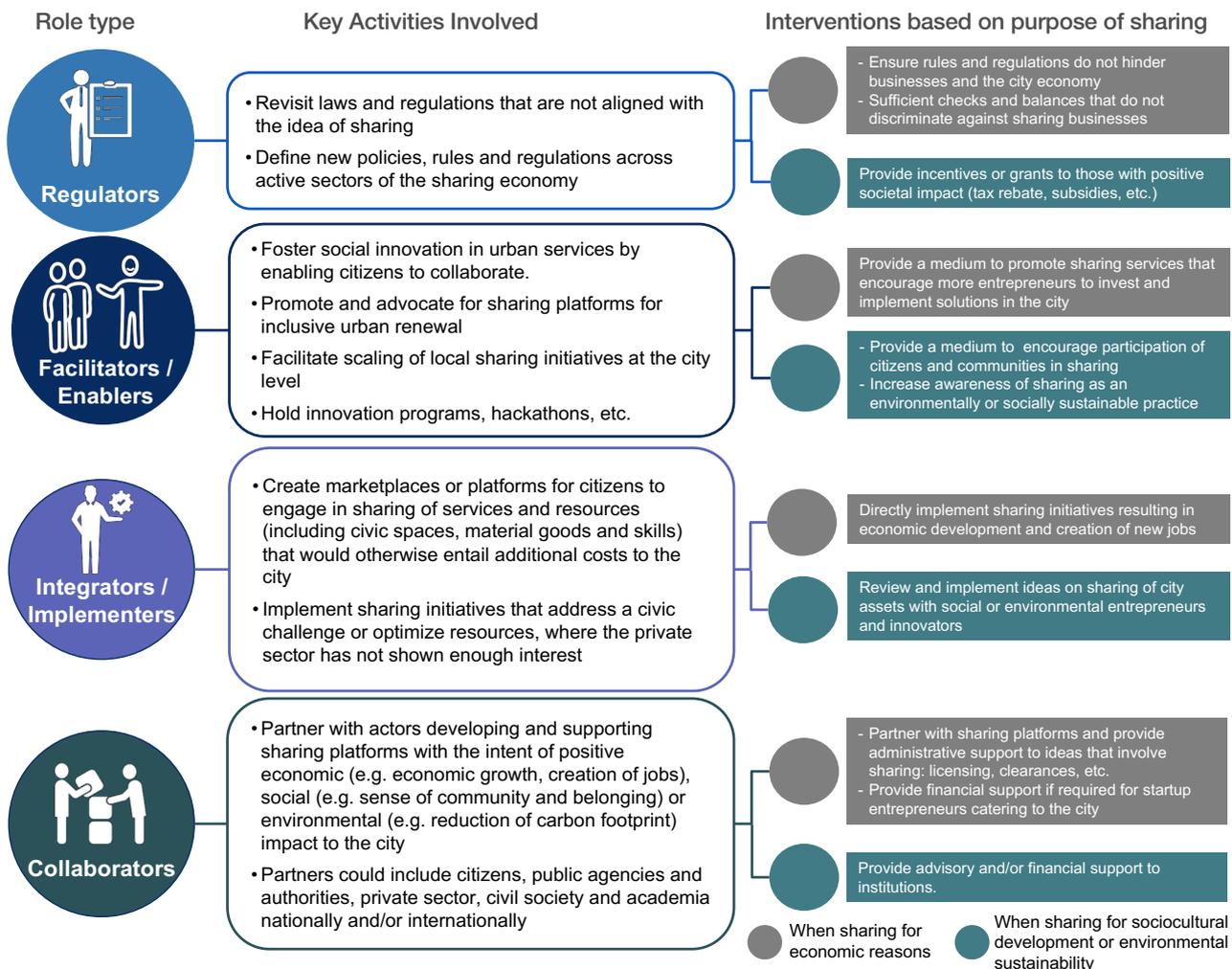
Source – City of Seoul contribution to the World Economic Forum study

Kamaishi City, Japan – partnering with sharing enterprises for the 2019 Rugby World Cup

Kamaishi City in Japan is one of the host cities of the 2019 Rugby World Cup, and is hoping to use this opportunity to promote itself as a tourist destination. Anticipating issues with accommodation and transport, the city has turned to sharing solutions. In October 2016, it signed a contract with Airbnb to structure programmes to use farmhouse accommodation and community sites; Airbnb will also be issuing English guidebooks for visitors. The city has also partnered with TABICA, a platform that introduces people to the daily lives and customs of locals through guides and workshops, and launched a PR campaign – “Meetup Kamaishi” – to promote local tourism. It has partnered with COGICOGI, a cycle-sharing service, and ShareNori, a car-sharing service, to offer transport to visitors during the event.

Source – PwC Japan contribution to the World Economic Forum study

Figure 6 - Different Roles of the Government in Sharing Economy



Source - Icons sourced from 'The Noun Project'

The Sharing Cities Alliance – Cities as Collaborators

The Sharing Cities Alliance aims to enable cities and their citizens to shape their own future through city-to-city collaboration. The goal of the Alliance is to enable city leaders continuously to address the sharing economy. The Alliance co-organizes a yearly summit, quarterly online seminars and one-on-one meetings with participating cities, and has created the “Alliance Lexicon” (ALEX), which is a constantly evolving knowledge base containing case studies, research and policies for and by the cities. The Alliance also publishes a monthly magazine to update all cities on the latest developments and aims to let both ALEX and the magazine be co-created by cities.

The Alliance was co-founded by Harmen van Sprang and Pieter van de Giind who also co-founded ShareNL in 2013, a private social enterprise instrumental in launching the “Amsterdam Sharing City” initiative in early 2015. The boutique agency in Amsterdam brings a global perspective in its portfolio of services to help cities across the world looking to exploit the power of sharing and collaborating. This includes evaluating how policies ranging from taxation, licensing and worker and consumer protection can and should apply to sharing platforms and collaboration on collecting data and formulating policy

Source – Chau (2017) and ShareNL (2017)

6. What are the issues and challenges in the sharing economy?

In their book, *Sharing Cities*, Julian Agyeman and Duncan McLaren describe a “healthy urban community” as one in which the “rich diversity of cultures is recognized, difference respected and contact between those cultures enabled and encouraged”. They explain how sharing-economy practices can increase multicultural interactions through:

- Revolution** – directly disrupting the city’s cultural landscape and exploiting this disruption.
- Subversion** – using the city’s own power for “symbiotic” opportunities, where existing elites at least partly share the interests of the challenging groups.
- Reinvention** – creating alternatives at the margins of the conventional economy and establishing new niches.

They argue that the best opportunities for systemic change come from combining **reinvention** and **subversion** to “seek interlinked opportunities to enhance well-being, increase justice and equity and spread participative democracy”.

An example is Medellín's efforts to overcome a history of violence and become a thriving medical, business and tourist centre through "social urbanism" projects such as the Metro-cable system and library parks being designed and planned through a participatory community process and funded through revenue from the city's public services company, Empresas Públicas de Medellín (Agyeman, et al., 2013).

Not all aspects of sharing-economy models are positive. Cities have faced challenges in creating policy and regulatory frameworks for platforms that – due to network effects^{viii} – may be seen as monopolies. With the amount of consumer data stored on sharing platforms rising exponentially, challenges are also growing in protecting consumers, avoiding unfair competition, modernizing outdated taxation laws and assuring social inequality. A summary of issues and challenges are illustrated in Table 2.

Table 2 - Issues and challenges arising from sharing economic models

Market-driven sharing (for economic reasons)	Purpose-driven sharing (for social and/or environmental reasons)
<ul style="list-style-type: none"> - Establishing trust and reputation. - Ensuring safety and security. - Uncertain effects of social equality. - More "exclusive" than "inclusive". 	<ul style="list-style-type: none"> - Guiding sharing towards improving public infrastructure and services. - Accountability and transparency in collective/collaborative governance.

Challenges in market-driven sharing^{ix}

1. Establishing trust and reputation

On any sharing platform buyers and sellers have to provide information necessary for the transactions to occur. Maintaining trust when information asymmetry^x exists – and especially when the reputation of a city is at stake as a facilitator, integrator or collaborator – is crucial to the success of sharing platforms. To minimize risk, sharing platforms provide mechanisms to build and maintain trust between participants by verifying their identity, intentions and capabilities. These include review-rating systems, background checks and guarantees or insurance mechanisms to protect buyers and sellers.

The most common ways to establish trust on platforms are summarized by Arun Sundarajan in his book *The Sharing Economy: The End of Employment and the Rise of Crowd-Based Capitalism* (Refer Figure 7).

Review-rating systems are the most common interventions, and relatively easy to implement. They encourage high quality of service, establish accountability, promote courteous behaviour and minimize discrimination between users. Uber uses a two-way rating system (i.e. both driver and riders get to rate each other), while Airbnb uses a combination of ratings and written reviews for both homeowners and guests. Both validate users by linking offline identity with online identity, offer a way to withhold payment in case of conflict and provide insurance against loss (Airbnb covers up to \$1 million in damages). Third-party review systems such as the Better Business Bureau go a step further by reviewing complaints and the level of responsiveness to those complaints, and monitoring factors such as licensing status and any ongoing government actions against the entity in question (Federal Trade Commission, 2016).

Some of the key challenges in review-rating systems are listed in Table 3. The challenges listed assume that users trust the centralized platforms more than they trust each other individually. However, a platform's credibility depends on the aggregate trustworthiness of its users. If a platform offers guarantees and sellers take advantage of them to offer lower-quality products, then overall credibility is undermined and the platform's trust can disintegrate.

Figure 7 - Facets of Trust in a Sharing Economy



Source – Sundararajan (2017)

Table 3 – Key challenges of review-rating systems and proposed interventions

Key challenges	Possible interventions
Platforms tend to receive feedback when an experience is either positive or extremely negative. In cases of mildly negative or average experience, users generally provide no feedback, which affects the validity of rating systems. Fear of retaliation may also prevent users from leaving a negative rating.	<ul style="list-style-type: none"> – Government can mandate sharing platforms to report the number of transactions that did not result in a review, while also displaying those who provided positive or negative feedback.
Rating systems can be manipulated through fake reviews, either to inflate one's own rating or depress that of a rival. Buyers and sellers may collaborate to dishonestly leave each other positive feedback.	<ul style="list-style-type: none"> – Allow only verified users to review on the platform, which could involve checking personal details such as credit card authorization. – Use software to periodically purge reviews that are not authenticated.
Professional reviewers with an established subscriber base may get greater weight than anonymous reviews, and gain the power to affect pricing.	<ul style="list-style-type: none"> – Use a percentile-based rating that allows users to compare sellers on the same platform.
Building reputation and trust is challenging for new buyers or sellers, creating a bias towards older accounts.	<ul style="list-style-type: none"> – Require members to make escrow deposits during the first few transactions to assure quality.
Those with an existing high score on a platform could exploit their trust by reducing their quality of service before ratings readjust for their new feedback.	<ul style="list-style-type: none"> – Weight recent transactions higher than old ones.

Trust Seal – Sharing Economy UK and Trust Mark – Japan

Sharing Economy UK (SE UK) has developed a Trust Seal – the first Kitemark for sharing-economy companies. It shows that companies are adhering to high standards, providing security to customers and setting up processes for when things do not go as planned. Companies are assessed over eight broad principles of good practice: identity verification, criminal and background checks, education and employment history checks, transparent communications, customer help and support, secure payments, clear pricing and refunds, insurance and guarantees and data protection.

SE UK worked with Rachel Botsman at Oxford Saïd Business School to help define the tests and PricewaterhouseCoopers (PwC) to independently implement them. Companies apply for the Trust Seal; security, communications and insurance experts review the applications; PwC verifies the application information against each principle and provides a report to the advisory panel for review; and the panel decides whether or not the company can be awarded the Trust Seal. To date, eight companies have secured the Trust Seal.

A similar scheme in Japan, the Sharing Economy Trust Mark, has so far certified 15 sharing services. Most consumers in the country are concerned with the handling of “safety & security” concerns when using sharing services. The Sharing Economy Trust Mark helps ensure the security and reliability of sharing services in the country by certifying enterprises as reliable entities. For companies, the Trust Mark delivers benefits in discounts on their insurance fees and aligns sharing services with international standards should any of these services roll out globally.

Source – Sharing Economy UK and PwC Japan contribution to World Economic Forum Study

2. Ensuring safety and security

Sharing may expose participants and platforms to risks in terms of safety and security.

- **Physical risk** (to service providers and users): using sharing platforms may result in unsafe situations. The renewal of Uber's licence with London's transport authorities, for example, was made conditional on new requirements for reporting serious criminal offences, obtaining medical certificates for its drivers and carrying out criminal background checks.
- **Reputation risk** (to platforms and service providers): a platform's entire business can be at risk if systemic concerns regarding misconduct become prevalent. For example, Uber has responded to concerns about offences committed by drivers by committing \$5 million to sexual assault and domestic violence prevention (Uber, 2017).
- **Platform risk** (to service providers and users): gaps in regulation can expose users to trade risk from platforms that take payment but fail to deliver service. In China, for example, the bike-sharing firm Bluegogo went bankrupt with a cumulative 20 million users and \$140 million worth of user deposits (Xiang, 2017).
- **Supply risk** (to platforms): sharing platforms have expanded aggressively by providing incentives to users and service providers, but profitability depends on scaling back those incentives as the platforms scale up. The balance between profitability and service level creates a tension between the platform as a business and those working on it.
- **Regulatory risk** (to service providers and platforms): with uncertainty over how laws and regulations pertain to sharing platforms, some city governments have either restricted or barred them from operating. Those who invested in assets needed for service provision are put at risk of failing to recoup their investment.

Case study – SafeMotos – Kigali

Road users are 700 times more likely to die in an accident in Rwanda than in the UK. In the city of Kigali, 80% of accidents involve motorcycle taxis. To address this, ride-hailing app SafeMotos uses data from sensors in a driver's smartphone to measure how they drive and distinguish between safe and unsafe drivers. SafeMotos also offers female drivers for female customers.

Some of the biggest challenges for Safemotos are regulatory. In cities such as Nairobi and Lagos, motorcycle taxis are not allowed into the city centre, preventing even the regulated and professional drivers from offering a service. A current proposal in Rwanda to set fixed pricing per kilometre could make it difficult for Safemotos to sustain activity. The company is looking to partner with cities to create regulations that enable them to conduct business and improve road safety.

Source – Contribution by SafeMotos for World Economic Forum study

3. Uncertain effects of social equality

Cities have to be cautious about social inequalities that can potentially be caused by the sharing economy. Two particular areas of concern are racial discrimination faced by users and income inequality as compared to formal markets.

In the USA, studies by the National Bureau of Economic Research and the American Economic Association have established cases of racial discrimination on platforms such as Uber and Airbnb. African American passengers were subject to longer wait times and higher cancellation rates than white passengers, while guests with African American-sounding names were 16% less likely to be accepted by hosts than guests with white-sounding names (Li, et al., 2017). Another study of Airbnb in New York City found African American hosts received nightly rates that were 12% lower and incurred a higher penalty for undesirable locations (B. Schor & Attwood-Charles, 2017). A study by TaskRabbit in Chicago revealed that people are less likely to accept tasks in low socioeconomic neighbourhoods because they perceive them as high-crime areas, and consumers have to pay more in these areas.

The Airbnb community commitment

In September 2016, Airbnb made a series of commitments to tackle discrimination, including anti-bias training for its hosts and employee network; training employees in addressing discrimination-related requests; finding a place to stay for individuals who have been discriminated against; accelerating instant-book listings, where potential biases can be avoided; and reducing prominence of photographs in the booking process. Cities can encourage similar commitments from platform companies where there are concerns about discrimination.

Source - Murphy (2016)

Widening wage gaps are another social inequality concern. In the USA, sharing-economy practices are increasing income inequality among the bottom 80% of income distribution. This is due in part to providers on these platforms already having full-time jobs and engaging in sharing to supplement their income, often with highly educated workers doing lower-skilled work such as driving. One response has been “platform cooperativism”, in which workers own and operate

the platforms to improve labour conditions and services (B. Schor & Attwood-Charles, 2017). Platform cooperatives usually find most success where the diversity levels of the work contributed by employees is low, competition is limited and no frequent funding is required (Sundararajan, 2016)

Provider Stock Ownership Programmes (PSOPs)

Provider Stock Ownership Programmes (PSOPs) are similar to Employee Stock Ownership Programmes (ESOPs): shares in a platform are allocated to providers. Such a model could help establish joint ownership and profit-sharing, along the lines that work in ESOPs in the context of traditional organizations. This idea has already been adopted by car-sharing service Juno, which has committed to ensuring that its drivers own 50% of the company's founding stock by 2026.

Source - Sundararajan (2016)

4. More ‘exclusive’ than ‘inclusive’

Many platforms are designed to reach tech-savvy, well-connected users who have the capacity to spend. College graduates are more likely to share than those from a lower educational background. A study by the Pew Research Center in the USA found that only 10% of people with household earnings of less than \$30,000 have booked trips using ride-hailing platforms, and 50% of them were unfamiliar with ride-hailing (BSR, 2016). In Japan, officials have stated that most of their citizens are still unaware of the sharing economy: in a survey carried out by PwC, only 31% of almost 10,000 citizens surveyed could recognize a sharing-economy service.

Cities need to enable an environment that removes barriers from sharing and allows more people to benefit from the sharing economy, including those from low-income households and lower educational background, physically challenged individuals and senior citizens. Cities should ensure inclusivity as a focus area for sharing platforms to encourage participation from a diverse range of people.

Linking Sharing Platforms to City Pass – city of Amsterdam

The city of Amsterdam has set up a project to spread the advantages of the sharing economy to those likely to be excluded, focusing on senior citizens and low-income households. As part of its Sharing Economy Action Plan,^{xi} it has begun to connect its sharing platforms to the City Pass, which senior citizens and those on low incomes can get for free. In 2017 the city started with the meal-sharing platform “Thuisafgehaald” (translated as TakeAwayfromHome), enabling City Pass holders to get a free or highly discounted meal from home cooks in their neighbourhood.

The city hopes such initiatives will inspire people to get to know and become active on more sharing platforms, as consumers and providers. It also organized meet-ups to demonstrate the city's sharing platforms, with a focus on those that would be of interest of people with low incomes – that is, avoiding car-sharing or property-sharing platforms – and where help is offered. City Pass “ambassadors” wrote articles about their experiences to inform other City Pass members about these platforms.

Source – City of Amsterdam contribution to World Economic Forum study

Challenges in purpose-driven sharing (for social and/or environmental reasons)

1. Guiding sharing towards improving public infrastructure and services

Users (rather than providers) are more likely to share for economic reasons, and cities need to address the challenge of how to tap into sharing behaviour for social and environmental reasons. Even users who are intrinsically motivated by social reasons usually interact only at a local level, creating the challenge of scaling and sustaining this behaviour in city-wide initiatives.

Cities reinforce the idea of “the city as a commons” through systemic restructuring of existing bodies and public assets. Advocates for the commons approach – including communities, non-profits and social enterprises – have to find more cohesive language to define how citizens incorporate a style of thinking that moves them into mainstreaming cooperative action at the city level.

Collaboration pacts – city of Bologna

In 2014, the city of Bologna adopted a regulation on “collaboration between citizens and the city for the care and regeneration of the urban commons” and launched “the city as a commons” project – a legal and administrative framework for citizens to care for urban commons. The regulation encouraged the creation of “hyperlocal institutions for urban co-governance” such as “community cooperatives, neighbourhood foundations and block consortia”, with technical and financial support provided by the city government. It promoted citizen action in “social innovation and collaborative services, urban creativity, digital innovation, collaborative communication and collaborative tools and practices that encourage urban common-ing.”

A key tool in this regulation was the “collaboration pact”, which defines the commons in question and the rules for collaboration between stakeholders including “single individuals, informal groups, communities and non-profit organizations”. To date, more than 180 collaboration pacts have been signed in Bologna.

Source - Shareable (2017)

2. Accountability and transparency in collective/ collaborative governance

Providing accountability in a collaborative environment can be challenging. Each city must consider:

- Should cities or neighbourhoods monitor outcomes from sharing practices that affect them or publicly owned assets?
- Who is to be held accountable if the sharing practice does not yield the expected outcome, or yields an adverse outcome?
- To what level are the collaborating actors accountable for the outcomes, particularly when public funds are involved?
- What level of due diligence is necessary when engaging in sharing practices of public assets?

Answers to these questions will vary depending on the social, political and cultural environment.

7. How should sharing be regulated?

While sharing platforms have taken some steps towards implementing mechanisms that establish trust and protect users, this does not remove the need for regulation. Governments first have to understand the intricacies of the specific operating model and its implications – whether economic (taxes, monopolies), legal (redefining labour laws that cater to freelancers) or social (protecting the rights of participants). Cities have to work to involve all necessary levels of government: Seoul illustrates the challenge, as the city government is promoting sharing initiatives within its own scope but higher-level laws and administrative regulations have not caught up.

Striking a balance

Cities have to address two goals when designing regulations for sharing platforms: encouraging innovation and competition, and protecting the interests of citizens. Cities can adopt a **bottom-up approach** towards regulatory frameworks, by monitoring markets and adapting to unique situations while in the early stages of evolution; or a **top-down approach**, imposing rules and regulations for sharing platforms to ensure the rights of all participants.

Playing fair (legal)

Cities have to ensure healthy competition among traditional and new business models, raising the question of whether contemporary sharing platforms should be subject to different regulatory treatment than traditional market players (Key concerns of market players listed in Table 4). Carrying out a market assessment of regulatory needs in each sector in which traditional players are competing with contemporary players can be useful in developing a regulatory framework that caters to both kinds of business.

Table 4 - Key Concerns of Market Players

Traditional market players	Contemporary market (based on sharing)
Rules and regulations that are applicable to traditional market players are not being applied to sharing platforms, giving them an unfair advantage.	Regulations designed for traditional market practices are being applied to newly evolved business models in inappropriate ways.
Sharing platforms are disrupting their business.	Traditional players are lobbying regulators to impose protective measures that increase costs for contemporary players.

Defining applicable taxes and fees (legal)

Taxation laws that are not sufficiently defined for new operating models can put traditional market sellers at an unfair disadvantage. For instance, should individuals sharing their parking space for a fee be taxed in the same way as formal pay-and-park systems? If so, how and on whom should the tax be levied?

Concerns about unclear or unfair taxation structures have been the primary drivers of resistance from operators in traditional markets to sharing platforms. In the absence of applicable existing regulations, many cities have entered into partnerships with sharing-economy platforms to collect and remit taxes on behalf of the city. For instance, Airbnb has entered into agreements with Portland, San Francisco and San Jose where it remits tax collected from its local hosts.

While these partnerships may help in the short term, cities ultimately have to define a statutory tax and/or fee structure that clearly identifies the obligations of platforms to buyers and sellers. For instance, the city council of Seattle recently voted to impose a levy of \$8 per night for rooms and \$14 per night for complete homes on short-term rentals, starting in 2019 – against the wishes of short-term rental platforms, which argued the tax should be a percentage fee rather than a flat rate. In Vancouver, regulations to come into effect in 2018 will require homeowners to pay a one-time \$54 fee and annual \$49 fee to be able to rent out their principal homes for up to 30 days a year.

Cities need to define a regulatory framework that incorporates the views and concerns of all stakeholders – the sharing platforms, traditional market players and participants across different sectors. Some are using the additional revenue generated by these taxes to address relevant social issues: Seattle, for instance, will invest the taxes it collects from the short-term rental market in community-led projects and paying off bonds for affordable housing (Seattle Weekly, 2017).

Ride-sharing companies charged mileage fees to help fund infrastructure – Sao Paulo

Transportation Network Companies (TNCs), commercial entities that match drivers with passengers through a digital platform, are popular in Sao Paulo owing to the city's severe traffic congestion. But while TNCs rely on public infrastructure to generate revenue, they were not contributing to the cost of maintaining this infrastructure. In May 2016, the city announced that TNCs operating in the city would have to pay a fee averaging around \$0.03 per vehicle/kilometre, exempting free ride-sharing services. The city anticipates that this regulation will generate \$11.5 million each year.

The regulation also requires TNCs to share data (origin, destination, distance travelled, price, etc.) with the city, which will improve the city's ability to plan, analyze and manage its transport network – including ways to create an incentive for TNCs to complement public transit, limit their contribution to peak hours of congestion and better serve low-income travelers and disabled persons. The city has proposed a strategy to create price bands based on total kilometers driven. The price per kilometer rises exponentially with increased consumption discouraging users from using the service when demand is greater (during congestion or peak times) and augment supply at times with lower demand and, therefore, less served (typically the night time and weekends).

Source – Adapted from Shareable (2017) and City of Sao Paulo contribution to World Economic Forum study

Self-regulation (legal)

Some regulatory responsibilities can be taken over as fiduciary duties by sharing platforms themselves, allowing for self-regulation where a regulatory framework has not yet been developed. The extent to which these responsibilities can be delegated to platforms depends on the level of data captured for regulatory oversight – for example, as evidence for future governmental audits to determine the effectiveness of enforcement by the platform.

Self-regulation has two major advantages. First, it decreases the pressure on regulatory bodies. Second, it allows the government to observe trends before assisting cities to take corrective steps, if needed.

Protecting data (social)

Sharing platforms collect, store and analyze a lot of data on their participants, including transactional data (e.g. information on the goods shared, cost and payment) and non-transactional data (e.g. user profiles, ratings, reviews, geolocation, preferences). This data is valuable and needs to be protected. Platforms usually address concerns regarding disclosure of information in their terms of use.

Data gathered by sharing platforms can also be useful for city governments – as noted above, to assist with transport planning, for example, and also to help determine the effects of sharing in a particular sector to inform regulations. However, sharing private data with government raises privacy concerns. One way to address this is by providing anonymized data to governments that could help achieve the desired results without compromising user identity. For instance, Uber has been providing data to cities on pick-up and drop-off locations at a zip-code level (Federal Trade Commission, 2016).

The challenge of regulating sharing-economy platforms is complex. Governments have to avoid deterring innovation while trying to achieve economic, social or environmental goals. It is, therefore, important for them to have flexibility in their regulatory approach.

Conclusion

While the concept of sharing is as old as humanity, the full possibilities opened up by the digital tools of the sharing economy are often still not fully appreciated. This paper has set out to improve understanding of the sharing economy's potential by clarifying terminology; exploring examples of what kinds of goods and services can be shared, who participates in sharing platforms and why; and discussing the challenges created by the sharing economy and how authorities can respond.

Cities need to move beyond the regulatory mindset in this evolving landscape. The paper elaborates on the potential role for cities in facilitating/enabling these business models. They may also have a role in integrating/implementing solutions for sharing of (or collaborating on) public assets and services and/or collaborating with other cities, enterprises (for-profit or not-for-profit) and other stakeholders to make the most of a city's assets. Harnessing these business models, cities can channel partnerships to influence and shape "sharing and collaborative" culture across all industry sectors – as they have with the mobility and hospitality sectors.

Getting to grips with the pitfalls and potential of the sharing economy is critical. If managed well, the sharing economy promises to have a transformative impact on cities. It can boost the economy, nurture a sense of community by bringing people into contact with one another and facilitating neighbourliness and improve the environment by making the most efficient use of resources.

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Endnotes

- i. There are limitations to the term sharing economy. In this paper, we shall use sharing economy as an encompassing term to cover different yet related concepts of the sharing economy as perceived and characterized by different stakeholders identifying with this model. Each concept differs in its understanding of approaching the underlying concept of sharing in some manner. The focuses could be on the benefit (e.g. access), behaviour (e.g. sharing), business model (e.g. rental) or even a market structure (e.g. peer-to-peer (Botsman, 2015)). In a recent report from OneEarth, Local Governments and the Sharing Economy, a Google Trends analysis showed that the term sharing economy is by far the most common term among others such as peer economy, access economy, asset economy and collaborative economy.
- ii. <http://www.dictionary.com/browse/economy?s=t>
- iii. A Nielsen study has revealed that nations more affected by financial crises are more open to participate in the sharing economy. In the case of most affected nations in Europe, the study revealed that over 53% of Spaniards were willing to share or rent personal property, along with Greece and Portugal. See <http://www.barcelona-metropolitan.com/features/report-the-sharing-economy/>.
- iv. When passengers are heading the same direction as the driver.
- v. Users sourcing a ride on demand from a pool of vehicles.
- vi. Sourced rides with costs split between riding passengers.
- vii. <http://yeyak.seoul.go.kr/main.web>
- viii. A sharing-economy platform requires that there be substantial number of buyers and sellers, enabling participants to have a greater number of matches. A high number of buyers draws a high number of sellers onto a platform and, conversely, a high number of sellers gives buyers an incentive to be on the platform. This phenomenon results in two-sided network effects.
- ix. Although the challenges listed in the section are applicable to all sectors sharing for economic reasons, references provided will often cite transportation network companies and short-term rentals, particularly Uber and Airbnb, owing to the scale of growth by these companies. Less than a decade old, and currently valued at \$68 billion and \$29.3 billion respectively (CNN Money, 2017), they are critical examples for other sectors looking to scale in the sharing economy.
- x. When transacting on a sharing platform, the seller, in most cases, has more information about the goods and services being offered than the buyers. This information asymmetry can lead to a "market for lemons", in which sellers with high-quality goods are unable to convince buyers to pay more, resulting in only low-quality goods being supplied and eventually in buyers losing trust in the platform and stopping purchasing from it.
- xi. See <https://amsterdamsmartcity.com/projects/sharing-economy>.



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