WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

Industry Agenda

Understanding the Sharing Economy

System Initiative on Environment and Natural Resource Security

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Contents

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Foreword

At the Annual Meeting of the New Champions 2016 in Tianjin (Summer Davos), in June, the World Economic Forum and CCICED jointly hosted a High-Level Forum on the Sharing Economy. The session brought together business leaders at the forefront of innovation, academics and government officials from China and around the world to discuss the technology that is driving the transition towards the sharing economy and the effect this is likely to have on society.

Following the success of this event, the Forum and CCICED agreed to continue to jointly explore the rise of the sharing economy and its impacts and they will sign a five-year MoU to collaborate on issues of environment and development. The Forum and CCICED will undertake research, convene experts to shape Chinese national policy-making and showcase the work of the CCICED on an international stage. This will start with the continuation of work on the sharing economy and will broaden to other issues, including the circular economy, oceans, climate change, and the Fourth Industrial Revolution and the environment.

This document represents a snapshot of initial analysis related to the impact of the sharing economy in China. It begins to explore the implications of new consumption models on the economy, society and the environment. This work will be expanded and deepened through the engagement of Forum and CCICED experts and the private sector. The work will provide a comprehensive assessment of the key opportunities and challenges related to the digital transformation of the sharing economy through a series of data-driven case studies. In addition, it will provide an overview of best-practice policies that have been implemented around the world – providing an evidence base to help effectively shape national policy approaches.

Following the event at the Annual Meeting of the New Champions 2016 and consultations with the CCICED, the work will specifically address the following key questions:

1. **National economy, social development, and environmental protection**

a. What are the impacts of the sharing economy on national economic development and employment?
b. What are the differences between the impacts on social development in urban and rural areas?
c. What are the effects on urbanization?
d. What is the relationship between the sharing economy and sustainable development? How can it play a role in developing a resource-saving and environmentally friendly society?

2. **Industrial development**

a. What is the impact on industrial development and competition between the sharing economy and traditional economy?
b. What would be the best way to implement multi-industry and multi-platform integration to promote the sharing economy in the future?

3. **Enterprise development**

a. During the process of enterprise development and implementing the sharing economy, what are the barriers for technology, market, society, law and administrative mechanisms?
b. What are the expectations in laws and regulations, policy and standards?
c. The Chinese government has clarified the goal for de-capacity and the process of enterprise de-capacity would lead to a huge amount of staff transfers and vacancies, and disused plants, equipment and storerooms, etc. How can the staff be re-employed and effective use made of the defunct equipment through the sharing economy?
d. How will traditional enterprise, such as hotels and taxi companies, deal with the impact of the sharing economy to realize transition?

Introduction
Mega Trends, China and the Sharing Economy

A series of global and national mega trends are acting as drivers and enablers for the adoption of the sharing economy in China. These include:

Economic rebalancing
In recent years, as set out in 2011 in the 12th Five-Year Plan, China has started a process of economic rebalancing away from investment and exports towards consumer-led growth. In 2015, for the first time, consumption and services accounted for more than half of total GDP and 58% of GDP growth[1]. The engine for much of this growth comes from an increasingly urbanized group of consumers; the proportion of Chinese citizens who live in cities rose from 30% in 1994 to 53% in 2014. As reported in the latest urbanization plan, the share of China's citizens living in cities will rise to 60% by 2020[2]. Premier Li Keqiang noted: "Domestic demand is the fundamental driver of our nation's economic development and urbanization has the greatest potential to expand domestic consumption."[3]

Material efficiency
China currently uses 2.5kg of materials per $1 of GDP versus an OECD average of 0.54kg[4]. As China's economy continues to rebalance, new models of consumption such as the sharing economy can play a role in decoupling economic growth from resource use and in promoting material efficiency. In a sharing economy, products are used more intensely, rather than sitting idle, allowing for a growth in consumption without the accompanying need for more natural resources while also unlocking the spare capacity in the system.

Technological change
The sharing economy is being delivered by a series of intersecting technological trends including: intelligent assets (the connectivity of products and materials via the internet of things, IoT); the proliferation of smart devices such as smartphones; the arrival of near-ubiquitous connectivity; mobile payments infrastructure; social media-based trust and verification systems; and the collection and analysis of big data[5]. The convergence of these technologies facilitates instant connections between people and assets as well as knowledge of the availability and location of underused or shareable products, services, space, labour or capital.

High-speed domestic adoption
In China, the growth of the sharing economy has been astounding. In 2015 the sharing economy was estimated to be worth about $229 billion domestically and is predicted to grow at a rate of 40% annually over the next five years. By 2020 it could account for 10% of GDP, according to the State Information Centre[6] in Beijing. China is poised to take the opportunity, with high adaptation rates of key technologies. In 2016, China had an estimated 980.6 million mobile phone users[7] and leads the way globally in proximity mobile payments, with over 195.3 million people using the technology in 2016 (compared with 37 million in the United States, the next largest market)[8].

Part One
Building an Evidence Base

Policy-makers are faced with a number of choices and dilemmas daily. To make informed decisions, the first step is to gain an understanding of an issue. For policy-makers to invest in the sharing economy, there needs to be a strong evidence base of information and this base should aim to quantify the potential costs and benefits of adopting or encouraging a particular technology. In collaboration with its partners, the Forum will undertake a series of case studies, using public- and private-sector data to ascertain the size of the social, environmental and economic impacts of the sharing economy.

Case Study: Home-Sharing and Peak Capacity

Key messages

- Traditional tourist infrastructure is built around the peak load of occupancy and is largely inflexible in times when visitor numbers surge past the normal base rate.
- An initial study by The World Economic Forum and MIT using Airbnb data demonstrates that over the course of the 2016 Olympics in Rio, 48,000 active listings offered through Airbnb housed 85,000 of the city's estimated 500,000 visitors. A substantial portion of these listings were created in the run up to the Olympics.
- In order for the city to have provided accommodation for this surge of visitors, it would have needed to build 257 hotels. This "elastic supply" that home sharing can provide offers significant benefits not only in terms of accommodation for visitors, but also in terms of material and emissions savings.

Context

In recent years, the rise of platforms such as Airbnb, Tujia, HomeExchange and Couch Surfing have brought about a new model for accommodation provision. By connecting on these platforms, people who possess property can rent, exchange or donate the use of their space to others. The platforms play the role of mediator, connecting prospective guests to hosts and providing a system of ratings to minimize information asymmetries, while also offering communication channels, insurance and other services.

All cities can expect to have different numbers of visitors at different times of the year. For example, visitor counts are higher during peak tourist seasons and during large business or sporting events. Traditional hotel infrastructure plays an important role in accommodating many of these tourists but is subject to a significant inefficiency: hotel-room counts typically reflect the capacity needed to accommodate "peak demand". That is, to accommodate all visitors during peak-demand periods, there needs to be enough hotel rooms to match these high levels. When a city hosts a large tourist event, such as the Olympics, it previously had to build significant hotel capacity to account for all of the guests. In some cases, this excess capacity became unused capacity after the event as the number of visitors reverted to the mean. This incurs a large economic and environmental burden, as the buildings and their contents may be used well below their maximum value for a substantial length of time.

The sharing of rooms can help resolve this problem. If people are able to rent out existing capacity to tourists during times of high demand, it will help a city better use its resources by utilizing existing capacity rather than building new rooms, which may, in turn, become obsolete. This theoretically brings net environmental benefits by reducing materials used in construction and their associated emissions, and also requires minimal public or private investment. As yet there is little research on the actual environmental and economic effect of this phenomenon.

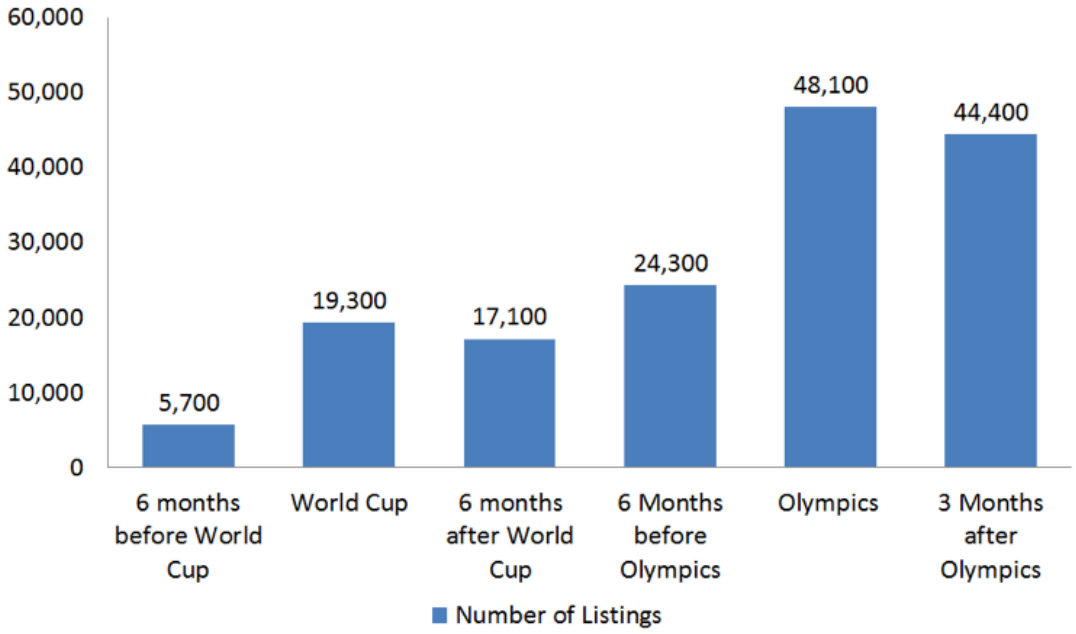
Research

The Forum, in partnership with MIT Senseable Cities Lab, will quantify the role of home-sharing in peak-capacity situations. The following brief uses aggregated data supplied by Airbnb from Rio de Janeiro during the World Cup and Olympics to ascertain the effect home-sharing had during these two major events, including saved emissions, materials, and distribution and effect of the economic impact.

Initial findings

In the initial phase of the research, the data suggests that a significant amount of capacity was provided by home sharing during the two events and that this capacity demonstrated "flexibility." In the run up to the World Cup the city grew from a base level of 5,700 Airbnb listings, rising 13,600 to 19,300 during the event. The number of listings then dropped with decreased demand after the event, falling to 17,100 six months after the World Cup. Over the next year and half the count rose by 31,000 to a full 48,100 listings during the Olympic Games. These patterns suggest that in addition to the overall growth of the platform, homeowners were reacting to demand signals in the market.

Figure 1: Snapshots of active listings on Airbnb in Rio de Janeiro before and after major sporting events

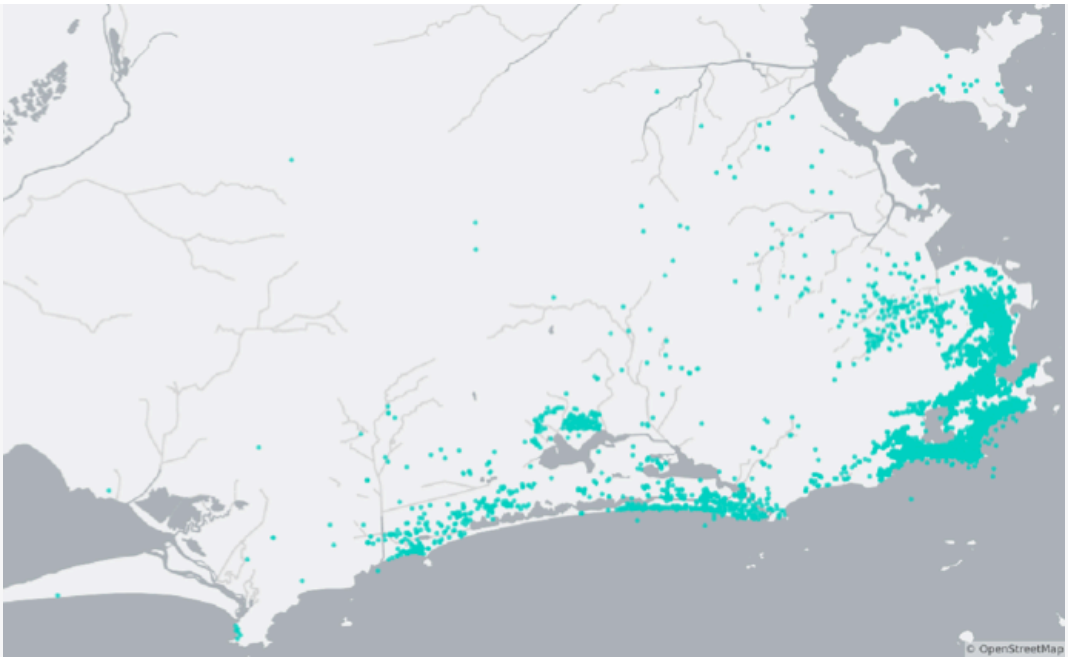


Source: Airbnb

In total, Airbnb home sharing accommodated a total of 85,000 guests during the 2016 Olympic Games in Rio, a sizable proportion of the estimated 500,000[9] visitors to city. If each pair of guests required one hotel room for the two week period of the games, the added capacity from Airbnb home sharing would be the equivalent of building 42,500 hotel rooms, or 257 average sized hotels in the city operating at full capacity during the games[10]. Counting all listings, booked and unbooked, the city had 48,100 listings active during the 2016 games. If each listing were the equivalent of one hotel room (which is conservative, since a substantial fraction of listings have more than one room), and these listings were all available over the duration of the Games, this would equate to the addition of 293 hotels. In the two years between the World Cup and the Olympics the city added 28,800 listings, the equivalent of adding 175 hotels between the two events[11]. Building this number of hotels, or even a fraction of this number, would have been a large undertaking in terms of financing and material use.

Data on the location of these listings demonstrates that they are also well distributed in the city. During the World Cup, home-sharing guests stayed in over 50 neighbourhoods across Rio and 70 during the Olympics (see Figure 2). Theoretically, this could bring extra economic gains by spreading tourist spending and host income into areas that normally don't receive large numbers of tourists, boosting the local economy[12].

Figure 2: Distribution of Airbnb listings during the Rio de Janeiro 2016 Games



Airbnb listings in Rio de Janeiro were spread over 70 neighbourhoods

A separate piece of research undertaken by Airbnb and Cleantech Group examined sustainability levels for various listings. Based on 8,000 survey responses, the research indicated that Airbnb guests in Europe use 78% less energy, consume 48% less water and produce 0%-28% less waste compared with hotel guests. Although these findings pertain to guests staying in Europe, this is indicative of the potential environmental benefits of home-sharing around the world[13].

Next steps

The above is an initial snapshot of the effect of home-sharing during the Rio Olympics. In the next stage, the research will dig deeper into the data to better quantify the environmental and economic impact of home-sharing during the Olympics and other major events.

Case Study: The Potential of Ride-Sharing Mobility

Key messages

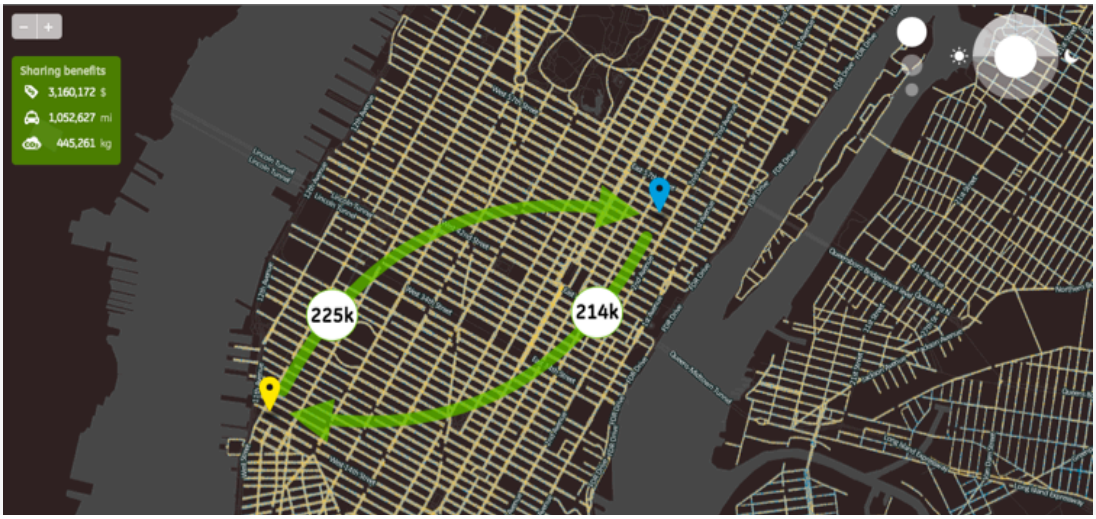
- Ride pooling, when two or more people who are making similar journeys share one taxi, is an efficient way of cutting down on congestion and pollution. This is now becoming more prevalent due to new digital on-demand "ride-sharing" services.
- A study by MIT using New York taxi data demonstrates that 80% of journeys could be shared by two passengers with minimal disruption to the journey, reducing the amount of trips in the city by 40%.
- This is already happening in China; in 2015, passengers with the company Didi Dache, shared an average of 1,143,000 rides per day. Over the entire year this created a net saving of 510,000,000 litres of fuel, 13,550,000 tonnes of carbon dioxide.

Context

The traditional taxi system operates via one of two models – people hail taxis on the street or phone for taxis in advance. In recent years, this model has been disrupted by newcomers such as Didi Dache (now Didi Chuxing), Uber and Lyft, who have changed the operating model for the taxi industry. These companies use GPS-enabled smartphone technology to connect drivers with customers on demand, with routing, payment and feedback all enacted through smartphones.

An MIT study mapped all taxi pick-ups and drop-offs in New York City

The app-based, on-demand system of taxi usage, coupled with advanced computer technology, allows for the greater possibility of sharing taxi rides as platforms are aware of the journeys people intend to take in advance and can match them in real-time to similar journeys. Companies worldwide have started to roll out the taxi-pooling model in a number of cities.



On this typical journey in Manhattan, New York City, marked by the arrows above there were over 200,000 journeys annually in which people were taking the same route at the same time in different taxis who could have shared the journey with minimal disruption. This would save $3 million for consumers and nearly 450,000kg of CO_2 emissions

The profiled study from MIT aims to quantify the potential of ride pooling in urban environments. The 2011 study used data from the 13,586 registered New York taxis, who made a total of 150 million journeys that year, nearly 400,000 taxi journeys per day. The start and end point of each trip was recorded via GPS as well as the time and duration of the journey. The study analysed the data at different periods of the day and matched shareable journeys. The key-changing parameters were the time a customer was willing to wait for a taxi, and the extra time that a passenger was willing to have added to a journey.

The study concluded that if passengers are willing to wait for one minute and have their journey lengthened by five minutes, 80% of journeys could be shared. The 80% figure equates to 40% less journeys over the year or a total of 60 million journeys, reducing congestion and significantly increasing the utilization rate of the taxi.

This saving has started to have an impact on the real economy. The ride-sharing company Didi Chuxing offers two car-pooling services, Kuaiche Banche, and Shuanfengche. With these services, customers can choose to share the journey at a discounted rate. Company data from Didi shows that in 2015 the number of rides on average every day on Kuaiche Banche and Shuanfengche

was 630,000 and 513,000 respectively, 1,143,000 in total. This was the equivalent of taking 2.1% of taxis off the road in Beijing, and 1.6% in Guangzhou, the most popular markets for the service. Over the entire year this created a net saving of 510,000,000 litres of fuel, 13,550,000 tonnes of carbon dioxide[15].

Beijing currently has 66,000 licensed taxi drivers, which account for 7% of all journeys taken in the city[16]. Ride-hailing companies operate large fleets of drivers; Didi, for example, has a fleet of 10 million registered drivers across China.

Next steps

Using the model developed by MIT, the Forum aims aim to repeat the study for China. It will ascertain the potential for and extent of ride-pooling in Chinese cities, cooperating with cities such as Guangzhou and ride-sharing companies such as Didi Chuxing for new sources of data. It will also investigate the impact on congestion, carbon emissions and urban mobility.

Part Two
Policy Case Studies

Technological change moves at exponential rates and, in the case of the sharing economy, this has led to a rapid disruption of industries and business models. Sharing-economy models have led to notable transformations in the tourism, real estate and mobility sectors as well as changing the way people work and what it means to be an employer. For the sharing economy to grow, a move towards smart legislation is required, which balances the interests of consumers, municipalities, public safety and social goods.

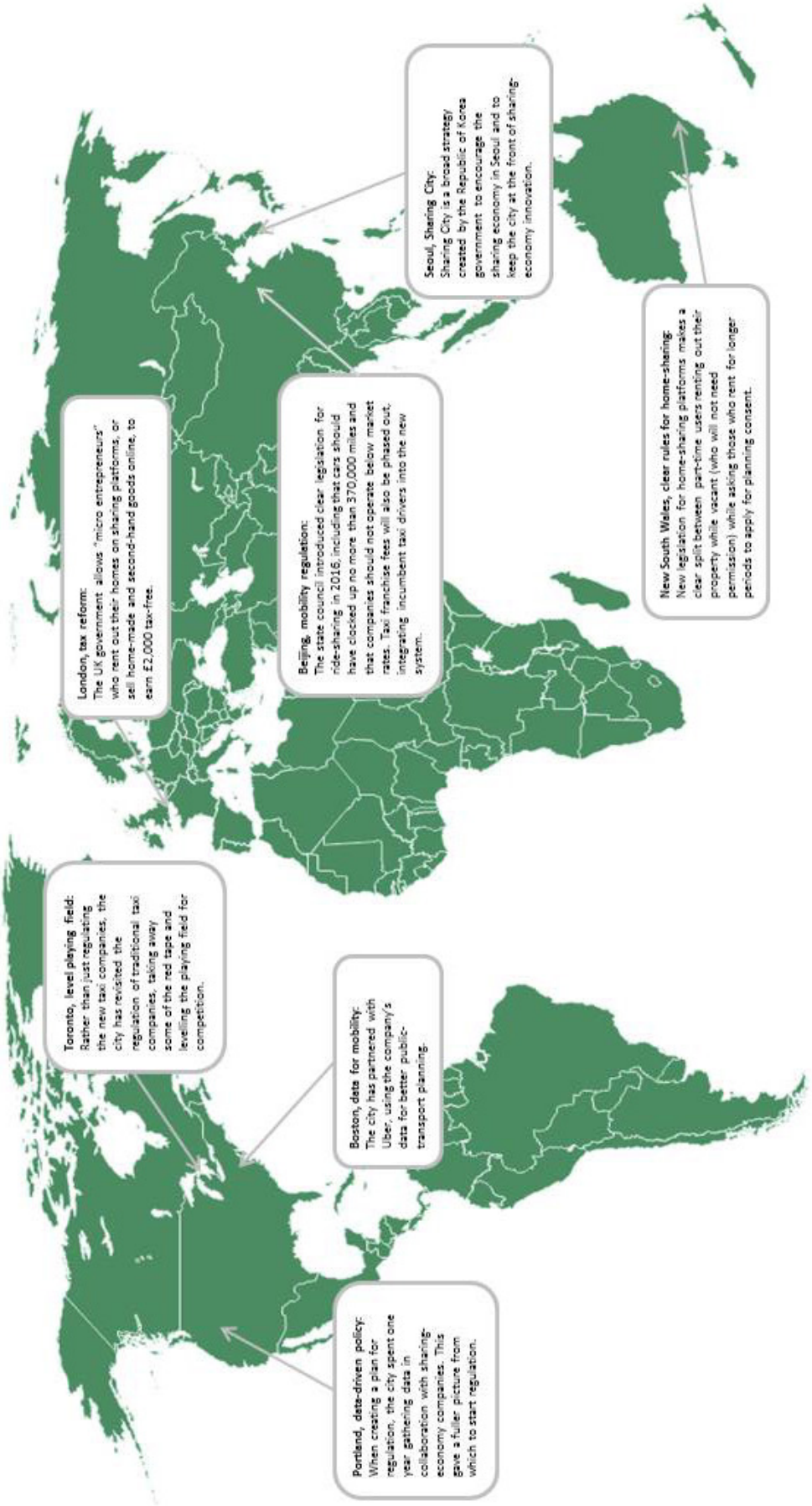
China has an opportunity to lead the way in making well-informed policy decisions that provide the right regulatory framework for the sharing economy. Moreover, there is a secondary set of opportunities. The digital platforms on which the sharing economy is based produces huge amounts of data which can help governments in various ways, from environmental monitoring to improved urban planning.

The following is a snapshot of how some cities around the world are regulating the sharing economy. No one region or government has cracked this formula yet. However, by looking at the global patchwork of municipal and national policies, a number of guiding principles have emerged.

Policy Approaches from Around the Globe

Many cities around the world have tried different approaches to regulating and encouraging the sharing economy.

Figure 3: A snapshot of global approaches to regulating the sharing economy



Case Study: Seoul – Building an Innovative, Collaborative and Prosperous City

Key messages

- To spur innovation; develop a culture of collaboration and belonging, and to create opportunities for prosperity for all its citizens, Seoul is transforming into a “Sharing City”.
- The city, driven by Mayor Park Won-Soon, set up an umbrella programme in 2012 which supports sharing initiatives (non- and for-profit, start-ups and established enterprises), promotes public awareness and participation, and develops an international brand for the “Sharing City” Seoul.

Overview

Two contrasting forces are shaping the development of the Sharing City and are constant throughout the programme. First, the multitude of grass-roots, super local sharing initiatives which connect neighbours and dwellers to share children’s clothes, spare rooms and time. These initiatives are reforming the culture of the city, building a more closely connected community of trust and equal relationships. Second, there are super global, transactional and commercially driven sharing-economy companies operating at scale, like Airbnb, which are supporting the creation of entrepreneurial opportunities in the sharing economy. The city’s model for change is based on enabling and nurturing both the grass-roots and global sharing economy.

Key policies and actions

Public-private platform: Seoul initiated a programme to develop the sharing economy, in close collaboration with city innovation agencies and existing organizations and sharing-economy businesses, helping to build a broad platform. For this the city enacted an official ordinance on the promotion of sharing.

Public approval: Seoul built trust for sharing initiatives by vetting and promoting sharing-economy initiatives across the city. From 2013 to 2015, the city designated 64 organizations and enterprises as supported by the Sharing City initiative.

Funding and public resources: Open competitions for subsidies, incubation spaces and services support for enterprises and start-ups in the sharing economy. The local government has made government facilities publicly available as part the programme.

Alignment of laws and institutions: Public laws and institutions have been examined and changed to facilitate sharing-economy innovation in various fields, including transport, tourism, taxation, car parks, food, insurance and construction.

Government incentives: Local administrators are incentivized based on promotional activities and successes in their districts to spread the initiative across the city.

Knowledge-sharing: The platform promotes the sharing economy through sharing experiences and knowledge, training sessions and innovation hubs.

High-tech public infrastructure: The Seoul sharing economy is building on a vast high-tech infrastructure – broadband is available to 97% of people in the Republic of Korea. The city is offering a broad array of offices, meeting rooms and public spaces to initiatives and promotes the Sharing City programme to city dwellers across diverse channels.

Impact
Sharing is becoming ever more widely accepted and spread throughout the population. It is driven by the favourability of the economics as well as its role in connecting to the community. Seoul made sharing of cars, parking spaces, clothing, tools, books and rooms a common occurrence, made over 1,000 meeting rooms and auditoriums available to the public to rent. Over 60 sharing services are designated by the Seoul government, ranging from sharing of vegetable gardens to cars to live performances and skills[17].

Case Study: Boston – Data-Sharing to Enhance Urban Mobility

Key messages
- The city of Boston has partnered with Uber and will use the company's data to optimize traffic planning and reduce congestion.
- Data from Uber trips is anonymized and consists of a record of the zip codes of the start and end of a trip, the distance and time travelled.
- Having access to this data will allow the city of Boston to better understand private transport flows, manage urban growth and public transport, and eventually reduce greenhouse gas emissions.

The city of Boston mapped out with Uber data[18]

The sharing economy is managed through digital platforms and the use of these platforms leaves a long trail of potentially high-value data. Analysis of this data can help companies optimize their service and open up opportunities for public-private collaboration. This valuable data can help governments in a range of fields, from environmental monitoring to urban planning. In Boston, the mayor's office partnered with Uber to use the company's data to help plan the city's transport infrastructure.

By analysing the most popular routes and drop-off areas at different times of the day or week, the city can build a digital picture of how people move around. Theoretically, the data can then be used to re-route public transport, optimize zoning and help allocate investment for new infrastructure.

Impact
The plan is still in its early stages and needs more granular data. And Uber has privacy concerns, wishing to protect the identity of its users. This issue is something that will likely reoccur as municipalities and platforms increasingly collaborate on data-sharing. Nevertheless, a data-sharing scheme that focuses on gaining the right level of detail, without compromising privacy, seems a promising tool for city planning and the initiative is working towards achieving this.[19]

Part Three
Principles for Regulation

Experience to date suggests that policy-making that effectively leverages the benefits of the sharing economy requires the creation of the right enabling framework based on a set of guiding principles. After an analysis of global policy-making and consultation with experts, the Forum has initially selected the following seven principles as guidelines for policy-makers:

Creating space for innovation
Outright bans or overly burdensome regulation can crowd out innovation. For new business models to grow, governments need to provide an initially encouraging environment while also building the necessary infrastructure to allow for the development of innovation hubs. Public-private partnerships can also play an important role in developing new enterprises for the sharing economy.

People-centred
Policies should be designed around the citizen with the goal of increasing the overall welfare of the population, improving quality of life, environmental and social well-being.

Proactive approach
In many regions, governments have allowed the sharing economy to exist in a grey area and policy outcomes have been left to courts and litigation rather than well thought-out regulation. New business models need to be brought into the mainstream and governments need to make clear frameworks that minimize uncertainty.

Assess the whole regulatory system
The focus should not only be on regulating the new entrants to the system but also on where the administrative burden could be lifted from the incumbent players so that all companies are on a level playing field.

Data-driven government
The sharing economy is based on digital platforms and therefore creates large amounts of useful data that can be used by governments and cities for improving the urban environment through public-private partnerships. These new data sources should also be at the centre of policy-making, as they give governments a more accurate picture of what is happening.

Flexible governance
Technology changes quickly and governance models need to be more flexible than in the past. This can include an ongoing dialogue with all the key stakeholders and sunset clauses (periodic expiry and renewal of regulation) in place so governments can adapt to changing technology.

Shared regulation
In the platform economy, all the players need to be involved in regulatory discussions and in the enforcement of policy. Engagement of a wide range of stakeholders from the government to companies and citizens is key to good policy-making and effective enforcement[20].

Contributors

Authors
Antonia Gawel, Project Lead, Circular Economy, World Economic Forum
Wolfgang Machur, Project Specialist, Circular Economy, World Economic Forum (seconded from Accenture)
James Pennington, Project Specialist, Circular Economy, World Economic Forum

Experts consulted
Sarah Bianchi, Director of Global Policy Development, Airbnb
Peter Coles, Head Economist, Airbnb
Frank Pang, Vice President, Didi Chuxing
Paolo Santi, Senior Researcher, MIT Senseable Cities Lab
Joeri van den Steenhoven, Director, Mars Solutions Lab
Arun Sundararajan, Professor and the Robert L. and Dale Atkins Rosen Faculty Fellow at New York University's Stern School of Business

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World Economic Forum
91–93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland
Tel.: +41 (0) 22 869 1212
Fax: +41 (0) 22 786 2744
contact@weforum.org
www.weforum.org

World Economic Forum USA
3 East 54th Street, 18th Floor,
New York, NY 10022, USA
Tel.: +1 212 703-2300
Fax: +1 212 703-2399
contact@weforum.org
www.weforum.org