CASE STUDY

CHINA: MOBIKE

Synchronizing social and technological innovations towards sustainable urban transportation with low-carbon mobility in the sharing economy.

Background Information

The development of low-carbon transport models and sharing mobility are central to transforming carbon-intensive urban transportation systems and an important step towards achieving overall sustainable urban development. The rise of the sharing economy phenomenon has inspired numerous types of disruptive innovations with the potential to drive climate-smart urban transformation (Lan et al., 2017), particularly in the unique context of China.

Long-standing problems within the critical urban sector of transportation in China such as congestion, carbon-intensive transportation modes, overcrowded public transport and air pollution continue to attract global attention and pressure to address these conditions. Mega-metropolitan areas and cities require disruptive innovations to meet their low-carbon visions and global greenhouse gas reduction targets (GREEN-WIN, 2018).

Mobike is the world's first free-floating bike-sharing (FFBS) scheme that began in Shanghai in April 2016 and now operates in more than two hundred cities across the world (GREEN-WIN, 2018). The Mobike service operates through an app-based platform that allows users to locate, secure and pay for a nearby bike within fifteen minutes. Each bike is equipped with a Location Based Service (LBS) system and unique Quick Response (QR) code so users can park the bike in any designated public bike parking space, providing Shanghai's inhabitants with an alternative low-carbon commute. Mobike has over 200 million registered users worldwide and over 8 million bikes serving its users around the globe (GREEN-WIN, 2018).

At its launch, Mobike aimed to address the negative environmental impacts of the transportation sector by solving the last mile issue and synergistically aligning its green business vision with the Shanghai 2035 Master Plan, which chose green development as the key for the city's sustainable transport system goals. The central objective of Shanghai 2035 is to achieve more than 85 per cent green transport. The Master Plan identified low-carbon transport systems such as Mobike's FFBS scheme as promising development areas (Ma et al., 2017). To further reduce its carbon footprint and ensure the longevity of the bike's product life cycle, Mobike designed and manufactured its own bikes with durable (4+ years) and weather-resistant materials (solid aluminium body). In April 2018, Mobike was acquired by Meituan-Dianping, China's largest provider of on-demand web services.

Mobike has fostered change in the behaviour of Shanghai citizens through technological innovations (LBS, QR, apps) and social innovations (sharing mobility), which other businesses can leverage to develop green and affordable low-carbon solutions in cities.

APPROACH, IMPLEMENTATION & CHALLENGES

Social and technological sharing innovations to create affordable, flexible and sustainable t ansport

The value of sharing is central to human cultural development, exchange and wellbeing (Ma et al., 2017). The emerging sharing economy provided Mobike a collaborative way to transform Shanghai residents from passive consumers to active value co-creators (Lan al., 2017). In aligning its business with the core of the sharing economy, Mobike involved a high level of contribution from its users. Moreover, a self-organized group, known as the Mobike Hunters, implemented mechanisms of social regulation of Mobike users' behaviour. The system incentivised good sharing behaviour by allocating Mobike credits for activities such as reporting damaged bikes and deterred violation of user rules by deducting points for behaviours such as inappropriate parking. As collaboration increased and users contributed to the company's commercialisation through the app, both Mobike and its users were able to form concerted values of nurturing green, affordable and flexible t ansport.

Figure 1. Bikes are re-parked in an orderly fashion by Mobike Hunters in Shanghai, China (Policy Brief No. 642018, GREEN-WIN, 2018).

App-based platforms to coordinate shared mobility users

Mobile apps and other Information and Communications Technology (ICT) platforms provided Mobike a very direct way to enable and mediate shared mobility with its users. Embedded Global Positioning System (GPS) technology in the bikes and real-time data easily links the FFBS service straight to the user through their mobile app. No rental station, nor dispatcher is needed, and the fare payment is au omatic.

The ability of ICT platforms to rapidly pool information and facilitate exchange of resources has fostered app-based sharing networks to expand at unpreceded levels. Experts predict the app-based economy will be worth more than €5 trillion by 2021. In Shanghai, more than ten million shared mobility users and 1.5 million shared bikes are operating through ICT platforms hosted on apps (GREEN-WIN, 2018).

Mobike aligned its low-carbon transportation vision with the two key enabling factors of app-based mobility: convenience and cost (GREEN-WIN, 2018). Mobike appeals to users through its flexibility through an inexpensive ICT platform-based app and easy-to-access alternative urban transport. According to Prof. Chen Xiaohong from Tongi University (2016), by combining features of innovative technologies and sharing,

Mobike and other low-carbon shared mobility providers can break the locked-in transport structures in cities such as Shanghai and therefore drive sustainable solutions.

Challenges

Mobike's entry into the market as a strong and fast-growing business coupled with government cooperation was understood as a misleading market signal for great business opportunities (GREEN-WIN, 2018). This led to over-investment, competition, and over-supply of bikes in a very short period.

The success of Mobike in Shanghai triggered thirteen new companies to launch similar FFBS schemes between January to August 2017. By the end of June 2017, Shanghai was flooded with more than 1.7 million shared bikes and over half of the city's residents were registered users of a FFBS scheme (Ma et al., 2017). Consequently, these impacts on the market formed negative interactions with local Chinese governments and the city authorities of Shanghai, for instance, responded by removing 300 thousand bikes from public areas and by placing obstacles to limit companies' operation.

The rapid upscale led to user misbehaviour such as vandalism, dumping and illegal parking of the bikes, which exacerbated the material stress on public spaces already caused by the flooding of bikes. These increasing pressures dramatically altered government and citizen attitudes towards FFBS schemes, breaking down initial support and concerted efforts to adapt Mobike to Shanghai's infrastructure.

Benefits & Lessons Learned

Reducing environmental impacts and achieving socio-economic benefits through low-carbon shared mobility

Mobike contributes to an alternative urban lifestyle through access-based mobility rather than private vehicle ownership, eliminating high costs of insurance, parking, maintenance and fuel consumption for users. This, in turn, can significantly reduce carbon dioxide (CO2) emissions and other material environmental impacts of car production, usage and infrastructure.

A 2017 report by Tsinghua University (TUPDI, 2017) shows how 200 million Mobike users in 200 global cities riding across 18.2 billion kilometres reduce about 4.4 million tonnes of CO2 emissions. At the same time, reducing emissions by commuting with low-carbon shared mobility also benefits the user by nurturing positive sharing behaviour and encouraging an active lifestyle.

OPPORTUNITIES & MOVING FORWARD

Despite governance challenges to realise the full potential of Mobike, the sharing economy still provides many opportunities to transform the way passengers commute in urban areas. Mobike exemplifies how apps and ICT platforms easily match consumer needs with a service or resource, while social networks and value co-creating can steer these innovations towards sustainable development. Sharing urban mobility through schemes such as FFBS can achieve win-win strategies for governments to meet low-carbon goals, provide residents with a sustainable alternative as well as increase economic value for businesses. Figure 2 (GREEN-WIN, 2018) below shows how shared values of sustainable development can be created and maintained through a collaborative governance model.

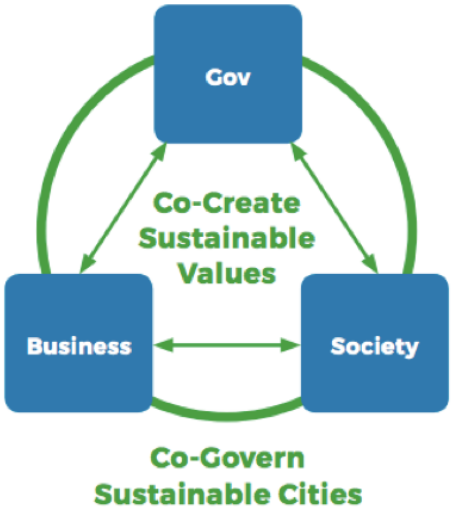

Figure 2. Collaborative Governance Model (Policy Brief No. 642018, GREEN-WIN, 2018).

By applying this model (Figure 2) at an early stage, principled engagement can promise businesses long-term implementation of their mobility schemes that continue to uphold the shared values and capacity of all stakeholders (Ma et al., 2017). The case of Mobike demonstrates how FFBS works in the app-based sharing economy and how a government-business-society collaborative regime can sustain the scheme and keep it aligned with Shanghai's low-carbon visions.

Moving forward, Mobike has been actively seeking government support to provide sufficient urban infrastructure and reduce uncertainties of its integration in the urban transportation system. The company has been seeking collaboration through other creative channels, engaging actors and influential academic and media figures to garner support.

With key collaborations and strong governance strategies formed at an early stage, Mobike is an example of how business can use the sharing model in this new economy to steer social and technological innovation towards sustainable transportation (Ma et al., 2017).

Information

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References

China bike sharing and urban development report, Tsinghua Urban Planning and Design Institute (TUPDI), 2017, Beiing.

GREEN-WIN. (2018). Deliverable 6.1: Disruptive Innovation, Win-Win Sustainability and Adaptive Lags in the Sharing Mobility Economy (Policy Brief No. 642018). GREEN-WIN. Available online: https://www.green-win-project.eu/resource/disruptive-innovation-and-win-win-strategies-sharing-mobility-economy-0 GREEN-WIN. (2018). Mobike: dock-less and app-based flexible bike sharing scheme. GREEN-WIN.

Lan, J., Ma, Y., Zhu, D., Mangalagiu, D., & Thornton, T. (2017). Enabling Value Co-Creation in the Sharing Economy: The Case of Mobike. Sustainability, 9(9),1504. Available online: https://doi.org/10.3390/su9091504

Ma, Y., Lan, J., Thornton, T., Mangalagiu, D., & Zhu, D. (2018). Challenges of collaborative governance in the sharing economy: The case of free-floating bike sharing in Shanghai. Journal of Cleaner Production, 197, 356–365. Available online: https://doi.org/10.1016/j.jclepro.2018.06.213