Case Study 5: Low carbon mobility transitions in China

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Introduction

China represents a test-case of global significance regarding the challenges of urban mobility transition. On the one hand, China is globally central to 'greening' mobility as the world's largest car market (Tyfield, 2014), and with significant further growth predicted (ibid.). On the other hand, the growth of a (fossil-fuelled) urban mobility system has been a central feature of the immense changes that have occurred since 1978 in China. Yet in both respects the need for an urban mobility transition is increasingly urgent, as manifest in issues of emissions and air pollution, urban gridlock and its social costs, and intensifying unrest around urban mobility issues. China, however, is also the site of significant government and corporate innovation efforts focused on opportunities for 'catch-up' in a key industry of the 21st century around the electric vehicle (EV) (Howell *et al*., 2014). At the same time, the much lower-technology electric two-wheeler (E2W) has emerged as a global market entirely dominated by small Chinese firms and their Chinese customers (Tyfield *et al*., 2015).

Despite the disappointment to date regarding EVs (low sales and low adoption for private use), the evidence shows a highly dynamic and geographically diverse situation in China. In particular, we highlight how the prospects regarding e-mobility system transition hinge on the uncertain assemblage of a diverse set of niches around China and the capacity of the EV and E2W to move down- and up-market respectively. This involves e-mobility becoming credibly associated in the public's imagination and experience with a new consumer-attractive, middle class urban-status and modern mobility system, including integration with the latest and most consumer-attractive digital and app economy. Prospects of mobility transition in China thus hinge primarily on issues beyond the current policy-dominating focus of high-technology EVs, such as the generational shifts towards prioritizing quality of life issues, together with associated openings for non-automotive sectors, notably in China's internet and telecom giants. In this case study, we offer an introduction

to the multiple dimensions of low carbon mobility transitions currently happening in the key global case study of China, focusing on four cases: electric vehicles (EVs), low-speed EVs, electric two wheelers (E2Ws) and vehicle sharing.

Politics of low carbon mobility transition in China

China is the largest absolute GHG emission producer in the world, since 2007 (Tyfield *et al*., 2014), and with rapidly increasing car ownership – growing approximately 20-fold from 200 people/vehicle in 1990 to 12 in 2012 – and plans for further urbanisation, it is already facing serious environmental problems caused (in part) by city traffic. By 2014, eight big Chinese cities had implemented restrictions on the purchase and travel of vehicles[1], and many other cities are following this example.

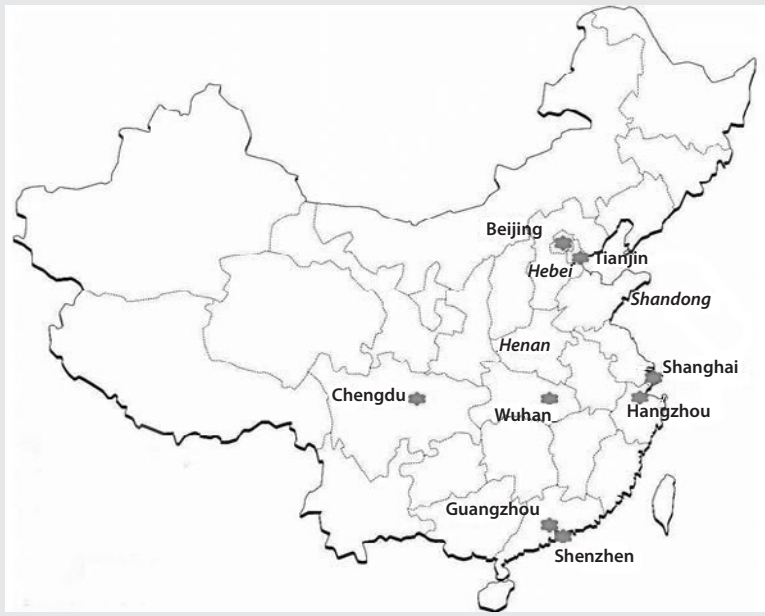

Figure 1: Map of China. Major cities highlighted in bold, provinces in bold italics.

Various measures to reduce car ownership and the use of private vehicles (e.g. licence plate lotteries, auctions and day-of-the-week restrictions), however, have neither improved air quality nor solved congestion problems in major cities. At the same time, private car ownership is in a phase characteristic of many post-socialist countries (Burrell & Hoerschelmann, 2014), where for a long period private car ownership was not possible. The automobile has become an important goal for consumers but now is slowly shifting from a status symbol to a family investment. This urge for a (large, foreign) car as a material and symbolic possession that has long been unattainable, remains very significant in China, complicating large-scale purchase of 'green' vehicles in the foreseeable future.

1 Beijing, Shanghai, Guangzhou, Tianjin, Guiyang, Shijiazhuang, Hangzhou, Shenzhen (December 2014)