Standardization in China: Electric Vehicle Technology as Driver for Change in China’s Automotive Standardization

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ABSTRACT

Electric vehicle (EV) development in China emerged with the 863 program (1986) for high technologies and has received support since the 10th Five Year Plan. While standards were of no particular importance in the early years of EV development, standards have increasingly become subject to policies and programs. For instance, the promotion of ‘indigenous’ or ‘home-grown’ innovation is perceived as means to develop domestic standards and contribute to international standards. Alongside this target, the Chinese government mandated the development of an EV standardization roadmap to serve as a guideline for optimizing standardization work, promoting technical innovation and large-scale industrialization. It was even considered that EV standardization was a novel standard field that has the potential to secure China a forerunner position in technological development as well as international standardization, regardless of standard-setting practices in the conventional automotive sector. Against this background, this paper examines the differences in system set-up and processes of standardization for the traditional automotive and the electric vehicles sector. While conventional automotive standardization is limited to a single sector with the Ministry of Industry of Information Technology and the China Automotive Technology and Research Centre in charge, electric vehicles require the participation of stakeholders from other sectors. Therefore, the negative influence from the conventional decentralized automotive sector on the development of common nationwide standards like the dynamics between national, regional and local actors cannot be deprived. Additionally, this paper also highlights learnings from EV standardization that might set positive impulses for conventional EV standardizations.

KEYWORDS

Automotive Industry, China, Electric Vehicles, Standardization, Standards

INTRODUCTION

Towards the end of the 2010s, the world experienced a hype of e-mobility and electric vehicles (EVs). This hype was triggered by numerous factors including, first, an acute concern about climate change and a desperate search for “green” technologies that might be able to accommodate climate change mitigation targets and economic growth. Second, the target – in some countries – to reduce dependency on oil imports and third, a growing awareness that sustainable urban development would profit from intermodal mobility concepts that integrate electric vehicles. China has been among the countries most ambitious in the hype period. In China, the EV hype started from 2009 onwards when demonstration projects for “new and renewable energy vehicles” (NEVs) became part of the government’s strategy to overcome the impact of the global financial crisis. The Chinese NEV demonstration projects emerged from the government decision taken in 2009 to include NEVs into a list of seven so-called “newly emerging
industries” (SEI). These industries were identified as important for China’s transition to a new growth model and for achieving technological competitiveness in new global markets. Based on the perceived potential of new opportunities for sector development, China was one of the first countries that invested in development throughout the early EV hype. To establish its EV industry and unfold leapfrogging potential, China pushed for sector development, including standards. Furthermore, the ‘Plan on the Revitalization and Restructuring of the Auto Industry’ that was issued in 2009, contains targets of 500,000 NEVs on the road by 2015 and 5 million by 2020 (Central Government, 2009).

To achieve this target, the so-called “10 cities, 1000 vehicles” demonstration project was initiated in 2009. It first included 13 cities to experiment with NEV deployment and the project was later gradually expanded to 25 cities. According to the name and planning horizon of the programme, these cities were expected to bring 25,000 NEVs onto Chinese roads until 2012. However, this target has not been met. By the end of 2012, only seven out of the 25 cities reached 1,000 NEVs (Fischer & Weithmann, 2014). The highly-praised demonstration projects are therefore mostly seen as a failure, particularly because sales numbers remained low and more importantly for this research – enabled various standard interpretations to establish across China. When the first demonstration projects were initiated, there were standards in place, but no technically unified solutions for implementing the standards. For instance, the various projects provided different technical interpretations of the standards. Due to incompatibility, connecting a vehicle to a charging pillar did not necessarily guarantee the initiation of the charging process.

China’s Ministry of Finance (MOF), Ministry of Industry and Information Technology (MIIT), Ministry of Science and Technology (MOST) and the National Development and Reform Commission (NDRC) have started a new approach in November 2013, when they selected 23 cities and five city clusters to participate in the subsequent pilot scheme (MOF, 2013). Added to that, the government invested considerable efforts in coordinating and monitoring the pilot projects more carefully in order to avoid the diffusion of localized technically incompatible solutions as in the previous pilot program. By the end of 2014, EV sales figures finally started to increase. Within the first 11 months of 2014 a total of 56,700 units were sold, which implies 5-times as much as in the same period in 2013. Moreover, sales for November 2014 were 10-times higher than in the previous year with 9,728 units. Although EV sales are soaring high, they provide only 0.46 per cent of the total market (Kynge, 2015).

**Development of Standardization**

While the EV sector development and diffusion of EVs is slowly gaining momentum, China is reaching out for a more powerful position in the world of standardization to support the SEIs. A popular Chinese saying emphasises this yearning as it states that ‘三流企业做产品; 二流企业做技术; 一流企业做标准’. This statement indicates that third rate companies make products, second rate companies make technology, and first rate companies make standards (Breznitz & Murphey, 2013). No doubt, China has the ambition to establish companies that are able to set standards.

The current Chinese standardization system is still based on the ‘Standardization Law’, adopted in 1988. The original purpose of this law was to set a legal framework for the development of China’s national standardization system in order to accommodate the standard needs of early economic reforms and clarify the basic legal framework in case of standard violation. Nowadays, the law still serves as the sole legislative framework (NPC, 2007). Aware that the law requires a revision to conform to nowadays economic needs, the government mandated various studies on standardization throughout the period of the 10th FYP (Wang, 2014). Based on the research findings, different government levels developed standardization support strategies and policies. In accordance with the 11th FYP, MOST initiated the ‘The National Medium- and Long-term Program for Science and Technology Development
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