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DOI

[10.1080/14649357.2021.1933578](https://doi.org/10.1080/14649357.2021.1933578)

Publication date

2021

Document Version

Final published version

Published in

Planning Theory and Practice

Citation (APA)

Wang, B., de Jong, M., Van Bueren, E., Ersoy, A., & Chen, Y. (2021). Unravelling Decision-Making Processes on Location Choices for High-Speed Railway Stations in China: A Comparison of Shenzhen, Lanzhou and Jingmen. *Planning Theory and Practice*, 22(3), 433-454.
<https://doi.org/10.1080/14649357.2021.1933578>

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To cite this article: Biyue Wang, Martin de Jong, Ellen Van Bueren, Aksel Ersoy & Yawei Chen (2021) Unravelling Decision-Making Processes on Location Choices for High-Speed Railway Stations in China: A Comparison of Shenzhen, Lanzhou and Jingmen, Planning Theory & Practice, 22:3, 433-454, DOI: [10.1080/14649357.2021.1933578](https://doi.org/10.1080/14649357.2021.1933578)

To link to this article: <https://doi.org/10.1080/14649357.2021.1933578>



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Published online: 18 Jun 2021.



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Unravelling Decision-Making Processes on Location Choices for High-Speed Railway Stations in China: A Comparison of Shenzhen, Lanzhou and Jingmen

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ABSTRACT

Most High-Speed Railway (HSR) station areas in China can be found at the urban periphery or in suburban areas, a phenomenon that has often been criticised. While debate about the influence these location choices have on the economic and sustainable development of cities rages on, little attention has been paid to the decision-making processes leading to these locations. This paper investigates these processes by comparing HSR stations in three cities: Shenzhen, Lanzhou and Jingmen. Our findings can help actors involved in making location choices develop awareness of different interests and create the conditions for successful development of HSR station areas.

ARTICLE HISTORY

Received 31 July 2020
Accepted 19 May 2021

KEYWORDS

HSR station areas;
decision-making process;
transport planning; urban
development; policy
networks; China

Introduction

Over the last four decades, Chinese urban governance has changed fundamentally. Since the economic reforms began in 1978, traditional central government intervention, typical of planned economies, has been replaced by marketisation and decentralisation (Hsing, 2010; Wu, 2003). The central government has devolved many responsibilities in governance and economic decision-making power to local governments (Chien, 2010), giving them a dominant role in Chinese urban development (He & Wu, 2009; Li et al., 2019). Chinese local governments have engaged in market-like entrepreneurial activities, with significant impacts on the speed and shape of the urbanisation process (Wu, 2018). The locational and industrial readjustment of urban activities has been highly influenced by local governments (Han, 2000). Local states have adopted the development of mega projects as one of the main strategies for urbanisation to generate revenues, enlarge urban areas, and improve the competitiveness of cities (Hsing, 2010; Qian, 2011).

The rapid development of High-Speed Railways (HSR) is expected to further accelerate urbanisation and industrialisation and reshape China's economic geography (Chen et al., 2019). It is estimated that by 2030 all 34 provincial capitals will be served by HSR stations, and 245 cities with a population of over 500,000 people will be connected (China Railway Corporation (CRC), 2016). However, unlike HSR stations in Europe and Japan, the majority of new Chinese HSR stations are located in the urban periphery or suburban areas. New urban areas, namely "HSR new towns", are created around the HSR stations to provide business and commercial functions, entertainment and residential functions.

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The particular location chosen for an HSR station determines the developmental potential of the station area around it, since it operates both as a node in the transport network and a place in the city (Bertolini & Spit, 1998; Kim et al., 2018). Scholars have argued that HSR stations in China tend to be located too far from the city to allow for optimal functioning (Yin et al., 2015). As transport nodes, non-central locations are problematic due to poor accessibility (Chen, 2012; Salzberg et al., 2013). As future projections for urban places, ambitious master plans for building HSR New Towns have been criticised for causing unsustainable urban expansion (Chen & Wei, 2013; Dai, 2015). Large tracts of agricultural land have been converted to construction land for the benefit of future station areas without being eventually developed (Lu, 2012). The service functions of many station areas are occupied by low-quality businesses, offices, hotels and residential areas (Zhao & Chen, 2015). Especially for medium-sized and small cities, station areas show slow spatial and commercial development since they are located far away from city centres which could help them thrive (Deng et al., 2019; Yu et al., 2012; Zhao & Chen, 2015).

A lot has been said and written about transport and land use characteristics of locations for HSR station areas, but there is remarkably little research conducted on the decision-making processes leading to those location choices. In two studies, the interaction across governmental tiers in the decision-making process regarding the location of Wuhan's HSR station was examined (cf. Dai, 2015; Yang & Han, 2020). However, it remains unclear which resources were controlled by which actors, and what their interdependencies looked like. This study aims to map actor interdependencies and explore the governance across various government tiers within the setting of local state-market dynamics. We believe it is essential to examine the institutional settings and planning cultures surrounding such large-scale development projects (Tornberg, 2012). These projects are the result of complex spatial, financial and political decision-making processes in which multiple actors are involved (Majoor, 2011). The actors may have differential access to resources needed in infrastructural mega-projects such as power, funding, land and knowledge. Different interests and objectives of these actors have to be balanced against each other and put to use in a complex and changing context (Salet et al., 2013).

This contribution aims to examine how location choices for HSR stations in China are made and how they are influenced by institutional settings, power positions and interdependencies between urban and railway actors. We explore what different goals and resources central and local governments bring to bear in the new decentralised context, and how these are intertwined in decision-making processes leading to the selection of certain locations. We borrow ideas from Policy Network Theory (PNT) to identify the perceptions, resources of and interdependencies among actors as well as rounds, impasses and breakthroughs that occur during decision-making processes. Since our study is of an exploratory nature, we adopt case study research for our data collection. Three cases are analysed: HSR station location choices in Shenzhen (Guangdong), Lanzhou (Gansu) and Jingmen (Hubei). Based on the results, we discuss how interdependencies among actors influence the course of decision-making processes and, ultimately, the location choice. In the conclusion, we will offer recommendations for policy makers aiming for better outcomes.

Understanding Decision-Making Processes by Focusing on Actors and Their Interdependencies

One could say that economic decentralisation and political centralisation have been the drivers for the rise of the entrepreneurial state in China, and consequently the major institutional conditions in which urban projects are undertaken (Wu, 2018; Zhang, 2002). To empower local governments and encourage them to become more economically self-sufficient entities, the central government set in motion a process of far-reaching deregulation (Xu, 2011). This enhanced economic policy discretion

is, however, restricted by political accountability principles imposed from above (Chien, 2010) and through performance evaluation procedures based on designated economic and social objectives (Gao, 2015; Wu & Zhang, 2007).

The planning, construction and operation of mega infrastructures, such as HSR, are still dominated by the central government, which provides large-scale financial support (Dai, 2015; Hu et al., 2018). Due to centralised planning and funding, these HSR projects could be rapidly implemented in China (Takagi, 2011). The objectives underlying HSR development have been to enhance capacity for the overloaded rail network, provide efficient medium-distance transport and improve passenger services. Supporting urbanisation and economic development by improving provincial and regional connectivity were also among the aims (China Railway Corporation (CRC), 2016). For local governments, infrastructure projects made their achievements conspicuous and provided evidence of their governance competence and success in meeting developmental targets (Chien, 2013). These projects have become a tactic to improve city competitiveness within the region and spur the local economy (Qian, 2011). Furthermore, infrastructure projects, especially HSR projects, usually act as an incentive for large-scale urban regeneration and development (Bruinsma et al., 2008). Land development often generated revenues for Chinese local governments to guarantee adequate funds for offering municipal services (Wu & Zhang, 2007). As a result, local governments use new infrastructures as weapons of advancement, and they are enthusiastic about establishing special development zones, a characteristic of growth-oriented politics in China (Jiang et al., 2016).

Some have argued that the Ministry of Railways (MOR)¹ was to some extent responsible for the current far-out-of-centre locations of HSR stations in China and the problematical urban development around these station areas (Chen, 2012; Chen & Zhang, 2010). It would have had the ultimate power to decide on HSR locations without requiring cooperation from local governments. However, the actual picture is more complex since HSR development in China in fact emerges through central-local relations and interactions (Yang & Han, 2020). Disbanding the Ministry of Railways (MOR) and establishing the China Railway Corporation (CRC) created opportunities for more constructive cooperation and competition among actors (Mu et al., 2015). Transforming actor relations changes both power distribution and interplay among actors (Li et al., 2019). This makes it necessary to analyse interactions and interdependencies among actors in the decision-making on locations for HSR stations.

It is Policy Network Theory (PNT) that offers the most developed theoretical framework for analysing the institutional and strategic complexity of problem-solving and decision-making (Koliba et al., 2018; Van Bueren et al., 2003; Van Gils & Klijn, 2007). A policy network perspective has proven to lead to a more profound understanding of policy processes, their dynamics and their outcomes in China (De Jong et al., 2016; Sun & Cao, 2018; Lu et al., 2018). It is the appropriate tool for understanding formal and informal institutional linkages among governmental and other actors that share a common interest in policy making (Rhodes, 2007).

Actors have been described as social entities, people or organisations (Enserink et al., 2010). They collaborate with other actors to protect their interests or to fulfil their goals. To understand changing actor behaviour, three dimensions have been used: perceptions, values and resources (Jobert, 1989; Sabatier, 1988; Scharpf, 2018). In summary, perceptions reflect the image that actors have of the world around them. This involves perceptions of other actors and their networked relationships, as well as the substantive characteristics of a policy problem (Scharpf, 2018). Values provide a direction into which actors would like to move. They describe the internal motivations of actors (Sabatier, 1988). Resources are the “things over which they [actors] have control and in which they have some interest” (Coleman, 1990, p. 28). Actors can use these resources to influence the world around them, including other actors, relations and rules. The most classic divisions of actors’ resources are “nodality” (knowledge/information),

“authority” (legal power), “treasure” (funds) and “organisation” (goods, staff and services)(Hood & Margetts, 2007). This NATO-scheme is used to examine to what extent and how the need for these resources is recognised, cogitated and/or compensated for (Vabo & Røiseland, 2012). Actors usually control and own different resources in the decision-making process. They need resources from other actors to reach their objectives, which creates interdependencies among actors (Klijn & Koppenjan, 2000; Marsh & Smith, 2000).

The analysis of a decision-making process is based on the reconstruction of policy rounds by identifying key decisions, and the process leading to those decisions (Teisman, 2000). This is followed by an analysis of the processes within each of the rounds, focusing on the actors, their goals, perceptions and resources, and on the actor relationships and interdependencies. Progress in decision-making within these rounds tends to be bumpy, with impasses and breakthroughs. Actors have to search for a shared understanding of the problem and possible actions, providing them with a basis for aligning their resources after an often rather lengthy process. A crucial decision offers an explanation and solution to an issue, which may even have resulted in an impasse, and it sets the circumstances for the next round (Van Bueren et al., 2003). A sequence of interactions and decisions in several rounds results in the outcomes of a process.

Actors involved in HSR projects usually have different perspectives and values (Peek & Louw, 2008; Pol, 2008). The primary value of the Chinese central government is to improve the efficiency and profitability of the whole railway network, whereas the local government regards the HSR station as a useful starting point for urban growth projects (Yang & Han, 2020). In a decentralised context, the location of HSR stations emerges as an outcome of a negotiation between CRC (MOR) and local governments (Dai, 2015; Yang & Han, 2020). However, it remains unclear which potential locations for an HSR station reflect actors’ perspectives, what resources are owned by which actors, and how they interact with each other in decision-making rounds. In that respect, to be able to understand the interdependency of actors and the decision-making process behind the location choices for HSR stations, it is essential (1) to understand the broader context; (2) to compile an inventory of the key actors, their goals and resources; (3) to map their interdependencies; and (4) to demonstrate how the actor constellations and those interdependencies influence the decision-making process in the various rounds. [Figure 1](#) shows the analytical framework of this research.

Methodology

In this paper, we used qualitative case study analysis as a research strategy. It not only allows opportunities for testing a theory (Yin, 2014) but also provides an in-depth understanding of particular problems or places and a broad understanding of relevant context (Seawright & Gerring, 2008), which is also a key part of PNT. To gain an in-depth understanding of the issues involved in answering the research question, we selected three cities in which HSR-station location choices were made: Shenzhen, Lanzhou and Jingmen. First, these cases present different regions and policy periods in which they have been developed. Shenzhen is located in the Pearl River Delta (PRD) in south-eastern China and adjacent to Hong Kong. Shenzhen North is one of the first few HSR stations in China. Lanzhou is the provincial capital of Gansu province and it is economically one of the most critical cities in northwest China. Jingmen is a prefecture-level city located in the middle of Hubei province in central China. Construction of that HSR station will start in 2020. [Figure 2](#) shows the geographical locations of each HSR location. Second, these cases demonstrate diverse variations in GDP, population, passenger amount and local power which could, besides showing differences, exhibit vital common patterns that cut across variations (Patton, 1990). [Table 1](#) summarises the characteristics of our case studies.

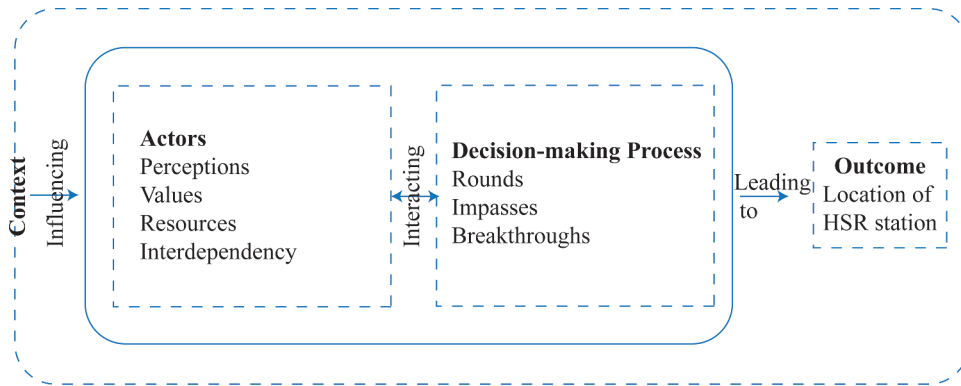


Figure 1. Analytical framework (Source: the authors).

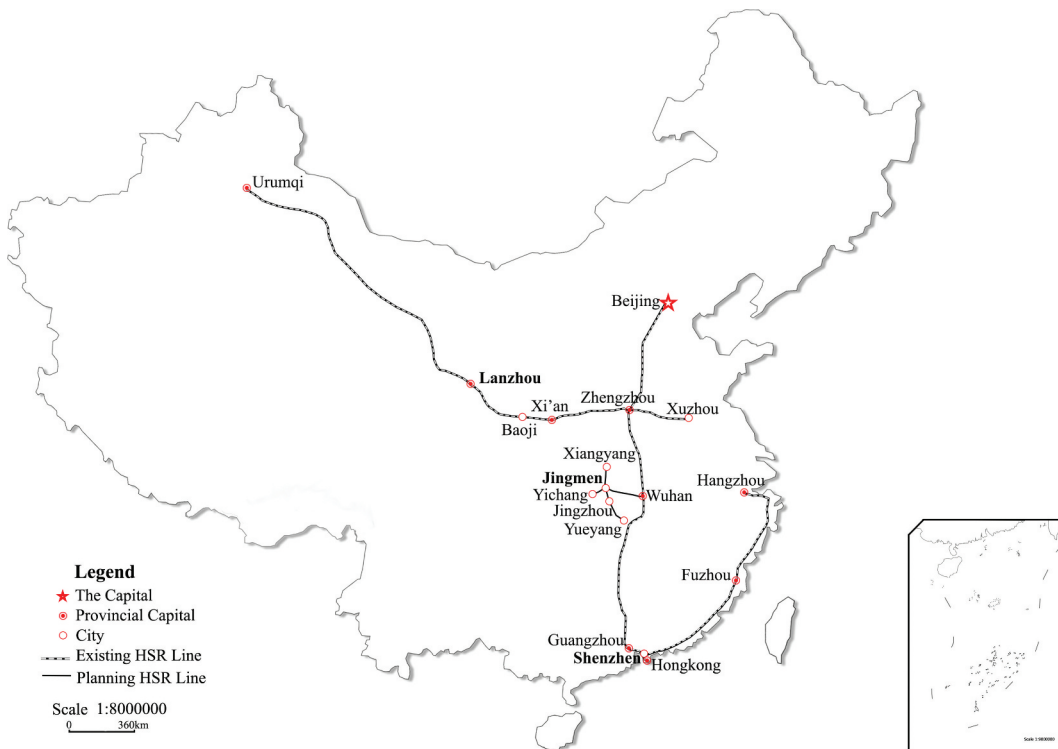


Figure 2. The locations and HSR lines of Shenzhen, Lanzhou and Jingmen (Source: the authors).

Our case studies were informed by a series of in-depth interviews, desk research and observations. The first round of fieldwork and in-depth interviews with actors was conducted from December 2018 to March 2019. The second round of fieldwork and in-depth interviews took place in October 2019. In total, 18 semi-structured interviews were conducted (see Appendix A for details). The “snowballing” strategy (Goodman, 1961) was applied for obtaining interviews. It started from a personal academic network and was then extended to local practitioners. For the Shenzhen case, we interviewed engineers and planners from the China Railway Fourth Survey and Design Group (CRFourthSDG). The Shenzhen branch of the

Table 1. Summary information on three HSR stations. (Sources: Jingmen Statistics Bureau, 2019; Lanzhou Statistics Bureau, 2020; Shenzhen Statistics Bureau, 2018).

| Station | City population in 2018(million) | City GDP by 2018 (billion) | Annual passengers (in 2020) (million) | Opened | HSR railway lines |
|----------------|----------------------------------|----------------------------|---------------------------------------|----------------------------|--|
| Shenzhen North | 12.52 | 2249 | 44 | 2011 | Beijing-Guangzhou-Shenzhen-Hongkong, Hangzhou-Fuzhou-Shenzhen |
| Lanzhou West | 3.28 | 273 | 9 | 2014 | Lanzhou-Urumqi, Baoji-Lanzhou, Lanzhou-Zhongchuan (intercity line) |
| Jingmen West | 2.89 | 185 | 3.45 (2025) | Under constructing in 2020 | Xiangyang-Jingmen-Yichang, Yanjiang, Jing-Jing (intercity railway) |

China Academy of Urban Planning and Design provided planning documents and meeting minutes. We analysed the case, based on interviews and documents including *Urban Design of New Shenzhen Railway Station Zone*, *Landscape Design for Shenzhen North Railway Station*, *Longhua New Area Comprehensive Development Master Plan*, *Design for Plots of Shenzhen North Railway Station*, *General Layout Planning of Shenzhen Railway Nodes*, *Plan of Shenzhen Second Passenger Railway Station* and meeting minutes. For the Lanzhou case, we interviewed railway actors from China Railway Lanzhou Branch, Lanzhou West Station manager and China Railway First Survey and Design Group (CRFirstSDG), and urban actors from the Lanzhou Metro Company, Lanzhou Urban-Rural Planning Bureau and Tongji Architectural Design Co., Ltd. The data for the Jingmen case were collected thanks to a previous research project and cooperation between the local government of Jingmen and Delft University of Technology from 2018 to 2019. Jingmen HSR station was also planned by interviewees from the CRFourthSDG. Here too, they provided information regarding the decision-making process in Jingmen. To obtain general information, we interviewed a member of senior staffs from CRC, who responsible for reviewing HSR lines and station development plans.

Case Analysis

Shenzhen

After becoming China's first Special Economic Zone (SEZ) in 1980, Shenzhen Luohu Station was the only passenger railway station for a long time. Due to fast economic and population growth, the MOR increased the frequency of its train services over time. The station capacity shortage caused problems for passengers, local government and the MOR. The station is located in the densely built city centre, leaving no opportunities for enhancement and expansion. Therefore, the idea to construct a second passenger railway station was put forward at the end of the 1990s. The presence of many hills on the north side of Shenzhen, the rapid urban development and the construction of many industrial parks left almost no location alternatives for the new train station. Longhua district was, geographically and socio-economically speaking, the most suitable site for the new station (Interviewee 4). Most areas surrounding the planned new station were undeveloped. It was 9.3 km away from Futian city centre (Figure 3).

As Shenzhen is a crucial railway transport node in south China, the MOR aimed to provide railway services which would conform fully with the projected passenger numbers and demand, generated by urban development in Shenzhen. The management and operation of the Shenzhen railway stations were the responsibility of the local branch of MOR, China Railway Guangzhou Branch (CRGB). CRFourthSDG was the research agency for providing scientific analysis and advice for the planning and development of railway lines and stations.

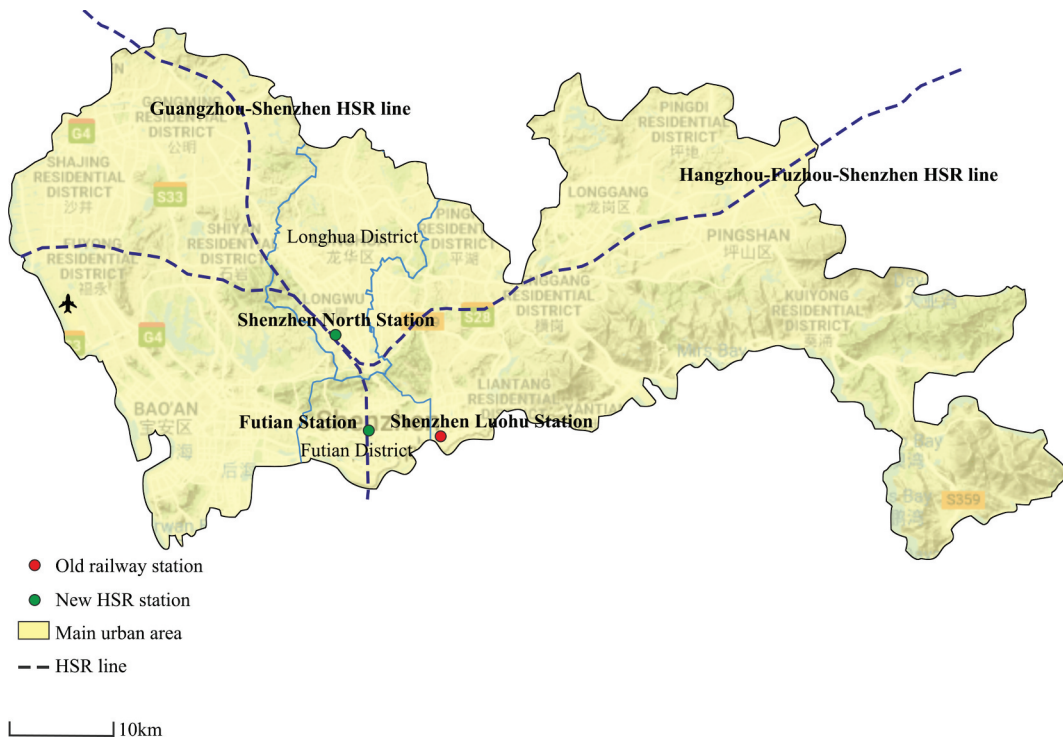


Figure 3. Locations of Shenzhen railway stations (Source: the authors).

The Guangdong provincial government cooperated with the MOR to plan, construct, invest and approve the development of railway lines and stations located in the province. It was responsible for the planning of the Pearl River Delta Metropolitan Region intercity railways in which the Shenzhen railway stations played an important role. The objective of the Shenzhen municipal government was to construct a national level railway transport hub, which could alleviate the transport pressure from the existing station and improve the connection between Shenzhen and Hong Kong. Meanwhile, it also aimed at minimising the impact of planned new railway lines on the urban spatial structure and coordinating the station area development with the urban master plan, thus making sure that the city's urban interests were served.

At the beginning of the 2000s, the Shenzhen municipal government proposed to develop the second passenger railway station on Shenzhen's urban fringe or at a subcentre. It negotiated with the CRGB and entrusted CRFourthSDG with the selection of a location for the new railway station. Most land in the Longhua District was owned by the national state or collectively owned. The municipal government was strongly in favour of locating the station in this area to minimise costs of relocation and the costs of land ownership change (Interviewee 2). In addition, it planned to shift the development focus from the city centre to the urban fringe. The location of the station could catalyse the Longhua area to be developed into a new city subcentre. Based on the analysis, the CRFourthSDG proposed to build the new Shenzhen railway station in Longhua in the *Plan of Shenzhen Second Passenger Railway Station*, and it was agreed by both Shenzhen municipal government, CRGB and MOR in November 2003 (Interviewee 4). They reached an agreement to construct the HSR station, named Shenzhen North Station, on the urban edge.

In 2005, a new round of negotiations was opened by the MOR when it proposed to construct an additional third station in the city centre. The *Medium- and Long-Term Railway Network Plan* was issued by the State Council of China. It approved that the Beijing-Guangzhou-Shenzhen-Hong Kong HSR line and the Hangzhou-Fuzhou-Shenzhen HSR line should intersect with each other in Shenzhen in January 2004. MOR drew up the *General Layout Planning of Shenzhen railway nodes* in 2005, which was in line with previous research to construct a new Shenzhen railway station in Longhua district (Zong et al., 2011). The Shenzhen North Station is located to the north of Shenzhen city centre in Futian district. The Beijing-Guangzhou-Shenzhen-Hongkong line would pass through Shenzhen from north to south by tunnels and then would connect with Hong Kong. Therefore, the MOR proposed to build another HSR station in Futian district. The Shenzhen municipal government disagreed with building the third station in Futian at first since it would be difficult to arrange traffic flows and the amount of land was limited. The MOR decided to construct the Futian station underground. The MOR convinced the Shenzhen municipal government that building an HSR station in the city centre could bring many benefits in terms of urban development, so the Guangdong provincial government and Shenzhen municipal government approved the plan in 2006. Figure 4 illustrates the decision-making process regarding Shenzhen HSR North station and Futian station; the outcome was that both stations were built. With the development of the Shenzhen North Station area, the Longhua district was planned by the municipal government as a subcentre that could accommodate those urban functions for which there was no space in Futian.

Lanzhou

Lanzhou is one of the most important cities and transport nodes in northwest China. The Lanzhou-Urumqi high-speed railway, officially known as Lanxin Railway Second Double-Track Line, is one of the most important projects in the 2004 *Medium- and Long-Term Railway Network Plan*. Its construction was approved by China's National Development and Reform Commission (NDRC) in August 2009. The city of Lanzhou has a linear urban form and is constrained by two mountains to the north and south. The distance between east and west Lanzhou is 30 km, while it is only 5–10 km from north to south (Tong & Shi, 2015). The city is carved in two by the Yellow River and land in Lanzhou is scarce, which causes difficulties in selecting a location. Three possible locations were identified for the Lanzhou HSR station during the planning process (Figure 5). The first option was to refurbish the existing Lanzhou Railway

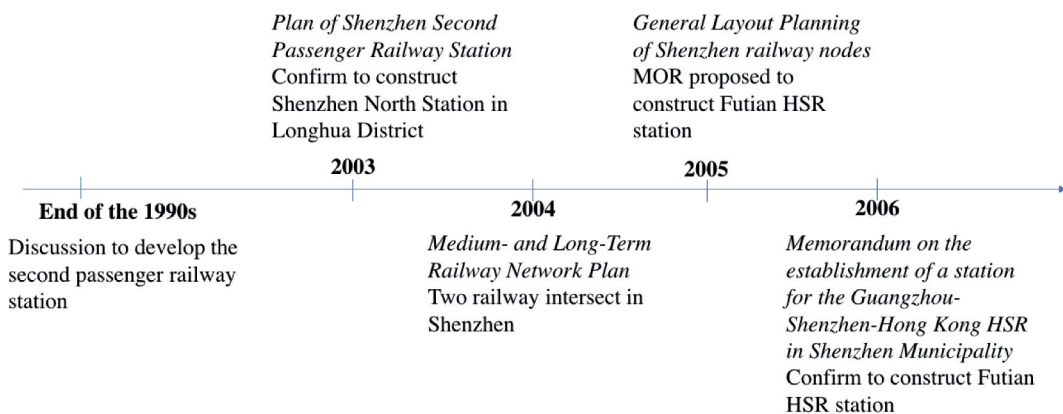


Figure 4. Decision-making process of Shenzhen HSR North Station and Futian Station (Source: the authors).



Figure 5. Alternative locations of Lanzhou HSR station (Source: the authors).

Station located in the city centre, the second to select an area in a new town, and the third location was an area in a subcentre of the city.

The MOR played a vital role in planning and constructing the Lanzhou-Urumqi HSR line. Lanzhou's HSR station would be the start of this line and figured as an important interchange hub in the Chinese railway network: its location was considered crucial by the MOR (Interviewee 8). The management and operation of the Lanzhou railway stations were the responsibility of China Railway Lanzhou Branch (CRLB). It had the land-use rights of the railway station. CRFirstSDG was the research agency providing scientific study and policy suggestions for railway lines and stations to local governments and MOR.

The Gansu provincial government cooperated with the MOR to plan, construct and invest in the section of the Lanzhou-Urumqi HSR line that would run through Gansu province (Interviewee 8). The provincial government and MOR established a joint venture company to invest in the railways. In combination with the Belt and Road Initiative and the Grand Western Development Program, the Lanzhou-Urumqi HSR line was crucial for Gansu province's future development. In the *Lanzhou Master Plan* (2011–2020), the station area was also regarded as the new business centre to improve urban competitiveness. The resources of the municipal government are the land-use rights to the surrounding area, funding for the supporting facilities and its strategic geographic position in north-western China (Interviewee 10).

In the initial city centre location round, engineers from MOR and CRFirstSDG suggested renovating and expanding the Lanzhou Railway Station since this seemed the most reasonable option (Interviewee 8, Interviewee 6). The equipment of Lanzhou Railway Station was obsolete and unable to provide efficient services to passengers. However, the station area had already evolved as the city centre over time. It was estimated that the renovation and expansion of the station would cost more than 4 billion CNY (Interviewee 6). These costs had to be spent primarily on compensation for the evictions from buildings, and this funding was to be provided by the Lanzhou municipal governments. Given that Gansu was one of the five most deprived provinces in China, it was nearly impossible for the local government to provide the funding for these large-scale operations on the Lanzhou Railway Station (Interviewee 6). Actors could not reach an agreement in this round.

In the next round, a location in the Lanzhou New Area was proposed by the Lanzhou municipal government (Interviewee 8, Interviewee 6). The Lanzhou New Area and HSR station were planned almost in the same period, so the Gansu provincial and Lanzhou municipal governments expected the HSR station to catalyse the development in the New Area (Interviewee 8, Interviewee 11). However, the Lanzhou New Area is 40 km away from the Lanzhou urban area and 74 km away from the Lanzhou Railway Station. MOR strongly disagreed with this option and found the distance unacceptable and inconvenient for passengers (Interviewee 8). The negotiation resulted in an impasse in this round. Following the dismissal of the new town option, the provincial and municipal governments were reluctant to find new alternative locations since they knew the MOR was not allowed to terminate the plan of building an HSR station in Lanzhou (Interviewee 6).

In the final round, the search for a new HSR station location started again and focused on possibilities in a subcentre or on the urban fringe. The CRLB proposed to build the new HSR station in the original Lanzhou west station area, a subcentre in Lanzhou, to break through the impasse (Interviewee 8). The previous Lanzhou west station was a freight and storage railway station. The CRLB controls the land-use rights. The Lanzhou municipal government only needed to remove a state-owned factory from the site of the future station's south square. The cost of land acquisition could thus be minimised (Interviewee 8). CRLB and the Lanzhou municipal government reached an agreement to move the freight station to a western rural area of Lanzhou and construct the Lanzhou West HSR Station. The outcome was that the choice for a station located in the subcentre of the city (Figure 6). Citizens tend to be satisfied with the location because it is convenient to arrive at the station by public transport. It is also a location desired by developers and investors (Interviewee 7).

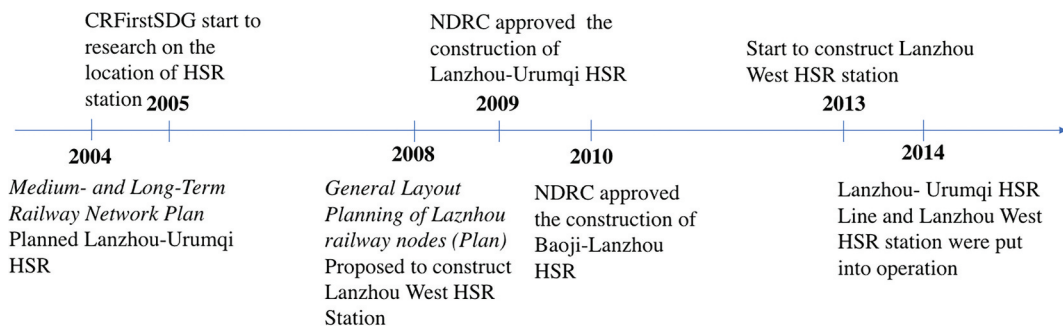


Figure 6. Decision-making process of Lanzhou West HSR Station (Source: the authors).

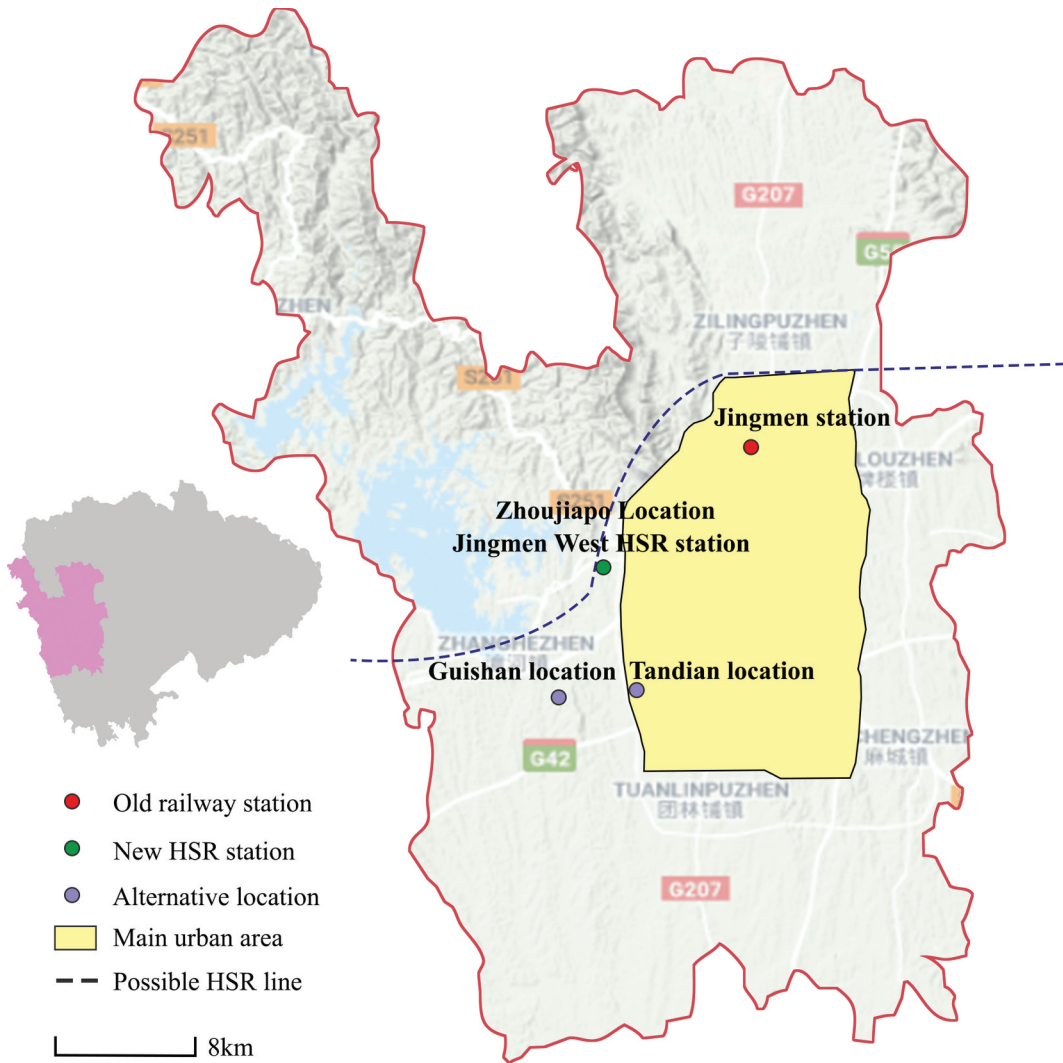


Figure 7. Alternative locations of Jingmen HSR station (Source: the authors).

Jingmen

Jingmen is the only prefecture-level city without an HSR station in Hubei Province (Interviewee 12). In 2014, the *Opinions of the Supreme People's Court on Providing Judicial Services and Safeguards for the Yangtze River Economic Belt Development* put forward the idea to construct the Yanjiang HSR (Shanghai-Wuhan-Chengdu). More than 10,000 citizens of Jingmen attended an organised activity to appeal for the Yanjiang HSR to pass through Jingmen in 2015. During the "12th Five-Year Plan (2011–2015)" period, the Jingmen municipal government communicated with the CRC and the China Railway Wuhan Branch (CRWB) and reported back to the Hubei provincial government (Interviewee 13). A draft was proposed during the "13th Five-Year Plan (2016–2020)" period, which indicated "one vertical and one horizontal" HSR lines intersecting in Jingmen. The efforts to select a location for the HSR station started in 2015 and continued until 2020 (Interviewee 17). Four possible locations for the HSR station were considered, the existing Jingmen railway station, Guishan, Zhoujiapo and Tandian (Figure 7).

CRC's objectives were to plan and construct the Yanjiang HSR line on time and at a reasonable cost. The management and operation of Jingmen railway stations were the responsibility of the China Railway Wuhan Branch (CRWB) of CRC. CRFourthSDG was involved as a research agency. One of its concerns was to keep the HSR route as straight as possible while also trying to satisfy the demands from local governments along the line, who were all aiming for a stop in their city, preferably at a location where urban development benefits would be biggest (Interviewee 4).

The Hubei provincial government provided the funds, jointly with CRC, to construct HSR lines within the Hubei province (Interviewee 14). It had to balance the interests of different cities in Hubei province and therefore attempted to have as many cities as possible connected to the HSR routes. Jingmen municipal government lobbied the CRC and the Hubei provincial government to choose Jingmen as a node on the HSR routes. Jingmen's interest was to take advantage of HSR and its station to develop its local economy, tourist industry and real estate development (Interviewee 16).

In the first round, the municipal government was against upgrading or renewing the existing railway station to an HSR station. It argued that connecting the traditional lines to the existing railway stations had already damaged and split the urban areas to the north and east of Jingmen. If the new HSR lines connected to this station, more than one-third of Jingmen's urban area would have to be demolished and the cost would be unaffordable for the municipal government (Interviewee 17). CRC, however, argued that the presence of the mining sites around the existing station made the land unsuitable for HSR line construction and operations. Thus, key actors agreed to look for a new location to build the HSR station.

In the next round, Jingmen's municipal government proposed constructing an HSR station in Guishan and planning an HSR new town, since the local government regarded the station as an important catalyst for future development (Interviewee 14). The new town was expected to attract service industries, talents and tourists. It was proposed to build high-rise buildings for headquarters, hotels, high-quality offices and restaurants. Real estate projects were also planned (Interviewee 15). Guishan was located 20 km away from the city centre. The station area could be expanded to around 18 km² but 60% of this area was basic farmland (Interviewee 18). The technical and geographic conditions in Guishan were most suitable for HSR construction among the four alternatives, so the CRC agreed (Interviewee 1).

Hubei provincial government reported the Guishan area as the preferred location to China's Ministry of Land and Resources² in 2017. However, the *Opinions on improving the rational development and construction of the areas surrounding HSR Stations* had just been issued by the NDRC, the Ministry of Natural Resources (MoNR), the Ministry of Housing and Urban-Rural Development (MoHURD) and the CRC in April, 2018. This guideline emphasised that the location of HSR stations should be in close proximity to the city's built-up area. It advised small and medium-sized cities not to construct new towns in haphazard ways. Thus, the national government did not approve of the Guishan location.

The guideline opened up a new round in which actors had to revisit the issue of an appropriate location for the Jingmen HSR station, either in a subcentre or at the urban fringe. It was expensive to construct the HSR station at Tandian since an additional billion CNY was needed for tracks, and a high-tech industry park would have to be demolished. The distance between Zhoujiapo location and the city centre was 12 km. However, the Jingmen municipal government found the station area at Zhoujiapo too small for future development (Interviewee 17). CRFourthSDG persuaded the municipal government that the beneficial effects of HSR on the local economy were not evident in small cities like Jingmen (Interviewee 14). The Jingmen municipal government accepted this advice, also given the fact that its resources were limited and the costs to construct the HSR station in Zhoujiapo would be the lowest. The outcome, shown in [Figure 8](#), was that the station would eventually be located on the urban fringe of the city at Zhoujiapo.

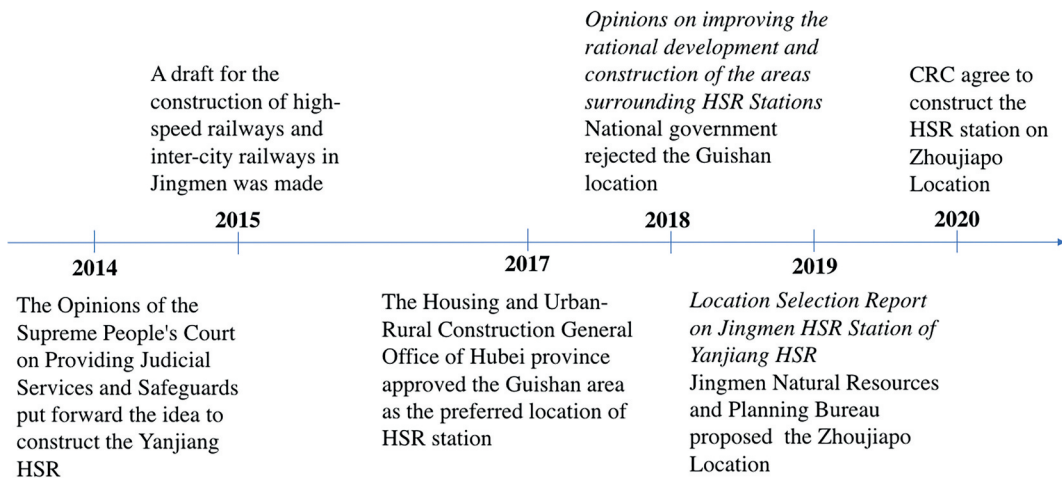


Figure 8. Decision-making process of Jingmen HSR Station (Source: the authors).

Analysis and Discussion

Actors and Their Interdependencies

The CRC inherited its responsibility for drafting policies for Chinese railway development policy from MOR. It draws up the national railway plan and relevant regulations. It supervises, invests, manages and operates the railways and stations. China railway branches are responsible for the management and operation of railways and stations. The most important resource of these local branches is the right to use the land and facilities of the railway stations. The land is owned by the state and allocated to the CRC, where its local branches construct the railway stations. These branches can also represent the CRC through investments in the railway projects. Their interests are not only the accomplishment of the national railway plan but also revenues from railway lines and stations. In our cases, it appears that the CRC and its local branches in the location choice process assess the technical feasibility of projects, strive for high railway operation speed and efficient management of construction time and for maximising the station's accessibility for passengers. The survey and design groups involved in location choices aim to provide professional studies and plans. The plans they draft need approval from both the CRC and provincial governments. The railway construction plans have to be approved by the NDRC (Interviewee 12).

The provincial and municipal governments are other key actors involved in the location choice for the HSR stations. While the provincial governments have access to funding and cooperate with the CRC and other provincial governments to construct major national railways, they aim to maximise the number of connecting stations within their provinces. On the other hand, the municipal governments have the development rights of the land surrounding the station areas and the funds for other transport facilities such as roads and subways. In the context of China's fiscal decentralisation and marketisation, municipal governments aim to improve their city's accessibility, expand urban space for development, capture the increase in land value and improve their city's image through the planning of a new HSR station area. As demonstrated in the cases, a commonly used strategy to reach these objectives is to develop a subcentre around the HSR station or to develop a new town around it, expecting the HSR station to catalyse urbanisation, economic development, to improve the area's spatial structure and to make up for the costs of land acquisition

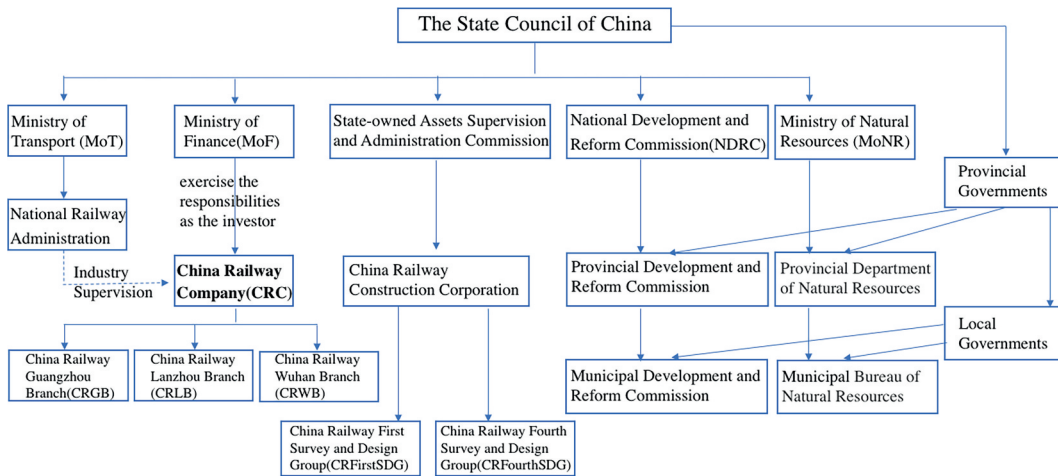


Figure 9. Formal relationships among actors (Source: the authors).

and compensation. Land functions always need to be transferred, so approval by the MoNR is vital (Interviewee 14). Figure 9 illustrates the formal relationships between various actors involved in the decision-making process for HSR stations.

Based on the actor analysis in our cases, Figure 10 maps the actor interdependencies in HSR station location choices. The decision-making process for HSR station locations is complex because it consists of two indivisible parts: station and facilities; and the station area. The resources for the two parts are distributed to different actors in the current Chinese institutional arrangements. *Nodality* is controlled by the actors who are advisors and have knowledge and information about certain issues (Lu et al., 2018). China Railway survey and design groups provide specialised knowledge of the planning and constructing of railways. They need to balance the requirements as expressed by railway actors and urban actors.

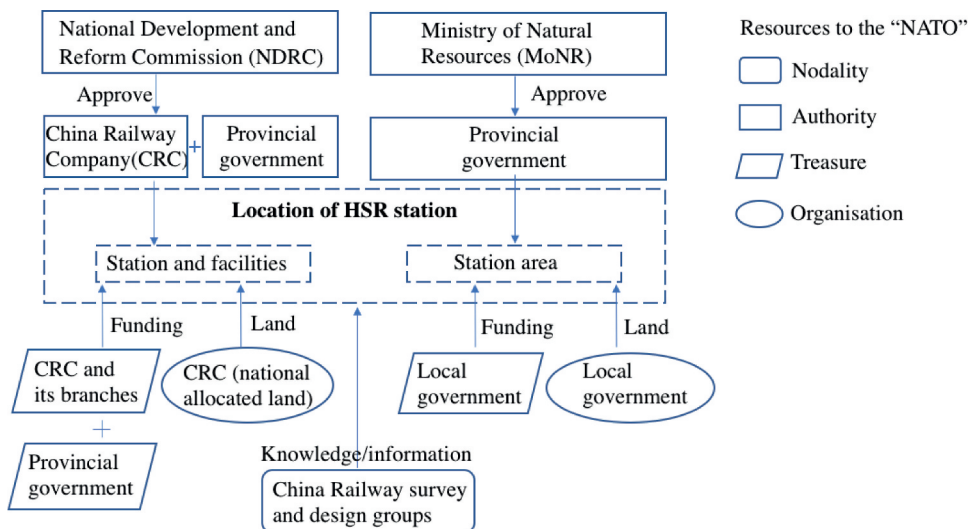


Figure 10. Actor interdependency map of HSR station location choice (Source: the authors).

Authority especially revolves around legitimate legal power. For the station and facilities, the authority resource is controlled by the NDRC. The NDRC gives an official response to the feasibility study on the railway line which is proposed by the CRC and the provincial government. As for the station area, any changes in the land use in station areas needs to be approved by the MoNR. *Treasure* (see NATO) is related to the economic and financial tools which enable governments to exchange resources with other actors (Vabo & Røiseland, 2012). The funding for constructing the railway line, station and facilities is provided by CRC and the provincial government. For the national major HSR lines, CRC and its local branches usually provide around 60–70% of the investment while provincial governments contribute 30–40%. For the station area, the compensation of land requisition, the investments in squares, roads, metro and other infrastructure are provided by the local government. *Organisation* refers to the physical resources and the services that governments can directly provide through agencies. In the case of HSR stations, the land for the station and railway infrastructure is allocated by the national government directly. The land for station areas is controlled by the local government (Yang & Han, 2020). The land to be developed is spatially divided into different parts according to different functions, such as squares and commercial areas. These different parts require different approval procedures. As a result, actors in the decision-making process of HSR station location choice depend on each other. These complex decisions cannot be realised by any unilateral action of dominant actors.

Rounds, Impasses and Breakthroughs in the Decision-Making Process

The cases have shown that bringing together transport and urban development generates a complex decision-making process. We generally found three main rounds in the decision-making process, representing a spatial sequence in the search process for a new station area, balancing the node and the place functions. In the first round, actors aim to find a location in the city centre, around the existing railway station. In the second round, the search focuses on finding a location in a new town. In the third round, the eyes are turned to finding a location in a subcentre or on the urban fringe. In each round, the railway actors interact with the urban actors in finding a location in a certain area. They aim to align resources in each round to meet both transport and urban goals, but when unsuccessful, the location search will be continued in a next round.

The cases show that the search for a location starts with a round to connect the HSR with the conventional railway stations which are located in the city centres. According to the literature (Hall, 2009; Yin et al., 2015), it is a beneficial choice from a transport and urban development point of view to renovate and upgrade conventional railway stations and regenerate station areas in city centres. The cases demonstrate that this option is difficult to achieve in China, despite many advantages. For railway actors, the accessibility of a city centre location is better, and the interchange between different railways is convenient for passengers (Yang & Han, 2020). The obsolete equipment could also be improved. However, urban actors cannot agree with this location alternative. Not only are the costs for land acquisition unaffordable, but also the damage to the existing urban area and the interruption of the local urban transport system are unacceptable to them. Unless, like Shenzhen, adequate funding can be provided for underground construction of an HSR line and station, actors simply cannot reach an agreement on selecting an existing station as the preferred location since the stakes are too high. In order to break through this impasse in decision-making, they need to look for another location.

As an alternative, we found that a faraway new town location tends to be proposed and preferred by local governments in the second round, which is the result of entrepreneurialism among local governments referred to above. One of the characteristics is that local governments pursue land speculation, rely on land-based alliances and maximise land financing. Local cadres have incentives to turn agricultural

land into urban construction land, promote local economic growth and favour their own political careers. Lanzhou and Jingmen are both industrial cities facing challenges of economic restructuring and urban disinvestment. They regard the advent of a new HSR station as an unparalleled opportunity to boost large-scale urban development, obtain revenue from the land, improve their urban image and attract investment. Municipalities, therefore, propose to construct their HSR station in new town areas. In the Jingmen case, the impact of a new town location would be questionable from both a transport and urban development point of view. A new national guideline, however, influenced the decision-making process as a result of which Jingmen had to abandon the plan to develop an HSR new town even though it had already reached an agreement with private real estate developers (Interviewee 17). The Lanzhou case demonstrates that the location in a new town may hamper HSR accessibility. The loss of support among railway actors following the new national policy led to the abandonment of the location selected in this round. Again, a suitable location that can balance the interests of actors had to be found, which occurs in the third round.

For transport infrastructures, the location should keep a distance from neighbourhoods but not too far to provide service for its users. New large-scale urban projects are increasingly realised in relatively “conflict-free” areas in places of urban decay or on the edge of cities that would welcome any investment (Altshuler & Luberoff, 2004). Compared to the reuse of an existing station in the city centre, the construction of a new station always appears as the most efficient and economical option that benefits both CRC and local governments. Compared to the new town location where future development is highly uncertain, locations on the urban fringe or in decaying subcentres welcome any investment and will be able to add value while risks are limited. These locations for HSR stations are acceptable to both CRC and provincial and municipal governments because they are relatively “conflict-free” areas. The station on an urban fringe or at a subcentre can balance the interests of the involved actors. For railway actors, the technical difficulties and construction cost can be kept low and the accessibility is acceptable. For urban actors, the cost of land acquisition and the damage to existing urban form are limited. There is still enough space for multi-functional development, while the density and connections to other parts of the city are sufficient to ensure a flow of passengers and users of the area. This alternative also meets national policy requirements and is therefore a relatively low cost and low-risk option; hence actors eventually agree on this choice in this third and final round.

Conclusion

This paper has investigated the decision-making process behind the location choice of HSR stations in China and mapped how actor interdependency affects the process. Three cases within Chinese cities of different sizes and levels of GDP were systematically compared to explain how the relevant actors involved in the location choice decision-making processes came to select a location that does not seem to make much sense if one takes its node-place potential and that of its alternatives as a criterion. To increase our insight into how actors from various disciplines embrace different aims in HSR projects (Bertolini & Spit, 1998; Peek & Louw, 2008), this research has shed light on how resource interdependencies between key players influenced the final location choices for HSR stations. It has also confirmed the findings of Dai (2015) and Yang and Han (2020) that location choices for Chinese HSR stations are the result of bargaining processes between railway actors and urban actors in a decentralised context. However, we went beyond their analyses by explicitly looking at the role resources play in structuring the interdependencies between actors, showing systematic patterns in the decision-making processes across three very different cases in China, and thus highlighting how important institutional

and network characteristics are as explanatory factors for, at first sight, seemingly irrational location choices.

Our findings suggest that in most decision-making processes, a few potential locations for an HSR station appear on the agenda; in each of our three cases there were three alternatives. A reflection on the alignment of resources and perceptions can be made here. Dealing with a diversity of perceptions, which tend to lead to impasses or stalemates, implies that it takes time to establish a location on which actors can reach consensus. As our three cases have shown, some choices are unacceptable to actors because of their consequences. Two key consequences have been identified in the cases: costs and risks of development, both for urban actors and transport actors, even though these factors may have a different meaning for each. Only occasionally does there appear an opportunity to overcome decision-making hurdles, as was seen in the Shenzhen case. The cases demonstrate that actors tend to find a way out of the impasse by discussing different alternatives, often consecutively. In an attempt to reach an agreement, they may make concessions but then make a claim on future benefits from their partners in return, thus enlarging the solution space. In order to break through and keep a process responsive to future developments, adaptive capacity, for example, can be built into the process. Understanding location choice processes, the rounds in which they evolve and the interdependencies that influence actor behaviour, can help actors understand which strategies or mechanisms can be adopted to prevent the process from slowing down (Heeres et al., 2016).

Furthermore, analysing actor interdependence can help identify interaction patterns in the decision-making process and specify their impact on integrated development of transport and land use in and around HSR station areas (Facchinetti-Mannone, 2019). Studies into decision-making processes leading to location choices for HSR stations have been in short supply in China, leading to a limited understanding of why station area development does not always proceed as hoped and expected. Our findings can help railway actors and urban actors involved in such location choices to understand each other's positions, preferences and behaviour better, facilitating alignment of resources and creating conditions for successful HSR station area development in terms of a balanced node-place.

Our analysis of actor interdependencies has shown that land resources and funding resources are controlled by different players: CRC and local governments respectively. As a consequence, development of different but mutually connected components of HSR station areas also occurs in parallel, constructed and managed by different actors. CRC is mainly responsible for the HSR and the area within the station, while local governments are in charge of local transport and the development of areas around the station. This fragmented development results in many complications, such as the inconvenient interchange between different transport modes and the slow development of HSR station areas. A closer look at the actor goals demonstrates, however, that integrated transport and land use development may, in fact, benefit all players: if disagreements could be overcome and joint organisational arrangements made possible from the beginning, station areas could be strengthened, improved and embellished considerably, making all players and their clientele happier. It is through adopting governance strategies and instruments aiming for goal alignment, continuous information exchange, mutual recognition of key interests and structured interaction that such joint arrangement become far more likely to be realised. We recommend that future research on HSR location choices in China focuses on developing governance strategies and instruments, allowing railway actors and urban actors to recognise their interdependencies, manage their interaction and thus substantially improve on the quality of HSR station areas. In follow-up studies in countries other than China, the theoretical premises as developed here may well also be adopted as a point of departure in coming to a good understanding of how decision-making processes lead to rational or (more probably) irrational location choices from a transport or urban planning perspective. However, countries have divergent institutional contexts consisting of different

actors, policy networks and different rules of the game, leading to a similar kind of analysis and use of method but dissimilar 'data input'. As a consequence, decision-making patterns and phases will most likely have their own specific shapes. Knowing that in countries such as Japan, France and Germany, HSR stations are often located much closer to city-centres, we look forward to reading studies that explain outcomes there, as seen through the lens of policy network theory as applied above.

Notes

1. The Ministry of Railways was dismantled at the 1st Plenary Session of 12th National People's Congress (14 March 2013). Its administrative duty has been transferred to the National Railway Authority, resorting under the Ministry of Transport (MoT), while the enterprise function has been assigned to the China Railway Corporation (CRC).
2. The Ministry of Land and Resources was dissolved in March 2018 and its functions were taken up by the Ministry of Natural Resources.

Acknowledgement

This work is supported by the China Scholarship Council [grant numbers 201708620179] and the Delft University of Technology. The authors would like to thank all the interviewees for providing invaluable information. We would also like to thank the two anonymous referees and editors for their insightful and helpful comments. We also thank Dr. Wijnand Veeneman for his constructive comments.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the China Scholarship Council (CSC) [201708620179].

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Appendix A.

Appendix A. Interviewees list.

| Interviewee No. | Position | Organisation | Interviewed cases |
|-----------------|--|---|----------------------------|
| 1 | Director of Railway Yard Department | China Railway Company | Shenzhen, Lanzhou, Jingmen |
| 2 | Chief Engineer | China Railway Fourth Survey and Design Group | Shenzhen, Jingmen |
| 3 | Director of Railway Yard Department | China Railway Fourth Survey and Design Group | Shenzhen, Jingmen |
| 4 | Director of Transport and Economic Department | China Railway Fourth Survey and Design Group | Shenzhen, Jingmen |
| 5 | Director of Architecture Department | China Railway Fourth Survey and Design Group | Shenzhen, Jingmen |
| 6 | Chief Engineer of Lanzhou Branch | China Railway First Survey and Design Group | Lanzhou |
| 7 | Deputy Manager of Comprehensive Development Department | Lanzhou Metro Company- Metro Real Estate Co., Ltd. ¹ | Lanzhou |
| 8 | Chief Engineer of Lanzhou Branch | China Railway Company | Lanzhou |
| 9 | Manager of Lanzhou Railway Stations | China Railway Company | Lanzhou |
| 10 | Senior Planner | Tongji Architectural Design Co., Ltd. ² | Lanzhou |
| 11 | Senior Planner | Lanzhou Urban-Rural Planning Bureau | Lanzhou |
| 12 | Director of Railway Office | Jingmen Development and Reform Commission | Jingmen |
| 13 | Manager of Passenger Management Branch | Jingmen Transport Bureau | Jingmen |
| 14 | Director | Jingmen Urban Planning Bureau | Jingmen |
| 15 | Director | Jingmen Housing Construction Committee Construction and Management Centre | Jingmen |
| 16 | Deputy Director of Zhanghe New District | Jingmen Local Government Zhanghe New District Branch | Jingmen |
| 17 | Director of Infrastructure Construction | Jingmen Local Government Zhanghe New District Branch | Jingmen |
| 18 | Director | Jingmen Land Resource Bureau | Jingmen |

1. Lanzhou Metro company was entrusted by the Lanzhou municipal government to provide fund, construct and develop the HSR station area.
2. Tongji Architectural Design Co.,Ltd. was entrusted by Lanzhou municipal government to plan the Lanzhou West HSR station, transport system and station area.