In Collaboration with the
China Center for Urban
Development and Kearney

WORLD ECONOMIC FORUM

The Belt and Road Cities' Connectivity Index

INSIGHT REPORT

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Contents

Foreword

Yulong SHI
Director of the China Center for Urban Development

Jefferson WANG Yu
Global Partner, Kearney

Rebecca IVEY
Chief Representative Officer, China Office, World Economic Forum

The Belt and Road Initiative (BRI), established and championed by China as a global public good, has been recognized and participated in by more and more economies over the past eight years.

The World Economic Forum shares the goals of the BRI and offers its full support to achieve success. As Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, noted,[1] the BRI is a groundbreaking international framework based on the concept of building a new type of platform, which has achieved impressive results and improved the connectivity of BRI countries.

Connectivity is not only a major new trend of our time, but also a key driver of future economic growth. According to the *Belt and Road Economics*[2] report released by the World Bank in 2019, "… countries that lie along the Belt and Road corridors are ill-served by existing infrastructure – and by a variety of policy gaps. As a result, they undertrade by 30 percent and fall short of their potential FDI by 70 percent. BRI transport corridors will help in two critical ways – lowering travel times and increasing trade and investment." In addition, "trade will also increase sharply, if unevenly, for Belt and Road corridor economies. The study estimates that trade will grow from between 2.8 and 9.7 percent for corridor economies and between 1.7 and 6.2 percent for the world." The report also noted that "BRI transport projects could help lift 7.6 million people from extreme poverty (those earning less than $1.90 a day) and 32 million people from moderate poverty (those earning less than $3.20 a day)."

In 2020, the China Center for Urban Development (CCUD), the World Economic Forum and Kearney jointly launched a study on BRI Cities' Connectivity Index to deepen the research on BRI connectivity. This study aims to evaluate the flow of key factors among typical BRI cities; its aim is to help those cities have more of an international focus and build intercity partnerships for connectivity, thus promoting the high-quality outcomes sought by the Belt and Road Initiative.

Our research team expects that during the post-pandemic global economic recovery, the Belt and Road Initiative, based on its steady progress over the past eight years as well as the improved infrastructure that has resulted from it, will effectively protect against economic recession and the decline in disposable income caused by COVID-19 in BRI countries and regions, especially those classed as developing. In this way, the BRI will create momentum for the economic recovery of all participants, hence contributing to the rapid recovery of the global economy in the post-pandemic era.

We hope that the report will help BRI cities evaluate their strengths and weaknesses, adopt targeted measures to become more cosmopolitan, and enhance collaboration among them, thereby establishing a highly connected system of BRI cities. We welcome all sides to join us in this effort to promote urban connectivity.

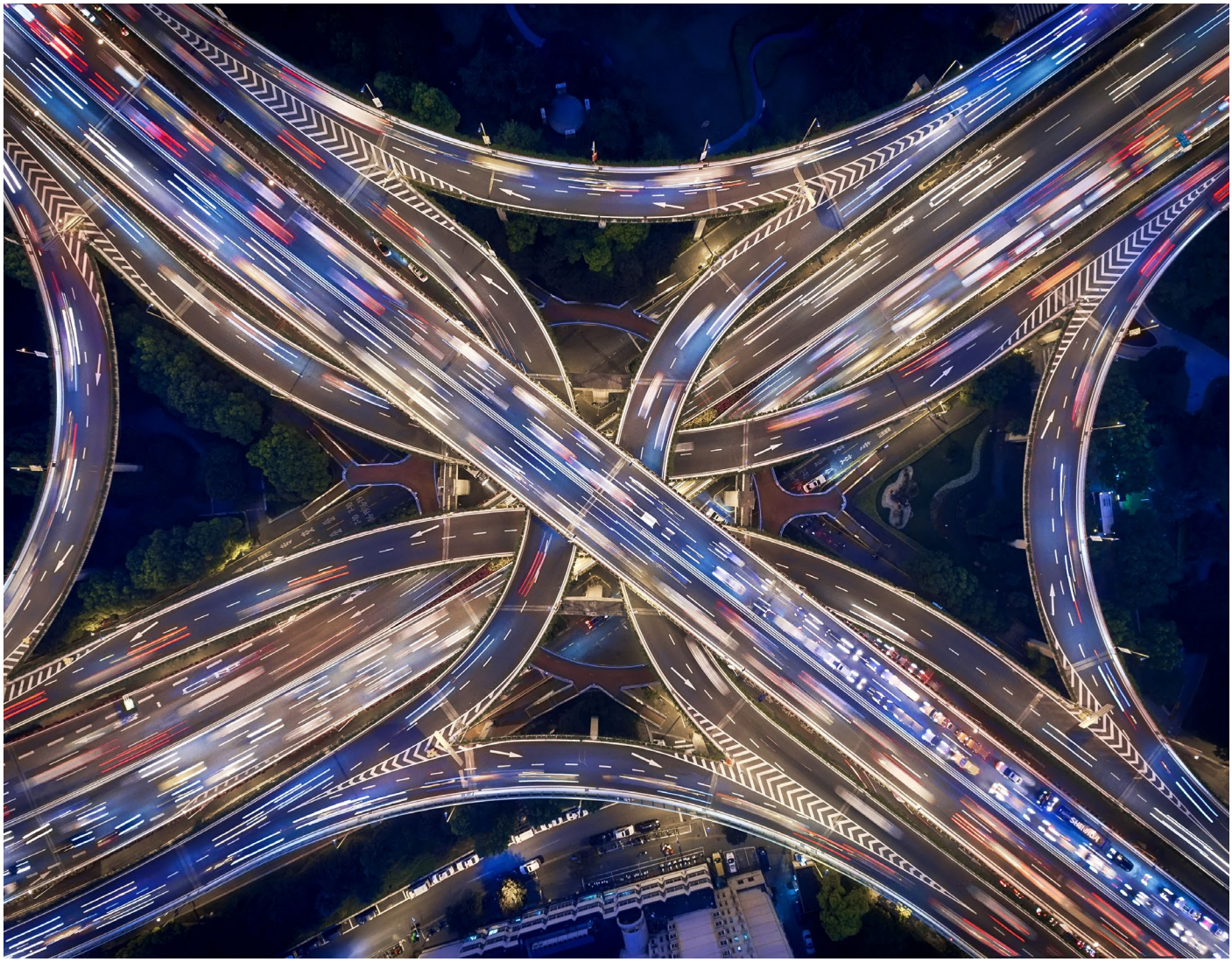
Executive summary

"The joint pursuit of the BRI aims to build connectivity and deepen cooperation," stressed Chinese President Xi Jinping at the opening ceremony of the Second Belt and Road Forum for International Cooperation (BRF). A city is the main location for modern economic and social activities, and intercity connection and cooperation is an important driver in jointly building connectivity among BRI cities. According to the United Nations, more than two-thirds of the world's population will live in urban areas by 2050.[3]

This report has selected 22 typical BRI cities based on six categories: policy coordination; infrastructure connectivity; unimpeded trade; financial integration; closer people-to-people ties; and information connection. It has derived an overall ranking plus rankings within each category based on assessments of 195 two-way city pathways and an analysis of more than 4,000 city-to-city data links. It has also measured the flow of key factors (capital, goods and information) and the level of connectivity among BRI cities, as well as exploring solutions to improve intercity connectivity.

There is still a long way to go. The report offers policy recommendations from five perspectives to improve intercity connectivity: taking advantage of existing strengths to reinforce strong connections; using geographical proximities and cultural similarities to build an area in which cities use their strength to stimulate the development of neighbouring areas or areas those with similar cultural background; building information connections using digital transformation; strengthening city-to-city exchanges to build partnerships among cities; and sharing methodologies to enhance city connectivity.

This report aims to help BRI cities evaluate their strengths and weaknesses, adopt targeted measures to increase intercity connectivity and deepen cooperation among BRI cities to build a community with a shared future for mankind.



1 Background

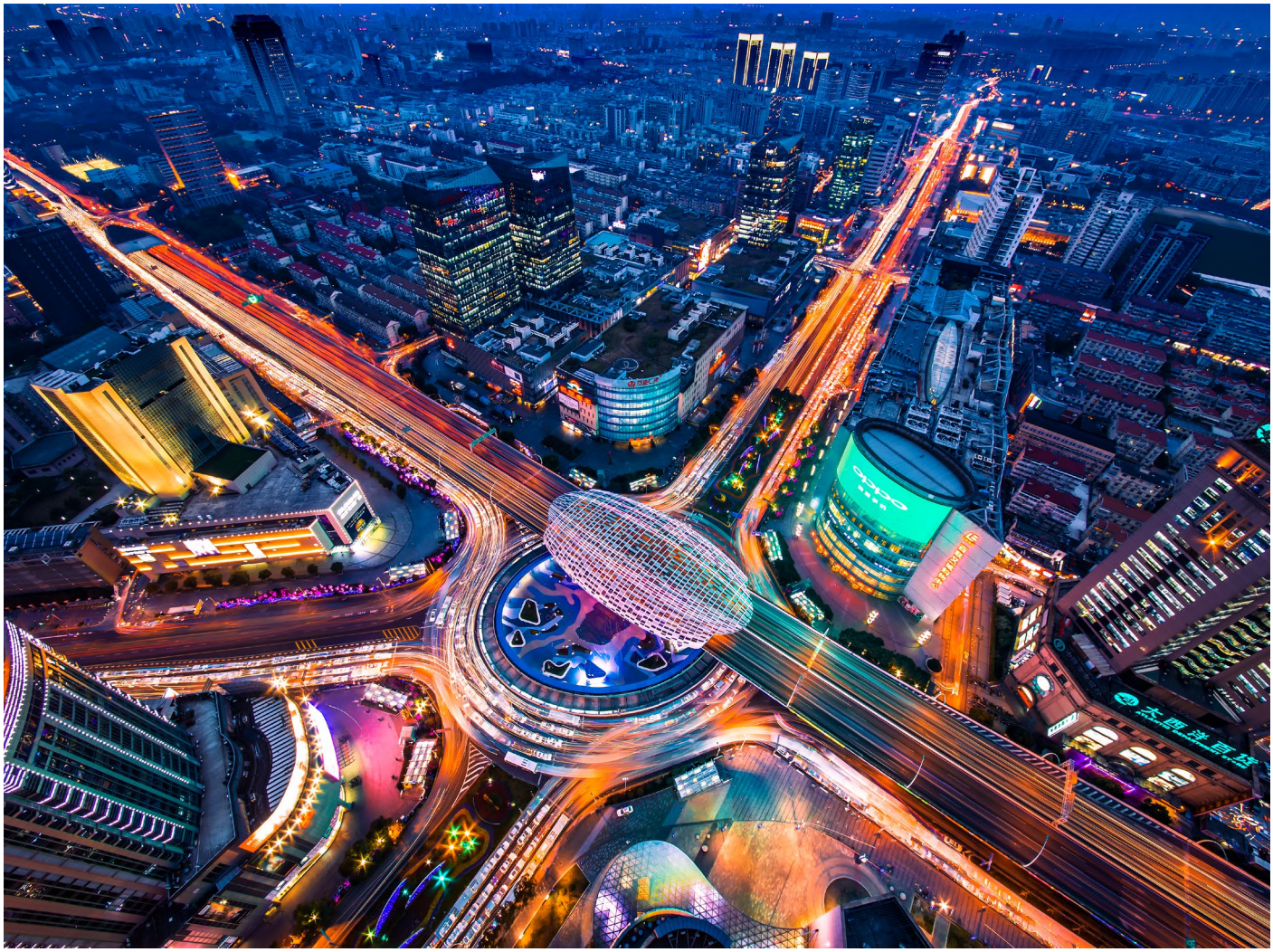
In January 2017, President Xi Jinping witnessed the signing of the Memorandum of Understanding between the National Development and Reform Commission (NDRC) on behalf of the Chinese government and the World Economic Forum to facilitate exchange and cooperation regarding the Belt and Road Initiative (BRI) and deepen international partnerships.

Subsequently, in April 2019, President Xi proposed collaborating to build the Belt and Road Sustainable Cities Alliance at the opening ceremony of the Second Belt and Road Forum for International Cooperation (BRF), where the China Center for Urban Development (CCUD) signed letters of intent with several international organizations.

In 2020, CCUD, the World Economic Forum and Kearney jointly launched the Belt and Road Cities' Connectivity Index to further the research of connectivity between BRI cities. The index is designed to evaluate the flow of key factors (capital, goods and information) among typical BRI cities, help cities strengthen cooperation and exchange, and ultimately build a highly connected system of BRI cities.

The study assessed connectivity on a city level based on the "five connectivities" of the BRI – namely, policy coordination, infrastructure connectivity, unimpeded trade, financial integration and closer people-to-people ties. (Information connection was added later.) It also carried out a multifaceted assessment of cities in six categories, considering the prominent features of digital connectivity of cities in recent years.

Based on Kearney's Global Cities Index,[4] this paper selected 22 typical BRI cities to measure the flow of factors and the connectivity between them. It summarized the modes, major challenges, key success factors and typical practices of connectivity in cities to help them have more of an international focus, build partnerships, facilitate the high-quality outcomes sought by the BRI and build a community with a shared future for mankind.



2 Rationale and methodology

2.1 The rationale behind the research

Global cities have formed a highly conjoined system of "multilayer networks and pathways" over the past two decades. In the future, cities will primarily influence the world by building cross-city connection pathways embodying their strength.

The world's cities began to develop a more connected network from the 1960s through to the 1980s. This was driven by the trend for globalization, and led to the collapse of the previous hierarchical structure among cities. Global cities assume basic functions, such as providing space for production organizations and market connections. They aggregate and control the flow of talent, capital, logistics, knowledge, information and culture, which are generated by corporate headquarters, international financial services, global transportation, advanced business services, and information and cultural products.

Since the 1990s, with the development of globalization and evolutions in industrial structure and information technology, regional developments have begun to play a bigger part in the competitiveness and growth of cities; the Yangtze river delta is an example of this kind of regional development, where a cluster of cities seek collaboration and joint development. Leading scholars such as Saskia Sassen and Manuel Castells believe there is an interdependent network among cities. Flows of global talent, capital, technology, commodities, information and knowledge are interconnected, forming a multilayered network and unique pathways. A city may be involved in many global pathways as a node and hub. This means global cities are shifting from a single network to a system of multilayer networks with specialized divisions of roles.

Given the features of "multilayer networks and pathways", the research on cities' connectivity and their pathways to other global cities makes it possible to assess the cities' strengths. To date, however, there are no mainstream frameworks assessing global cities' connectivity in a multidimensional way. Kearney's Global Cities Index, a comprehensive city index evaluating the development and strengths of global cities in multiple categories, has limited its assessment to two-way and multi-way city pathways. Another measurement tool, The World According to GaWC,[5] also provides assessment on city pathways, but is limited to the position and integration of cities in the high-end service industry only.

To better understand the existing strengths of major BRI cities and the implications for their future development, this report has analysed and measured pathways between BRI cities using multiple categories based on their level of connectivity.

The data will be expanded to cover more cities and intercity pathways to enable more systematic and comprehensive measurement of city connectivity in the future.

2.2 Methodology

The Index measures 10 metrics from six categories, including the "five connectivities" of the BRI and a new category for digital connectivity – namely, information connection – to assess 22 BRI cities and 195 two-way city pathways,[6] including more than 4,000 city-to-city data links (Table 1).

Cities are mainly selected from Asian, European and African regions participating in the BRI, including BRI cities located in East Asia, South Asia, South-East Asia, West Asia, Central Asia, North Africa, East Africa, South Africa, Southern Europe, and Central and Eastern Europe (see Table 9), of which nine are Chinese and 13 are international. The number of inland cities (10) and coastal cities (12) is also purposefully balanced in this research.

TABLE 1 **The 22 cities of the Belt and Road Cities' Connectivity Index**

Region	Country	City	Coastal/inland city
East Asia (10)	Korea	Seoul	Coastal
	China	Zhengzhou	Inland
		Xi'an	Inland
		Urumqi	Inland
		Shenzhen	Coastal
		Shanghai	Coastal
		Chengdu	Inland
		Qingdao	Coastal
		Beijing	Inland
		Tianjin	Coastal
Central Asia (1)	Kazakhstan	Alma-Ata	Inland
South-East Asia (2)	Thailand	Bangkok	Coastal
	Singapore	Singapore	Coastal
South Asia (1)	Pakistan	Karachi	Coastal
West Asia (2)	United Arab Emirates	Dubai	Coastal
	Turkey	Istanbul	Coastal
Africa (3)	Egypt	Cairo	Coastal
	Kenya	Nairobi	Inland
	South Africa	Johannesburg	Inland
Europe (3)	Italy	Rome	Coastal
	Russia	Moscow	Inland
	Austria	Vienna	Inland

Ten key indicators are chosen based on the following six categories: policy coordination; infrastructure connectivity; unimpeded trade; financial integration; closer people-to-people ties; and information connection, which serves as a separate category at the city level (Table 2).

TABLE 2 **Metrics and weights**

Dimension	Interpretation	Weight[1]	Metric	Weight[2]
Policy coordination	Measures the intensity of policy exchanges	16.7%	– Number of sister cities – Participation in international cooperation – Participation in major conferences	33% 33% 33%
Infrastructure connectivity[3]	Measures the transportation connection between cities	16.7%	– Direct passenger flights – Shipping routes – Direct rail freight (including China–Europe Railway Express)	25% 50% 25%
Unimpeded trade	Measures the trade flows between cities	16.7%	– Imports and exports between cities	100%
Financial integration	Measures the level of financial cooperation between cities	16.7%	– Foreign direct investment	100%
Closer people-to-people ties	Measures cultural exchanges between cities	16.7%	– Average number of airline seats per week	100%
Information connection	Measures the level of information exchanges between cities	16.7%	– Intercity broadband traffic	16.7%

Source: Kearney analysis

[1] Weights are rounded off to one decimal place, totalling 100%.

[2] Weight is evenly distributed among the categories and metrics of each category, except for infrastructure connectivity, where the weight of shipping routes is higher than air and rail freight due to the importance of sea freight volume to the entire trading network.

[3] Considering the developing features of a digital economy, information connection is separated from communication infrastructure connectivity at city level and analysed as a unique category.

For every category, the connectivity of each city with the other 21 cities was measured and their scores determined and standardized. The scores in the six categories and the total score were calculated according to weight. Furthermore, the connectivity of each pair of cities' pathways reflected in each indicator was measured (e.g. the strength of logistics pathway between Shanghai and Singapore), the score of the pathway determined through standardization and the six category pathway scores and the total pathway score calculated according to weight.

3 Findings

3.1 Results of the Index

Singapore topped the Belt and Road Cities' Connectivity Index, followed by Shanghai, Beijing, Bangkok and Seoul, the leading cities in East and South-East Asia. The top 10 cities are mainly coastal, except Beijing, Moscow and Chengdu (see Table 3).

Among Chinese cities, Shanghai and Beijing are among the top three, and Shenzhen, Chengdu, Tianjin and Qingdao lie between ninth and 13th. Chengdu, an emerging first-tier city, secured 10th place with a remarkable score.

TABLE 3 **Overall ranking of the Belt and Road Cities' Connectivity Index**

Overall ranking	City	Country
1	Singapore	Singapore
2	Shanghai	China
3	Beijing	China
4	Bangkok	Thailand
5	Seoul	South Korea
6	Dubai	UAE
7	Moscow	Russia
8	Istanbul	Turkey
9	Shenzhen	China
10	Chengdu	China
11	Tianjin	China

Overall ranking	City	Country
12	Rome	Italy
13	Qingdao	China
14	Cairo	Egypt
15	Karachi	Pakistan
16	Vienna	Austria
17	Xi'an	China
18	Zhengzhou	China
19	Almaty	Kazakhstan
20	Johannesburg	South Africa
21	Nairobi	Kenya
22	Urumqi	China

Source: Kearney analysis

1. Top five cities: balanced strengths, prominent roles as integrated hubs

Singapore, Shanghai, Beijing, Bangkok and Seoul are the leading BRI cities. They are leading global cities in addition to being leading regional hubs, with more balanced performances across the categories. Singapore topped four categories, while Shanghai ranked in the top three across all categories.

All of the top five cities are from Asia, reflecting the continent's potential for integrated development and intra-continental connectivity.

TABLE 4 | **Top five cities of the Belt and Road Cities' Connectivity Index**

Overall ranking	City	1. Policy coordination	2. Infrastructure connectivity	3. Unimpeded trade	4. Financial integration	5. Closer people-to-people ties	6. Information connection
1	Singapore	10	1	1	1	5	1
2	Shanghai	2	2	2	3	3	2
3	Beijing	1	10	3	8	6	3
4	Bangkok	4	6	6	5	1	14
5	Seoul	5	12	5	2	4	20

Source: Kearney analysis

Singapore topped the overall ranking thanks to its unique geographical location, which enables it to play important roles as a free trade port, a transportation hub, an international financial centre, one of the top 10 cities for foreign direct investment (FDI) flows and a broadband hub in Asia. It took the lead in four categories – specifically, infrastructure connectivity, unimpeded trade, financial integration and information connection – which can be attributed to its strong sea transportation industry, convenient cross-border trade environment, open policies for attracting foreign investment and established national digital strategy.

Shanghai, in second place, has demonstrated the most balanced performance. It gained the second highest score for policy coordination, infrastructure connectivity, unimpeded trade and information connection, which reflects its notable achievements as an international centre for economy, finance, trade, shipping and technology innovation, and its strong capability as China's largest international metropolis. Shanghai's port has handled the largest number of containers in the world for 11 consecutive years, but it is still behind Singapore in the number of routes and frequency of international shipping. Despite having the highest intercity imports and exports and leading in digital infrastructure in China, Shanghai still underperforms Singapore in terms of trade facilitation and broadband speed and penetration.

Beijing, in third place, gained the highest score for policy coordination and the third highest score for unimpeded trade and information connection. As an international exchange hub of the BRI, Beijing promotes policy coordination for bilateral state cooperation, and holds the Belt and Road Forum for International Cooperation. Multiple China–Russia and China–Africa cooperation agreements have been negotiated and signed in Beijing. The Asian Infrastructure Investment Bank (AIIB), headquartered in Beijing, has also signed cooperation projects with several BRI countries. Despite this, Beijing lags behind the two coastal cities of Singapore and Shanghai in trade and capital flows. However, Beijing has partnered with the Port of Tianjin to facilitate cross-border trade, which moved it up nine places in cross-border trade environment in two years. Beijing was second only to Shanghai in digital infrastructure, with the largest number of top internet and information technology companies, and unicorn enterprises.

Bangkok ranked fourth overall and gained the highest score in closer people-to-people ties. As Thailand's capital and largest city, Bangkok topped the rankings of global tourism destinations for four consecutive years thanks to its advantageous geographical location and pleasant natural environment. Most foreign tourists to Bangkok are from China, followed by Japan, South Korea and Singapore. Bangkok also actively hosts political and economic events related to the BRI, with the largest number of forums and summits held in selected international cities.

Seoul ranked fifth overall and for policy coordination, and second for financial integration. Politically, Seoul has signed "sister city" agreements with a number of countries to strengthen its economic and cultural exchanges and cooperation, has proactively joined a number of international cooperation organizations on climate, history and culture, and holds several international summits. Economically, Seoul accounts for more than 55% of the FDI flowing to and from South Korea, which lays the foundation for the country's business operations. FDI inflows to the city are mainly directed towards the service industry. FDI outflows cover a wide range of destinations, including China, Japan, Viet Nam, Saudi Arabia and Singapore. Seoul still has room to improve in terms of infrastructure connectivity and information connection compared with the top four cities.

2. Top 6–10 cities: differentiated advantages in specific categories

Most of the top 6–10 cities in the overall ranking were among the top performers in each category – ranking in the top five in at least one of the six categories.

Dubai held the sixth position. It showed strong performance in closer people-to-people ties. The city is one of the most important global air transport hubs – a key node connecting Europe and Asia. It is a regional economic and financial centre with superior performance in financial integration. Dubai also performed well in information connection, thanks to the improving digital infrastructure and innovation breakthroughs driven by a pre-emptive national digital transformation strategy.

Moscow, in seventh position, gained the third highest score for policy coordination, which is the highest among the international cities selected. Moscow has the largest number of sister cities and international city cooperation platforms among selected cities. It has long been the hub for political consultations and negotiations between Russia and other countries in Europe and Asia, and has also held many international conferences of great historical significance. Its leading position in infrastructure connectivity is attributed to its railway freight capability, which appears to be the strongest among the 22 cities. It ranked in the top 10 for unimpeded trade, financial integration and closer people-to-people ties, although was slightly behind leading coastal cities.

Istanbul ranked eighth overall and around 10th across all categories, reflecting its strong overall position as Turkey's largest city and centre for economy, culture and transportation.

Shenzhen ranked ninth overall and third for infrastructure connectivity. This is attributed to its strong background in sea transportation – its container throughput holds third place in China and fourth in the world.

Chengdu, in 10th position, performed well for policy coordination. It has built bilateral cooperation with four of the 13 international cities in the report, second only to Beijing and Shanghai. Chengdu proactively participates in multilateral city exchange platforms for international cooperation and has gained higher scores than Shanghai and Beijing in this regard, reflecting its long-term planning in internationalization and its vision to play a central role in the BRI. Chengdu has built a strong information connection, thanks to its strategic objectives of creating a national and international communication hub over the past five years. It has also built up strength in infrastructure connectivity, especially its capability in rail transportation as a hub of the China–Europe Railway Express. Chengdu's infrastructure connectivity is set to improve further thanks to its future planning for international rail and air transportation.

3. Cities ranked 11–22: regional leaders, with limited inter-regional connection

Cities positioned from 11 to 22 in the rankings were in the top 10 in up to two categories, displaying their unique features and advantages in BRI city connectivity (see Table 5). However, their influence on the Belt and Road Initiative is generally intra-regional and the geographical scope of their impact is relatively low.

Rome and Cairo are strong in policy coordination, which is attributed to the large number of international conferences they have held. These two capital cities also performed well in closer people-to-people ties. As important regional hubs and with unparalleled historical buildings and artefacts, the two cities are beloved destinations for tourists from all over the world.

Tianjin and Zhengzhou demonstrated unique advantages in financial integration. They have been increasing financial support and innovation efforts connected to the BRI following its launch; these include international settlements, external guarantees, foreign investment consulting and other financial services provided to related projects and enterprises. Qingdao showed outstanding performance in infrastructure connectivity, benefiting from its role as an international trade port and transit hub along the Yellow River and the west coast of the Pacific.

TABLE 5 | **Cities ranked 6–22 in the Belt and Road Cities' Connectivity Index**

Overall ranking	City	Policy coordination	Infrastructure connectivity	Unimpeded trade	Financial integration	Closer people-to-people ties	Information connection
6	Dubai	11	5	10	4	2	4
7	Moscow	3	4	7	6	7	18
8	Istanbul	9	9	9	10	8	12
9	Shenzhen	20	3	4	12	13	7
10	Chengdu	7	7	17	11	15	5
11	Tianjin	15	16	11	9	18	6
12	Rome	6	12	19	19	9	11
13	Qingdao	14	8	12	18	11	9
14	Cairo	8	18	16	17	10	22
15	Karachi	13	17	13	15	17	15
16	Vienna	16	15	20	13	12	13
17	Xi'an	12	20	15	16	21	10
18	Zhengzhou	22	14	14	7	14	8
19	Almaty	17	11	18	14	19	18
20	Joburg	19	19	8	21	16	21
21	Nairobi	18	21	22	22	20	17
22	Urumqi	21	22	21	20	22	16

Source: Kearney analysis

3.2 Leaders across each dimension

Although there is not a "perfect city" across all the categories, the top cities in the overall ranking have received high scores in each of them. Three cities – Singapore, Beijing and Bangkok – took the lead across six categories.

The top five cities across each category ranked high overall, and the top three cities on the overall rankings performed extremely well in each category. Shanghai ranked in the top three in all six categories; Beijing ranked in the top three in three categories (see Table 6). Coastal cities performed better on all categories except for policy coordination and information connection. They also held more top five positions than inland cities in each category.

TABLE 6 | **Top five cities across each category**

Ranking	Policy coordination	Infrastructure connectivity	Unimpeded trade	Financial integration	Closer people-to-people ties	Information connection
1	Beijing	Singapore	Singapore	Singapore	Bangkok	Singapore
2	Shanghai	Shanghai	Shanghai	Seoul	Dubai	Shanghai
3	Moscow	Shenzhen	Beijing	Shanghai	Shanghai	Beijing
4	Bangkok	Moscow	Shenzhen	Dubai	Seoul	Dubai
5	Seoul	Dubai	Seoul	Bangkok	Singapore	Chengdu

Source: Kearney analysis

Policy coordination: As a key hub for political and international exchange in the BRI, **Beijing** has promoted policy coordination for bilateral cooperation. Many China–Russia and China–Africa cooperation agreements have been signed there. The AIIB, headquartered in Beijing, has signed cooperation projects with several BRI countries. Since the launch of the BRI, Beijing has held the largest number of high-level BRI-related forums, summits, workshops and other economic and political conferences, including the highest-level conference – the Belt and Road Forum for International Cooperation (BRF).

Infrastructure connectivity: The port of **Singapore**, strategically located in the Strait of Malacca, is an important shipping artery between the Pacific and the Indian Ocean. Due to its advantageous geographical location, superior shipping ecosystem and strong government support, the city has become a world-class shipping hub, with more than 250 international shipping routes and vessels from more than 130 shipping companies from about 80 countries arriving and berthing each day.

Unimpeded trade: Singapore, one of the countries signing the largest number of multilateral and bilateral free trade agreements in the world, has participated in many regional cooperation organizations, such as the General Agreement on Tariffs and Trade (GATT), World Trade Organization (WTO) and Asia-Pacific Economic Cooperation (APEC). It was the first country to ratify the Regional Comprehensive Economic Partnership (RCEP) in 2021. Singapore has topped the ranking of trade facilitation among 189 economies for a decade, enabled by convenient trade settlement and free trading entities.[7] Benefiting from relaxed free trade policies, Singapore has far higher import and export volume than other BRI cities.

Financial integration: As a leading financial centre in Asia, **Singapore** attaches great importance to attracting foreign investment and is highly open to

foreign capital. Singapore was the third largest FDI recipient ($110 billion) in 2019, focusing on financial cooperation with East and South-East Asian cities, such as Shanghai, Seoul and Bangkok. It also provides policy and financial support to encourage local enterprises to invest overseas, and offers incentives, credit programmes and commercial credit insurance to overseas enterprises.[8]

Closer people-to-people ties: Bangkok, the world's most popular tourist destination in Asia, received more than 22 million international visitors in a year before the outbreak of COVID-19, which makes it the largest tourist destination in the world. It has especially close exchanges and connections with Singapore, Shanghai, Beijing and Dubai.

Information connection: Benefiting from its "intelligent island" strategy created last century, **Singapore** has built a leading position in digital and information communication infrastructure in both Asia and the world as a whole. It's now one of the world's most developed economies in terms of digital infrastructure and possesses the top digital infrastructure in Asia. Singapore has the fastest broadband in the world with a speed of 208.16Mbit/s.[9] The penetration of broadband and mobile phones in the city reaches 200% and 160.6% respectively. Among the top 10 cities in this category, seven are from China, among which Shanghai and Beijing ranked second and third respectively.

China has strengthened its information connection rating with extensive investment in digital infrastructure at home and abroad and its large number of internet users.

Besides information exchange and communication, the high-end producer services industry, represented by information technology and financial services, is also one of the most important signs of information connection.

China's leading strengths in digitalization and e-commerce are also reflected at city level. For example, the health-based QR code system used by China during the COVID-19 pandemic was developed by the city of Hangzhou and was adopted by a number of Chinese cities and even other countries. To this end, information connection was added as an important supplement, making up the "six connectivities" to measure the connectivity of BRI cities.

3.3 Results of the pathway assessment

Unlike other city assessment systems, this index not only measures the connectivity of individual cities but also identifies highly connected pathways among cities by measuring intercity connection from the perspective of flows (e.g. talent, capital).

1. Overall rankings

Pathways ranking the top 10 connect the seven pairs of cities displaying the highest level of connectivity, both in individual categories and overall (see Table 7). Singapore is the most connected city, as it is the endpoint of the top six pathways.

Pathways between geographically proximate cities are better connected. Six of the top 10 pathways are between East Asian and South-East Asian cities, two are between East Asian cities. Benefiting from geographical advantages and historical development, coastal cities are better connected in terms of trade, culture and transportation. Inland cities, however, have closer connections through railways, and sometimes through policy coordination, e.g. Beijing and Moscow.

TABLE 7 **Top 10 intercity pathways**

Ranking	Pathway	Region
1	Singapore–Shanghai	East Asia and South-East Asia
2	Singapore–Bangkok	
3	Singapore–Beijing	
4	Singapore–Shenzhen	
5	Singapore–Seoul	
6	Singapore–Dubai	South-East Asia and West Asia
7	Shanghai–Seoul	East Asia
8	Beijing–Moscow	East Asia and Eastern Europe
9	Shanghai–Bangkok	East Asia and South-East Asia
10	Beijing–Seoul	East Asia

Source: Kearney analysis

2. Leaders by each dimension

Policy coordination: Beijing, Shanghai, Moscow, Cairo, Seoul and Rome are active in political communications and are keen to seek bilateral cooperation. The Moscow–Cairo pathway scored the highest on policy coordination, with both cities participating in the largest number of international organizations. Beijing and Seoul have built a closer pathway due to geographical proximity and political contacts. Istanbul and Cairo are closely connected due to cultural and religious similarities.

Infrastructure connectivity: Singapore has created leading pathways with China's coastal cities (Shanghai/Shenzhen/Qingdao) by sea transportation; Moscow has direct rail freight connections to all selected Chinese cities – in particular, the Moscow–Chengdu line of the China–Europe Railway Express, which runs approximately 50 round trips per week.

Unimpeded trade: The trade pathways between East and South-East Asian cities are relatively well connected. As the international core trade hub, Singapore stimulates the development of its city pairs and helps them to rank in the top four in this category.

Financial integration: Singapore took the lead in financial integration and is the endpoint of four of the top five pathways. As for its financial development strategy, apart from maintaining close cooperation with European and US financial centres such as London and New York, Moscow also has close financial connections with emerging Middle East financial cities. Zhengzhou is attracting Singapore investors with its strategic planning and development in international logistics. Zhengzhou Commodity Exchange, the first pilot in China's futures market and one of the five national futures exchanges, has been cooperating with Singapore Exchange (SGX) since 2015.

Closer people-to-people ties: Bangkok, Seoul and Singapore have built leading pathways with Chinese cities in terms of closer people-to-people ties. They are also top destinations for the Chinese in terms of tourism and business trips. The Qingdao–Seoul pathway is a paradigm for closer people-to-people ties, including business-to-business ties based on geographic proximity.

Information connection: Singapore led the way in information connection and is ranked in all top five pathways in this category. What's more, given Chinese cities' advantages in informational connectivity, four of the top five pathways in this category are a combination of Singapore–Chinese cities. The Singapore–Dubai pathway ranked second, due to the efforts of both cities in realizing their digital strategies.

TABLE 8 **Top five pathways by each category**

Ranking	Policy coordination	Infrastructure connectivity	Unimpeded trade	Financial integration	Closer people-to-people ties	Information connection
1	Moscow–Cairo	Singapore–Shanghai	Singapore–Shanghai	Singapore–Shanghai	Singapore–Bangkok	Singapore–Shanghai
2	Beijing–Seoul	Singapore–Shenzhen	Singapore–Beijing	Singapore–Seoul	Shanghai–Seoul	Singapore–Dubai
3	Istanbul–Cairo	Singapore–Bangkok	Singapore–Bangkok	Singapore–Bangkok	Shanghai–Bangkok	Singapore–Beijing
4	Moscow–Rome Shanghai–Seoul	Singapore–Qingdao	Singapore–Shenzhen	Moscow–Dubai	Qingdao–Seoul	Singapore–Chengdu
5	Rome–Cairo	Moscow–Chengdu, etc.[1]	Moscow–Beijing	Singapore–Zhengzhou	Beijing–Seoul	Singapore–Tianjin

Source: Kearney analysis

[1] *Assessed on the availability of direct trains, the following pathways ranked No. 5: Moscow–Chengdu, Moscow–Beijing, Moscow–Shanghai, Moscow–Qingdao, Moscow–Tianjin, Moscow–Shenzhen, Moscow–Zhengzhou, Moscow–Almaty; Istanbul–Vienna, Istanbul–Karachi.*

3. Implications and findings

By analysing the 195 pathways between the 22 selected cities, we identified three unique features of the pathways between closely connected BRI cities.

Feature 1: The top pathways are formed between leading cities in the connectivity index

The top 10 pathways are paired between cities leading in one or more categories and ranking in the top seven overall in the index. Singapore has the strongest connectivity, securing all top six pathways (see Table 7).

Feature 2: Pathway connectivity is strengthened by geographical proximity

Among the top 10 pathways, six are paired between East and South-East Asian cities; two are paired between cities within East Asia (see Table 7), reflecting stronger connectivity between cities with geographical proximity.

Better infrastructure connectivity will reduce the "distance" between cities. For example, the China–Europe Railway Express improves city connectivity in terms of railway infrastructure and unimpeded trade. However, financial integration is not influenced by distance. For example, China's investment in the UAE and Italy has grown by 35% and 24% respectively over the past three years at a higher growth rate than its investment in East Asian and South-East Asian countries.

Feature 3: Coastal cities perform better in pathway connectivity than inland cities

Endowed by their geographical location and historical development, coastal cities are more connected in terms of trade, culture and transportation, and perform better in unimpeded trade, financial integration, closer people-to-people ties and shipping infrastructure connectivity.

Inland cities have closer connections through railways, and sometimes through policy coordination, examples being the national capitals Beijing and Moscow.

4 Policy recommendations

Intensifying global economic and trade disputes are bringing greater challenges in terms of "globalization" and "multilateral cooperation". In this context, city-level connectivity will become more prominent. In contrast to multilateral cooperation at a national level, practical and flexible city-level cooperation to some extent helps break ideological and geopolitical barriers to facilitate multilateral regional collaboration and focus more efforts on economic, trade, cultural and commercial exchanges.

Cities, covering only 2% of the total area of the globe, are home to more than 50% of the world's population and are responsible for 80% of its economic output.[10] According to UN projections, more than two-thirds of the world's population will live in urban areas by 2050. The fastest growing cities are in Asia and Africa, including Karachi, Kinshasa and Lagos. Increasing intercity connectivity is a key step to strengthen the foundations for high-quality BRI development.

Specifically, it makes sense to start with five initiatives to strengthen the connectivity of BRI cities:

1. Take advantage of existing strengths to reinforce strong connections

Cities should identify their strengths before determining which category to focus on, such as strength in policy and institutional cooperation (e.g. Moscow and Beijing) or in economic and livelihood development (e.g. Singapore and Dubai). Given that the six categories are mutually complementary and collaborative, cities can choose to pinpoint two or three key categories. For example, stronger infrastructure connectivity can improve unimpeded trade and people-to-people ties, better trade facilitation can drive the capital flow demand of enterprises, and enhanced information connection helps increase the efficiency of trade and financial integration.

2. Use geographical proximity and cultural similarity to build an area in which their strengths can spread and be shared

Cities that have not yet established close pathways should first connect with those in their neighbouring regions, as geographical proximity and cultural similarities can increase the feasibility of policy and trade cooperation. Singapore, for example, built close trade cooperation with South-East Asian countries in the 19th and 20th centuries. Indonesia's and Malaysia's need to transit their major commodities (such as rice, spices and rubber) through Singapore makes the city a core export gate for cross-border trade in South-East Asia.

3. Build information connection relying on digital transformation

Cities should highlight digital transformation; in an age of digitalization, the digital transformation of cities is a historical choice. For example, Singapore's ongoing "Smart Nation" strategy explores changes in governance patterns, business models, trade frameworks and lifestyles, taking the city on a distinctive path of digital development. To prevent and control COVID-19 in the post-pandemic era, working from home, virtual offices and telecommuting are gaining popularity. These bring their own challenges, particularly in some Asian countries that are reluctant to accept such new ways of working due to cultural considerations – for example, in Japan face-to-face meeting is required. The importance of intercity information connection will be increasingly visible in the future, requiring countries and cities to play their role in digital infrastructure development, orderly digital asset sharing and alignment of digital privacy management policies.

First-tier Chinese cities (e.g. Shanghai and Beijing) and new first-tier Chinese cities (e.g. Hangzhou and Chengdu) have superior digital infrastructure. The high-end producer services industry, represented by information technology and financial services, will be the most internationally and digitally dependent sector. As a global leader in e-commerce and cross-border e-commerce, China should use digital technology to make breakthroughs, especially to take the initiative in developing and supporting international digital trade platforms to influence and increase cooperation with BRI countries, and even the world as a whole.

4. Strengthen city-to-city exchange to build partnerships

To maintain highly cooperative city pathways, both cities in a pathway should continue to explore the cooperation potential based on their existing influence, improve the mechanism for bilateral communication and exchange, and promote all-round connectivity.

City governments should go beyond traditional exchange frameworks of "sister cities" and build intercity partnerships from a more

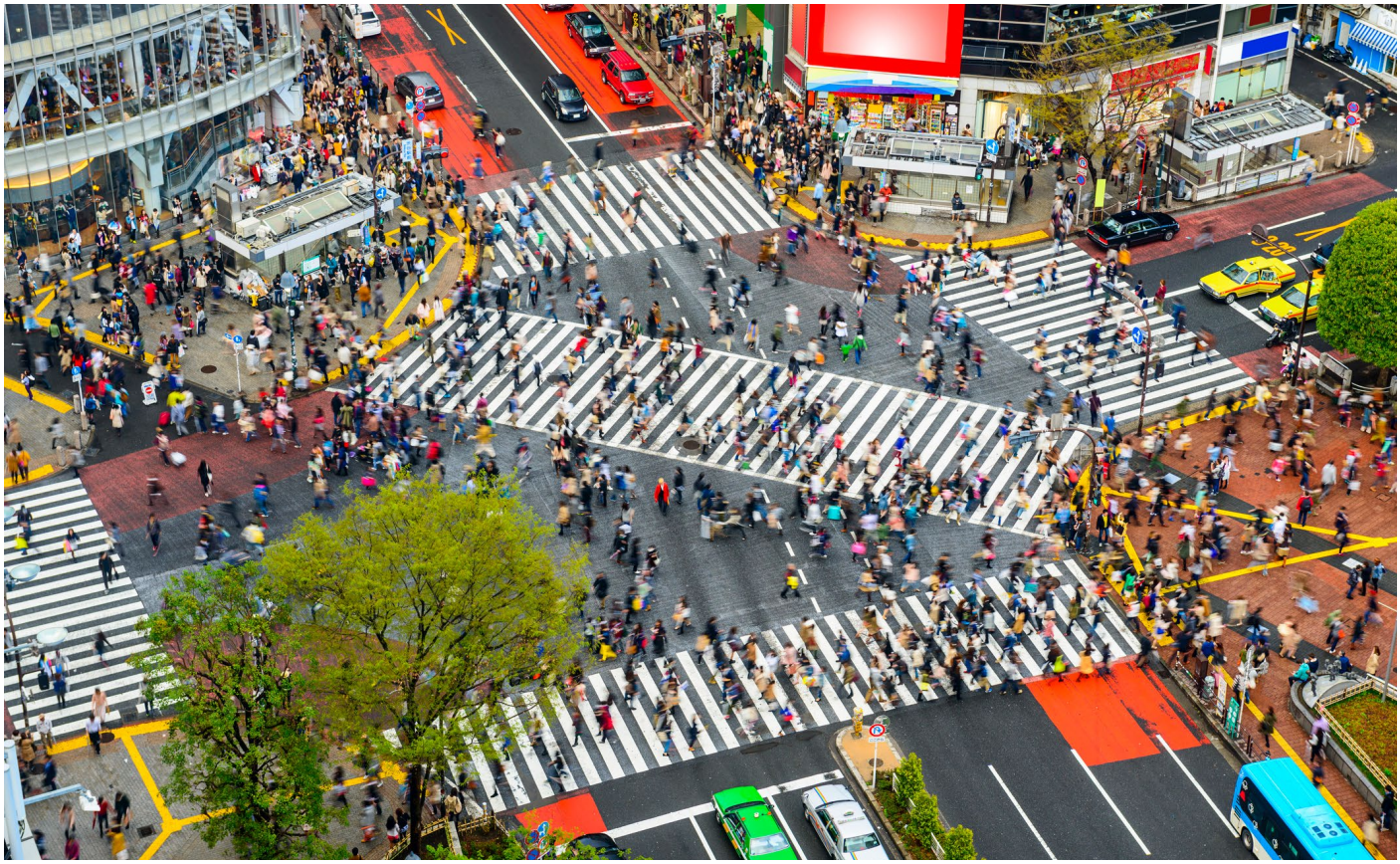
diversified, pluralistic and comprehensive perspective. For example, branch offices or representative offices can be set up in both cities of a highly connected pathway to promote intercity investment, economic and trade cooperation, cultural exchange, tourism, etc. Multinational companies are rethinking their "one-size-fits-all" globalization strategies and shifting towards more localized options. They should focus on cities that have strong pathways with those where their corporate headquarters or key businesses are located, which helps accelerate their integration into local communities and expand their business's sphere of influence. Local companies may strengthen their cooperation with companies located in the other city of a specific pathway. For example, travel agencies and tourism companies in two cities with strong cultural and tourism ties can enhance cooperation to develop the customer base in both cities.

Singapore and Shanghai, for example, have the potential to further enhance their connectivity in specific pathways, such as shipping, trade and finance. Indeed, the cooperation of shipping companies and maritime technology ventures between Singapore and China helps facilitate the development of information technology and intelligence in shipping; China (Shanghai) Pilot Free Trade Zone is conducive to breaking down technical and market access barriers while trading with Singapore; projects deepening the cross-border Renminbi (RMB) cooperation between Singapore and Shanghai are also of positive value in this regard.

5. Share best practices to enhance city connectivity

Many cities currently face similar development challenges, especially those in the same geographical region. Therefore, sharing techniques and stories of success can help bring two cities closer, and build a more stable and reliable city pathway. For example, cities of all sizes in China where the COVID-19 pandemic has been brought under control ahead of other countries can share their successful and implementable solutions with international cities, especially those with similar social characteristics, such as those in East and South-East Asia.

Cities should also proactively strengthen cooperation with international organizations. For example, they could participate in the ICLEI (Local Governments for Sustainability) network to enhance their connection and cooperation with international cities. They should actively get involved in discussions about international rules and regulations to enhance the level of international development, such as joining the Paris Agreement to reduce emissions and build climate resilience. Cities can refer to the methodologies shared by platforms such as URBACT[11] to define feasible policies and implementation roadmaps based on their own situations. They can also draw experience from Citymart,[12] a platform that collects development solutions and contributes ideas to more than 130 cities around the world, as well as enabling municipalities to purchase solutions according to their own challenges.



5 Highlight 1: Comparing Chinese cities and international cities on connectivity

5.1 Differences by category

1. Advantageous categories of international cities: financial integration and closer people-to-people ties

Singapore, Bangkok, Seoul and Dubai rank in the top five for financial integration and closer people-to-people ties. Shanghai, in third place, is the only Chinese city among the top five (see Table 9).

– **Financial integration:** Singapore is one of the main financial centres of Asia, second only to Hong Kong, Dubai is the emerging financial centre of the Middle East, and Seoul is also a major financial centre in Asia. All three cities have significantly higher investment flows to and from BRI cities than Chinese cities do. Bangkok is in fifth position in this category. Despite the close connection to Singapore, there are fewer investment flows between Bangkok and Singapore than between Shanghai and Singapore. The number of cities with which Bangkok has capital transactions is also smaller than that of Dubai. Shanghai is the only Chinese city that has advantages in financial integration, but there is still a significant gap between it and Singapore in terms of capital amount and city coverage. The expansion of the service trade is of great significance to China. The services sector, especially the high-end producer service sector represented by finance, is the most internationally connected part of global industries. Increasing the import of services can strengthen China's economic transformation and international connectivity, as well as reverse the services trade deficit. For cities with comparative advantages in the service industry, there is great potential to export services to BRI countries.

– **Closer people-to-people ties:** Most of the international cities leading in this category are capital cities, which play the role of cultural exchange centres. Unlike large cities in China where most talent flows within the national border, talent in South-East Asian countries mainly flows across borders, as the region has a limited number of megacities. It is worth noting that Dubai is one of the few non-capital cities among the top 10 by this dimension, attributed to its role as the "Middle East hub" and the government's vision to develop it into a "global cultural hub".

2. Neutral categories – Chinese cities and international cities have similar performance across policy coordination, infrastructure connectivity and unimpeded trade

The number of Chinese cities among the top five cities in each of these three categories is equal to that of international cities (two or three). The rankings of these international and Chinese cities are also close (see Table 9).

- **Policy coordination:** Beijing and Shanghai ranked first and second respectively; Moscow, Bangkok and Seoul ranked third to fifth.
- **Infrastructure connectivity:** Singapore, Moscow and Dubai ranked among the top five; Shanghai and Shenzhen ranked second and third respectively.
- **Unimpeded trade:** Shanghai, Beijing and Shenzhen ranked second, third and fourth respectively, lagging behind Singapore but higher than Seoul.

TABLE 9

Ranking difference between Chinese and international cities across the "Five Connectivities"

Overall ranking	City	Policy coordination	Infrastructure connectivity	Unimpeded trade	Financial integration	Closer people -to-people ties
1	Singapore	10	1	1	1	5
2	Shanghai	2	2	2	3	3
3	Beijing	1	10	3	8	6
4	Bangkok	4	6	6	5	1
5	Seoul	5	12	5	2	4
6	Dubai	11	5	10	4	2
7	Moscow	3	4	7	6	7
8	Istanbul	9	9	9	10	8
9	Shenzhen	20	3	4	12	13
10	Chengdu	7	7	16	11	15

International cities · Chinese cities · Top five by category

Source: Kearney analysis

3. Advantageous categories of Chinese cities: outstanding information connection improves overall ranking

Eight Chinese cities ranked in the top 10 on the category of information connection. Only two international cities of the top five in the overall ranking, Singapore and Dubai, are on the list (see Table 10).

China has a clear advantage in information connection thanks to its heavy investment in digital infrastructure at home and abroad and its large number of internet users. Shanghai and Beijing ranked in the top three; Chengdu, a representative of the new first-tier cities, secured fifth place, outperforming Shenzhen.

As for international cities, Singapore and Dubai are the best performers in information connection. Dubai is vigorously developing its digital infrastructure and has the fastest fixed broadband in the Middle East, enabling the UAE to top the rankings of fibre-to-the-home (FTTH) penetration[13] and the mobile broadband internet subscriber index[14] for three consecutive years. The city also announced the establishment of the Dubai Digital Authority (DDA)[15] on 22 June 2021 to improve its global position in digital development.

TABLE 10 **Top 10 cities by information connection**

Ranking	City	Country
1	Singapore	Singapore
2	Shanghai	China
3	Beijing	China
4	Dubai	United Arab Emirates
5	Chengdu	China
6	Tianjin	China
7	Shenzhen	China
8	Zhengzhou	China
9	Qingdao	China
10	Xi'an	China

Source: Kearney analysis

With the addition of the information connection category, the overall ranking of Chinese cities improved (see Table 11). Beijing, Tianjin and Zhengzhou ranked two places higher than in the "five connectivities" due to their advantages in information connection. In general, international cities still have room to improve in this area.

TABLE 11 **Impact of information connection on the overall ranking**

Country	City	Change
China	Shanghai	—
China	Beijing	+2
China	Shenzhen	—
China	Chengdu	+1
China	Tianjin	+2
China	Qingdao	—
China	Zhengzhou	+2
China	Xi'an	+1

Source: Kearney analysis

5.2 Differences by influence

A comparison between the rankings of the Belt and Road Cities' Connectivity Index and Kearney's Global City Index (see Table 12) showed that Chinese cities are more influential within BRI regions, while international cities exhibit a stronger global influence. This indicates that the BRI cities inherently have close ties with Chinese cities on all kinds of pathways, and Chinese cities have a stronger incentive to jointly pursue the China-initiated BRI.

Chinese cities overall have greater regional influence, and only Beijing has a stronger global influence than other Chinese cities in this research project. Shanghai has a more balanced global and regional influence, while the influence of other cities such as Shenzhen, Chengdu and Tianjin is relatively stronger in BRI regions.

International cities, such as Vienna, Johannesburg and Nairobi, generally have a stronger influence on a global scale than specifically in BRI regions. Bangkok, a hugely popular Asian tourism destination and an important regional centre in the Association of South-East Asian Nations (ASEAN), is the only international city whose regional influence is stronger than its international influence.

TABLE 12 **The Belt and Road Cities Connectivity Index vs. Kearney's Global Cities Index**

Cities more influential in BRI regions

Country	The Belt and Road Cities' Connectivity Index rankings	Kearney's Global Cities Index rankings
Singapore	1	2
Shanghai	2	3
Bangkok	4	9
Shenzhen	9	13
Chengdu	10	14
Tianjin	12	16
Qingdao	13	18
Karachi	16	19
Zhengzhou	18	20
Almaty	19	21

Cities with strong global influence[1]

Country	The Belt and Road Cities' Connectivity Index rankings	Kearney's Global Cities Index rankings
Beijing	3	1
Seoul	5	4
Moscow	7	5
Cairo	14	12
Vienna	15	6
Johannesburg	20	11
Nairobi	21	15

Source: Kearney analysis

[1] *Among the 22 selected cities, 17 have different rankings in the Global City Index – Urumqi was not included in the Global City Index; Dubai, Xi'an, Istanbul and Rome held the same or similar places in the two indexes.*

6 Highlight 2: Best practices in city connectivity – Singapore, Shanghai, Chengdu

6.1 Singapore

Singapore topped the Belt and Road Cities' Connectivity Index and took the lead across four categories – infrastructure connectivity, unimpeded trade, financial integration and information connection.

Singapore was committed to becoming the "hub of South-East Asia" long before the launch of the BRI. The small city-state, with almost no natural resources and a population of 5.7 million, has made "self-reliance" one of its diplomatic principles. It has been focusing on foreign trade, attracting foreign investment and technological development since the last century. Today, Singapore's achievements surpass those of many traditional developed countries: it ranks top among 189 world economies in terms of cross-border trade facilitation; it is also one of the world's most developed economies in terms of digital infrastructure.

Key initiatives in Singapore

Establish a sound and convenient cross-border trade and tariff policy: Singapore has been set up as a free port since the 19th century. With no control over foreign exchange, capital can flow freely in and out of the country: it allows free operations for trade entities; it has built a complete shipping industry chain, and has reduced shipping taxes significantly; it exempts all imports from tariffs, except for alcohol, tobacco (including cigarettes), oil and motor vehicles. Free trade and low taxes have made Singapore a major global trading hub.

Broaden and build strong trade partnerships: Singapore has been a member of the GATT since 1973 and was a founding member of the WTO at its creation on 1 January 1995. It has also been committed to expanding its trade partnerships, building on APEC, the Asia-Europe Meeting (ASEM) and ASEAN, and was the first country to ratify the Regional Comprehensive Economic Partnership (RCEP) agreement in 2021. Singapore was the first country in Asia to sign the Free Trade Agreement (FTA) with China, which came into effect in 2009, covering 95% of Singapore's exports to China, the largest trading partner with Singapore to date. The BRI will further strengthen Singapore's position as a trading hub and enhance Singapore's trade partnership with major Chinese cities.

Adopt highly open policies to foreign capitals: Singapore provides a series of incentives to attract foreign companies to set up headquarters in the country, such as the Global Trader Programme, Business Headquarters Programme, Operational Headquarter Status and Regional Operational Headquarter Status for multinational corporations. Singapore sets no restrictions on the scope of business in which a company can engage, and companies can change their scope of business according to their business and market conditions without approval, as long as what they do is legal. The extremely open and inclusive policies have attracted more than 4,000 multinational corporations (MNCs) to set up their regional headquarters in Singapore.

Ensure an outstanding education system combining a global perspective and East Asian culture: Singapore brings together people from different ethnic groups around the world, including Malays, Indians, Eurasians and Chinese, who make up the largest percentage of the population. In addition to English, which is the primary teaching language, a second language is mandatory for all students in Singapore. Chinese courses are also compulsory for Chinese students. As former Prime Minister of Singapore Lee

Kuan Yew stated, "It is this unique bilingualism that has enabled Singapore to communicate freely with the world without losing our cultural heritage and the massive Chinese market."[16]

Have a forward-looking digital strategies: The Singapore government started to highlight the strategic importance of information technology and its initial vision for a Smart Nation initiative early in 1992. Singapore now ranks first in Asia for digital infrastructure, with fast fixed broadband (208.16Mbps in June 2020), over 50% of South-East Asia's data centre capacity, and implementation of its first 5G network in May 2021.

In terms of social governance and livelihood services, Singapore's "Smart Nation 2025" programme proposes building an island-wide infrastructure and operating system for data collection, connection and analysis; this will form a scientific governance system supported by the acquired data that is able to predict citizens' needs and provide better public services.

Regarding industrial development, Singapore has adopted the Industry Transformation Maps, building on its ICT expertise, to commercialize innovative technologies, and has established Digital Industry Singapore (DISG) to facilitate the entry of Singapore's financial technology companies into Asian markets.

For trade facilitation, Singapore is participating in the formulation of digital trade rules, hoping to lift digital trade barriers, solve cross-border payment problems among Asian-Pacific cities and build a more open and digitally connected trade platform that enhances trade facilitation.

In 2012, Singapore began to invest heavily in promoting port automation and intelligence through its Smart Port challenge to secure the strategic goal of transforming itself into an international shipping centre. Singapore's Next Generation Port 2030 (NGP2030) initiative aims to create the world's largest container throughput in the future (1.5 times that of Shanghai's port) by integrating next-generation technologies. In addition, Singapore has invested $1.1 billion in building unmanned vessels to increase operational efficiency and gain a head start in sea transportation in the future.

6.2 Shanghai

Shanghai ranked second overall and in the top three across each of the six categories.

As a centre of international economy, finance, trade, shipping and technology innovation in China, Shanghai demonstrates strong overall connectivity and is becoming a central hub for the operation of the dual economic circulation model. China is pushing a "dual circulation" development pattern to sustain growth in the coming years, building up strength in both domestic demand and foreign trade to meet challenges in this stage of development. The "dual circulation"development paradigm, in which domestic and overseas markets reinforce each other, with the domestic market as the mainstay, was mentioned as a guiding thought in a blueprint for China's development in the next five to 15 years, which is under review.[17]

Key Initiatives in Shanghai

Improve foreign investment policies and build a cluster of global headquarters: In 2019, Shanghai improved foreign investment policies in three areas – opening up to foreign trade, attracting more foreign investment and protecting the legitimate rights and interests of foreign investors. Shanghai has now become one of the main homes of Chinese and global companies' headquarters, hosting a total of 771 regional headquarters for MNCs and 481 foreign-invested research and development (R&D) centres so far.

Improve financial market system and financial resource allocation: Aggregating various types of national markets for financial factors, Shanghai has become a leading financial centre, with some of the most complete financial market categories in the world, leading in spot gold and stock value (Shanghai Stock Exchange). In 2020, the value added by the financial sector accounted for more than 18% of the city's GDP, taking it to third place in the Global Financial Centres Index (GFCI) in September 2020. In the future, Shanghai will accelerate the upgrade of its International Financial Centre to build a global platform for the flow and allocation of capital factors (financial accommodation and global resource allocation).

Improve the trade environment and capacity to build an international trade centre: In 2020, the import and export volume of Shanghai's trade in services reached $153 billion, ranking it among the top cities in the world, thanks to Shanghai's recognition of the importance of trade in services as

early as 1997. Shanghai took the lead in piloting the reform of integrated national customs clearance, which halved the time needed for clearances in customs. Shanghai's Pudong New Area has also been strengthening trade facilitation measures to break the bottleneck in customs clearance of key industries. Looking forward, Shanghai will make gradual and innovative breakthroughs in offshore trade, enhancing its role as an entrepôt trade hub, and expanding the potential of cross-border e-commerce to build a global trading hub.

Consolidate its position as an international aviation hub and shipping centre: Since the "Reform and Opening-up" of Shanghai,[18] the city has been increasing its investment in transportation development, including key hubs such as Shanghai Port, Shanghai Railway Station, Pudong International Airport, Hongqiao International Airport and Yangshan Port, to build a sound hub network integrating sea, land and air transportation. Having proposed this vision in the 1990s, Shanghai is now leading the way in infrastructure connectivity, with the world's largest container throughput for 11 consecutive years, together with the world's fourth largest air passenger throughput and third largest cargo throughput. In addition, the Shanghai Free Trade Zone has attracted several top global foreign-funded ship management companies, which makes the city more attractive as an industry cluster.

Push digital transformation to build a global digital city: In the area of digital governance, Shanghai promotes the development of new generations of information infrastructure and intelligent terminals, with a focus on 5G. In terms of the digital economy, it focuses on the next generation of internet economic brands to enhance the capability of core digital industries and form a cluster of advanced intelligent manufacturing industries. Regarding the digitization of daily life, Shanghai promotes deeply integrating digital technologies into education, medical care, elderly care, culture and tourism.

6.3 Chengdu

Chengdu ranked 10th overall and gained the highest score among China's new first-tier cities

Although an inland city, Chengdu, the most connected of the new first-tier cities in China, has remained a hub for trade and cultural exchange between China and the West since ancient times. Chengdu was originally the intersection of three major transportation and trading network systems, namely the Southern Silk Road, the Northern Silk Road and the Maritime Silk Road (the Yangtze River Transportation Route), where Eastern and Western trade and cultures met. Today, Chengdu is an important transportation hub in western China, and will connect to the rest of the country and beyond under the BRI as it moves to become an international gateway and hub.

Key Initiatives in Chengdu

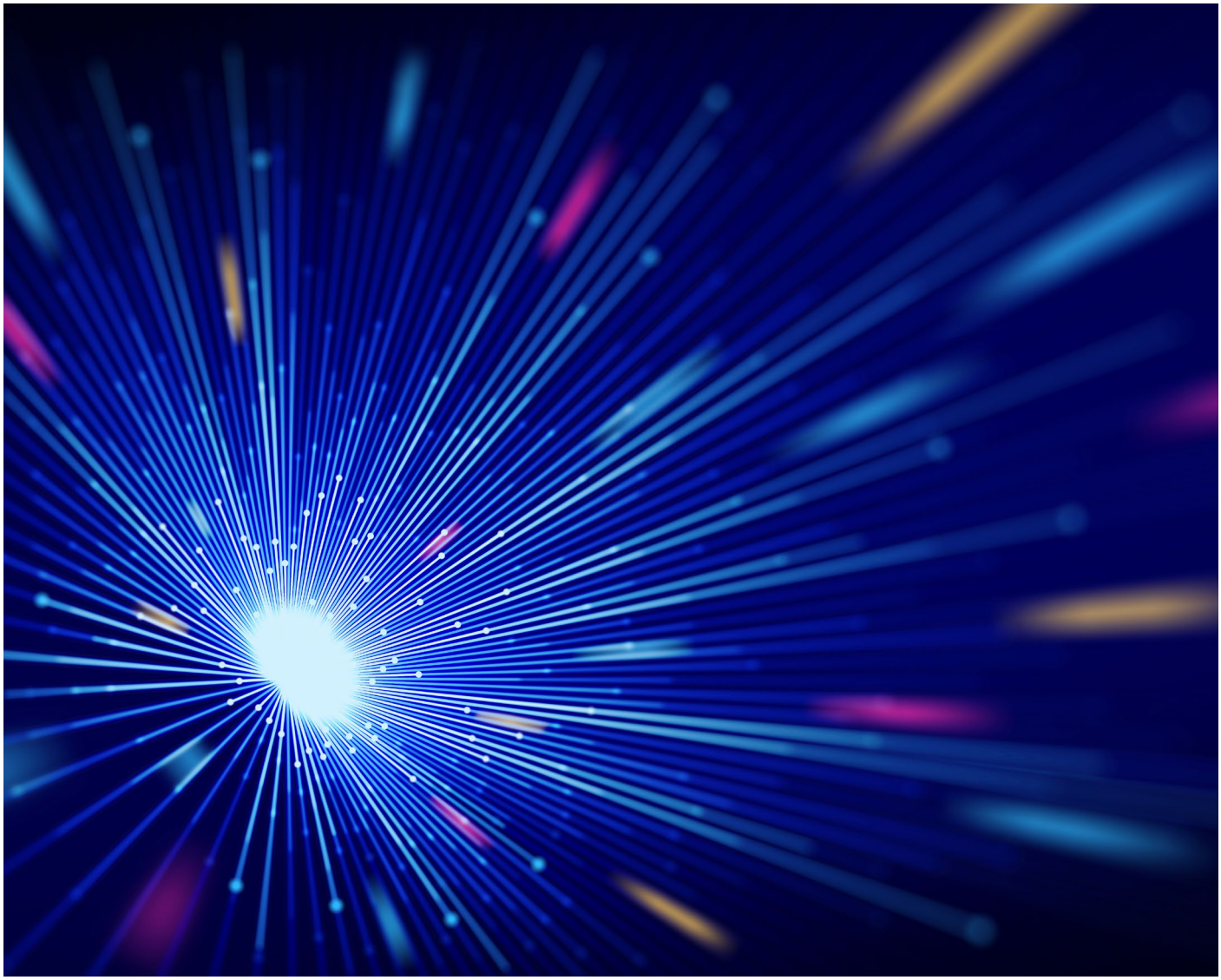
Strengthen infrastructure to transform into an integrated international transportation hub: Chengdu has advantages in *rail transportation*. It aims to gain influence in western Chinese cities and the BRI cities as Chengdu International Railway Port and the China–Europe Railway Express continue to develop. Chengdu International Railway Port, with a planned area of 73.2 square kilometres, is a pilot free trade zone, a national open port, a national land port hub, a comprehensive bonded zone and a national economic development zone. Chengdu ran a total of 4,300-plus international freight train trips in 2020, up by 35.5% year-on-year, with a heavy load rate of 97.7%, among which 2,400 were China–Europe train trips, with those trips having a heavy load rate of 96.3%. As of 2020, Chengdu International Railway Port has run more than 10,000 train trips with seven international rail lines and six international rail-sea intermodal lines, connecting 59 international cities and 20 Chinese cities. The obvious advantages of Chengdu in rail transportation are attributed to system innovation, regional clusters and strong industrial support.

In addition, Chengdu has undertaken the first national reform of intermodal "one-bill coverage" based on rail transport, with China's first blockchain cross-border trade platform, Sino-Europe Trade Link, underpinned by one-bill coverage. It has pioneered the China–Europe Railway Express less-than-container-load (LCL), shared shipment and "three trains into two" integrated transport model to update the current operational model of the Europe Pass. It is also the first to reform China–Europe freight tax collection and management.

Chengdu built the China–Europe Railway Express brand (Chengdu–Chongqing) in collaboration with Chongqing to coordinate operations and align freight. It has established the Asia–Chengdu–Europe Logistics (Industrial) base in cooperation with 13 cities and prefectures in Sichuan Province, and established an operation system with 100 cities and counties in western China to boost the export of agricultural products (e.g. fruit, flowers, trees, tea), light industrial products (e.g. furniture, food, garments) and high-end products (e.g. high-end manufacturing equipment, cars and pharmaceuticals).

Chengdu has also built the Jintang–Qingbaijiang–Xindu Belt and Road Inland Port Area around Chengdu International Railway Port, and set up the European Industrial City plus concentrated industrial zones for rail transportation, and aerospace and biomedical materials, to develop Europe-facing industries suitable for railway transportation. It has improved the China–Europe Railway Express supply chain to provide stable international logistics solutions for enterprises in Sichuan Province and western China, including TCL, Dell and Lenovo, and offers stable import channels for commodities such as timber and ore concentrates.

In terms of air transportation, Chengdu Tianfu International Airport, China's largest airport after Beijing Daxing International, was completed at the end of 2020 and put into operation at the end of June 2021. The first phase saw the creation of three runways and a 600,000 square metre passenger terminal. The airport has capacity for 90 million passengers per year and an annual cargo throughput of more than 2 million tons. It is the first airport in the world to seamlessly integrates high-speed (350 km/h) trains with airport terminals, in addition to boasting advanced technologies such as China's first 4F-class intelligent runway and Asia's first driverless clean-energy personal rapid transit (PRT) system. Chengdu Tianfu International Airport will integrate operations with Chengdu Shuangliu International Airport to add 48 passenger routes covering major global aviation hubs and economic centres, 14 international freight routes leading to major global logistics node cities, and 30 passenger routes connecting to international tourist destinations, and ultimately build a highly interconnected "air silk road".[19]



Deepen cooperation with BRI countries based on their strengths: Chengdu has built extensive partnerships with Laos, Cambodia, Singapore and other ASEAN countries on infrastructure, agriculture, forestry, animal husbandry and fisheries, power engineering, modern services, culture and tourism. Its cooperation with Germany, the United Kingdom, France and the Netherlands focuses on science and technology, such as energy conservation and environmental protection, information technology, biomedicine and high-end equipment manufacturing.

Strengthen digital infrastructure to build an international communication hub at regional level: Chengdu has 11.42 million internet users, with a penetration rate of 69.9%, 10.3% higher than that of China.[20] Chengdu ranked first among China's new first-tier cities for both FTTH coverage and the number of optical network users. This improving information and communication infrastructure creates new growth drivers, as well as laying a strong foundation for the city to build a BRI information pathway and position itself as an international information port. Chengdu will further speed up the construction of a 5G-led double-gigabit broadband city, complete 65,000 5G base stations, and take the lead in realizing the large-scale commercial use of 5G in China. It will also strive to solve the three core problems of artificial intelligence (AI) technology in the field of satellite internet – computing power, algorithms and big data – and accelerate the expansion of narrowband internet of things infrastructure (NB-IoT) from central urban areas to suburban and rural areas in Chengdu.

7 Highlight 3: Prospects

The expectation is for this study to cover more cities and metrics and provide deeper analysis in the next three to five years, which will improve the coverage and value of the study.

Cities: The plan is to increase the number of cities covered from 22 to 80–100 in phases, with the aim of incorporating all new first-tier cities in China and significantly enlarging the sample size of overseas cities to cover all BRI regions geographically. More emerging cities will also be selected, while maintaining a balance between inland and coastal cities. In the far future, non-BRI cities that are significantly influenced by the BRI will also be included.

Metrics: More specific metrics will be added to each of the current "six connectivities", such as industrial chain connection, high-end service industry connection and e-commerce connection. The weight of specific metrics will be optimized as appropriate, while the weight of each of the six categories will remain the same.

Analysis scope: As data accumulates year by year, assessments will be added on the growth rate of BRI cities' connectivity. By focusing on the annual changes in city connectivity and pathway connections, it will be easier to gauge the changing impacts of the BRI on the cities covered.

In addition, as mentioned in the fifth point of the policy recommendations, the hope is to combine the resources and strengths of all parties and draw lessons from urban platforms such as URBACT and Citymart to create a platform for the sharing of data, methodologies, cases and service providers by BRI cities. The plan is also to publish the data in this report as interactive forms on the platform for all parties to make cross-queries and comparisons based on their own needs.

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Contributors

World Economic Forum

Rebecca Ivey
Chief Representative Officer, Greater China

Pengcheng Qu
Head of Government Affairs, Greater China

Yamin Xu
Lead of Internet of Things and Urban Transformation Platform, Greater China,

Authors from China Center for Urban Development

Jing Guan
Assistant Researcher, International Cooperation Department

Yue Liu
Director, International Cooperation Department

Huijie Sun
Assistant Researcher, International Cooperation Department

Likang Zhang
Assistant Researcher, International Cooperation Department

Authors from Kearney

Peiyi Chen
Project Manager

Jiaying Li
Consultant

Jefferson Wang Yu
Global Partner

Queenie Zhou Kunyi
Consultant

Pengyuan Zhou
Principal

The authors would like to thank the following contributors:

Stefan Bogensberger
Schwarzman Scholar, Tsinghua University

Abdo Al Habr
Kearney Principal

Mike Hales
Kearney Global Partner

Songzhi Huang
Schwarzman Scholar, Tsinghua University

Ameer Ibrahim
Schwarzman Scholar, Tsinghua University

Ralph Kamar
Kearney Consultant

Cheng-Hsuan Li
Schwarzman Scholar, Tsinghua University

Rudolph Lohmeyer
Global Partner

Antoine Nasr
Global Partner

Aizhan Omirzak
Schwarzman Scholar, Tsinghua University

Austin Xu Zizheng
Kearney Consultant

Chengzhi Yin
Associate Professor, School of Public Policy and Management, Tsinghua University

Rafael Zhuang Yongkun
Kearney Consultant

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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
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