



Industry report of the construction material market in the PRC and other regions

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China Insights Consultancy Introduction, Methodologies, and Assumptions

China Insights Consultancy is commissioned to conduct research and analysis of, and to produce a report on the construction materials market in the PRC and selected developing countries, at a fee of RMB400,000. The report commissioned has been prepared by China Insights Consultancy independent of the influence of The Company or any other interested party.

China Insights Consultancy is an investment consulting company originally established in Hong Kong. Its services include industry consulting services, commercial due diligence, strategic consulting, and so on. Its consultant team has been tracking the latest market trends in environment, industry, energy, chemicals, healthcare, consumer goods, transportation, agriculture, e-commerce, finance, etc., and has the most relevant and insightful market intelligence in these mentioned industries.

China Insights Consultancy undertook both primary and secondary research using various resources to construct this report. Primary research involved interviewing key industry experts and leading industry participants. Secondary research involved analyzing data from various publicly available data sources, including National Bureau of Statistics, Ministry of Ecological Environment, etc. The information and data collected by China Insights Consultancy have been analyzed, assessed, and validated using China Insights Consultancy's in-house analysis models and techniques. The methodology used by China Insights Consultancy is based on information gathered from multiple levels, which allows for such information to be cross-referenced for reliability and accuracy.

The market projections in the commissioned report are based on the following key assumptions: (i) the overall social, economic, and political environment in the PRC is expected to remain stable during the forecast period; (ii) the economic and industry development in the PRC is likely to maintain a steady growth trajectory during the forecast period, accompanied by continuing urbanisation; (iii) relevant key industry drivers are expected to drive the construction materials market, including growing demands from infrastructure construction and real estate, and favorable government policies, increasing urbanisation rate and promotion of new-type urbanization and rural revitalization, and evolving technologies; (iv) there is no extreme force majeure or unforeseen set of industry regulations in which the market may be affected in either a dramatic or fundamental way.

All statistics are reliable and based on the most recent information available as of the date of this report. Other sources of information, including governments, industry associations, or marketplace participants, may have provided some of the information on which data or its analysis is based.

All the information about The Company is sourced from either The Company's own audited report or management interviews. China Insights Consultancy is not responsible for verifying the information obtained from The Company.

Terms and Abbreviations

Abbreviations:

CAGR: Compound Annual Growth Rate

CBCIA: Concrete Branch of Construction Industry Association of China

CCA: China Cement Association

CCPA: China Concrete & Cement-based Products Association

CSSA: China Sand-Stone Association

GDP: Gross Domestic Product

IMF: International Monetary Fund

KM: Kilometre

MEE: Ministry of Ecological Environment

MIIT: Ministry of Industry and Information Technology of the People's Republic of China

NBSC: National Bureau of Statistics of China

NDRC: National Development and Reform Commission

NSCKR: National Statistical Committee of the Kyrgyz Republic

NSP: New Style Dry-process

PRC: People's Republic of China

SAMR: State Administration for Market Regulation

Terms:

Silt bearing: the content of particles with a particle size of less than 75 μ m

Artificial sand: rocks that are mechanically crushed and sieved into rocks, mine tailings and industrial waste particles with a particle size of less than 4.75 mm, but excluding soft, weathered particles

Tonne: metric ton, equivalent to 1,000 kilograms

UHPC (Ultra-High Performance Concrete): a kind of fiber-reinforced concrete with high compressive strength (ranging from 150MPa to 800MPa), high tensile strength (higher than 5MPa), ultra-high toughness, high durability, high abrasability, high blast resistance and strong self-healing ability in terms of microfractures.

Note: Terms and abbreviations are presented in alphabetical order.

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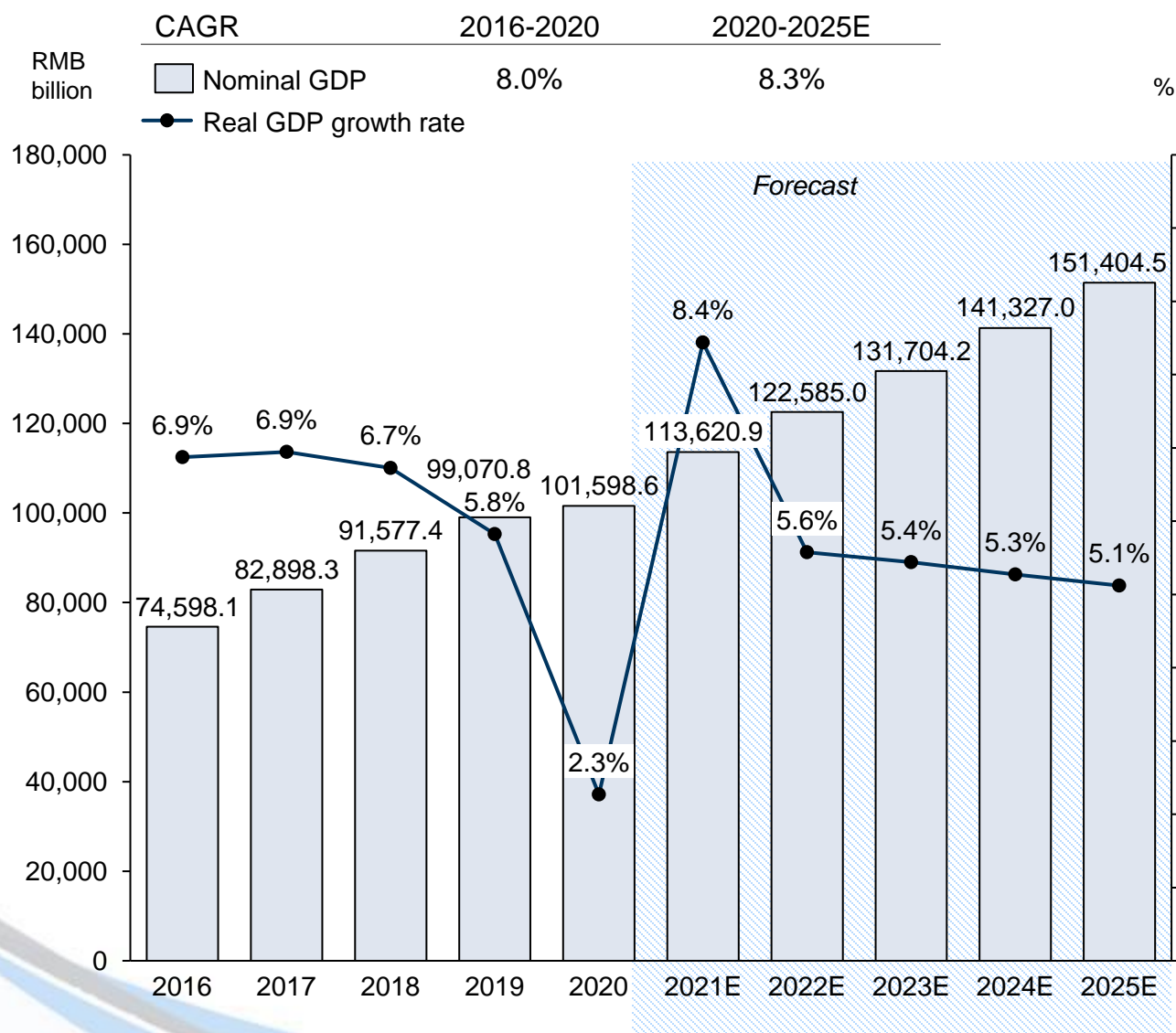
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1. Overview of the Macroeconomic and Social Development in the PRC

Nominal GDP and real GDP growth rate in the PRC

-The macro-economy of the PRC has experienced a stable growth from 2016 to 2019 and a slow growth in 2020, with the nominal GDP reaching RMB101,598.6 billion in 2020; it is expected that the nominal GDP of the PRC will reach RMB151,404.5 billion in 2025

Nominal GDP and Real GDP growth rate, the PRC, 2016-2025E



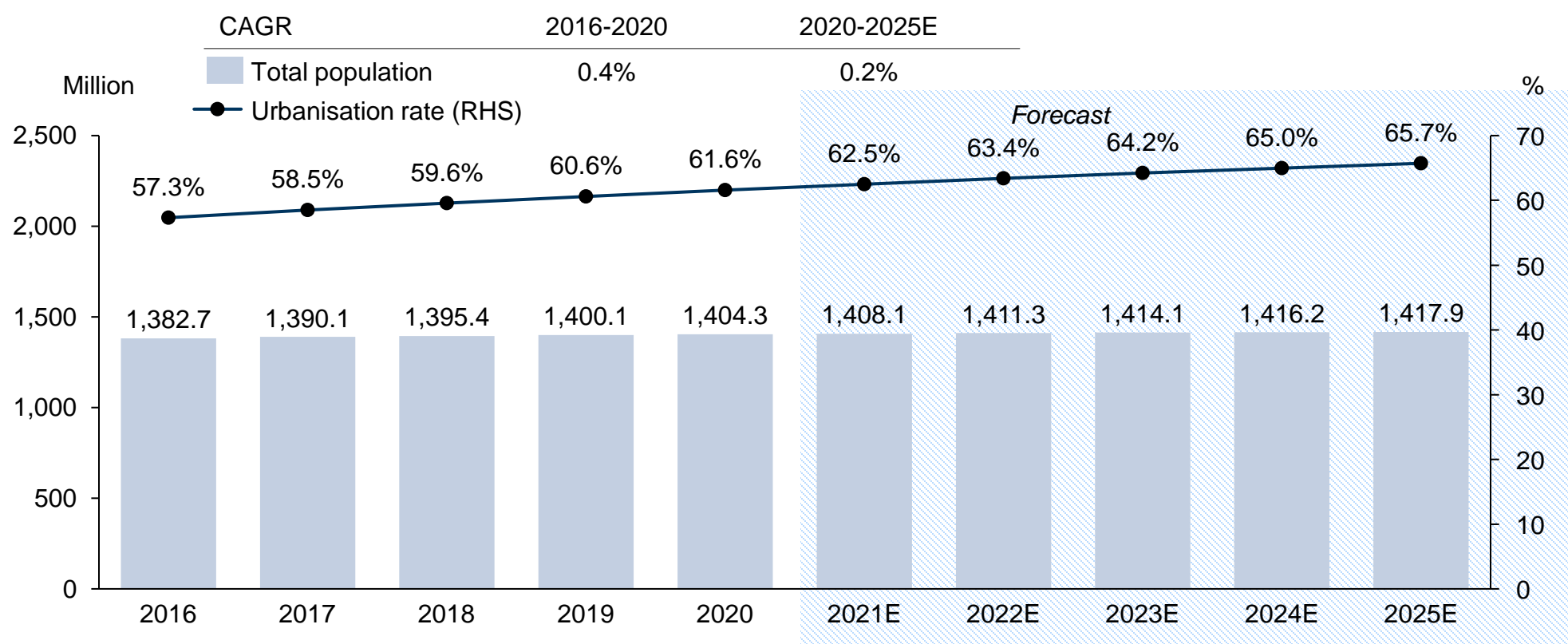
Key analysis

- The macro-economy of the People's Republic of China (PRC) has achieved a stable growth between 2016 and 2020. The nominal GDP rose from RMB74,598.1 billion in 2016 to RMB101,598.6 billion in 2020, registering a CGAR of 8.0%. Meanwhile, the real gross domestic product (GDP) growth rate kept above 6.0% between 2016 and 2019.
- In view of the severe global economic impact of the coronavirus(COVID-19) pandemic, the real GDP growth rate of the RPC declined to 2.3% in 2020. It is expected that the economy will rebound after the pandemic is effectively controlled, with real GDP growing at 8.4% in 2021 and stabilizing around 5% to 5.5% in the next four years. The nominal GDP is estimated to reach RMB151,404.5 billion in 2025, representing a CGAR of 8.3% between 2020 and 2025.
- The economic development in the PRC has entered into the "new normal" phase. According to the "13th Five-Year Plan for Economic and Social Development of the PRC" (), there is clear trend toward a more advanced form of growth, improved divisions of labour and a more rational structure in the PRC.
- The PRC has proposed the "Belt and Road Initiative". The related infrastructure construction projects will further promote the economic development of Western China. It proposed that Western China should accelerate the construction of internal and external interconnection channels and regional hubs, improve infrastructures, and significantly improve the conditions for external transportation in developing and remote areas. In addition, Western China will continue to promote New Urbanisation. The continuous development of Western China will be one of the driving forces for the economic development in the PRC.

Total population and urbanisation rate in the PRC

-Under the combined effect of the ageing population and the universally implemented three-child policy, the population of the PRC is growing slowly; the urbanisation rate is expected to reach 65.7% in 2025 with favorable policies to promote urbanisation projects

Total population and urbanisation rate, the PRC, 2016-2025E



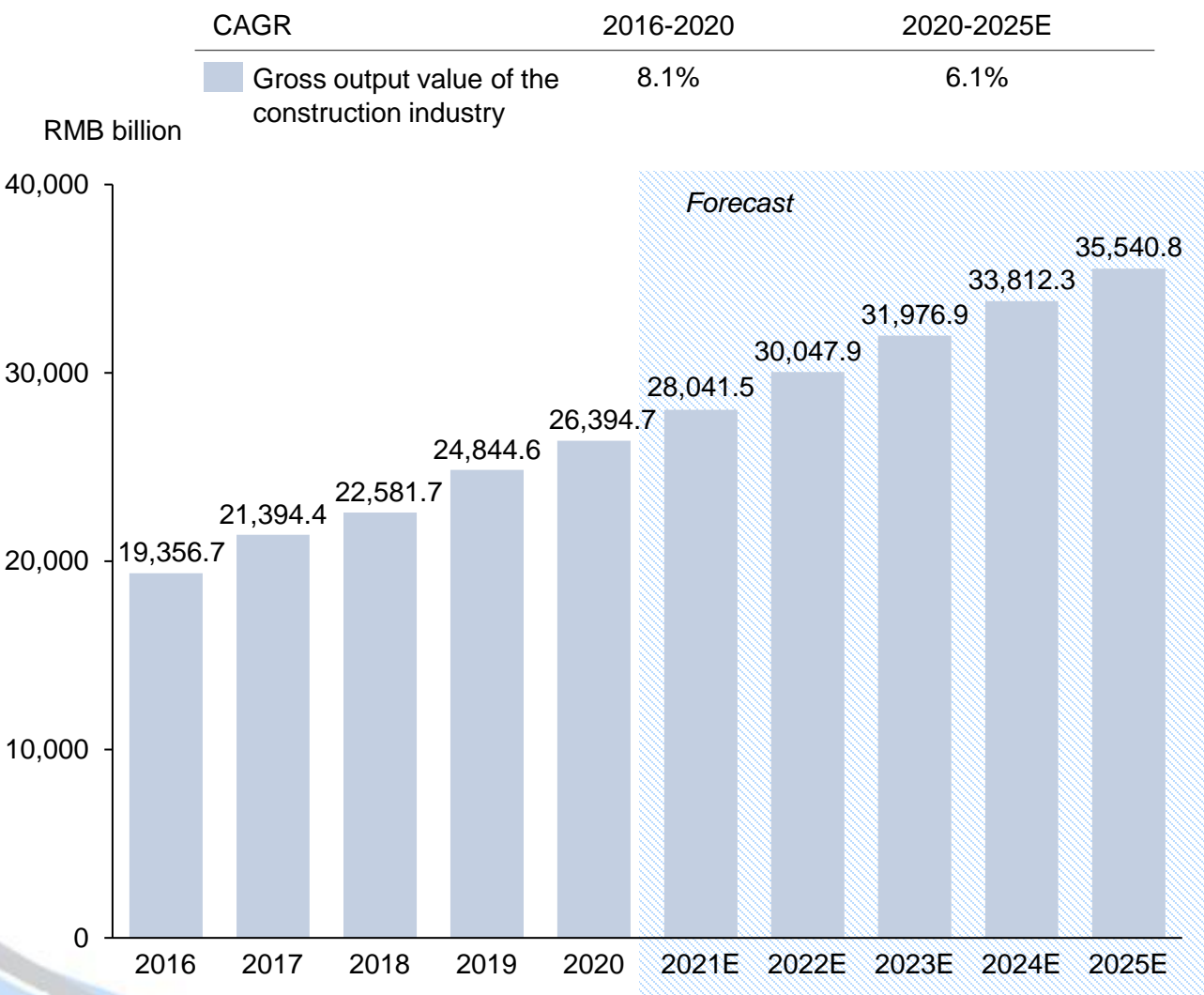
Key analysis

- The PRC is the largest country in the world as measured by population, accounting for approximately 19% of the total world population. The total population increased from 1,382.7 million in 2016 to 1,404.3 million in 2020, with a CAGR of 0.4%. With the implementation of the three-child policy, the total population is expected to continue to grow in the future, reaching 1,417.9 million by 2025.
- During the recent years, the pace of urban construction in the PRC has been accelerated, with the urbanisation rate reaching approximately 61.6% in 2020. In the future, the PRC will continue to promote new urbanisation projects, granting the urban residency to approximately 100 million former rural residents and other permanent urban residents without urban household registration. The urbanisation rate in the PRC is expected to reach 65.7% by 2025.

Gross output value of the construction industry in the PRC

-The gross output value of the construction industry in the PRC has been and is expected to maintain a rapid growth, driven by multiple development strategies, such as the Large-scale Development Strategy for the Western Region and the “Belt and Road Initiative”

Gross output value of the construction industry, the PRC, 2016-2025E



Key analysis

- The construction industry is an important pillar of the national economy. The environment and growth of the construction industry depend on the macro-economic landscape and other factors, such as interest rate, inflation, urbanism rate, the level of social and cultural development, unemployment rate, the trend of population distribution and consumer confidence. The construction industry in the PRC is benefiting from the rapid economic development of the PRC.
- The construction industry in the PRC has maintained a rapid growth trend over the past five years. The gross output value of the construction industry increased from RMB19,356.7 billion in 2016 to RMB26,394.7 billion in 2020, with a CAGR of 8.1%.
- In the next five years, the China Western Development Strategy and the “Belt and Road Initiative” are expected to drive the large-scale construction projects of real estate and infrastructure, further propelling the development of the ready-mixed concrete industry in the PRC.
- It is estimated that the gross output value of the construction industry in the PRC will increase at a relatively low CAGR of 6.1% from 2020 to 2025, reaching RMB35,540.8 billion in 2025.

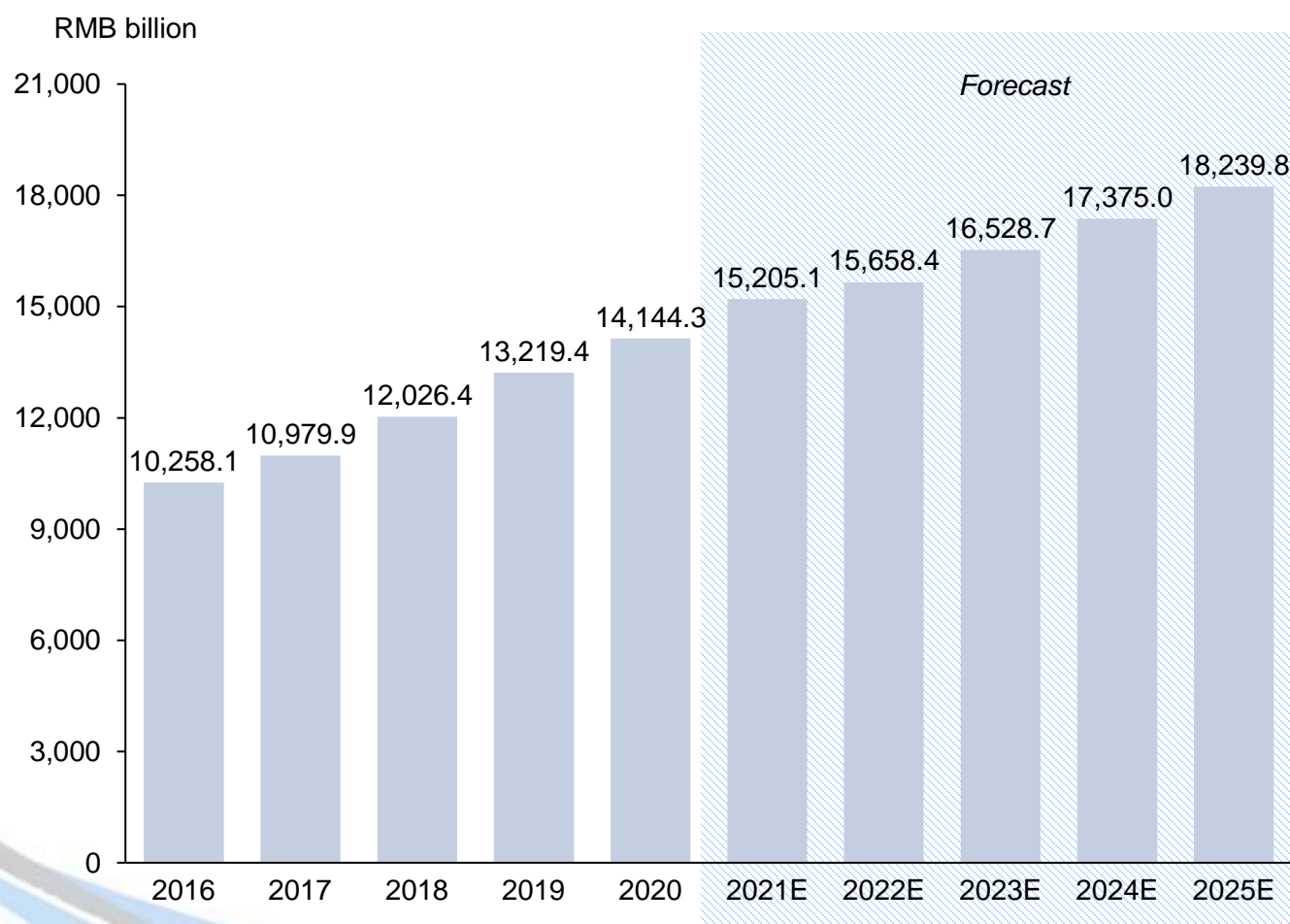
Investment in the real estate development in the PRC

-The investment in the real estate development in the PRC has increased steadily over the past five years; controlled by various policies, the real estate industry will continue to develop in a healthy and rational way

Investment in the real estate development, the PRC, 2016-2025E

Key analysis

CAGR	2016-2020	2020-2025E
Investment in the real estate development	8.4%	5.2%

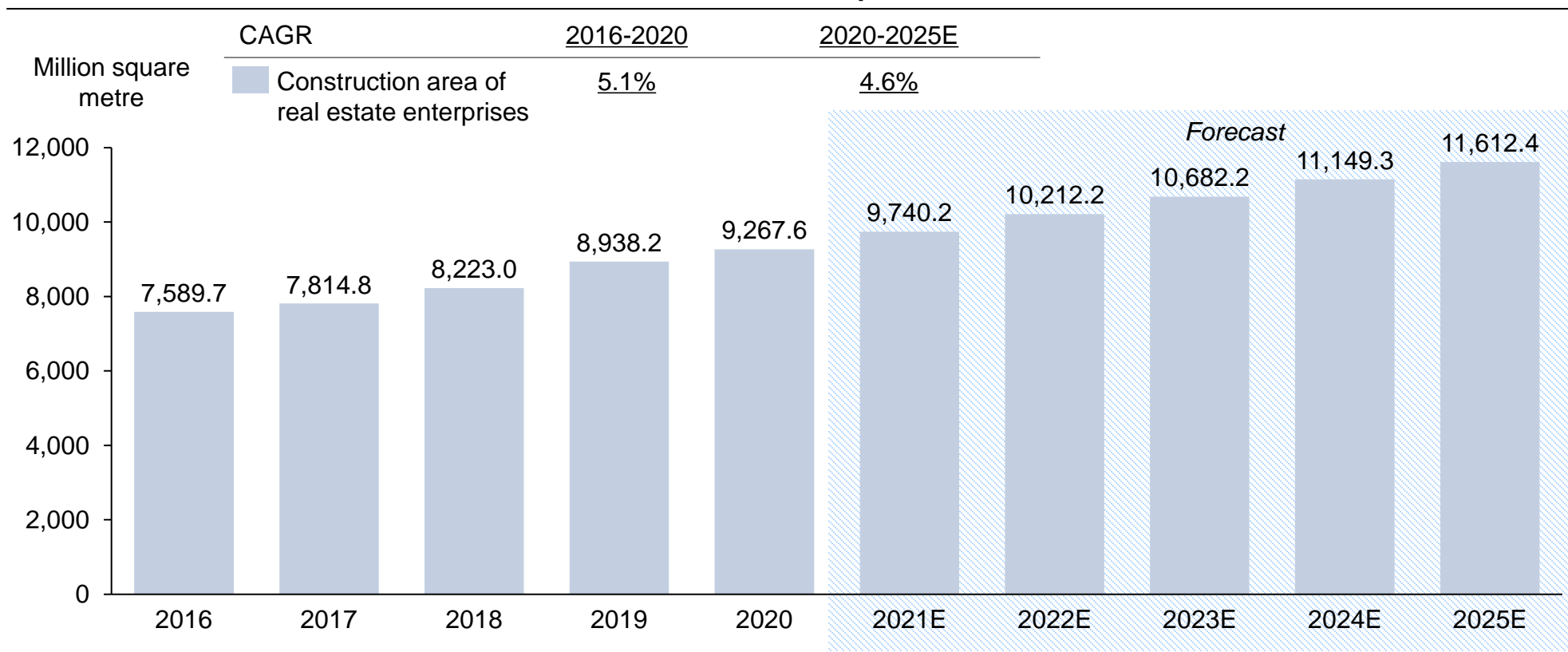


- The real estate industry is a precursory, basic and pillar industry in the national economic system. The status of the real estate industry determines that it plays an important and positive role in the national economy, mainly in promoting urban construction and economic growth, as well as improving living standards.
- The real estate industry in the PRC has grown steadily over the past five years. The investment in the real estate development increased from RMB10,258.1 billion in 2016 to RMB14,144.3 billion in 2020, with a CAGR of 8.4%.
- In the next five years, the PRC will continue to improve the housing supply structure, and promote the balance between market supply and demand. In areas where demand for housing far outstrips supply, the government will increase appropriate amount of land available for residential development. In areas with relatively large inventories of commodity housing, the government will steadily relieve housing inventory to ensure the smooth operation of real estate market.
- As the PRC continues to optimise the housing supply structure, it is estimated that in 2025, the investment in the real estate development in the PRC will grow steadily to RMB18,239.8 billion with a CAGR of 5.2% between 2020 and 2025.

Construction area of real estate enterprises in the PRC

- With the steady growth of the investment in the real estate industry in the PRC, the construction area of real estate enterprises has experienced an upward trend over the past five years

Construction area of real estate enterprises, the PRC, 2016-2025E



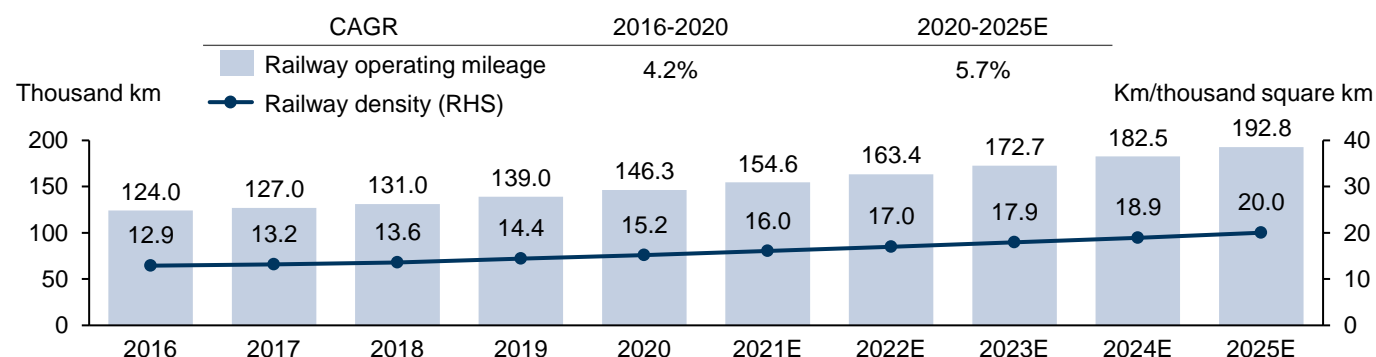
Key analysis

- With the steady development of the PRC real estate industry, the construction area of real estate enterprises has grown steadily from 7,589.7 million square metres in 2016 to 9,267.6 million square metres in 2020, with a CAGR of 5.1%.
- It is expected that the real estate industry in the PRC will continue to develop steadily in the future. The construction area of real estate enterprises in the PRC will grow to 11,612.4 million square metres in 2025, with a CAGR of 4.6% between 2020 and 2025.

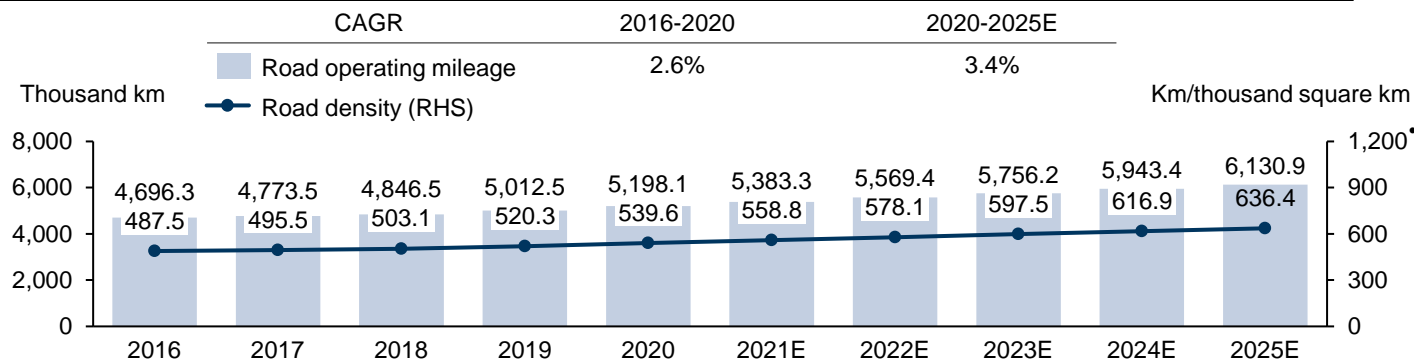
Railway, road, and expressway operating mileage in the PRC

- The transportation network has developed rapidly in recent years with various indicators growing steadily; according to the “13th Five-Year Plan” and “Medium- and Long-Term Railway Network Plan”, the transportation networks is expected to maintain a rapid growth in the next five years

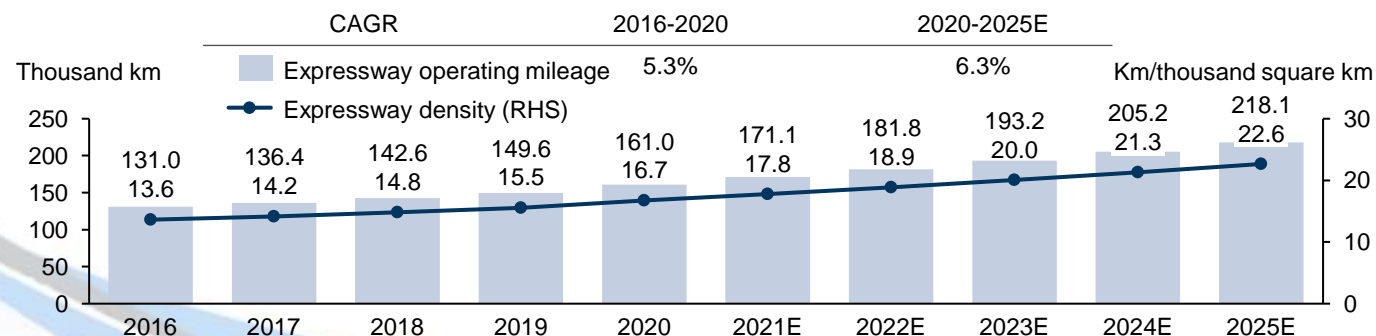
Railway operating mileage, the PRC, 2016-2025E



Road operating mileage, the PRC, 2016-2025E



Expressway operating mileage, the PRC, 2016-2025E



Key analysis

- The transportation network in the PRC has developed rapidly in recent years. The railway operating mileage increased from 124.0 thousand kilometres (km) in 2016 to 146.3 thousand km in 2020, with a CAGR of 4.2%. The railway density increased from 12.9 km/thousand square km in 2016 to 15.2 km/thousand square km in 2020. The road operating mileage increased from 4,696.3 thousand km in 2016 to 5,198.1 thousand km in 2020, with a CAGR of 2.6%. The road density increased from 487.5 km/thousand square km in 2016 to 539.6 km/thousand square km in 2020. The expressway operating mileage increased from 131.0 thousand km in 2016 to 161.0 thousand km in 2020, with a CAGR of 5.3%. The expressway density increased from 13.6 km/ thousand square km in 2016 to 16.7 km/ thousand square km in 2020.

In the future, the PRC will continue to improve the layout of railway network and move forward regional road interconnections. In addition, the government will speed up the construction of the national expressway network, which consists of 7 radial expressways from Beijing and 11 north-south expressways. Furthermore, the PRC will continue to strengthen the construction of rural roads and promote the upgrade and transformation of county and township roads.

- It is estimated that by 2025, the railway operating mileage will reach 192.8 thousand km, and the railway density will reach 20.0 km/thousand square km. The road operating mileage will increase to 6,130.9 thousand km and the road density will reach 636.4 km/thousand square km. The expressway operating mileage will grow to 218.1 thousand km, and the expressway density will reach 22.6 km/thousand square km.

Macroeconomic statistics summary of Hubei province

- Before Hubei suffered from the outbreak of coronavirus pandemic in 2020, it has experienced higher economic growth rate than the national average level since 2016. The infrastructure construction is expected to continue to expand along with the recovery of economy and the rise of urbanisation rate

Macroeconomic statistics summary, Hubei province, 2016-2025E

	Unit	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	CAGR (16-20)	CAGR (20-25E)
Nominal GDP	RMB billion	3,266.5	3,547.8	4,202.2	4,582.8	4,344.3	4,926.3	5,421.2	5,945.2	6,513.0	7,125.4	7.4%	10.4%
Per capita GDP	RMB	55,665.0	60,199.0	71,109.0	77,387.0	73,297.0	82,820.7	90,971.6	99,571.4	108,865.8	118,858.4	7.1%	10.2%
Urbanisation rate	%	58.10%	59.30%	60.30%	61.30%	62.30%	63.2%	64.1%	64.9%	65.6%	66.4%		
Output of construction industry	RMB billion	1,186.2	1,339.1	1,513.4	1,698.0	1,613.6	1,823.8	2,007.6	2,203.3	2,411.1	2,631.4	8.0%	10.3%
Completed investment in fixed assets	RMB billion	2,950.4	3,187.3	3,474.8	3,774.4	3,064.8	3,524.5	3,890.2	4,281.6	4,699.6	5,144.5	1.0%	10.9%
Real estate development investment	RMB billion	429.6	457.5	469.3	511.2	488.9	546.9	589.5	633.3	681.4	720.2	3.3%	8.1%
Real estate enterprise construction area	Million square metre	298.8	305.1	313.2	338.3	265.6	294.0	323.8	355.1	387.6	421.4	-2.9%	9.7%
Railway operating mileage	Km	4,138.2	4,215.5	4,340.6	4,557.6	5,164.8	5,395.9	5,637.2	5,889.3	6,152.8	6,428.0	5.7%	4.5%
Road operating mileage	Thousand km	260.2	269.5	275.0	289.0	290.0	300.3	310.7	321.2	331.7	342.2	2.7%	3.4%
Expressway operating mileage	Km	6,204.0	6,252.0	6,367.0	6,860.3	7,229.8	7,479.5	7,724.9	7,965.7	8,201.6	8,432.3	3.9%	3.1%

- The construction material industry is highly correlated with the macroeconomic environment in Hubei Province.

Macroeconomic statistics summary of Hunan province

- The nominal GDP in Hunan province reached RMB4,178.1 billion in 2020, and is expected to continue to grow rapidly at a CAGR of 8.8% between 2020 and 2025 as the coronavirus pandemic gets controlled

Macroeconomic statistics summary, Hunan province, 2016-2025E

	Unit	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	CAGR (16-20)	CAGR (20-25E)
Nominal GDP	RMB billion	3,155.1	3,390.3	3,633.0	3,975.2	4,178.1	4,619.6	4,986.6	5,367.8	5,773.5	6,203.1	7.3%	8.2%
Per capita GDP	RMB	46,382.0	49,558.0	52,809.0	57,540.0	60,391.0	66,409.7	71,489.1	76,743.5	82,316.6	88,198.5	6.8%	7.9%
Urbanisation rate	%	52.8%	54.6%	56.0%	57.4%	58.8%	60.1%	61.3%	62.4%	63.5%	64.5%		
Output of construction industry	RMB billion	730.4	842.3	958.1	1080.1	1186.4	1,335.2	1,500.3	1,683.1	1,885.6	2,109.4	12.9%	12.2%
Completed investment in fixed assets	RMB billion	2768.8	3132.8	3448.5	3799.5	4088.3	4415.3	4750.9	5093.9	5443.3	5798.0	10.2%	7.2%
Real estate development investment	RMB billion	295.7	342.6	394.6	444.6	488.0	516.7	544.9	572.3	598.8	637.8	13.3%	5.5%
Real estate enterprise construction area	Million square metre	301.4	316.9	357.8	400.5	407.6	443.7	481.0	519.5	558.9	599.3	7.8%	8.0%
Railway operating mileage	Km	4719.8	4744.5	5070.1	5271.0	5630.0	5726.2	5821.1	5914.7	6007.0	6097.9	4.5%	1.6%
Road operating mileage	Thousand km	238.3	239.7	240.1	240.5	241.1	241.9	242.6	243.3	244.0	244.7	0.3%	0.3%
Expressway operating mileage	Km	6080.0	6419.0	6725.0	6802.0	6951.0	7217.2	7479.7	7738.2	7992.3	8241.5	3.4%	3.5%

•The construction material industry is highly correlated with the macroeconomic environment in Hunan Province.

Macroeconomic statistics summary of Yunnan province

- Yunnan province has experienced rapid growth rate of nominal GDP over the past 5 years; the strong economy growth and increasing urbanisation rate will boost the real estate and infrastructure construction

Macroeconomic statistics summary, Yunnan province, 2016-2025E

	Unit	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	CAGR (16-20)	CAGR (20-25E)
Nominal GDP	RMB billion	1,478.8	1,637.6	2,088.1	2,322.4	2,452.2	2,721.5	2,992.9	3,289.3	3,614.5	3,970.9	13.5%	10.1%
Per capita GDP	RMB	31,093.0	34,221.0	43,366.0	47,944.0	50,474.0	55,372.4	60,539.3	66,149.0	72,265.7	78,929.6	12.9%	9.4%
Urbanisation rate	%	45.0%	46.7%	47.8%	49.2%	50.4%	51.6%	52.7%	53.8%	54.8%	55.7%		
Output of construction industry	RMB billion	386.7	472.6	545.9	612.2	672.5	764.5	867.3	982.2	1,110.3	1,253.0	14.8%	13.3%
Completed investment in fixed assets	RMB billion	1566.2	1847.5	2060.8	2234.3	2406.3	2671.0	2950.2	3243.0	3548.9	3866.9	11.3%	10.0%
Real estate development investment	RMB billion	268.8	278.6	324.7	415.1	450.5	485.2	519.6	553.1	585.6	618.2	13.8%	6.5%
Real estate enterprise construction area	Million square metre	205.9	210.9	218.0	263.1	258.0	278.6	299.7	321.3	343.3	365.6	5.8%	7.2%
Railway operating mileage	Km	3651.5	3681.7	3847.9	4031.0	4233.0	4511.2	4807.7	5123.7	5460.4	5819.3	3.8%	6.6%
Road operating mileage	Thousand km	238.1	242.5	252.9	259.4	265.0	272.7	280.4	288.1	295.7	303.4	2.7%	2.7%
Expressway operating mileage	Km	4134.0	5022.0	5184.0	5577.1	7086.8	8586.8	9718.7	10935.8	12236.8	13619.8	14.4%	14.0%

- The construction material industry is highly correlated with the macroeconomic environment in Yunnan Province.

Macroeconomic statistics summary of Tibet Autonomous Region

-The economy in Tibet is relatively undeveloped compare to other key regions the Company covered; However, Tibet has experienced rapid growth in economy and real estate, and is expected to further expand at a high growth rate

Macroeconomic statistics summary, Tibet Autonomous Region, 2016-2025E

	Unit	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	CAGR (16-20)	CAGR (20-25E)
Nominal GDP	RMB billion	115.1	131.1	154.8	169.8	190.3	215.8	239.5	265.3	293.5	324.5	13.4%	11.3%
Per capita GDP	RMB	35184.0	39267.0	45476.0	48902.0	54285.0	58997.0	64128.5	69515.0	75277.2	81415.0	11.5%	8.4%
Urbanisation rate	%	29.6%	30.9%	31.1%	33.2%	34.5%	35.7%	36.9%	37.9%	38.9%	39.9%		
Output of construction industry	RMB billion	11.1	14.8	17.3	22.0	29.5	35.0	41.9	50.0	59.3	70.1	27.6%	18.9%
Completed investment in fixed assets	RMB billion	159.6	197.6	216.8	212.0	223.4	246.1	270.4	296.2	323.7	352.8	8.8%	9.6%
Real estate development investment	RMB billion	4.9	4.0	9.3	13.0	16.5	18.6	20.8	23.3	25.9	28.8	35.9%	11.7%
Real estate enterprise construction area	Million square metre	3.5	2.3	3.6	7.6	9.5	13.8	19.5	26.7	35.6	46.4	28.3%	37.4%
Railway operating mileage	Km	786.3	785.1	785.1	1031.8	1356.0	1549.7	1771.1	2024.1	2313.2	2643.6	14.6%	14.3%
Road operating mileage	Thousand km	82.1	89.3	97.8	104.0	118.8	128.5	138.8	149.4	160.6	172.3	9.7%	7.7%

*Note: No historical data for expressway operating mileage of Tibet Autonomous Region

The infrastructure in Tibet Autonomous Region is relatively under-developed as compared to South China and East China.

Macroeconomic statistics summary of Chongqing city

- The per capita GDP of Chongqing reached RMB80,027.0 in 2020, which was higher than the national average level; Despite a growing urbanization rate, the real estate in Chongqing is expected to grow slowly and steadily in the next 5 years due to the saturated market and tightening land policies.

Macroeconomic statistics summary, Chongqing city, 2016-2025E

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Macroeconomic statistics summary of Sichuan province

- The nominal GDP in Sichuan province reached RMB4,859.9 billion in 2020, and is expected to continue to grow rapidly with a CAGR of 8.3% between 2020 and 2025

Macroeconomic statistics summary, Sichuan province, 2016-2025E

	Unit	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	CAGR (16-20)	CAGR (20-25E)
Nominal GDP	RMB billion	3,293.5	3,698.0	4,290.2	4,661.6	4,859.9	5,316.3	5,750.3	6,211.7	6,707.6	7,239.4	10.2%	8.3%
Per capita GDP	RMB	40,003.0	44,651.0	51,556.0	55,774.0	58,029.0	62,945.0	67,787.4	72,900.4	78,361.3	84,180.2	9.7%	7.7%
Urbanisation rate	%	49.2%	50.8%	52.3%	53.4%	54.6%	55.8%	56.9%	57.9%	58.9%	59.8%		
Output of construction industry	RMB billion	996.0	1140.0	1298.4	1466.8	1561.3	1758.6	1,978.1	2,222.2	2,493.2	2,794.0	11.9%	12.3%
Completed investment in fixed assets	RMB billion	2823.0	3123.9	3442.7	3736.0	3922.9	4197.5	4476.6	4759.4	5045.1	5332.7	8.6%	6.3%
Real estate development investment	RMB billion	528.3	515.0	569.8	657.3	731.5	775.9	820.3	864.4	908.1	951.4	8.5%	5.4%
Real estate enterprise construction area	Million square metre	415.3	412.9	440.7	491.1	507.6	542.9	578.9	615.3	652.1	689.1	5.1%	6.3%
Railway operating mileage	Km	4622.7	4831.7	4950.2	5088.1	5312.0	5577.6	5848.1	6123.2	6402.7	6686.1	3.5%	4.7%
Road operating mileage	Thousand km	324.1	330.0	331.6	335.8	394.0	408.8	424.2	440.2	456.8	474.0	5.0%	3.8%
Expressway operating mileage	Km	6523.0	6821.0	7131.0	7520.9	8140.0	8535.6	8929.7	9321.4	9709.9	10094.3	5.7%	4.4%

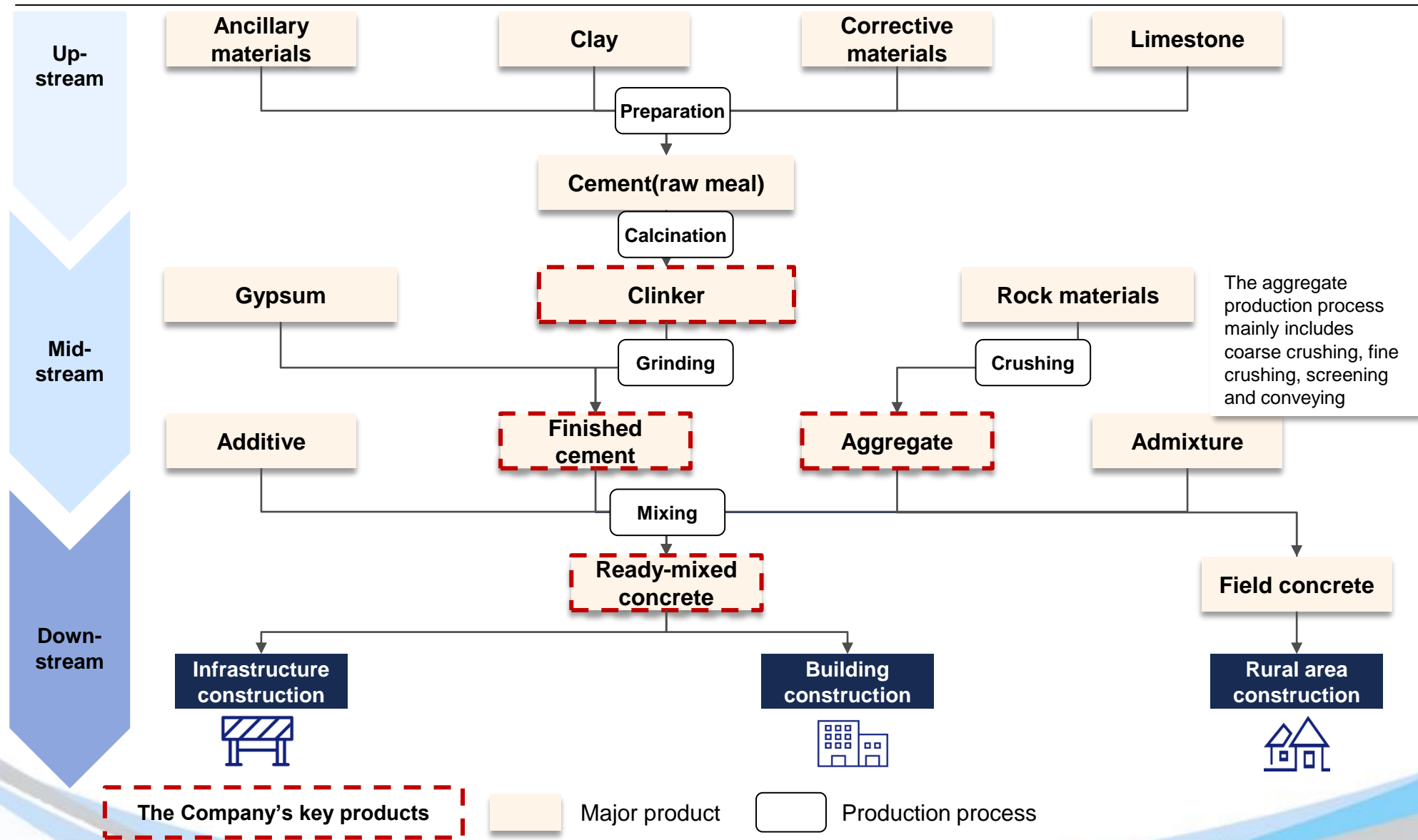
- The construction material industry is highly correlated with the macroeconomic environment in Sichuan Province.

2. Analysis of the major construction material market in the PRC

Overview of construction materials industry in the PRC

- The production process of construction material industry comprises of raw meal preparation, clinker calcination, cement grinding, and concrete mixing; clinker, finished cement, aggregate and ready-mixed concrete are the key products of the Company

Overview of construction materials industry, the PRC, 2019



Definition and classification of cement in the PRC

- Cement refers to powdery hydraulic inorganic “binding” construction material, which can be categorised into general cement, special cement, characteristic cement by purpose; general cement is the most widely used cement type since the general cement production accounts for over 95% of total cement production in the PRC

Definition of cements, the PRC, 2019

- Cement refers to a powdery hydraulic inorganic “binding” construction material. Given that cement can become adhesive when mixed with water, it is commonly used as a binder in construction settings which hardens, sets and adheres to other materials. Cement is seldomly used alone, but rather to bind sand and gravel together to produce concrete.
- Cement can be categorised into general cement, special cement, characteristic cement by purpose. General cement is the Portland cement that is suitable for most industrial and civil construction projects. General cement is the most widely used cement type since the general cement production accounts for over 95% of total cement production in the PRC.

Classification of general cements, the PRC, 2019

Categories	Code	Clinker + gypsum (%)	Range of applications	
			Applicable	Not applicable
Portland cement	P-I	100	<ul style="list-style-type: none"> • Rapid hardening concrete • High-strength concrete • Prestressed concrete • Concrete used under the condition of low temperature 	<ul style="list-style-type: none"> • Mass concrete • Heat resistant concrete
	P-II	>=95		
Ordinary Portland cement	P-O	>=80 & <95	<ul style="list-style-type: none"> • Applicable for almost all kinds of concrete without specific requirements 	
Slag Portland cement	P-S-A	>=50 & <80	<ul style="list-style-type: none"> • Concrete used for ground and underwater projects • Heat resistant concrete 	<ul style="list-style-type: none"> • Rapid hardening concrete • High-strength concrete • Watertight concrete
	P-S-B	>=30 & <50		
Pozzolanic Portland cement	P-P	>=60 & <80	<ul style="list-style-type: none"> • Concrete used for underground projects • Mass concrete 	<ul style="list-style-type: none"> • Concrete under the condition of dry environment • Rapid hardening concrete • High-strength concrete
Portland fly-ash cement	P-F	>=60 & <80		
Composite Portland cement	P-C	>=50 & <80		

Definition of Clinker in the PRC





-Clinkers refers to the by-product produced during the manufacturing of cement. It is produced by sintering limestone and aluminosilicate materials such as clay during the cement kiln stage

Definition of Clinker, the PRC, 2019

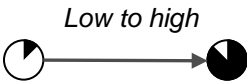
- Clinkers refers to the by-product produced during the manufacturing of cement. It is produced by sintering limestone and aluminosilicate materials such as clay during the cement kiln stage.

Classification of cement kilns for cements clinker production, the PRC, 2019

- Cement kilns are the heart of the production process of cement, whose capacity usually defines the capacity of the cement plant. As the main energy-consuming and greenhouse-gas-emitting stage of cement manufacture, improvement of kiln efficiency has been the central concern of cement manufacturing technology. Common cement kilns in the PRC include Wet process kiln, mechanized shaft kiln, ordinary dry kiln, and new type dry process kiln. The new type dry process kiln is most widely used in China among all different kilns, as it is environmentally friendly and efficiency.

Categories	Wet process kiln	Mechanized shaft kiln	Ordinary dry kiln	New type dry process kiln
Key features	<ul style="list-style-type: none">High mobility of cement slurrywell-mixedHigh quality of Clinker	<ul style="list-style-type: none">Inequality of calcinationNeed long time to cool downHard to control during the calcinationFluorine pollution	<ul style="list-style-type: none">High efficiency of heat transferRelatively low mobility of cement slurryUndermixing of raw meal	<ul style="list-style-type: none">latest production technologyHigh efficiency of heat transferHigh production volumeEnvironmentally friendly
Heat consumption index*	191	139	211	100
Popularity				

*Note: Heat consumption index indicates the burning heat consumption for clinker; The higher the heat consumption index, the more burning heat consumption for clinker





Definition and classification of aggregate in the PRC

- Aggregate refers to inert granular material used in construction, which serves as reinforcement to add strength to the overall composite material; aggregates can be divided into fine and coarse aggregates, both of which are indispensable in producing concrete

Definition of aggregate, the PRC, 2019

- Aggregate refers to inert granular material used in construction, including sand, gravel, crushed stone, slag, etc. Aggregate refers to inert granular material used in construction, including sand, gravel, crushed stone and slag; and it serves as a reinforcement to strengthen the overall composite material. Aggregates are used to increase volume, stability, resistance to wear or erosion, and other desired physical properties to the finished product. For a good concrete mix, aggregates need to be clean, hard, strong particles free of absorbed chemicals or coatings of clay and other fine materials that could cause the deterioration of concrete.
- Aggregates can be divided into fine and coarse aggregates, both of which are indispensable in producing concrete. The ratio of coarse aggregate to fine aggregate in construction can affect the performance of the concrete.

Classification of aggregate, the PRC, 2019

Categories	Functions	Size	Products	Silt bearing*	Range of applications
Coarse aggregate	• Play a supporting role of strength and maintain the shape	• $\geq 4.75\text{mm}$ 	Natural sand: <ul style="list-style-type: none">River sandMountain sandSea sandLake sand Artificial sand: <ul style="list-style-type: none">Machine-made sandMixed sand	$\leq 0.5\%$	• Concrete with a strength grade greater than C60**
				$\leq 1.0\%$	• Concrete with a strength grade between C30 and C60, or with requirements for anti-freeze, impermeability, etc.
				$\leq 1.5\%$	• Concrete with a strength grade lower than C30
Fine aggregate	• Fill the gaps between the coarse aggregates and the gaps between the mixtures generated during the mixing and flow of cement	$\leq 4.75\text{mm}$ 	• Gravel • Pebble	$\leq 1.0\%$	• Concrete with a strength grade greater than C60
				$\leq 3.0\%$	• Concrete with a strength grade between C30 and C60, or with requirements for anti-freeze, impermeability, etc.
				$\leq 5.0\%$	• Concrete with a strength grade lower than C30



*Note: Silt bearing r

**Note: Concrete products can be divided into different strength grades from C10 to C100 according to their strength grades. The higher the concrete grade, the stronger the compressive capacity

Definition of concrete and ready-mixed concrete, the PRC, 2019

- Concrete refers to a general term for engineering composite materials in which aggregates are cemented into a whole by cementing materials. Concrete is obtained by mixing cement, aggregates, water, and admixtures in a certain proportion, and is widely used in civil engineering.
- Concrete can be categorised into cast-in-place concrete and ready-mixed concrete according to different mixing locations, and production and quality management. Ready-mixed concrete refers to concrete that is specifically batched or manufactured for customers' construction projects, and supplied to the customer on-site as a single product. It is a mixture of Portland or other cement, water and aggregate. Ready-mixed concrete requires special production machinery and equipment, and a special mix ratio design.
- Compared with the cast-in-place concrete, ready-mixed concrete has the advantages of high product quality, stable and controllable, high work efficiency, and low environmental pollution, which is in line with the national policies for green development.

Classification of ready-mixed concrete, the PRC, 2019

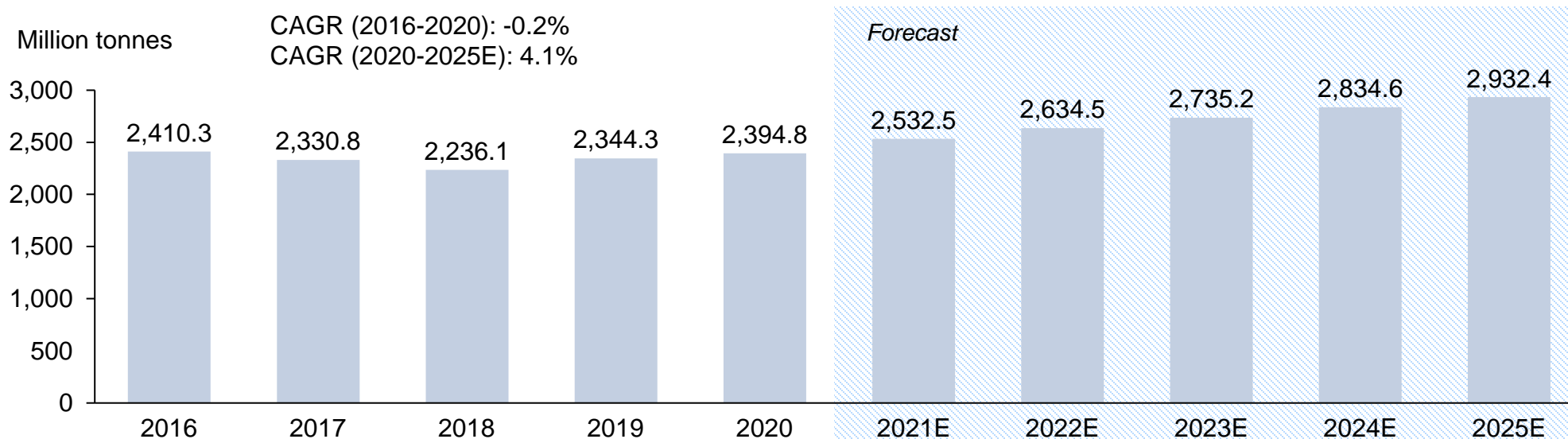
	Compressive Strength*	Features	Typical application scenarios	
Low to medium strength ready-mixed concrete	<ul style="list-style-type: none">• C10• C15• C20• C25	<ul style="list-style-type: none">• The price and the requirements for raw materials in production are relatively low• Relatively low compressive strength and impermeability	 Concrete cushion	 Highway retaining wall Mostly used for non-load-bearing components and temporary structures with relatively small forces and low durability requirements
Medium to high strength ready-mixed concrete	<ul style="list-style-type: none">• C30• C35• C40• C45• C50• C55	<ul style="list-style-type: none">• Moderate production cost• A certain level of compressive strength, volume stability, durability, and other properties	Foundation raft	Prestressed T beam Mostly used for load-bearing components and permanent structures in infrastructure and housing construction
High strength ready-mixed concrete	<ul style="list-style-type: none">• C60 and above	<ul style="list-style-type: none">• High requirements for raw material quality and high production costs• High compressive strength, durability, and volume stability	Main structure	Core tube for

Production volume of cement in the PRC

-The production volume of cement in the PRC decreased slightly from 2016 to 2018 due to the cutting overcapacity strategy and the production restriction policy for environmental protection. Driven by the successful industry reform, an upward growth was seen in 2019 and 2020, and is expected to be continuous given that the investment in the infrastructure construction and real estate is increasing



Production volume of cement, the PRC, 2016-2025E



Key analysis

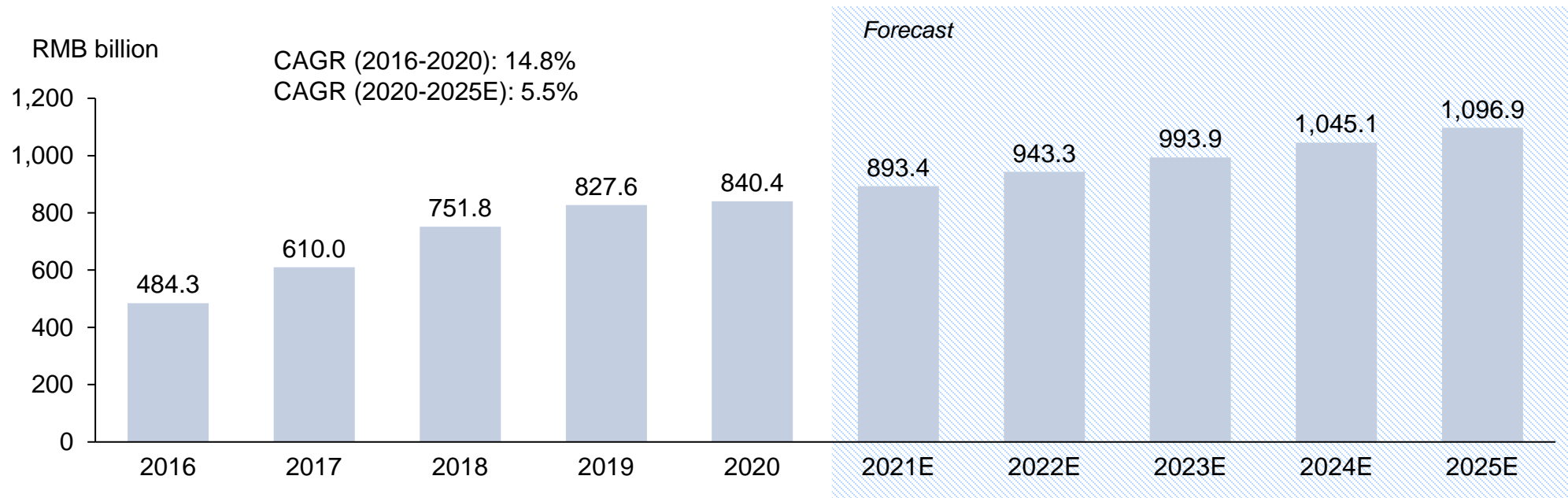
- The production volume of cement in the PRC fell slightly from 2,410.3 million tonnes to 2,236.1 million tonnes between 2016 and 2018, mainly due to the cutting overcapacity strategy and the production restriction policy for environmental protection. After that, the supply and demand of the market became balanced and the production volume saw a rise, reaching 2,394.8 million tonnes in 2020. Given that the demand of cement market kept going up for the increasing investment in the infrastructure construction and real estate, a steady growth in production volume is expected in the next 5 years.
- Cement consumption in China exhibits seasonality by quarter. In general, cement consumption in the first quarter is the weakest given that the construction sites are closed for the Chinese New Year holidays and the demand for downstream cement is relatively low. Besides, construction activities in some regions of China will shutdown in winter due to the cold weather. In the second quarter, demand for cement picks up as construction sites reopen. In the third quarter, construction activities are adversely affected due to the rainy and typhoon season, resulting in lower cement consumption. After the rainy season, cement consumption recovers in the fourth quarter driven by downstream demand.
- Despite the negative impact of the 2020's outbreak of coronavirus(COVID-19) pandemic had on the production of construction materials due to the stagnation of construction projects, the downstream of construction industry is expected to display a recovery in 2021. In general, the demand for cement in first quarter is low due to the spring festival and low temperature, and will spur in the second quarter. However, the demand for cement and infrastructure starts in 2021 H1 was low due to the unusual rainy weather as well as the increase in steel price. As a result, the average cement price drop in 2021 H1, and the profit margin of cement industry decreased in 2021 H1 with a YoY growth rate of negative 7.2%. With increasing infrastructure projects starts in July, the cement industry recovered, and the cement price rebounded. Besides, the increase in the price of raw materials such as coal and coke and the limited supply due to staggering production policy also contributed to the increase of cement price since July.
- Given that the investment in infrastructure construction and real estate is growing, the demand and production volume of cement is expected to continue to increase. It is predicted that the production volume of cement in the PRC will reach 2,932.4 million tonnes in 2025, with a CAGR of 4.1% between 2020 and 2025.

Production value of cement in the PRC

-Affected by rising in the price of cement, the production value of cement rapidly increased between 2016 and 2020; It is expected to maintain sustained growth in the next few years with the steady increase in the price and sales volume of cement



Production value of cement, the PRC, 2016-2025E



Key analysis

- The production value of the cement experienced a rapid and continuous growth from 2016 to 2020, rising from RMB484.3 billion to RMB840.4 billion, with 14.8% CAGR, which is mainly due to the increase of the cement price. With the implementation of industry-wide supply-side reform and the strengthened supervision of environmental protection, the inventory for domestic cement supply dropped to a low level in the PRC, which has boosted the price of cement.
- with the implementation of industry-wide supply-side structural reform and the strengthened supervision of environmental protection, the inventory for domestic cement supply dropped to a low
- Despite the negative impact of the 2020's outbreak of coronavirus(COVID-19) pandemic had on the production of construction materials due to the stagnation of construction projects, the production value of cement in 2020 still increased by 1.5%, which indicates a strong demand of cement market. A continuous growth of production value of cement is expected to be seen in the coming years since the price and production volume are rising up in the economic recoveries after pandemic.
- In the next few years, due to the supply chain revolution of the cement industry, strengthened supervision of environmental protection, and the further implementation of the de-capacity policy, the price of cement in the PRC is expected to rise steadily. Besides, the production volume of cement is predicted to continue to maintain a growing trend. Therefore, it is estimated that by 2025, the total production value of cement in the PRC will reach RMB1,096.9 billion, with a CAGR of 5.5% between 2020 and 2025.

Production volume of clinker, the PRC, 2016-2025E

Forecast



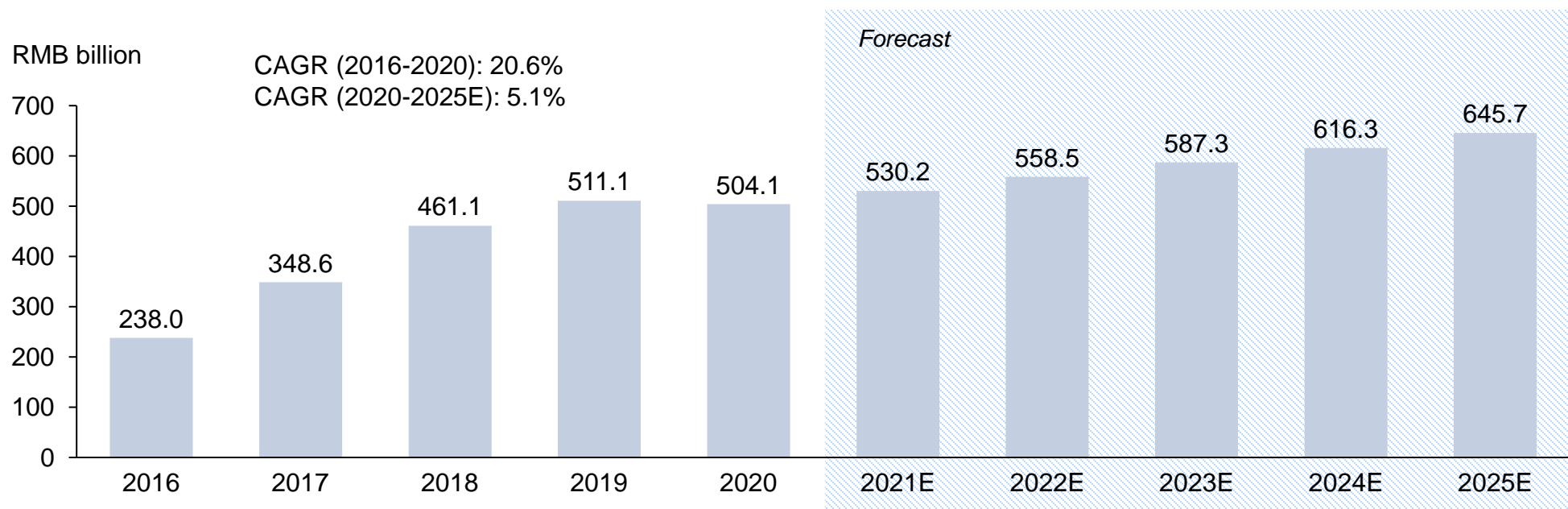
- The production volume of clinker in the PRC has experienced a steady increase from 1,370.0 million tonnes in 2016 to 1,579.0 million tonnes in 2020, representing a CAGR of 3.6%.
- As the national economic development slowed down, the growth rate of both FAI in the real estate industry and investment in infrastructure construction decreased slightly. With a lower growth rate of downstream demand and the supply-side reform to decrease the production capacity, the growth rate of production volume of clinker

Production value of clinker in the PRC

-The production value of clinker rapidly increased between 2015 and 2019, and slightly fell in 2020 due to the coronavirus. It is expected to maintain steady growth in the next few years with the steady increase in the price and production volume of clinker



Production value of clinker, the PRC, 2016-2025E



Key analysis

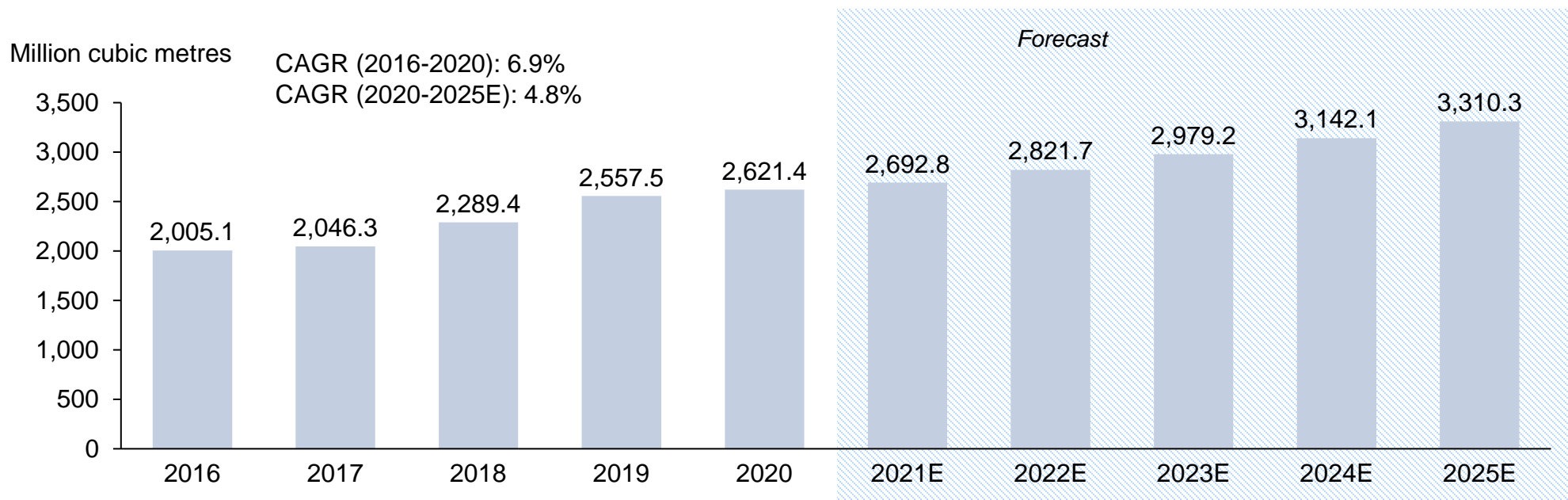
- The production value of clinker rapidly increased from RMB228.0 billion to RMB511.1 billion between 2016 and 2019, mainly driven by the rising in the price of clinker. With the implementation of industry-wide supply-side reform and the strengthened supervision of environmental protection, the inventory for domestic cement supply dropped to a low level in the PRC, which has boosted the price of clinker between 2015 and 2019. The production value of clinker falls to RMB504.1billion in 2020, registering a CAGR of 20.6% between 2016 and 2020.
- In view of the outbreak of coronavirus(COVID-19) pandemic in 2020, infrastructure and real estate construction projects shut down, resulting in lower demand of clinker, which led to a lower market price in 2020. A continuous growth of production value of clinker is expected to be seen in the coming years since the price and production volume are rising up in the economic recoveries after pandemic.
- In the next few years, due to the supply chain revolution of the cement industry, strengthened supervision of environmental protection, and the further implementation of the de-capacity policy, the price of clinker is expected to rise steadily. The production value of clinker is expected to continue to grow in the next few years driven by the steady growth in infrastructure and real estate construction, but with a low growth rate due to the production restriction of the ongoing carbon-neutral policies for suppliers. Therefore, it is estimated that the total production value of clinker in the PRC will reach RMB645.7 billion by 2025, with a CAGR of 5.1% between 2020 and 2025.

Production volume of ready-mixed concrete in the PRC

-The production volume of ready-mixed concrete in the PRC increased between 2016 and 2020 with a CAGR of 6.9%, and is expected to continue to grow, driven by the increasing demand from downstream real estate and infrastructure construction as well as the growing penetration rate of ready-mixed concrete



Production volume of ready-mixed concrete, the PRC, 2016-2025E



Key analysis

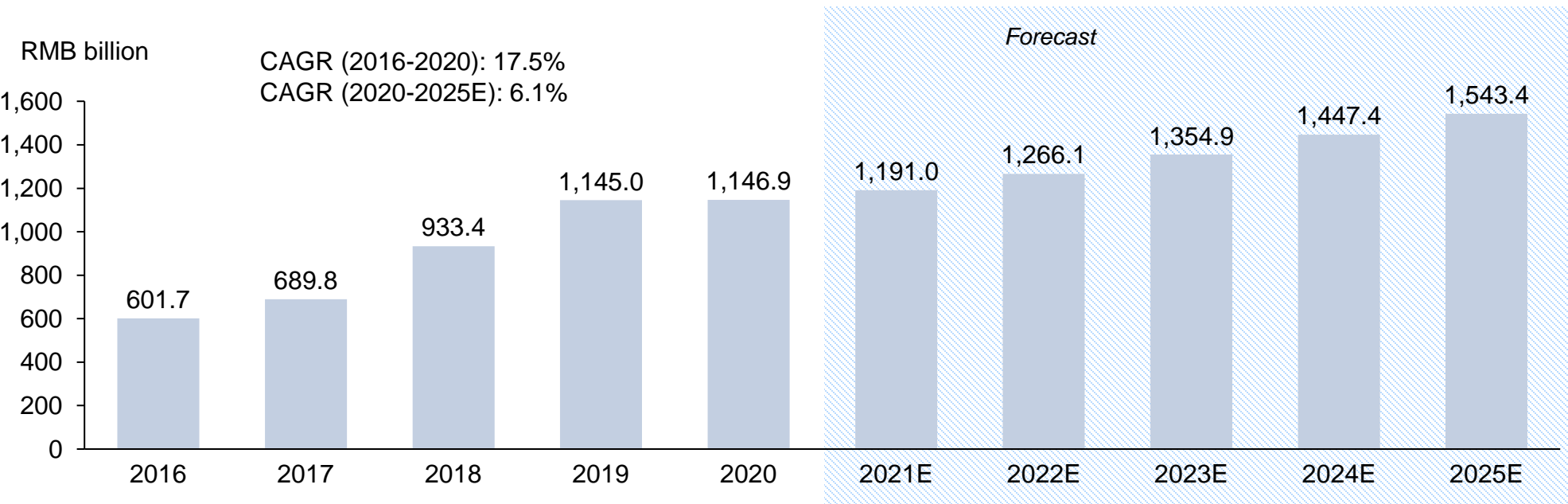
- The production volume of ready-mixed concrete in the PRC increased from 2,005.1 million cubic metres in 2016 to 2,621.4 million cubic metres in 2020, representing a CAGR of 6.9%. Due to the oversupply of ready-mixed concrete, the utilization rate of ready-mixed concrete production capacity in the PRC was relatively low, within a range of 20% to 40% between 2016 and 2020.
- Due to the coronavirus (COVID-19) pandemic in 2020, infrastructure and real estate construction projects shut down in Q1, resulting in a lower production volume of ready-mixed concrete. Despite the pandemic, the production volume of cement in 2020 still increased by 2.5% due to the government's stimulus for domestic infrastructure construction. According to the 2020 Government Work Report, RMB3.75 trillion worth of special bonds program would be issued in 2020 to support New Infrastructure and New Urbanization initiatives, which is being used as a way to boost economic growth following the coronavirus pandemic. It is expected that the production volume of ready-mixed concrete will recover soon after the pandemic is fully controlled.
- Considering the growing demand for concrete in infrastructure construction and real estate, along with the increasing penetration rate of ready-mixed concrete, the demand, and production volume of ready-mixed concrete are expected to continue increasing. It is predicted that the production volume of the PRC ready-mixed concrete will reach 3,310.3 million cubic metres in 2025, with a CAGR of 4.8% between 2020 and 2025.

Production value of ready-mixed concrete in the PRC

- The production value of ready-mixed concrete in China increased rapidly between 2016 and 2020, largely due to the rising price and production volume of ready-mixed concrete over the past few years, and is projected to continue growing with a CAGR of 6.1% between 2020 and 2025.



Production value of ready-mixed concrete, the PRC, 2016-2025E



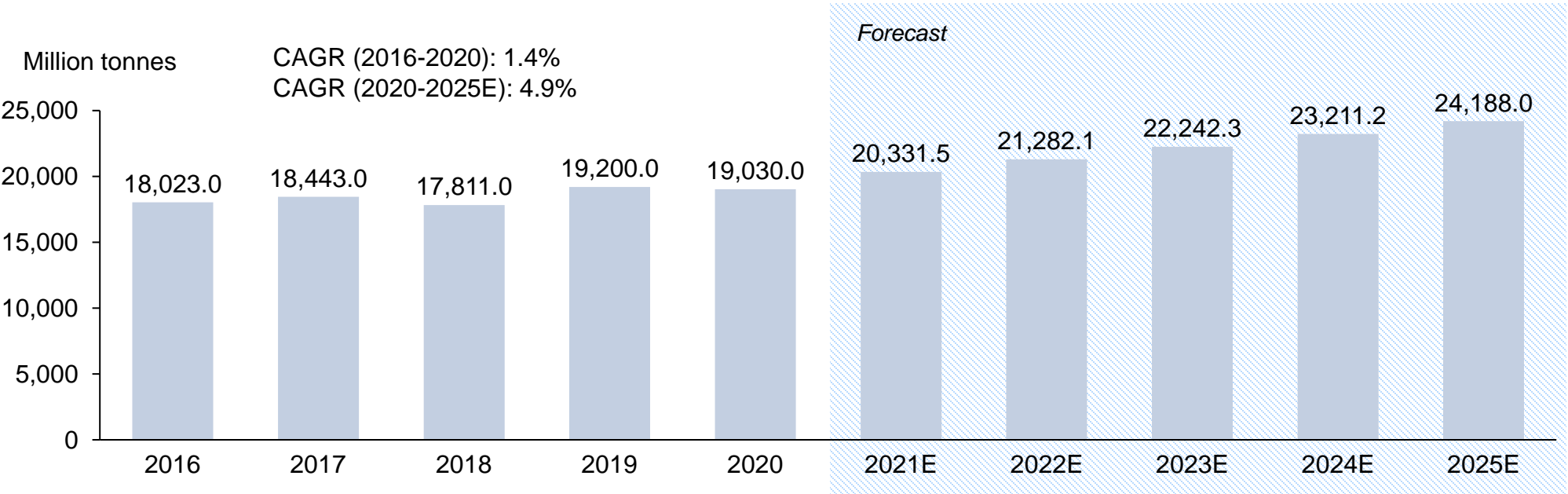
Key analysis

- The production value of ready-mixed concrete in China has increased from RMB601.7 billion in 2016 to RMB1,146.9 billion in 2020 at a CAGR of 17.5%, maintaining a fast growth between 2016 and 2020. The significant growth between 2016 and 2019 is largely caused by surges in both the price and production volume of ready-mixed concrete.
- With factories closed in 2020 Q1 due to the COVID-19 pandemic, the production value of ready-mixed concrete in 2020 is roughly the same as that of 2019. However, it is expected that the production value of ready-mixed concrete will recover soon and continue to grow after the pandemic is under control.
- In the next few years, with the steady increase in the demand for ready-mixed concrete and the further implementation of the de-capacity policy, the price of ready-mixed concrete is expected to rise steadily. Besides, the production volume of ready-mixed concrete is predicted to continue to maintain a growing trend. Therefore, it is estimated that by 2025, the total production value of ready-mixed concrete in the PRC will reach RMB1,543.4 billion, with a CAGR of 6.1% between 2020 and 2025.

Production volume of aggregate in the PRC

-The production volume of aggregate in the PRC fluctuated between 2016 and 2020, and is expected to maintain steady growth in the next few years with the steady increase in downstream demand

 **Production volume of aggregate, the PRC, 2016-2025E**

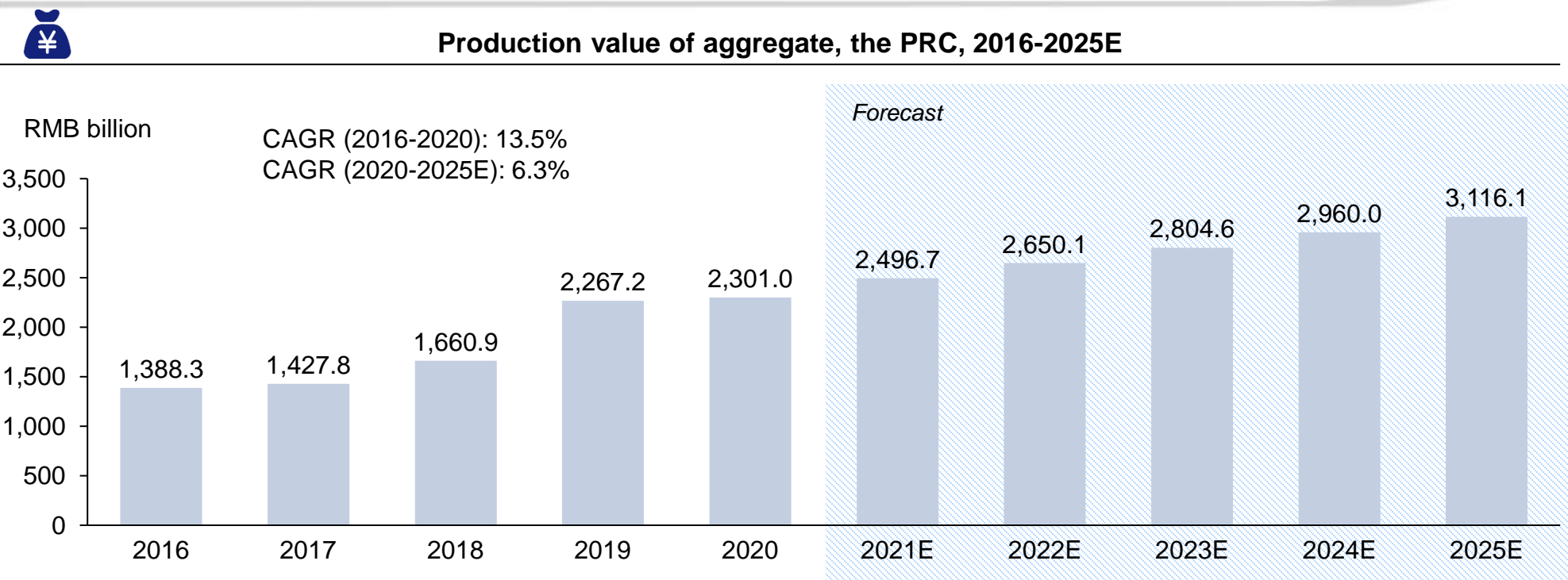


Key analysis

- The production volume of aggregate in the PRC increased from 18,023.0 million tonnes in 2016 to 19,030.0 million tonnes in 2020, representing a CAGR of 1.4%. The production volume declined slightly in 2018 and 2020 mainly as a result of a stringent regulation in mining for the purpose of environmental protection and coronavirus.
- Due to the outbreak of coronavirus(COVID-19) pandemic in 2020, infrastructure and real estate construction projects shut down, resulting in lower demand and production of aggregate. It is expected that the production of aggregate will recover after the pandemic is fully controlled.
- Given that the demand for aggregate in infrastructure construction and real estate is increasing, the demand and production volume of aggregate are expected to continue increasing. It is predicted that the production volume of aggregate in the PRC will reach 24,188.0 million tonnes in 2025, with a CAGR of 4.9% between 2020 and 2025.

Production value of aggregate in the PRC

-The production value of aggregate increased between 2016 and 2020 and is expected to maintain steady growth in the next few years with the further implementation of environmental protection regulations and the prospective growth in the production of artificial sand.

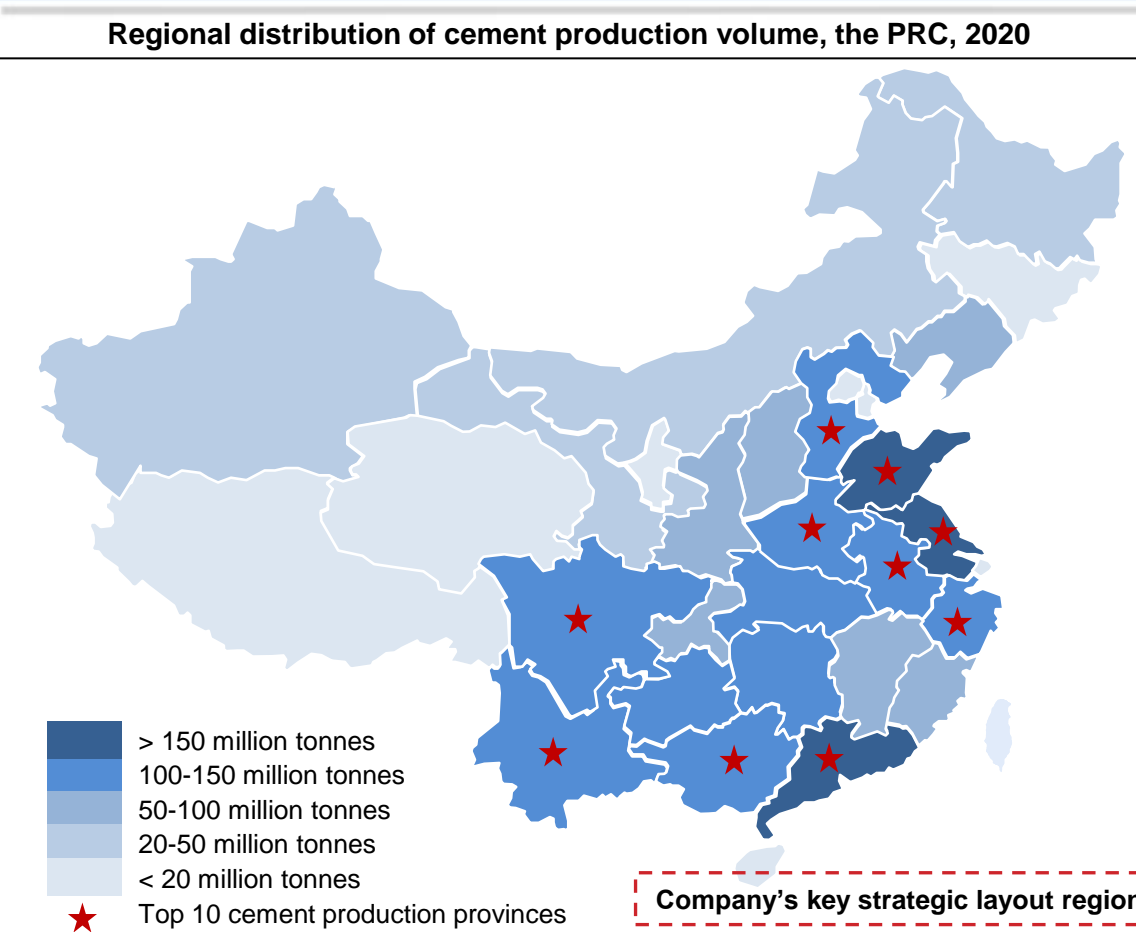


Key analysis

- The production value of aggregate rapidly increased from RMB1388.3 billion to RMB2,301.0 billion between 2016 and 2020, representing a CGAR of 13.5%. This corresponds to a rising aggregate price driven by the inventory drop mainly as a result of stringent environmental protection-related regulations in mining.
- Despite the negative impact of the 2020's outbreak of coronavirus(COVID-19) pandemic had on the production of construction materials due to the stagnation of construction projects, the production volume of ready-mixed concrete in 2020 still increased by 1.5% caused by the rising price. A continuous growth of production value of ready-mixed concrete is expected to be seen in the coming years.
- In the next few years, implementation of environmental protection regulations will continue to support a steady rise in price of aggregate, as well as the prospective growth in the production of artificial sand. The production volume of aggregate is expected to continue to grow in the next few years driven by the steady growth in infrastructure and real estate construction. Therefore, it is estimated that the total production value of aggregate in the PRC will reach RMB3,116.1 billion in 2025, with a CAGR of 6.3% between 2020 and 2025.

Regional distribution of cement production in the PRC

- Cement production in the PRC is mainly concentrated in East China, Central South and Southwest China, which accounts for approximately 70% of the total cement production.



Top 10 provinces by volume of cement production, the PRC, 2020

Rank	Province	Cement production (million tons)	% of Total
1	Guangdong	170.8	7.2
2	Shandong	157.7	6.6
3	Jiangsu	153.1	6.4
4	Sichuan	145.0	6.1
5	Anhui	141.8	6.0
6	Zhejiang	132.4	5.6
7	Yunnan	129.8	5.5
8	Guangxi	121.4	5.1
9	Henan	117.2	4.9
10	Hebei	117.2	4.9

- The PRC's cement production is mainly concentrated in East China, Central South and Southwest China, which account for approximately 70% of the total cement production in China. Since cement has the characteristics of low weight-to-value ratio and limited expiration date, it is generally sold within a certain proximity from its production facility to balance between revenue and transportation costs.
- By the end of 2020, there were three provinces with an annual cement production volume exceeding 150 million tonnes, being Guangdong, Shandong and Jiangsu, and 13 provinces with an annual cement production volume exceeding 100 million tonnes, being Sichuan, Anhui, Zhejiang, Yunnan, Guangxi, Henan, Hebei, Hunan, Guizhou and Hubei. This part will focus on analyzing the Company's key cement production regions in China, which are Hubei, Hunan, Sichuan, Chongqing, Yunnan, and Tibet Autonomous Region.
- Hubei, Yunnan, Hunan, Chongqing and Sichuan provinces have experienced significant economic growth and increasing fixed asset investments in recent years, which have led to increasing demand for construction materials, including cement, clinker, concrete and aggregate. From 2016 to 2020, the nominal GDP of Hubei, Yunnan, Hunan, Chongqing and Sichuan grew at a CAGR of 7.4%, 13.5%, 7.3%, 9.0% and 10.2%, respectively, and the fixed asset investments of Hubei, Yunnan, Hunan, Chongqing and Sichuan grew at a CAGR of 1.0%, 10.2%, 13.8%, 6.5% and 8.6%, respectively. From 2020 to 2025, the nominal GDP of Hubei, Yunnan, Hunan, Chongqing and Sichuan is expected to grow at a CAGR of 10.4%, 10.1%, 8.2%, 9.7% and 8.3%, respectively.

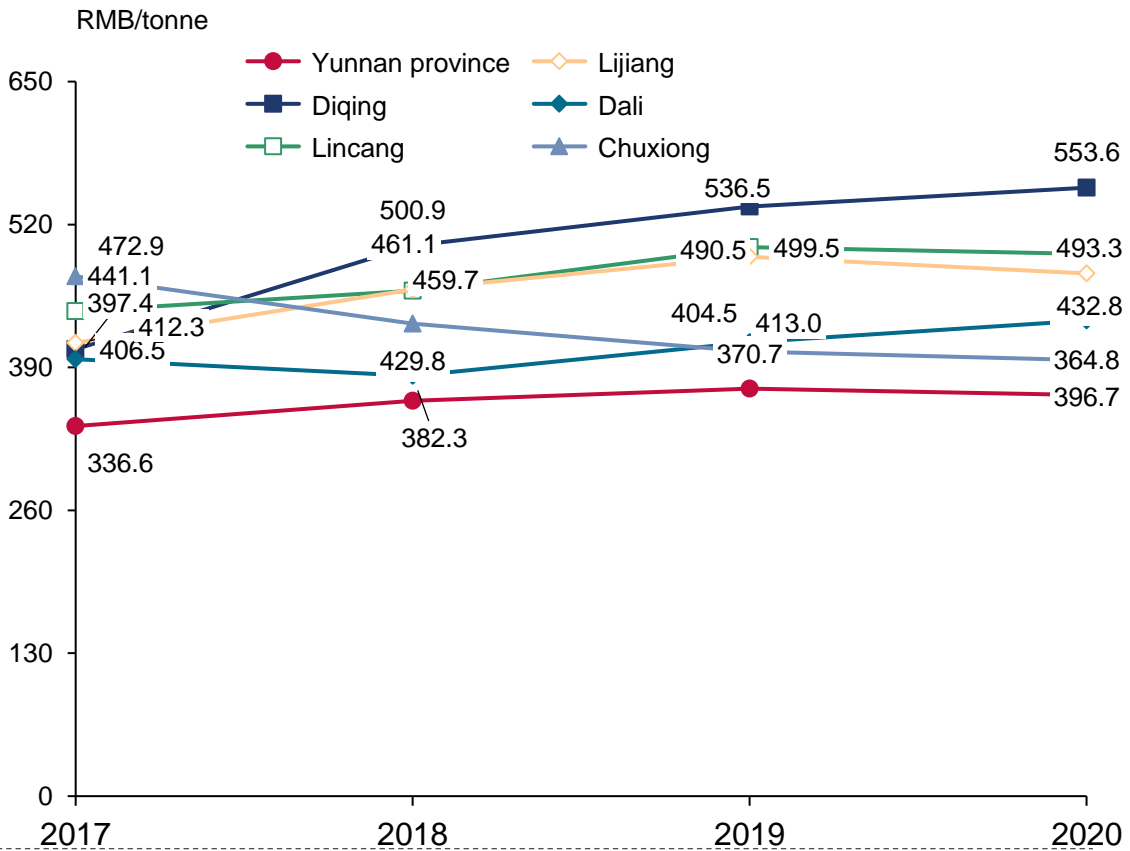
Regional distribution of cement production in Yunnan province

- Cities in the central parts of Yunnan provinces have higher cement production volume due to the advanced logistics networks; Diqing, Lincang, Lijiang, Dali and Chuxiong are the top five cities In terms of annual average price of cement

Top 10 cities by volume of cement production, Yunnan province, 2019

Rank	City	Cement production (million tons)	% of Total
1	Kunming	19.2	15.0
2	Qujing	15.8	12.3
3	Yuxi	15.3	11.9
4	Dali	15.2	11.8
5	Wenshan	9.4	7.3
6	Puer	9.1	7.1
7	Honghe	8.5	6.7
8	Zhaotong	8.2	6.4
9	Baoshan	6.9	5.4
10	Lincang	6.8	5.3

Top five cities by annual average price of cement , Yunnan province, 20167-2020



- Kuming, Qujing and Yuxi are the top three cities in Yunnan provinces in terms of volume of cement production in 2020, accounting for 15.0%, 12.3% and 11.9% of total cement production volume in Yunnan, respectively. The cities with large volume of cement production are mainly located in the central and northeast parts of Yunnan province given that it comprises of convenient logistics infrastructures such as Kunming-Hekou Railway, Kunming-Yuxi Railway, etc.
- In terms of annual average price of cement, Diqing, Lincang, Lijiang, Dali and Chuxiang are the top five cities with annual average price of RMB553.6 per tonnes, RMB493.3 per tonnes, RMB475.6 per tonnes, RMB432.8 per tonnes, RMB396.7 per tonnes in 2020, respectively. The annual average price of cement is higher than the province average level mainly as a result of their relatively stronger economic activities, lower production capacity and higher transportation costs.

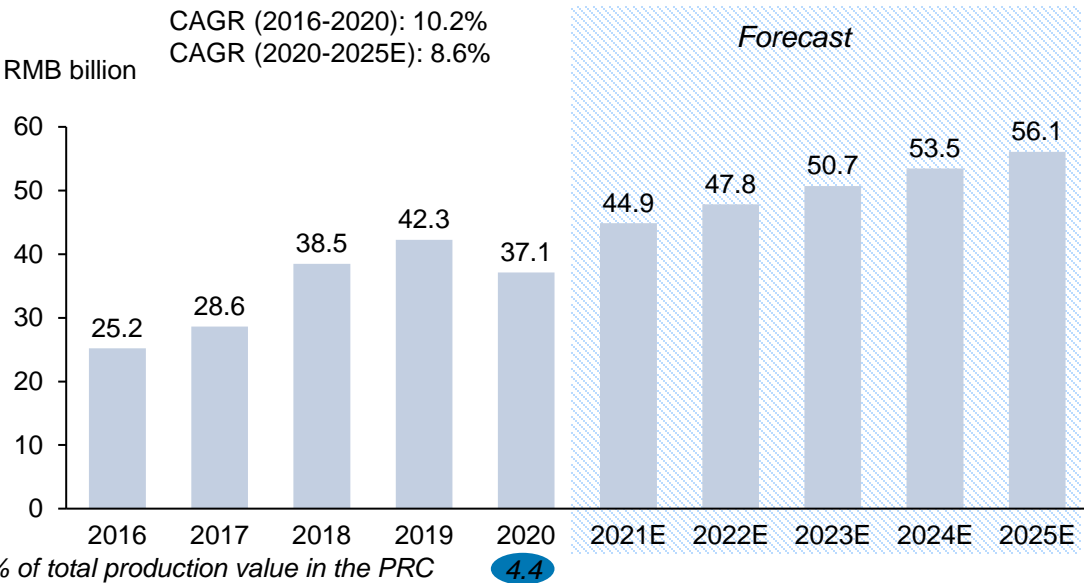
* The average price of cement refers to the average price of P.O 42.5 bulk cement, a kind of high-end cement, including tax.
Source: National Bureau of Statistics of China(NBSC), China Insights Consultancy 32

Cement production in Hubei province

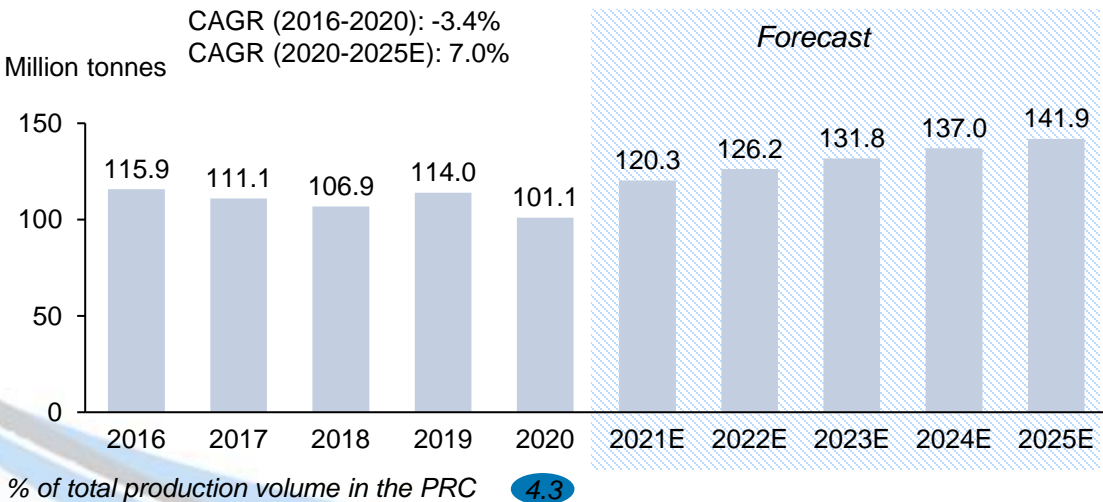
- Hubei province as the epicenter of the COVID-19 pandemic has suffered a tremendous downturn in construction and other industries in 2020; However, as economy recovers, the cement production is expected to rise as to support future development of the cities.



Production value of cement, Hubei province, 2016-2025E



Production volume of cement, Hubei province, 2016-2025E



Key analysis

- Hubei province is situated in Central China, with a long and rich history in cement production. The province is abundant in water resources as it is home to many rivers and lakes. As a result of its convenient waterways, cement manufacturers in Hubei province are able to lower their transportation costs for delivering cement to other provinces.
- The production value of cement in Hubei increased from RMB25.2 billion in 2016 to RMB42.3 billion in 2019, and decreased to RMB37.1 billion in 2020, representing an overall CAGR of 10.2%. Due to the low inventory level for domestic cement supply in Hubei province, the annual average price of cement raised significantly since 2016, reaching RMB367.1 per tonne in 2020. Cement production in Hubei accounted for 4.4% and 4.3% of total cement production in China in 2020 in terms of production value and volume, respectively.
- The overall economy of Hubei suffered tremendously as it is the epicenter of the COVID-19 pandemic where the whole province had to shut down for a few months in the first two quarters of 2020. However, with the pandemic becoming under control, it is expected that the output of construction industry and fixed assets investment will pick up in 2021 and experience a CAGR of 13.7% and 10.9% between 2020 and 2025, respectively. To promote infrastructure construction, the government of Hubei province released Three-year action plan for the "Ten Major Projects" of Hubei Province after the epidemic to restore its shortcomings and strong functions (2020-2022)(2020—2022)) which aims to invest approximately RMB2.3 trillion in infrastructure construction in the next three years. Such favourable policies, coupled with the natural advantage of rivers and waterways in Hubei Province, can continue to support the future development of the cement and concrete industry.

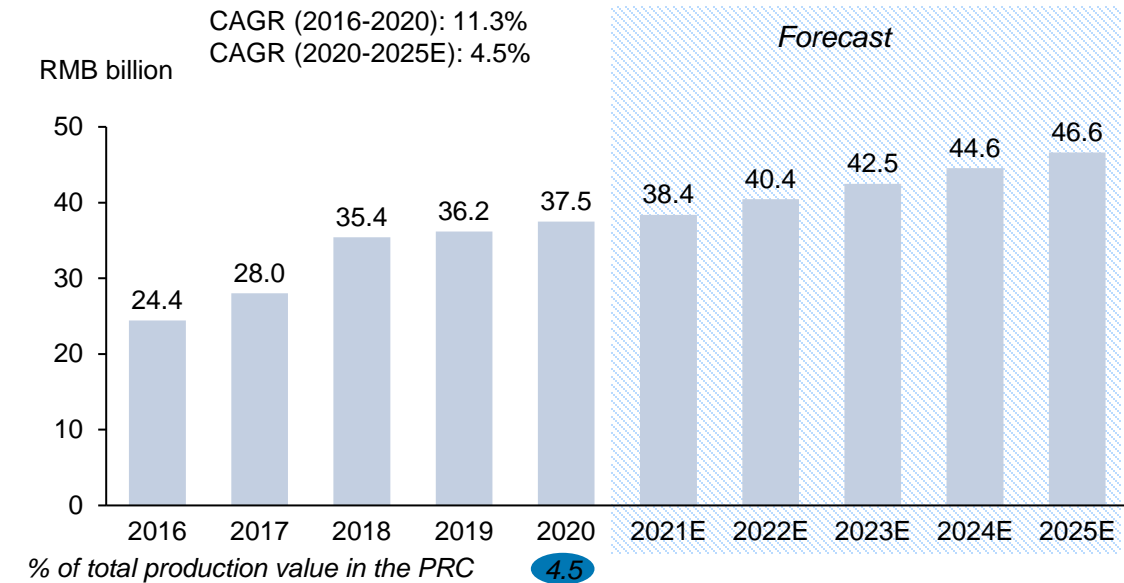
Note: The production value was calculated based on ex-factory cement price, excluding tax and freight.

Cement production in Hunan province

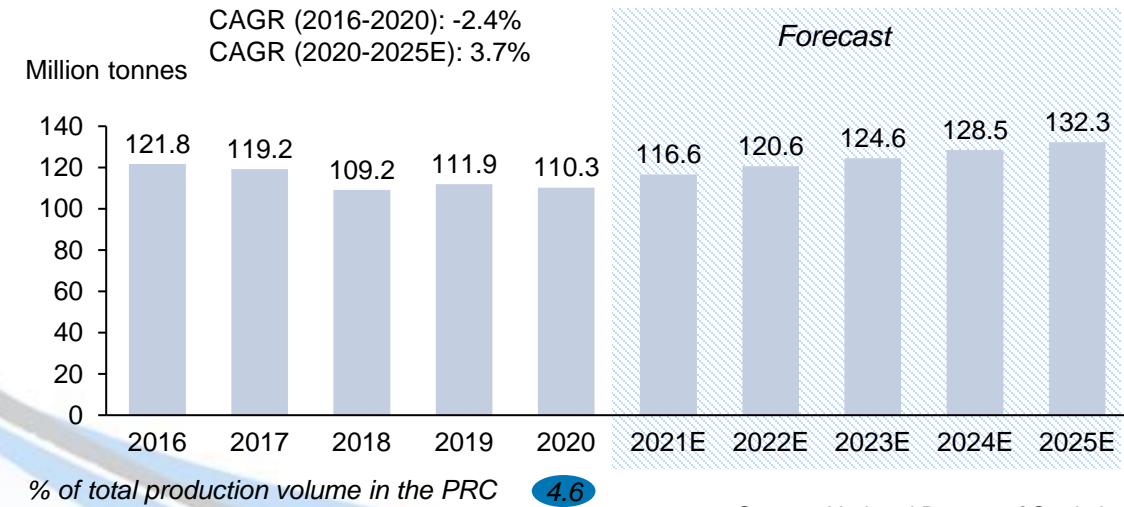
- Hunan province is located in south-central China to the middle reaches of the Yangtze River and south of the Dongting Lake; the natural advantages as well as support from the local government will further boost the cement and concrete industry in Hunan



Production value of cement, Hunan province, 2016-2025E



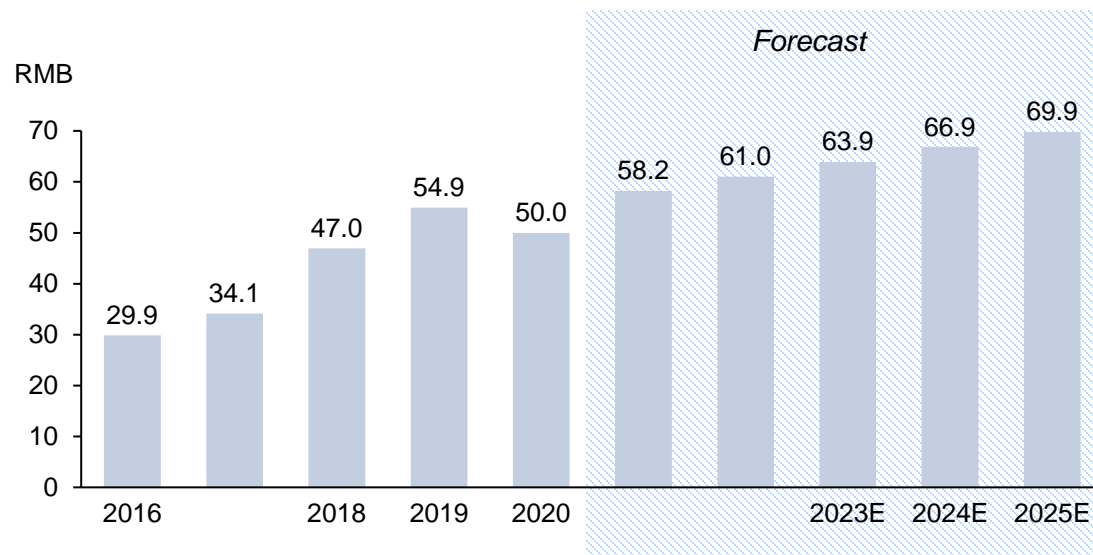
Production volume of cement, Hunan province, 2016-2025E



Key analysis

- Located in south-central China to the middle reaches of the Yangtze River and south of the Dongting Lake, Hunan province is one of the key regions across China in terms of economic development both regionally and nationally. With the ever-improving traffic infrastructure such as highway, railway, and shipping, both intercity traffic and interprovincial traffic of Hunan province brings great convenience for cement transportation. Moreover, Hunan has abundant natural resources of raw materials for cement production.
- The production volume of cement in Hunan province declined during the period between 2016 and 2018, mainly as a result of the de-capacity policy and the staggering production policy for environmental protection. The double effects of the decline in cement production volume and the increase in cement price ensured the sustainable development of the cement market in Hunan province. The production value of cement increased from RMB24.4 billion in 2016 to RMB37.5 billion in 2020, representing a CAGR of 11.3%. Cement production in Hunan accounted for 4.5% and 4.6% of total cement production in China in 2020 in terms of production value and volume, respectively.
- In 2020, Department of Industry and Information Technology in Hunan released Digital Economy Development Plan of Hunan Province (2020-2025)(2020-2025), which promotes the construction of new infrastructure () in Hunan, focusing on the implementation of ten key projects, Internet of Things Industry Foundation Strengthen Project, Big data Industry Promotion Project, IC industry Growth Project, etc. The natural advantages as well as support from the local government will further boost the cement and concrete industry in Hunan.

Note: The production value was calculated based on ex-factory cement price, excluding tax and freight.

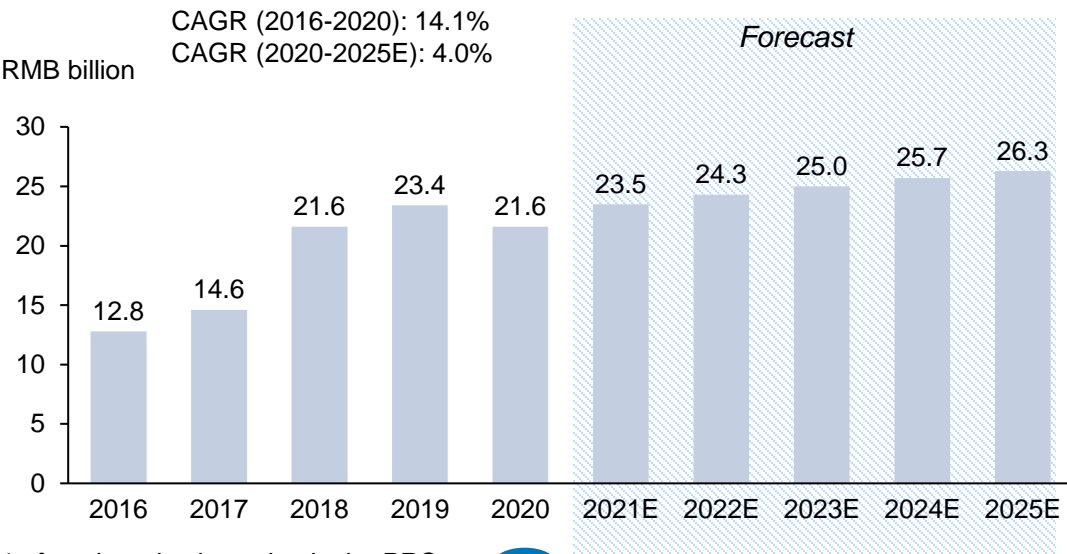


Cement production in Chongqing city

-Chongqing is the largest municipality directly under the central government located in western China; the favourable policies in new infrastructure will boost the demand for cement and foster the development of the cement and concrete industry in the next few years



Production value of cement, Chongqing city, 2016-2025E

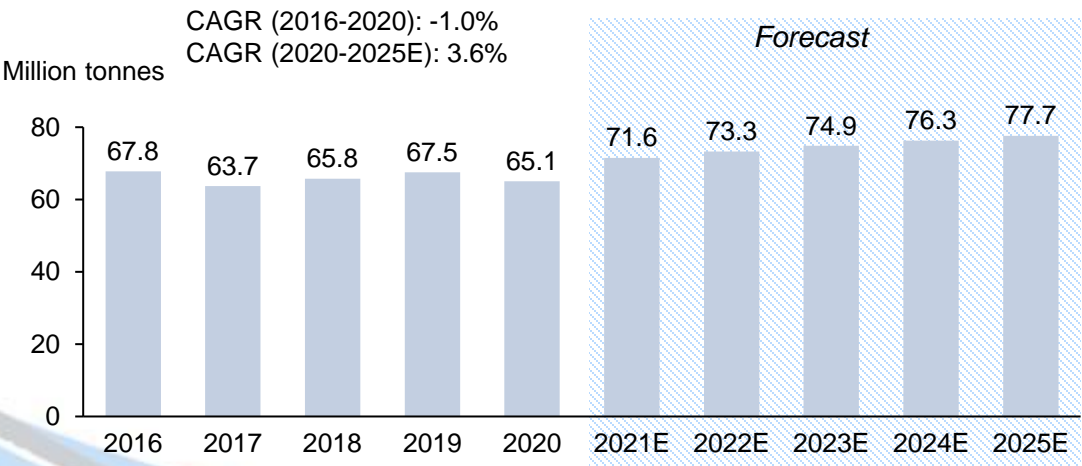


% of total production value in the PRC

2.6



Production volume of cement, Chongqing city, 2016-2025E



% of total production volume in the PRC

2.7

Key analysis

- Chongqing is the largest municipality in terms of area directly under the central government located in western China. Chongqing Jiangbei International Airport, one of the top ten airports in China, and the largest port on the upper reaches of the Yangtze River are both located in Chongqing. Chongqing has unique advantages in the Belt and Road Initiative due to its favorable location. With the smooth operation of the Chongqing-Xinjiang-Europe international railway, Chongqing has become the frontier of the Belt and Road Initiative. Therefore, the transportation advantages as well as the infrastructure investment led by the Belt and Road Initiative drove the development of the cement industry in Chongqing.
- With an urbanisation rate higher than the national average, Chongqing is saturated in the real estate market. To guarantee a healthy growth of the market, the government has tightened the land offering policies and imposed limitations on house purchasing, which might led to a lower growth rate of the future cement production.
- The production volume of cement in Chongqing fluctuated between 2016 and 2020, driven by the supply-side reform in the PRC. With the staggering production policy, the capacity of cement production has been controlled and the supply and demand has been balanced. The production volume of cement reached 65.1 million tonnes in 2020. As a result of the rising cement price, the production value of cement increased rapidly from RMB12.8 billion in 2016 to RMB23.4 billion in 2019, and decreased to RMB21.6 billion in 2020, representing a CAGR of 14.1%. Cement production in Chongqing accounted for 2.6% and 2.7% of total cement production in China in 2020 in terms of production value and volume, respectively.
- In 2020, Chongqing Communications Administration issued Chongqing's land space planning and Communication specialty plans—5G special plan(—5G), which plans to build 150,000 5G base stations in Chongqing by 2025. The favourable policies in new infrastructure will boost the demand for cement and foster the development of the cement and concrete industry in the next few years..

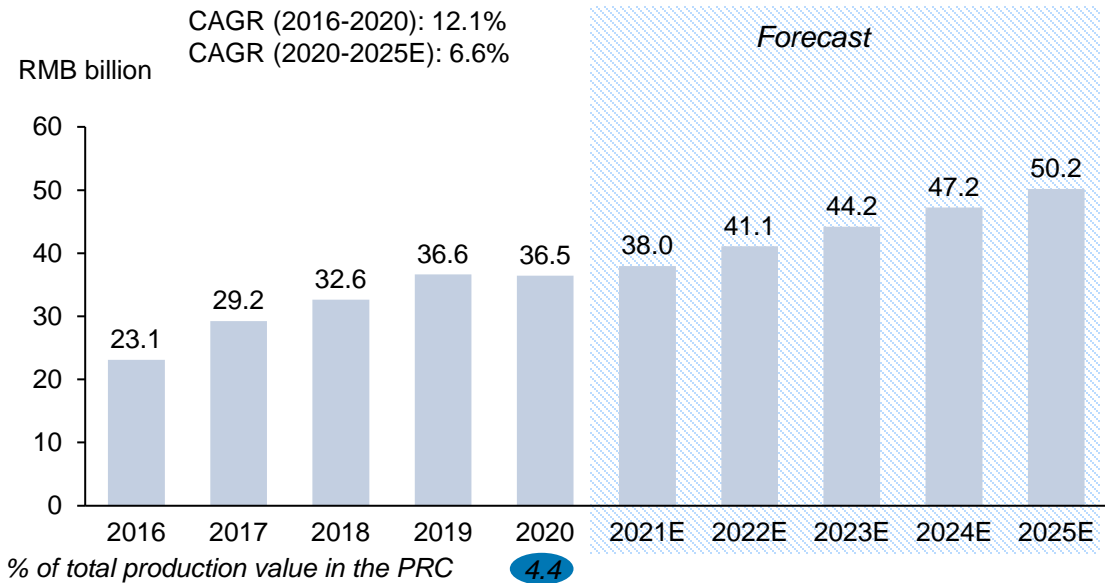
Note: The production value was calculated based on ex-factory cement price, excluding tax and freight.

Cement production in Yunnan province

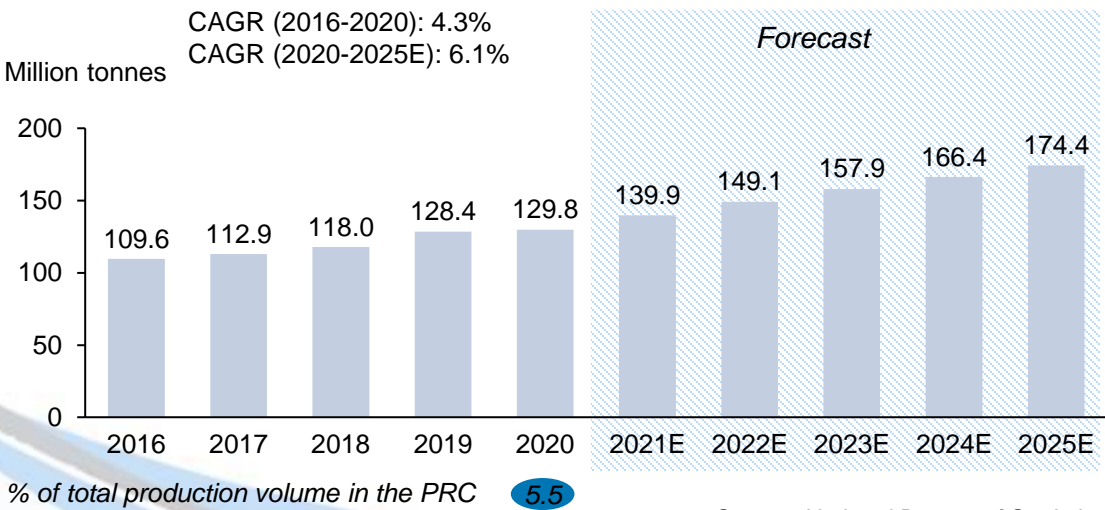
-Yunnan province is located in the geographical center of Asia, which makes it a key trading hub of Asia; with the promotion of the government and geographical advantages in transportation, the cement and concrete industry in Yunnan is expected to continue to prosper



Production value of cement, Yunnan province, 2016-2025E



Production volume of cement, Yunnan province, 2016-2025E



Key analysis

- Yunnan province is located in the geographical center of Asia, which makes it a key trading hub of Asia. Within China's Belt and Road Initiative, Yunnan is home to key road and railway links to South and Southeast Asian countries, such as Laos, Vietnam, and Myanmar via the China-Myanmar-Bangladesh-India Economic Corridor.
- The economic growth in Yunnan Province has boosted the market demand for cement. The growth rate of investment in real estate development in Yunnan exceeded the national average level, registering a CAGR of 13.8% between 2016 and 2020. Therefore, the production volume of cement in Yunnan province grew at a higher rate than the national average level over the past five years given that the demand from real estate construction is higher in Yunnan province.
- The production value and the production volume of cement in Yunnan Province increased from RMB23.1 billion and 109.6 million tonnes to RMB36.5 billion and 129.8 million tonnes, representing a CAGR of 12.1% and 4.3%, respectively. Cement production in Yunnan province accounted for 4.4% and 5.5% of total cement production in China in 2020 in terms of production value and volume, respectively.
- To promote the new infrastructure construction, the government issued Implementation Plan for Promoting New Infrastructure Construction in Yunnan Province (2020-2022)(2020-2022), which targets to invest RMB377.3 billion in 665 construction projects. With the promotion of the government and geographical advantages in transportation, the cement and concrete industry in Yunnan is expected to continue to prosper.

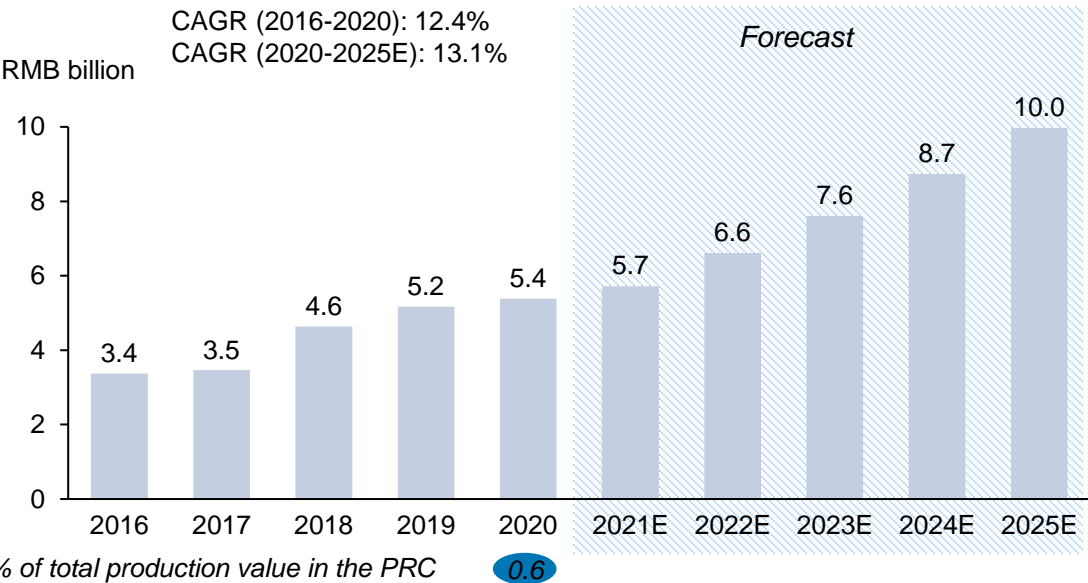
Note: The production value was calculated based on ex-factory cement price, excluding tax and freight.

Cement production in Tibet Autonomous Region

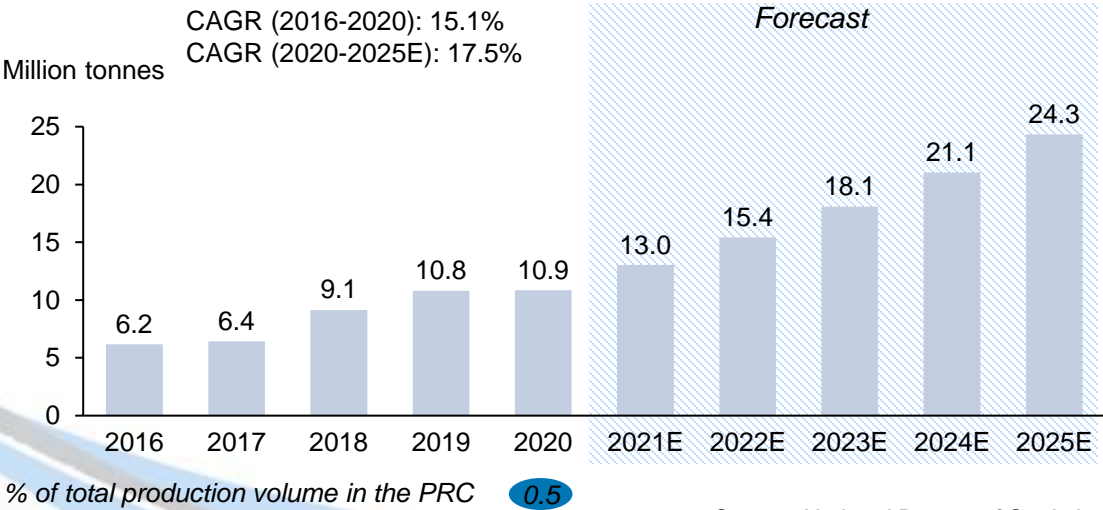
-Tibet Autonomous Region is located in southwest China and is adjacent to the Xinjiang Uygur Autonomous Region and Qinghai, Sichuan, Yunnan provinces; the on-going investment in the infrastructure construction in Tibet will continue to support the downstream cement



Production value of cement, Tibet, 2016-2025E



Production volume of cement, Tibet, 2016-2025E



Key analysis

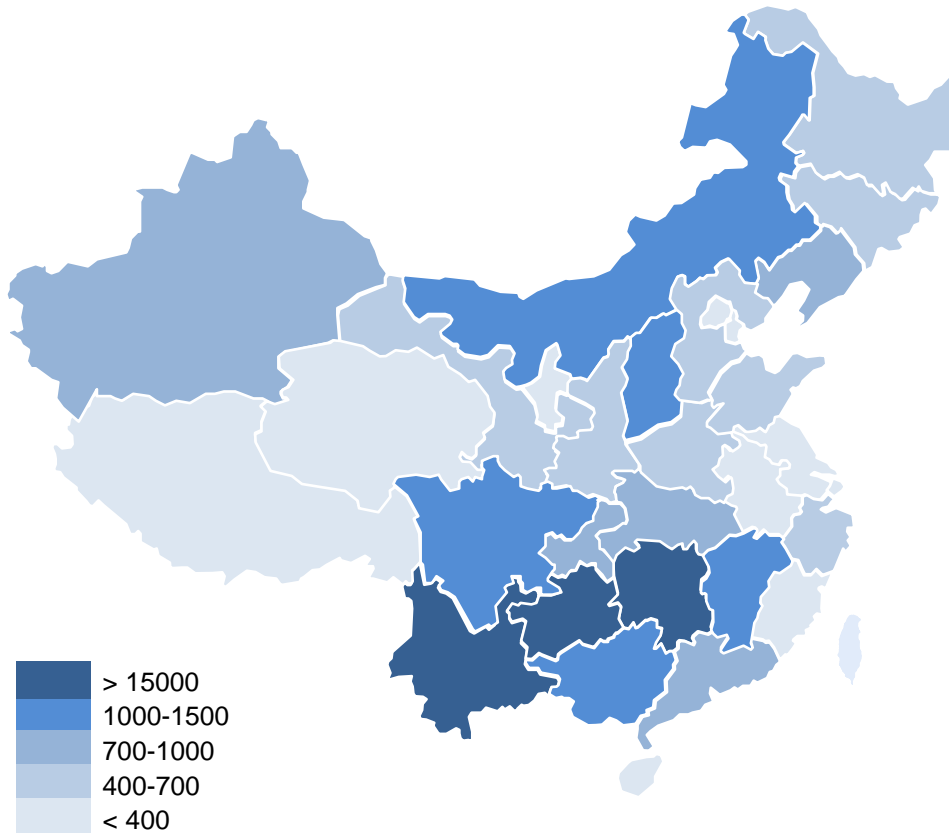
- Tibet Autonomous Region is located in southwest China and is adjacent to the Xinjiang Uygur Autonomous Region and Qinghai, Sichuan, Yunnan provinces. Bordering South Asian countries such as India, Nepal, Myanmar, and Bhutan, Tibet is an important region to seek cooperation with South Asian countries in the Belt and Road Initiative.
- Tibet's GDP growth has been one of the best performing in China over the past five years, registering a CAGR of 13.4% between 2016 and 2020, underpinned by strong investment in infrastructure and robust consumption. With the massive infrastructure projects launched over the past few years, the construction materials market in Tibet developed rapidly.
- The production volume of cement in Tibet Autonomous Region increased from 6.2 million tonnes in 2016 to 10.9 million tonnes in 2020, representing a CAGR of 15.1%. The production value of cement increased from RMB3.4 billion to RMB5.4 billion between 2016 and 2020, registering a CAGR of 12.4%. The average price of cement in Tibet was higher than the national level over the past few years given that the supply was lower than the demand and the transportation cost for delivering cement into Tibet was high. Cement production in Tibet accounted for 0.6% and 0.5% of total cement production in China in 2020 in terms of production value and volume, respectively.
- The PRC government actively invests in the infrastructure in Tibet such as the construction of Lhasa General Airport for emergency rescue base and Sichuan-Tibet railway in the next few years. The on-going investment in the infrastructure construction in Tibet will continue to support the downstream cement and concrete demand, which will in turn benefit the local cement manufacturers.
- As one of the first cement production companies entering into the Tibet market, the company enjoys the first-mover advantage to establish our production facilities and sales networks within this area.

Note: The production value was calculated based on ex-factory cement price, excluding tax and freight.

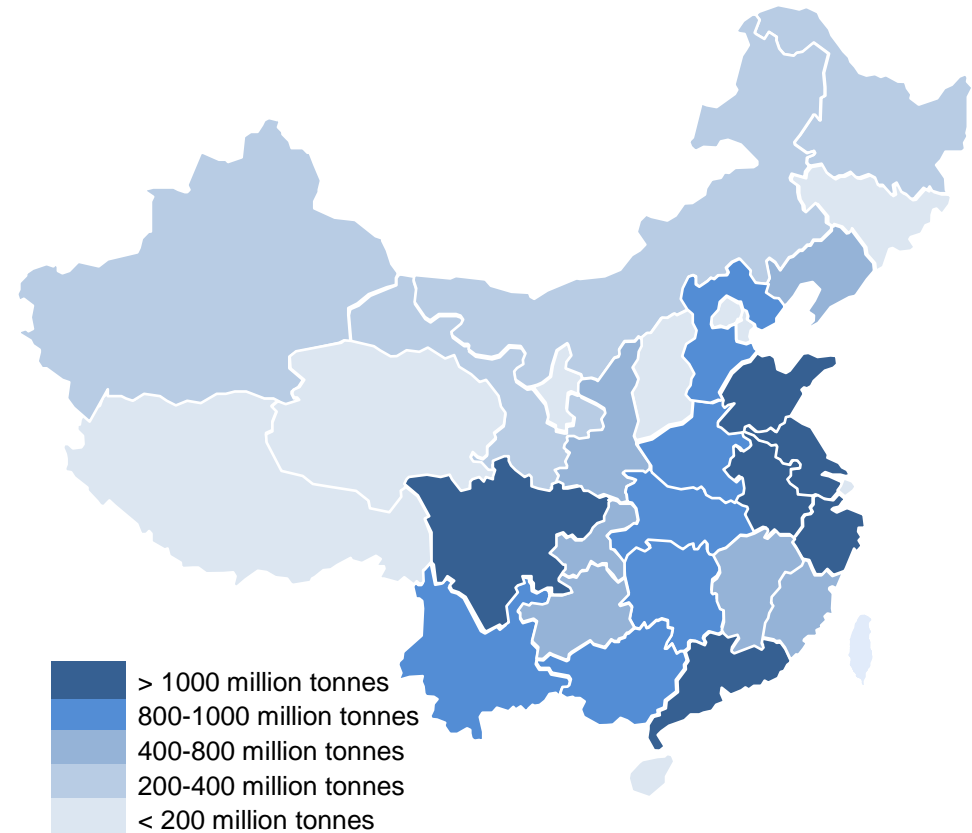
Aggregate supply and demand in China

- Scarce resources and large-scale mining will enhance the bargaining power of enterprises in aggregate industry

Regional distribution of sand and gravel mines, the PRC, 2020



Regional distribution of aggregate demand, the PRC, 2020

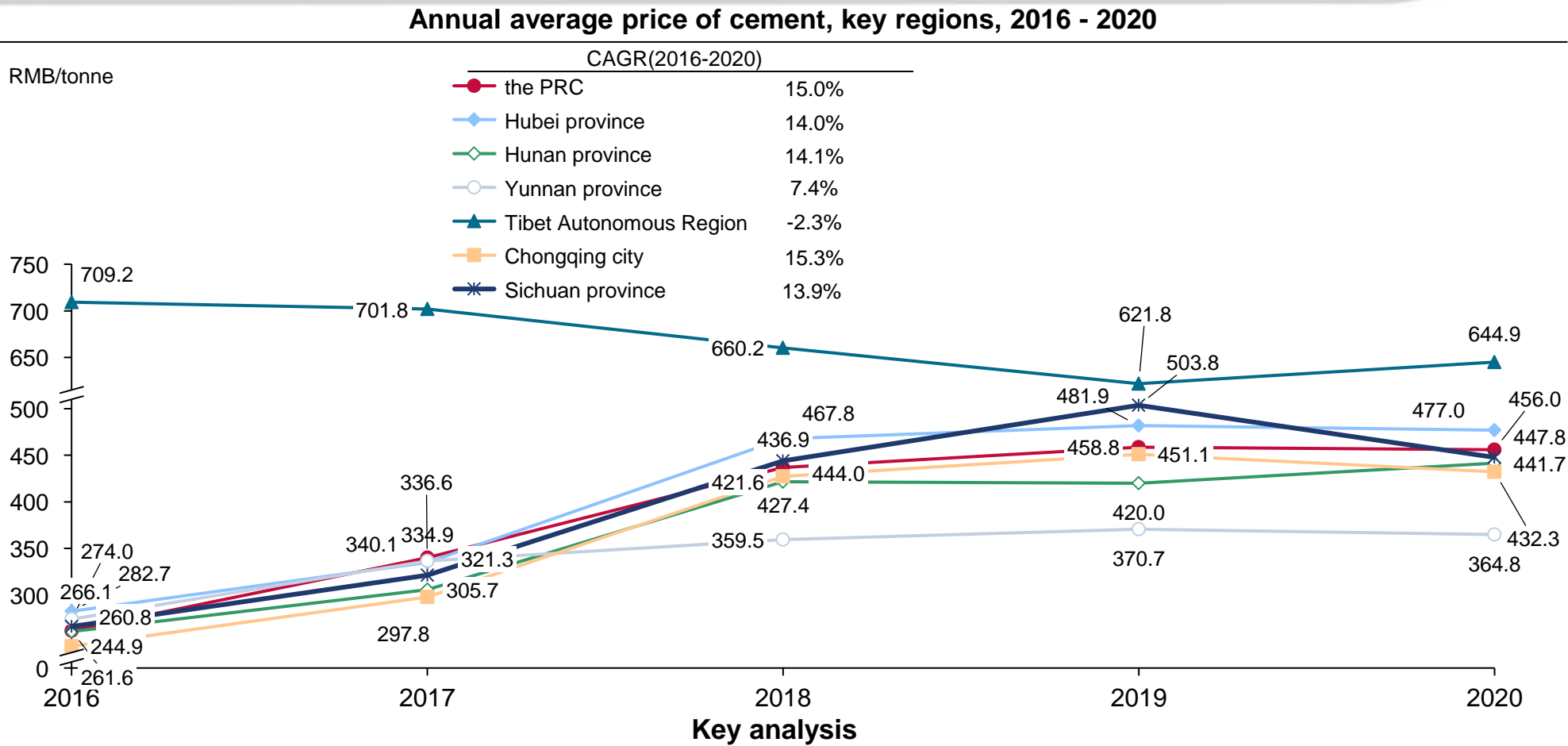


Key analysis

- Mine resources in good locations are scarce. It is expected that the approvals of mining rights will continue to be tighten, and stricter environment protection measures will be gradually rolled out. The raw material or mine resources will be increasingly scarce, resulting higher pricing power for raw material suppliers.
- The trend of large-scale mining will lead to the continuous increase of industry concentration. The concentration will further optimize the industry and will enhance the bargaining power of enterprises.

Price analysis of construction materials industry in the PRC(1/2)

- The average prices of cement in the aforementioned six key regions of the Company's strategic layout fluctuated between 2016 and 2020

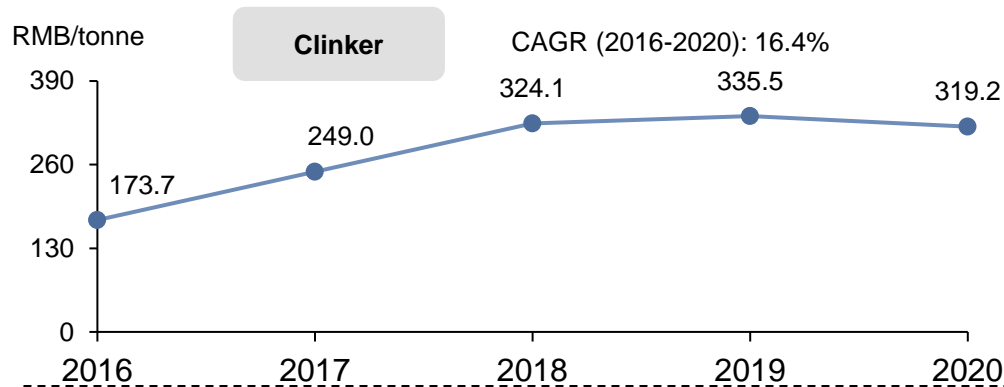


- The average prices of cement in the aforementioned six key regions of the Company's strategic layout fluctuated between 2016 and 2020. Except for Tibet Autonomous Region, in 2016 and 2017, the cement price remained relatively weak as a result of overcapacity and fierce market competition. Since 2017, the cement price in key regions except for Tibet has experienced an uptick, primarily driven by policies to address overcapacity.
- The annual average price of cement in Tibet Autonomous Region was higher than the national level over the past few years, given the limited supply to meet the demand and the transportation cost to Tibet was high. With the subsequent increase in capacity of local cement production, Tibet's annual average price of cement gradually declined since 2017, reached RMB621.8 per tonne in 2019 and bounced back to RMB644.9 per tonne in 2020, which was mainly due to the coronavirus pandemic's interruption on inter-provincial transportation.

Price analysis of construction materials industry in the PRC(2/2)

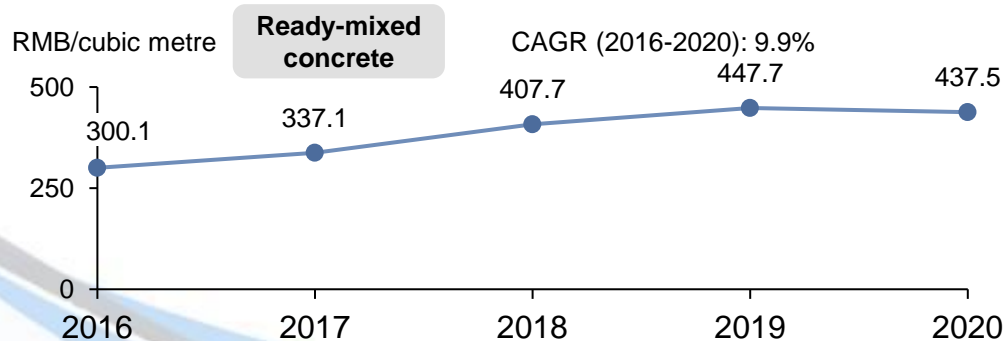
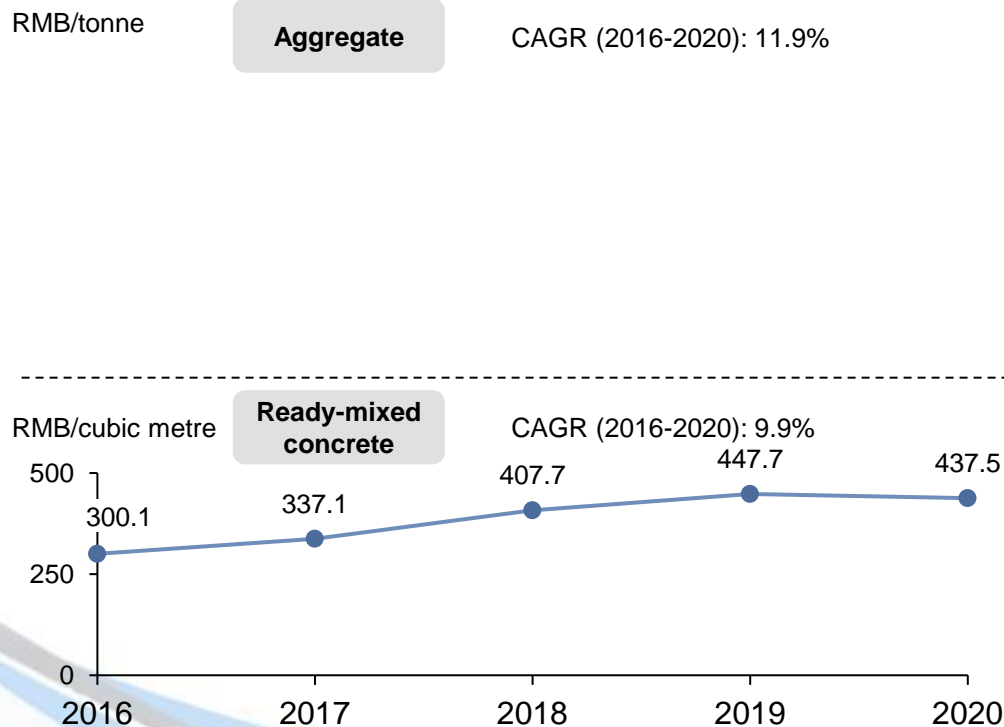
-The annual average price of construction materials including clinker, aggregate and ready-mixed concrete experienced a rapid growth between 2016 and 2020, which is mainly due to the production limitation for environment protection and the de-capacity reforming policies

Annual average price of construction materials, the PRC, 2016-2020



Aggregate

CAGR (2016-2020): 11.9%



Key analysis

- The annual average price of clinker experienced a rapid growth with a CAGR of 16.4% between 2016 and 2020.
- With the implementation of industry-wide supply-side reform and the strengthened supervision of environmental protection, the inventory for domestic cement supply dropped to a low level in the PRC, which has boosted the price of clinker in between 2016 and 2018.
- In view of the outbreak of coronavirus(COVID-19) pandemic in 2020, infrastructure and real estate construction projects shut down, resulting in lower demand and production of clinker. This has led to a lower price of clinker.

- The annual average price of aggregate experienced a rapid growth with a CAGR of 11.9% between 2016 and 2020.
- Since 2016, with the strict implementation of the environmental protection regulations, a number of small-size quarries have closed, resulting in a shortage in aggregates supply and the surging price of aggregates. The price of aggregate rise from RMB77.0 per tonne in 2016 to RMB120.9 per tonne in 2020.

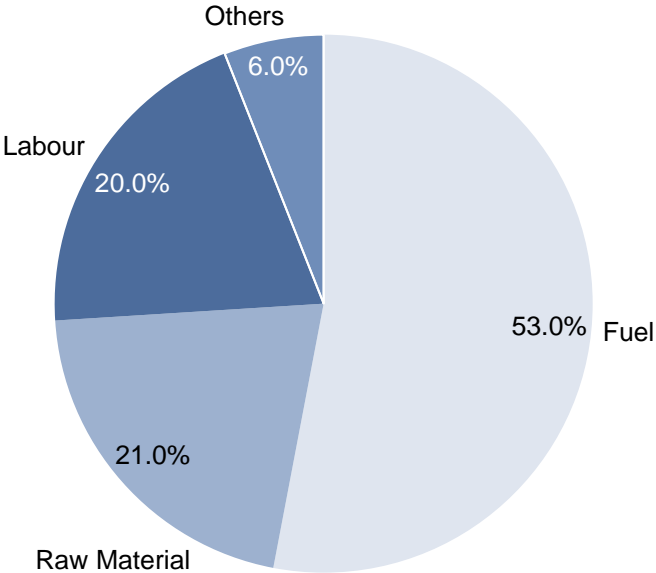
- The annual average price of ready-mixed concrete experienced a steady growth with a CAGR of 9.9% between 2016 and 2020.
- The price of ready-mixed concrete has experienced fluctuations since 2016, which is primarily driven by the fluctuations of raw materials.
- The annual average price of ready-mixed concrete rise from RMB300.1 per cubic metre to RMB437.5 per cubic metre between 2016 and 2020, thanks to the strict implementation of the environmental protection regulations which negatively affected the supply of ready-mixed concrete.
- In view of the outbreak of coronavirus(COVID-19) pandemic in 2020, infrastructure and real estate construction projects shut down, resulting in lower demand and production of ready-mixed concrete. This has led to a lower price of ready-mixed concrete .

Cost analysis of cement in the PRC

-In cement industry of the PRC, the cost of fuel accounts for more than half of the total cost of cement production, and the cost of raw material and labour are the other key components in the cost structure

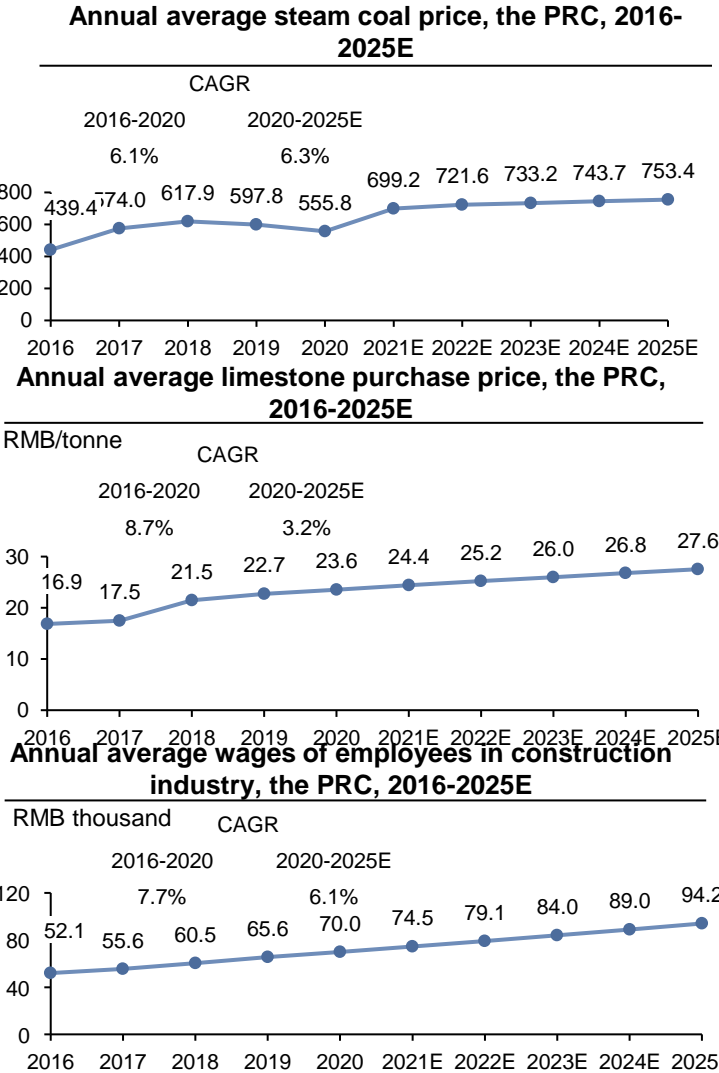
Cost analysis of cement, the PRC, 2020

Cost Structure



- The cost for cement can be divided into fuel, raw materials and others cost, among which fuel cost accounts for approximately 50% to 55% of the total cost structure, labor cost accounts for approximately 20%, and raw material accounts for approximately 20% to 25%.
- Coal and electricity are the two common sources served as fuel during the production process of cement.
- Raw materials for production of cement include limestone, clay, corrective materials, and ancillary materials. Among them, the cost for limestone is the major component of the raw material cost of cement.
- Others cost includes depreciation, amortization and overhead cost.

Price analysis



- The thermal coal price increased from RMB439.4 per tonne in 2016 to RMB555.8 per tonne in 2020. Due to economy recovery in 2021 after COVID-19 pandemic, many manufacturing enterprise resume to work, resulting in a sudden growth in the demand of coal. The average steam coal price is expected to experience a rapid growth in 2021, and continue to stably increase between 2021 and 2025.
- The average limestone purchase price has increased from RMB16.9 per tonne to RMB23.6 per tonne between 2016 and 2020, mainly driven by the shortage of supply resulting from the stricter environmental protection regulations. With the continuous implementation of environmental regulations, it is expected that the average limestone purchase price will continue grow and reach RMB27.6 per tonne by 2025, representing a CAGR of 3.2% between 2020 and 2025.
- The average wages of employees in construction industry increased stably from RMB52.1 thousand in 2016 to RMB70.0 thousand in 2020 with a CAGR of 7.7% in the same period. With the slower growth of labor force for construction industry, it is expected that the average wages of employees in construction industry will continue to grow and reach RMB94.2 thousand by 2025.

Key drivers of construction materials industry in the PRC(1/2)

- The major drivers of construction materials industry of the PRC include growing demands from infrastructure construction, real estate, New Infrastructure, and favorable government policies, increasing urbanisation rate and promotion of new-type urbanization and rural revitalization, and evolving technologies

Key drivers

Analysis

1

Growing downstream demands from downstream markets including infrastructure construction and real estate

- The rapid growth of investment in infrastructure construction and the stable investment in real estate development in China jointly ensure the stable increase in demand for construction materials and will promote the further development of the construction material industry throughout China. With the increasing development level of the national economy, residents in the PRC have put forward higher requirements on infrastructure and housing environment, thus the Government has listed the urban infrastructure construction as the core of national economy construction. The total investment in infrastructure construction in the PRC increased from RMB15,201.2 billion in 2016 to RMB17,051.8 billion in 2020 with a CAGR of 2.9%. In the meantime, the investment in real estate development increased from RMB10,258.1 billion to RMB14,144.3 billion, representing a CAGR of 8.4% between 2016 and 2020.
- Infrastructure construction and the real estate industry are expected to experience steady growth in the next few years with the implementation of related policies and measures. In 2016, the State Council issued the revision of Medium- and Long-Term Railway Network Plan(), which sets targets for the size of the railway network by 2025. The Ministry of Housing and Urban-Rural Development issued the “13th Five-Year Plan for the Municipal Infrastructure Construction in Nationwide Cities” () in 2017. The Plan sets development goals for infrastructure construction and real estate. Moreover, in 2018, the General Office of the State Council issued the “Guiding Opinions of the General Office of the State Council on Maintaining Efforts to Remedy Shortcomings in Infrastructure Field”(), which proposed policies and measures such as accelerating the launch of preliminary work and the commencement of construction of projects and securing the smooth implementation of projects under construction.

2

New construction demand from the promotion of New Infrastructure

- “New Infrastructure”() was first mentioned on the Central Economic Work Conference which promoted the enhancement of new infrastructure such as artificial intelligence, industrial internet, and internet of things in December 2018. According to the National Development and Reform Commission, the New Infrastructure includes (i)information infrastructure such as 5G, internet of things, data center, artificial intelligence, blockchain, etc.; (ii) Converged infrastructure, which refers to applying technologies such as internet, big data, and artificial intelligence into the traditional infrastructure; (iii) Innovation infrastructure that supports technology research and development, scientific research, etc. With the pressing ahead of the government, 13 provinces has released investment plans for key projects related to the New Infrastructure in 2020 by April 2020. The New Infrastructure will bring huge demand for construction such as computer labs for data center, 5G base station, electrical substation, etc.

Key drivers of construction materials industry in the PRC(2/2)

- The major drivers of construction materials industry of the PRC include growing demands from infrastructure construction and real estate, New Infrastructure, and favorable government policies, increasing urbanisation rate and promotion of new-type urbanization and rural revitalization, and evolving technologies

Key drivers

Analysis

3

Increasing urbanisation rate and promotion of new -type urbanization and rural revitalization

- As the national economy has entered into a new era of high-quality development, the urbanisation rate and level of industrialisation have continuously improved. The urbanisation rate in the PRC has increased from 57.3% in 2016 to 61.6% in 2020, and is expected to reach 65.7% by 2025. With the rapid urbanization process of the PRC, the continuous urban construction drives the demand for construction materials.
- Besides, The Chinese government actively promoted new-type urbanization, rural revitalization, and poverty alleviation through transportation infrastructure construction. In March 2019, the National Development and Reform Commission of China issued “Key Tasks of New-type Urbanization for 2019”(), which aimed to optimize plans for urbanization, strengthen support for transportation networks, promote high-quality urban development, reinforce the construction of urban infrastructure, accelerate the development of urban-rural integration, and improve the capabilities for construction and management of municipal infrastructure. The promotion of new-type urbanization and rural construction will provide support for cement demand.

4

Favorable government policies for environmental protection, production efficiency and other factors

- In recent years, the PRC has successively issued a number of policies and regulations for the construction materials industry to enhance product standards, energy saving, and emission reduction and production safety, and further promote the structural adjustment of cement products and certain high-tech building materials. The policies and regulations include “Certain Opinions on Promoting the High-Quality Development of the machine-made sand Industry”(), Amendment No.3 to the “General Portland Cement” (3), “Guiding Opinions on Elimination of Backward Production Capacities and Upgrade of Ready Mixed Concrete”(), “Opinions on Accelerating the Green Development of Bulk Cement Industry during the “13th Five-Year Plan” Period”(二), etc. These policies and regulations regulated the market and ensured the sustainable development of the construction materials industry.

5

Evolving technologies of cement production to improve economical and production efficiency

- To improve economical and production efficiency, cement producers began to use rotary kilns with advanced NSP(New dry process) technology in recent years as vertical kilns consume much more coal and energy than rotary kilns, rendering vertical kiln plants more exposed to power shortages and price volatility of coal and electricity. In addition, vertical kilns discharge much more pollutants than rotary kilns which goes against the world’s environmental protection concerns. In 2019, production capacity of clinker using NSP technology was 1820 million tonnes, which is over 98% of total clinker production capacity.

Future Trends of the construction materials industry in the PRC

- The key future trends of construction materials industry of the PRC include promotion of green development, persistent supply-side structural reform and adoption of information and energy conservation technologies in cement production

Future Trends

Key Analysis

1

Promotion of
green
development



- As the construction materials industry develops and upgrades, green, environmentally friendly and energy-efficient construction materials have become the mainstream of the construction market. In June 2018, the State Council of China issued the "Three-Year Action Plan for Winning the Blue Sky Defense Battle" (《打赢蓝天保卫战三年行动计划》), which required the cement industry to continuously eliminate excess capacity and strictly prohibit new production capacity. This series of measures will help the cement industry to eliminate obsolete capacity as well as strengthen the prevention and control of pollution. In March 2020, the National Development and Reform Commission, the Ministry of Natural Resources, the Ministry of Industry and Information Technology, and the Ministry of Ecology and Environment jointly issued the "Guiding Opinions on Promoting the Healthy and Orderly Development of the Sand and Stone Industry" (《关于促进砂石行业健康有序发展的指导意见》), which encouraged and supported the comprehensive utilization of waste rock, slag, and tailings and other gravel resources to achieve "turning waste into treasure".

2

Persistent
supply-side
structural
reform



- At present, the problem of serious overcapacity in the cement industry has not been fundamentally resolved, and structural contradictions still exist. Supply-side structural reform is and will continue to be the key to the sustainable and healthy development of the cement industry. Policies and measures such as staggering production and capacity replacement will be strictly implemented during the "14th Five-Year Plan" (《“十四五”时期》) period.

3

Adoption of
information
and energy
conservation
technologies in
cement
production



- Cement construction materials manufacturers are increasingly adopting information and energy conservation technology to support automation and process control, reduce fuel consumption, increase production, and improve product quality. For instance, in the production processes, since cement plant equipment and processes can be monitored digitally with information technology, manufacturers are enabled to make quicker and smarter decisions on when to repair or maintain equipment based on unique data, which will ultimately increase the productivity by reducing downtime, as well as reduce environmental footprint by optimising processes in cement production. Besides energy conservation technology such as NSP(New dry process) technology can reduce the consumption of coal and energy during the manufacturing process of clinker.

Risks and challenges of the construction materials industry in the PRC

-The main challenges of the PRC ready-mixed concrete industry include the rising upstream raw materials price, the fluctuation of energy cost, the fluctuation of cement price, and the tightening supervision on the production process

Risks and challenges

Key Analysis

1

Rising upstream raw materials price

- Due to the intensification of environmental protection, a large number of cement, sand and stone manufacturers that fail to meet the environmental protection requirements have been forced to shut down or rectify. The upstream supply of raw materials presents a certain degree of shrinkage, leading to the short-term shortage of aggregates in many regions of the PRC.
- The prices of raw materials may fluctuate from time to time as a result of various factors, such as fluctuations in commodity prices and changes in government policies. Besides, many sand and stone manufacturers have suspended or limited production under intensified environmental supervision. In the future, with the rising price of raw materials, the tight supply and the high cost of the construction materials industry is expected to continue, which will exert certain impacts on the construction materials manufacturers.

2

Fluctuation of energy cost

- Coal and electricity are used as the power sources in cement production, which together account for about 53% of the total production costs. Therefore, fluctuation in coal and electricity costs represents one of the significant causes of volatility in the cost of cement production. Therefore, the substantial fluctuation of coal price and electricity poses one of the principal potential risks and uncertainties affecting the performance of the cement manufacturers.

3

Fluctuation of cement price

- The prices of cement price may fluctuate from time to time due to the change in the policies and regulations, as well as the supply and demand. Since the second half of 2016, cement enterprises have realised synergistic prices rising through restricting and stopping production at the supply side. At the end of 2017, the cement price index increased by over 40% compared to that at the beginning of the year. The uncertainty in the change of cement price will influence the profitability of cement manufacturers.

4

Tightening supervision on the production process

- Since 2018, in response to “Opinions on Comprehensively Strengthening Ecological Environment Protection and Resolutely Fighting for Pollution Prevention and Control”() issued by the State Council, many provinces and cities have carried out special rectification activities for construction materials manufacturers, requiring to strictly control the production processes, remediate and close the batching plants that fail to meet the standards and seriously pollute the environment, further alleviating air pollution and improving project quality. In the next few years, these remediation measures will have a certain impact on the production capacity and production volume of the construction materials industry, but will make the production of construction materials greener and more standardised on the other hand.

Impact of the Novel Coronavirus on the construction materials industry

- An outbreak of respiratory illness caused by a novel coronavirus (COVID-19 virus) first emerged in Wuhan city, Hubei province, China in late 2019 and which continues to expand within mainland China and globally. The new strain of coronavirus is considered highly contagious and may pose a serious public health threat. The World Health Organization (“WHO”) is closely monitoring and evaluating the situation. The WHO has declared the outbreak of novel coronavirus (COVID-19 virus) a Public Health Emergency of International Concern (PHEIC).
- The PRC government announced on 23 January 2020 the lockdown of Wuhan city in an attempt to quarantine the city. Furthermore, several measures have been introduced by the Chinese government including suspension of outbound public transport of multiple cities in Hubei Province, postpone of starting date for work nationwide, cancellation of public activities during the holiday, etc. These measures are likely to adversely affect industries such as transportation, infrastructure and construction construction, real estate industries.
- Given that the downstream industries of construction material industry are construction, real estate, etc., the impact of COVID-19 virus on these industries will affect the demand for construction materials. The direct impact on construction has meant the halting of work with labour unable to get to sites or because of disruption in the delivery of key materials and equipment. Besides, the capital liquidity crunch is one of the main issues that negatively affect the property and construction sectors. Since companies’ demand for construction work may decline due to the massive slump in sales and profits, many companies may decide to reduce office floor space in order to reduce rental costs. The reduced cash inflow to property developers will cut off their investment to the property and construction market, and may even delay or cancel their projects. The pandemic delayed demand from the downstream industries caused pressure on the construction materials industry in the first quarter of 2020. However, it was the off-season when the pandemic broke out and hence its impact for the whole year is expected to be limited.
- Faced with severe impact of the novel coronavirus epidemic, the Chinese government has introduced a series of proactive fiscal and monetary policies, such as issuing epidemic-aiding treasury, as a way to promote continuous economic recovery and high-quality development. Stimulated by the policies, indicators related to cement demand picked up: 1) The gross output value of the construction industry 2020 reached RMB26,394.7 billion, with an growth rate of 6.2%; 2) The investment in the real estate development 2020 increased to RMB14,144.3 billion, by a growth rate of 7.0% 3) The cement production volume 2020 was 2,395 billion tonnes, while the clinker production volume 2020 was 1.579 billion tonnes, increased by 2.2% and 3.7%, respectively.
- According to the World Economic Outlook published by the International Monetary Fund (“WEO”), the real GDP growth in China was 2.3% in 2020, which is significant lower compared to that in 2019 due to the impact of COVID-19 pandemic. However, with the effective measures implemented by the PRC government to restrain the further spread of COVID-19 and to revitalize the economy, it is projected that the real GDP growth will reach 8.4% in 2021.

3. Competitive landscape of the concrete market in the PRC

Competitive analysis of the cement market in terms of revenue in China

- The Company is one of the leading market player in the cement market in China and ranked the fifth among all cement manufacturers in terms of operating income generated from cement business






Ranking of top five cement manufacturers in terms of operating income generated from cement business in China, 2020

Rank	Manufacturer's name	Revenue generated from cement business (RMB billion)	Market share
1	China National Building Material Co., Ltd.	109.0	13.0%
2	Anhui Conch Cement Co., Ltd.	94.4	11.2%
3	China Resources Cement Holdings Ltd.	29.0	3.5%
4	Tangshan Jidong Cement Co., Ltd.	27.7	3.3%
5	The Company	21.9	2.6%
	<u>Subtotal</u>	282.0	33.6%
	<u>Others</u>	558.4	66.4%
	<u>Total</u>	840.4	100.0%

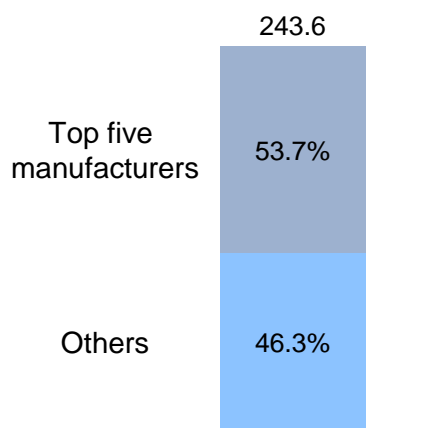
- The cement industry in China is relatively concentrated with top 5 cement manufacturers accounting for 33.6% of market share in terms of revenue generated from cement business in China, and almost all leading cement manufacturers are listed companies. In 2020, the Company generated approximately RMB21.9 billion of revenue from its cement business and was ranked fifth among the leading Chinese cement manufacturers in terms of revenue.
- Besides, as of December, 2020, there were a total number of nine production lines for cement and clinker in Tibet, three of which were owned by the Company and two of which were owned by the company that the Company invested.
- Based on our industry knowledge, we believe that the Company's use of other distributors for sales of products is generally in line with industry practice.
- The M&A trend in China's cement industry has led to a further increase in market concentration. the PRC Government in the past has adopted policies that are designed to accelerate the consolidation of the cement industry, promote modernization and improve energy-efficiency and environmental friendliness. From 2013 to 2020, the number of cement companies decreased from approximately 3,800 to 2,800 since many leading players have taken actions in mergers and reorganization. As large-scale state-owned enterprises and leading companies conducted successive M&A activities such as the acquisition of small-and-medium cement manufacturers has reduced industry competition and created operational synergies, allowing leading market players to further dominate the cement industry. The M&A trend is expected to continue as the structural adjustments of cement industry will continue and backward production capacity will be gradually phase out.
- The company have become one of the benchmark companies for utilizing digitalization in the cement industry in China and we embrace the trend of applying new information technologies and systems throughout our business operations.

Note: The leading five manufacturers are all listed companies; The operating income figures generated from the cement business in China in 2020 for the top 5 manufacturers (except for the Company) were estimated by CIC based on their annual reports, industry public articles and other reputable third party's sources. Due to the fact that such diversity and complexity of the scope involves adjusting for certain factors and changes, certain margin of error or bias cannot be excluded, which may cause this ranking result not being absolute or unique. Source: China Cement Net, China Insights Consultancy 49

Overview of the top five cement manufacturers in terms of revenue generated from cement business in China

Manufacturer's name	Time of establishment	Headquarter s' location	Focused regions and countries	Company's background	Listing status
 China National Building Material Co., Ltd.	1984	Beijing	<ul style="list-style-type: none"> East China, Northeast China, Southwest China and South Central China Germany, India, Mongolia and Africa 	<ul style="list-style-type: none"> The largest manufacturer for building materials and an integrated service provider leading throughout the world 	Listed
 Anhui Conch Cement Co., Ltd.	1997	Anhui	<ul style="list-style-type: none"> East China, South China and West China 	<ul style="list-style-type: none"> A large state-owned cement and clinker manufacturer. 	Listed
 China Resources Cement Holdings Ltd.	2003	Guangxi	<ul style="list-style-type: none"> Nationwide, focusing on Guangdong, Guangxi, Fujian, Hainan, Yunnan, Guizhou, Shanxi, Inner Mongolia and Hong Kong 	<ul style="list-style-type: none"> Subsidiary of China Resources Co., Ltd. A large-scale and state-owned cement, clinker and concrete producer in Southern China 	Listed
 Tangshan Jidong Cement Co., Ltd.	1994	Beijing	<ul style="list-style-type: none"> Nationwide, focusing on Beijing, Tianjin, Hebei, Liaoning, Jilin, Inner Mongolia and Shaanxi 	<ul style="list-style-type: none"> The largest state-owned cement manufacturer in northern China 	Listed
 The Company	1907	Hubei	<ul style="list-style-type: none"> Nationwide, focusing on Central China, Southwest China Tajikistan and Cambodia 	<ul style="list-style-type: none"> One of the earliest enterprises in the China's cement industry The first A&B-share listed company in the China's building materials industry 	Listed






- The cement industry in China is relatively concentrated, characterized by an overall national over-production capacity issue with varying degree across different regions.
- Some of the Company's current and potential competitors may have better brand recognition in the markets in which they operate, more competitive pricing or greater financial, technical or marketing resources than the Company does.
- Due to the continuing overcapacity in the cement industry in recent years and increasingly fierce market competition, we bear the risk of business concentration and our profitability and business operations may be adversely affected if any adverse changes occur in the cement industry in the PRC.
- The gross profit margin of our aggregate segment decreased from 66.5% in the six months ended June 30, 2020 to 63.5% in the six months ended June 30, 2021, mainly due to the increased operating costs of expenses in relation to outsourcing activities for mining, partially offset by increased average selling prices. Such increase was primarily attributable to the short supply in the aggregate market, as manufacturers were affected by the strengthened environmental protection policies implemented lately.



Competitive analysis of the cement market in terms of cement production volume in China

- The Company is a leading cement manufacturer in China, which ranked fifth in terms of cement production volume in China

Ranking of top five Chinese cement manufacturers in terms of cement production volume, China, 2020






Rank	Manufacturer's name	Production volume of cement in China (million tonnes)	Market share
1	 China National Building Materials Group Corporation	352.7	14.7%
2	 Anhui Conch Cement Co., Ltd.	290.3	12.1%
3	 Tangshan Jidong Cement Co., Ltd.	94.6	4.0%
4	 China Resources Cement Holdings Ltd.	90.8	3.8%
5	 The Company	68.1	2.8%
	Subtotal	896.5	37.4%
	Others	1,498.3	62.6%
	Total	2,394.8	100.0%

Note: The leading five manufacturers are all listed companies. The Production volume of cement in China in 2020 for the top 5 manufacturers (except for the Company) were e fact that such diversity and complexity of the scope involves adjusting for certain factors and changes, certain margin of error or bias cannot be excluded, which may cause this ranking result not being absolute or unique.

Competitive analysis of the cement market in terms of cement production capacity in China

- The Company is a leading cement manufacturer in China, which ranked fifth in terms of cement production capacity in China

Ranking of top five Chinese cement manufacturers in terms of cement production capacity, China, 2020

Rank	Manufacturer's name	Production volume of cement in China (million tonnes)	Market share
1	 China National Building Materials Group Corporation	501.4	16.2%
2	 Anhui Conch Cement Co., Ltd.	361.9	11.7%
3	 Tangshan Jidong Cement Co., Ltd.	170.0	5.5%
4	 China Resources Cement Holdings Ltd.	105.7	3.4%
5	 The Company	105.6	3.4%
	Subtotal	1,244.6	40.2%
	Others	1,846.3	59.8%
	Total	3,090.9	100.0%

Note: The leading five manufacturers are all listed companies. The production capacity of cement in China in 2020 for the top 5 manufacturers (except for the Company) were the fact that such diversity and complexity of the scope involves adjusting for certain factors and changes, certain margin of error or bias cannot be excluded, which may cause this ranking result not being absolute or unique.

Competitive analysis of the clinker market in central China

- The Company is a leading market player in the cement market in central China and ranked the first among all cement manufacturers in terms of operating income generated from cement business in central China

Ranking of top five cement manufacturers in terms of operating income generated from cement business, central China, 2020



Note 1: China United Cement Corporation and South Cement Co., Ltd both are subsidiaries of the China National Building Materials Group Corporation

Note 2: Central China includes Henan Province, Hubei Province and Hunan Province.

- The total market size of cement in terms of production value in central China was RMB123.0 billion in 2020, accounting for 14.6% of total cement production value in China. The cement industry in central China is relatively concentrated with the top five manufacturers accounting for 28.9% of the market share. The Company was the largest manufacturer in central China with an operating income generated from cement business of RMB8.5 billion, accounting for approximately 6.9% of the total market

Note: The operating income figures generated from the cement business in central China in 2020 for the top 5 manufacturers (except for the Company) were estimated by CIC based on their annual UHSRUWV LQG X VWU\ SXEOLF DUWLFOHV DQG RWKHU UHSXWDEOH WKLUG SDUW to the fact that such diversity and complexity of the scope involves adjusting for certain factors and changes, certain margin of error or bias cannot be excluded, which may cause this ranking result not being absolute or unique.

Competitive analysis of the cement market in terms of cement production capacity in central China

- The Company is a leading cement manufacturer in China, which ranked first in terms of cement production capacity in central China

Ranking of top five Chinese cement manufacturers in terms of cement production capacity, central China, 2020

Rank	Manufacturer's name	Production volume of cement in China (million tonnes)	Market share
1	The Company	57.8	14.3%
2	Tianrui Cement Group Co., Ltd.	38.0	9.4%
3	Anhui Conch Cement Co., Ltd.	36.6	9.1%
4	South Cement Co., Ltd.	32.5	8.1%
5	China United Cement Corporation	31.8	7.9%
	Subtotal	196.7	48.8%
	Others	206.8	51.2%
	Total	403.5	100.0%

Note: The production capacity of cement in central China in 2020 for the top 5 manufacturers (except for the Company) were estimated by CIC based on their annual reports, scope involves adjusting for certain factors and changes, certain margin of error or bias cannot be excluded, which may cause this ranking result not being absolute or unique.

Competitive analysis of the cement market in terms of cement production capacity in central China






- The Company is a leading cement manufacturer in China, which ranked first in terms of cement production volume in central China

Ranking of top five Chinese cement manufacturers in terms of cement production volume, central China, 2020

Rank	Manufacturer's name	Production volume of cement in China (million tonnes)	Market share
1	The Company	33.6	10.2%
2	Tianrui Cement Group Co., Ltd.	24.7	8.1%
3	Anhui Conch Cement Co., Ltd.	24.3	7.4%
4	South Cement Co., Ltd.	24.0	7.3%
5	China United Cement Corporation	18.5	5.6%
	Subtotal	127.1	38.6%
	Others	202.0	61.4%
	Total	329.1	100.0%

Note: The production capacity of cement in central China in 2020 for the top 5 manufacturers (except for the Company) were estimated by CIC based on their annual reports, scope involves adjusting for certain factors and changes, certain margin of error or bias cannot be excluded, which may cause this ranking result not being absolute or unique.

Overview of the top five cement manufacturers in terms of production capacity of the clinker in central China

Manufacturer's name	Time of establishment	Headquarters' location	Focused regions and countries	Company's background	Listing status
 The Company	1907	Hubei	<ul style="list-style-type: none"> Nationwide, focusing on Central China, Southwest China Tajikistan and Cambodia 	<ul style="list-style-type: none"> One of the earliest enterprises in the China's cement industry The first A&B-share listed company in the China's building materials industry 	Listed
 China United Cement Corporation	1999	Beijing	<ul style="list-style-type: none"> Nationwide, focusing on Shandong, Jiangsu, Henan, Hebei, Anhui, Shanxi, Inner Mongolia, Sichuan and Beijing 	<ul style="list-style-type: none"> Subsidiary of China National Building Materials Group Corporation A large state-owned cement enterprise group 	Listed
 Tianrui Cement Group Co., Ltd.	2000	Henan	<ul style="list-style-type: none"> Nationwide, focusing on Henan, Liaoning, Anhui and Tianjin 	<ul style="list-style-type: none"> Subsidiary of Tianrui Group Co., Ltd. A large cement manufacturer 	Listed
 South Cement Co., Ltd.	2007	Zhejiang	<ul style="list-style-type: none"> Nationwide, focusing on Zhejiang, Shanghai, Jiangsu, Anhui, Hunan, Jiangxi, Fujian and Guangxi 	<ul style="list-style-type: none"> Subsidiary of China National Building Materials Group Corporation A large state-owned cement enterprise 	Listed
 Anhui Conch Cement Co., Ltd.	1997	Anhui	<ul style="list-style-type: none"> East China, South China and West China 	<ul style="list-style-type: none"> A large state-owned cement and clinker manufacturer. 	Listed

Competitive analysis of the clinker market in Hubei Province

- The Company is a leading market player in the cement market in Hubei Province and ranked the first among all cement manufacturers in terms of production capacity of the clinker

Ranking of top five cement manufacturers in terms of production capacity of the clinker, Hubei Province, 2020

Rank	Manufacturer's name	Time of establishment	Headquarters' location	Production capacity (million tonnes)	Market share	Company's background
1	The Company	1907	Hubei	24.8	37.5%	<ul style="list-style-type: none"> One of the earliest enterprises in the China's cement industry and the first A&B-share listed company in the building materials industry
2	China Gezhouba Group Cement Co., Ltd.	2011	Hubei	14.9	22.5%	<ul style="list-style-type: none"> Subsidiary of China Gezhouba Group Co., Ltd. and is known as "China's granary"
3	Asia Cement (China) Holdings Corporation	2004	Hong Kong	5.3	8.0%	<ul style="list-style-type: none"> A large cement and clinker manufacturer
4	Hubei Jinglan Group	2005	Hubei	4.0	6.1%	<ul style="list-style-type: none"> A large state-owned cement and clinker manufacturer
5	Shiji Xinfeng Leishan Cement (Group) Co., Ltd.	2003	Hubei	2.9	4.4%	<ul style="list-style-type: none"> A cement and clinker manufacturer with 50 years of cement production history
Sub-total				51.9	78.5%	
Others				14.2	21.5%	
Total				66.1	100.0%	

- The clinker industry in Hubei Province is highly concentrated, with the top five cement manufacturers accounting for 78.5% of the market share in terms of annual production capacity of the clinker in 2020.
- In 2020, the Company was the largest cement manufacturer in Hubei Province with annual production capacity of the clinker of 24.8 million tonnes in the clinker market, accounting for approximately 37.5% of the total market.
- Huaxin Equipment Manufacturing is a certified high-tech enterprise in Hubei Province and one of the leading domestic heavy cement machinery manufacturing enterprises, with an annual equipment manufacturing capacity of 50,000 tons as of June 30, 2021.

Source: China Cement Net, China Insights Consultancy 58

Competitive analysis of the clinker market in Yunnan Province

- The Company is a leading market player in the cement market in Yunnan Province and ranked the second among all cement manufacturers in terms of production capacity of the clinker

Ranking of top five cement manufacturers in terms of production capacity of the clinker, Yunnan Province, 2020





Rank	Manufacturer's name	Time of establishment	Headquarter's location	Production capacity (million tonnes)	Market share	Company's background
1	Southwest Cement Co., Ltd.	2011	Sichuan	17.0	17.8%	• A subsidiary of the China National Building Materials Group Corporation
2	The Company	1907	Hubei	12.6	13.2%	• One of the earliest enterprises in the China's cement industry and the first A&B-share listed company in the building materials industry
3	Yunnan Cement Co., Ltd.	2008	Yunnan	10.4	10.9%	• A cement and clinker manufacturer
4	Hongshi Cement Co., Ltd.	2002	Zhejiang	7.9	8.3%	• Subsidiary of Hongshi Holding Group Co., Ltd • A large cement manufacturer
5	Anhui Conch Cement Co., Ltd.	1997	Anhui	7.6	7.9%	• A large state-owned cement and clinker manufacturer
Sub-total				55.5	58.1%	
Others				40.2	41.9%	
Total				95.7	100.0%	

- The company primarily operate in the central and northwestern parts of Yunnan province, which is the largest regional cement market in Yunnan with convenient logistics infrastructures.
- The clinker industry in Yunnan Province is concentrated, with the top five cement manufacturers accounting for 58.1% of the market share in terms of annual production capacity of the clinker in 2020.
- In 2020, the Company was the second largest cement manufacturer in Yunnan Province with annual production capacity of the clinker of 12.6 million tonnes in the clinker market, accounting for approximately 13.2% of the total market.
- For the same period, as a leading market player in the local cement market in Yunnan province, we ranked second among all cement manufacturers in terms of annual production capacity of the clinker with a total share market of 13.2%.

Source: China Cement Net, China Insights Consultancy 59


Entry barriers of cement market in China

- Major entry barriers of cement industry include production requirement, capital resource, raw material resource and regional barriers

Entry barriers		Key Analysis
Production requirements		<ul style="list-style-type: none">New entrants are subject to production requirements and environmental-friendly standards in relation to cement production processes in China. Governmental authorities have launched specific requirements in the qualifications, coverage of batching plants, production organization and management capabilities for cement manufacturers. With the increasing awareness of environmental protection issues, the government has adopted a series of environmental policies to reduce the adverse effects of the cement industry on the environment. For example, according to “Notice on further improving the normalization of cement staggering production” (W y A ũ 1 T M A) E / \$; i 6 Á) Ä < • ð * Î - : ·) [+ e = I D X) released by MIIT and MEE, all clinker production lines must carry out staggering production, while production line with the task of co-processing urban domestic garbage and toxic and hazardous waste throughout the year can be exempted.
Capital resources		<ul style="list-style-type: none">The cement industry is highly capital intensive, so the capital sourcing capability is fundamental to cement manufacturers. Cement enterprises, especially new entrants, require a substantial amount of capital to build their production facilities, purchase production equipment and develop and implement new technologies. Due to the long construction period of cement projects, a large amount of capital is also needed to maintain company's normal operation.
Raw material resources		<ul style="list-style-type: none">Cement production consumes significant amounts of raw materials and energy resources. However, in recent years, with the increasing awareness of environmental protection issues, the supply of limestone has decreased due to the shutdown of many unqualified mines by the government. All these limitations of raw materials increase the difficulty for new market players to enter the cement market. It is expected that the approvals of mining rights will continue to be tighten, and stricter environment protection measures will be gradually rolled out. The raw material resources will be increasingly scarce, resulting higher pricing power for raw material suppliers.
Regional barriers		<ul style="list-style-type: none">The cement market has high regional barriers to new entrants. Given the weight and bulky nature of cement, manufacturers prefer to locate the production facilities near the raw material resources. However, local cement enterprises have already dominated the regional market and enjoyed support from the local government, which make it hard for new entrants to overcome the regional barriers.

Key success factors of cement market in China

- Achievement of economies of scale, leading production and market layout, extension of industry chain and brand reputation are essential for remaining competitive in this market

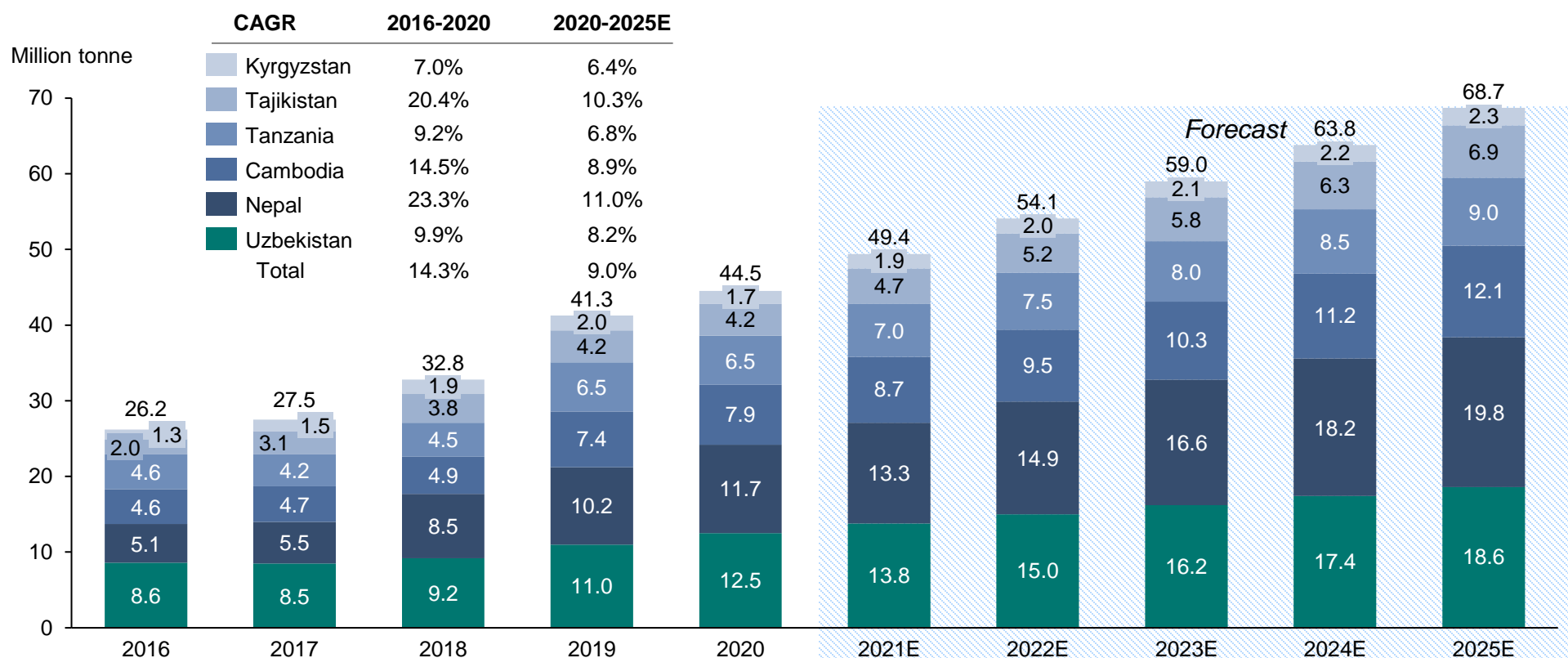
Key success factors	Key Analysis
<div>Achievement of economies of scale</div> <div></div>	<ul style="list-style-type: none">Achievement of economies of scale plays a key role for cement manufacturers in maintaining their competitiveness in the cement market. Leading players in cement market in China are all large cement producers in terms of production capacity in the region where they are located. They achieve such economies of scale through continuous technological upgrade or acquisitions. With economies of scale, cement manufacturers can obtain the cost advantage over small enterprises and be more capable of researching and developing new technologies, so that they can rapidly expand their production capacity by constructing more cement production lines and improve production efficiency in order to hold the key to success..
<div>Leading production and market layout</div> <div></div>	<ul style="list-style-type: none">Leading cement manufacturers tend to have a leading production and market layout. Their target markets are among the fastest growing economic areas in China with rapid industrialization and urbanization development. Leading players are such well positioned that they are able to capture growth opportunities in the cement and construction industry. In addition, production facilities of key market players are mainly located near the raw material resources. Considering the weight and bulky nature of cement, convenient access to resources can save a huge amount of transportation cost and improve the production efficiency of these market leaders.
<div>Extension of industry chain</div> <div></div>	<ul style="list-style-type: none">Large cement enterprises are now exploring opportunities for the extension of cement industry chain in the regions where they have business operation. Through the development of concrete, aggregates, and other cement production related business, leading cement manufacturers can leverage on the synergetic advantages of them, promote the integration of industrial development and further consolidate their core competitive advantages.
<div>Brand reputation and wide client base</div> <div></div>	<ul style="list-style-type: none">Large cement manufacturers enjoy high brand reputation in the industry. Such reputation is usually built up through high quality cement products and services and increasing market shares in the cement markets. Manufacturers with high brand reputation could accumulate loyal and stable client bases, and also could have access to receive government and policy support by conducting high-profile construction and infrastructure projects. Besides, adoption of distributor network is a common practice in China for large cement players to reach a wider retailer customer base in an effective way.

4. Analysis of the export market for major construction material market in the PRC

Production volume of cement in the selected developing countries

-The developing economy and the increasing urbanisation and industrialisation of the selected developing countries propel the demand for construction materials, with increasing production volume of cement; the production volume of the five selected developing countries reached 44.5 million tonnes in 2020

Production volume of cement, Kyrgyzstan, Tajikistan, Tanzania, Cambodia, Nepal, Uzbekistan, 2016-2025E



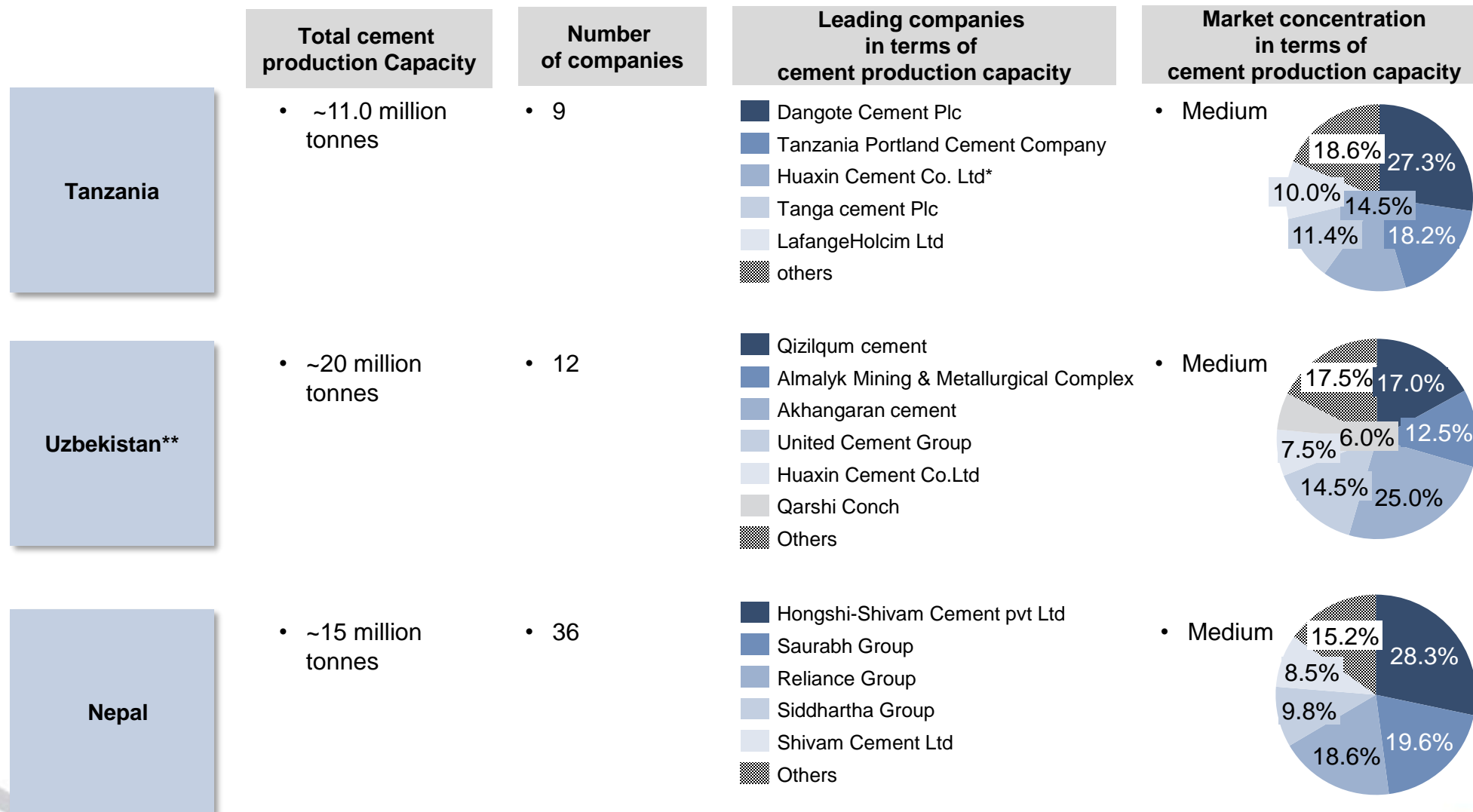
Key analysis

- Kyrgyzstan, Tajikistan, Tanzania, Cambodia, Nepal and Uzbekistan produced a total of 44.5 mt of cement in 2020. Specifically, production volume of cement in Tajikistan and Nepal experienced higher growth rate during the past few years, with a CAGR of 20.4% and 23.3% between 2016 and 2020, respectively.. In comparison, the grow rate of cement production volume in Kyrgyzstan experienced relatively lower growth rate.
- Rapidly developing economy, as well as the increasing urbanisation and industrialisation of the selected developing countries, fuel the demand growth for construction materials, especially cement. It is expected that by 2025, the total production volume of cement in Kyrgyzstan, Tajikistan, Tanzania, Cambodia, Nepal and Uzbekistan will reach 68.7 million tonnes, with a CAGR of 9.0% between 2020 and 2025.

Competitive analysis of the cement market in terms of production capacity in the selected developing countries(2/2)

- Among all the selected developing countries, Tajikistan and Kyrgyzstan have relatively high market concentration, while Nepal has lower market concentration and largest number of market players

Competitive analysis of the cement market in terms of production capacity, Tanzania, Uzbekistan, Nepal, 2020



*Note: Huaxin Cement Co. Ltd has

2020

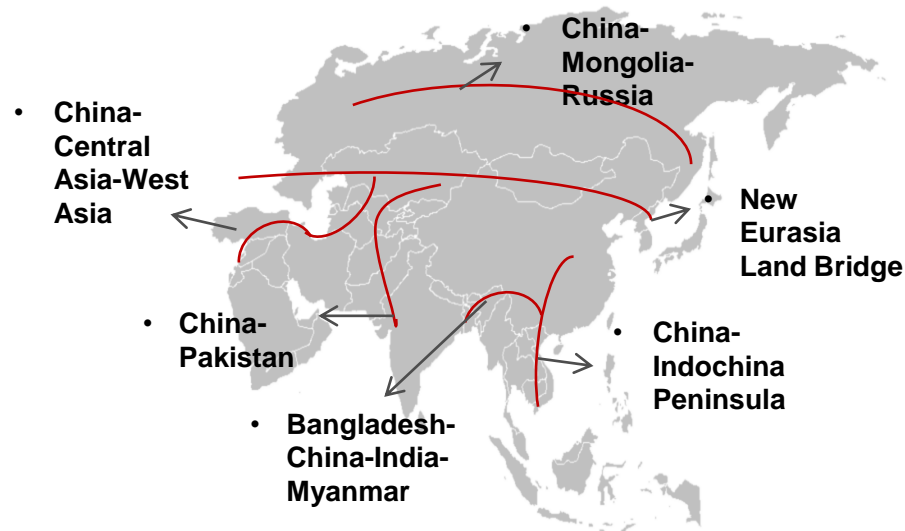
**Note: Huaxin, Qarshi Conch, UTD Cement, and Shangfeng Cement have projects in Uzbekistan between 2020 and 2021

Source: CemNet, Global Cement, China Insights Consultancy 65

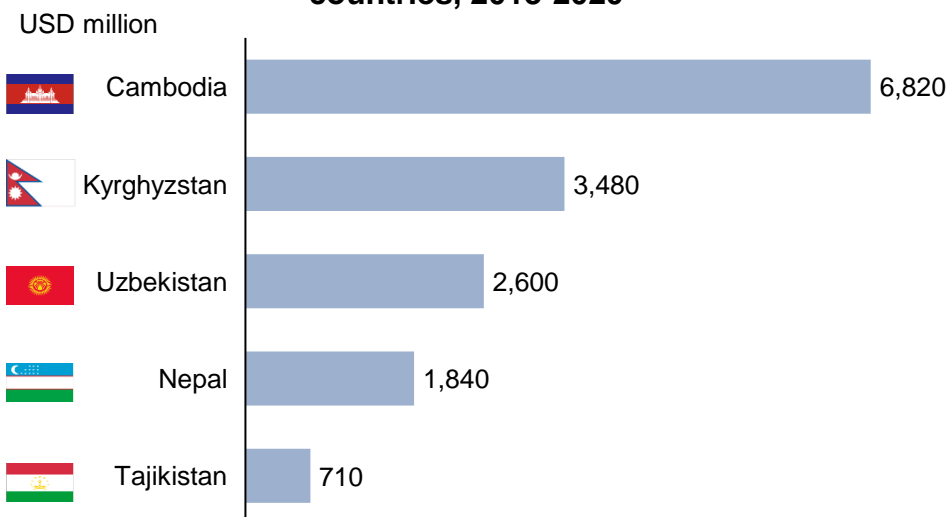
The “Belt and Road Initiative”

-The “Belt and Road Initiative” proposed to strengthen the infrastructure construction along the Belt and Road countries, which will benefit the construction materials manufacturers given that the contracts for infrastructure construction will bring the demand

The “Belt and Road Initiative”



Total contract awarded value to the selected developing countries, 2013-2020



- The “Belt and Road Initiative”, also known as the Silk Road Economic Belt and the 21st-century Maritime Silk Road, was first unveiled by President of the PRC Xi Jinping in September 2013.
- In March 2015, the National Development and Reform Commission, the Ministry of Foreign Affairs, and Ministry of Commerce of the PRC jointly issued the “Vision and Actions on Jointly construction Silk Road Economic Belt and 21st-Century Maritime Silk Road” (21与). It pointed out that on land, the Initiative will focus on jointly construction economic corridors by taking advantage of international transport routes, relying on core cities along the Belt and Road; At sea, the Initiative will focus on jointly construction smooth, secure and efficient transport routes connecting major sea ports along the Belt and Road. Besides, Central Asia is the privileged corridor for both Europe and Asia at the heart of the New Silk Roads, as the Chinese-led BRI converges with the Russia-led Eurasian Economic Union (EAEU).
- Since 2013, the total contract awarded from the PRC to Belt and Road countries exceeded USD473.9 billion. The “Belt and Road Initiative” related projects in Asia are mainly undertaken by large-scale Chinese-funded infrastructure enterprises, such as CR, China Communications Construction, and the Company. Among the selected developing countries, Cambodia has earned the largest contract awarded value since 2013, with a total value of USD6,820 million. The contracts signed with these countries in infrastructure construction will bring the demand for construction materials, and benefit the construction materials companies that have business in those countries.

Infrastructure construction projects in the selected developing countries

- Enterprises in the PRC have undertaken overseas projects along the route of the “Belt and Road Initiative”; in the future, the construction materials manufacturers in the PRC will have opportunities to undertake the construction projects in the selected developing countries with a global expansion

Reserve of infrastructure construction projects in the selected developing countries brought by the “Belt and Road Initiative”

Type	Name	Location	Investment	Schedule	Target	Content
Expressway	Phnom Penh-Sihanoukville Expressway	Cambodia	Approximately USD2.0 billion	Started from 2019	190 km in length	Funded by the China Road and Bridge Corporation, the new expressway will act as an efficient link between the capital city Phnom Penh and the coastal city Sihanoukville
	Birgunj-Kathmandu and Rasuwagadhi-Kathmandu Railway	Nepal, India, the PRC	Approximately USD7-8 billion	Preliminary preparation	287 km in length	The project aims to connect Kathmandu to both India and China by railways
Railway	Xinjiang- Persian Gulf Railway	the PRC, Kyrgyzstan, Tajikistan	Approximately USD2.5 billion	Preliminary preparation	150 km in length	Railway from Xinjiang to the Persian Gulf would require the construction of a rather long section through Tajikistan to connect the Vakhdat station east of Dushanbe with Karomik at the Tajik-Kyrgyz border
	Dushanbe-Uzbekistan Border Road Improvement	Tajikistan	Approximately USD109.5 million	Started from 2016	5 km in length	The project is part of a stretch of road connecting Dushanbe to the border with Uzbekistan
Road	Alternative North-South road	Kyrgyzstan	Approximately USD297.0 million	Started from 2016	Include a tunnel that is 0.7 km long and two bridges	Funded by Exim Bank of China and the Government of the PRC, an additional uninterrupted transport route will be established between the north and south of the country
	New International Airport of Siem Reap	Cambodia	Approximately USD880.0 million	Started from 2020	Covering 700 hectares	The airport is expected to receive 7 million passengers annually, once the first phase of the new airport is completed
Airport	New International Airport of Phnom Penh	Cambodia	Approximately USD1.5 billion	Started from 2019	Covering 2600 hectares	The airport will be able to accommodate 27 million passengers by 2030, and up to 30 million by 2050
	Metropolitan Ring around Tashkent City	Uzbekistan	Approximately USD60.5 million	Started from 2017	52.1 km in length	Provide a new, and fourth, metro line in Sergeli district, where more than 152,000 people live
Urban construction and development						

Drivers of construction materials market in the selected developing countries

-The drivers for entering the construction materials market of the selected developing countries include the growing demand for infrastructure construction, the promotion of the “Belt and Road Initiative”, technology and supply capacity advantages, and the stable cooperation relationship with Chinese-funded large-scale infrastructure enterprises

Drivers	Description
1 Growing demand for infrastructure construction in Asia	<ul style="list-style-type: none"> The infrastructure construction in the selected developing countries is relatively backward, especially in Tajikistan, Kyrgyzstan, Uzbekistan and Cambodia, leaving a large space for further enhancement. As a result, the Governments of these Asian countries have successively proposed short-term and long-term infrastructure development plans to set development goals for their infrastructure construction. For example, the Government of Cambodia has proposed that in the next few years, Phnom Penh-Sihanoukville Expressway, new International Airport of Siem Reap and new International Airport of Phnom Penh will be established to improve the infrastructure in Cambodia. Therefore, it is expected that in the next few years, the selected developing countries will accelerate the development of road construction, water conservancy construction, housing construction, urban construction, etc. The downstream ends will further stimulate the demand for construction materials and drive the development of construction materials industry in the selected developing countries.
2 Promotion of the “Belt and Road Initiative”	<ul style="list-style-type: none"> Since 2014, with the gradual advancement of the “Belt and Road Initiative”, many Chinese-funded enterprises have entered into the Asian market, and many large-scale construction projects have been carried out in the infrastructure field. By the end of 2019, the number of overseas EPC projects of Chinese-funded enterprises has exceeded 3,000 in the countries along the “Belt and Road Initiative”. Chinese-funded enterprises have abundant reserves in the selected developing countries, including highway construction, railway construction, water conservancy construction, urban construction and development, and energy projects. It is expected that with the continuous implementation of the “Belt and Road Initiative” related projects, the local demand for construction materials in the selected developing countries will maintain an upward trend in the next few years.
3 Technology and supply capacity advantages of the PRC construction materials enterprises	<ul style="list-style-type: none"> Most of construction materials enterprises participating in the “Belt and Road Initiative” infrastructure project in Asia are leaders in the domestic construction materials industry of the PRC. These enterprises have rich experience in the construction materials market, with outstanding product quality and advanced production technology. Therefore, Chinese-funded construction materials manufacturers obtain great advantages in production technology and product quality compared with local manufacturers after entering the construction materials market of the selected developing countries. Meanwhile, rich experiences in participating in long-term large-scale projects of the PRC construction materials manufacturers enable them to effectively plan the production capacity and production line layout in large-scale projects in Asia, achieving long-term stable supply of construction materials.
4 Stable cooperation relationship with Chinese-funded large-scale infrastructure enterprises	<ul style="list-style-type: none"> The “Belt and Road Initiative” related projects in the selected developing countries are mainly undertaken by large-scale Chinese-funded infrastructure enterprises. The leading construction materials manufacturers have established stable long-term cooperation relationships with those large-scale infrastructure enterprises, and have accumulated cooperation experiences in terms of type of product, supply quality, capacity coordination, concrete transportation, etc. Therefore, these domestic construction materials manufacturers are able to maintain stable cooperation with the large-scale Chinese-funded infrastructure enterprises in the supply of construction materials in the “Belt and Road Initiative” related projects.

Future Trends and challenges of construction materials industry in the selected developing countries

- The key future trends and challenges of construction materials industry in Cambodia, Nepal and Central Asian countries include political stasis and security issues, personnel and equipment management and integration trend in Central Asia

Trends and challenges

Key Analysis

1

Political stasis
and security
issues



- The Central Asian countries face common security challenges from crime, corruption, and terrorism for a long time. In 2018, Kyrgyzstan saw corruption trials against senior officials regarding Chinese energy contracts and the end of exemption from prosecution for former presidents. The uncertainty of political stasis in Central Asia may negatively affect the economy, foreign direct investment as well as the construction materials industry in these countries. However, policies and regulations are rolling out by the government in these countries to eliminate political issues, which will alleviate the influence to the construction materials industry and foreign investment.

2

Personnel
and
equipment
management



- Due to the limited development of the cement industry in the selected developing countries, It is necessary for the new Chinese entrants to send a sufficient number of professional engineers from the PRC to fill key positions, in order to ensure the overall quality of the project. Meanwhile, they can recruit local workers for basic positions, but need to do targeted training for them to meet project quality requirements.
- The key equipment for the production, including the maintenance equipment and parts used for maintenance, may need to be deployed by road or by sea from the PRC, which brings a certain delay in deployment time, and challenges the project schedule and cost of construction materials manufacturers.

3

Integration
trend in Central
Asia



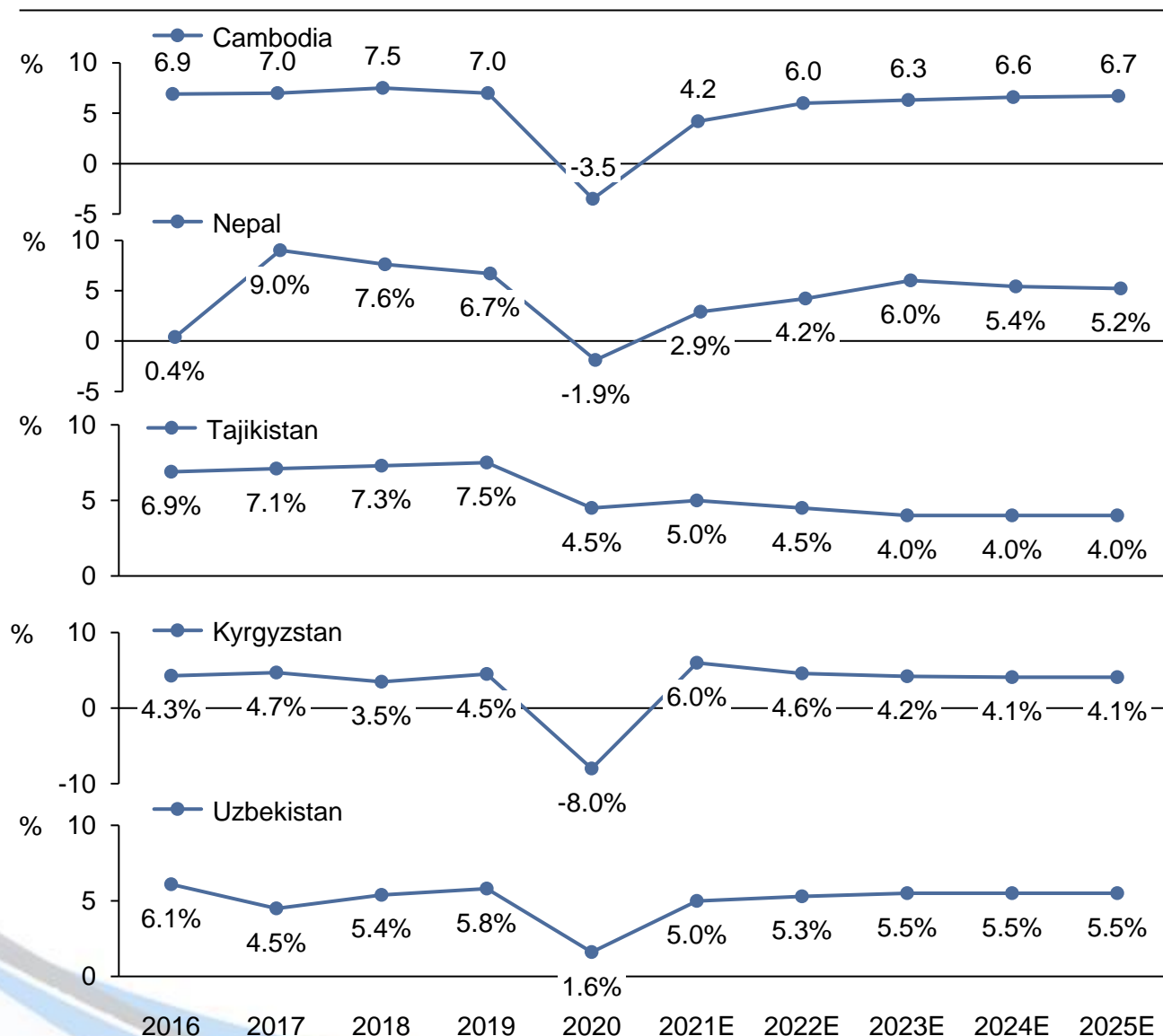
- Central Asia countries are seeking regionalism and integration for a long time. In November 2019, the 'Second Consultative Meeting of Central Asian Leaders' took place in Tashkent, Uzbekistan. A wide range of issues and suggestions about regional development including facilitating bilateral and multifaceted transactions were discussed. Besides, Russia and China pursued the 'Eurasian Economic Union' and the 'Belt and Road Initiative' (BRI) respectively to expedite the regional economic integration process. The regional integration and corporation may boost the import and export of Central Asian Countries as well as the economy and infrastructure construction, resulting a higher demand for construction materials.

5. Macroeconomic and social development of the selected developing countries

Real GDP growth rate in the selected developing countries

-The selected developing countries have experienced high real GDP growth rate over the past few years, except for 2020 due to the impact of the coronavirus(COVID-19) pandemic ; the “Belt and Road Initiative” will further enhance the infrastructure construction, providing the impetus for sustainable economic development

Real GDP growth rate, Cambodia, Nepal, Tajikistan, Kyrgyzstan, Uzbekistan, 2016-2025E



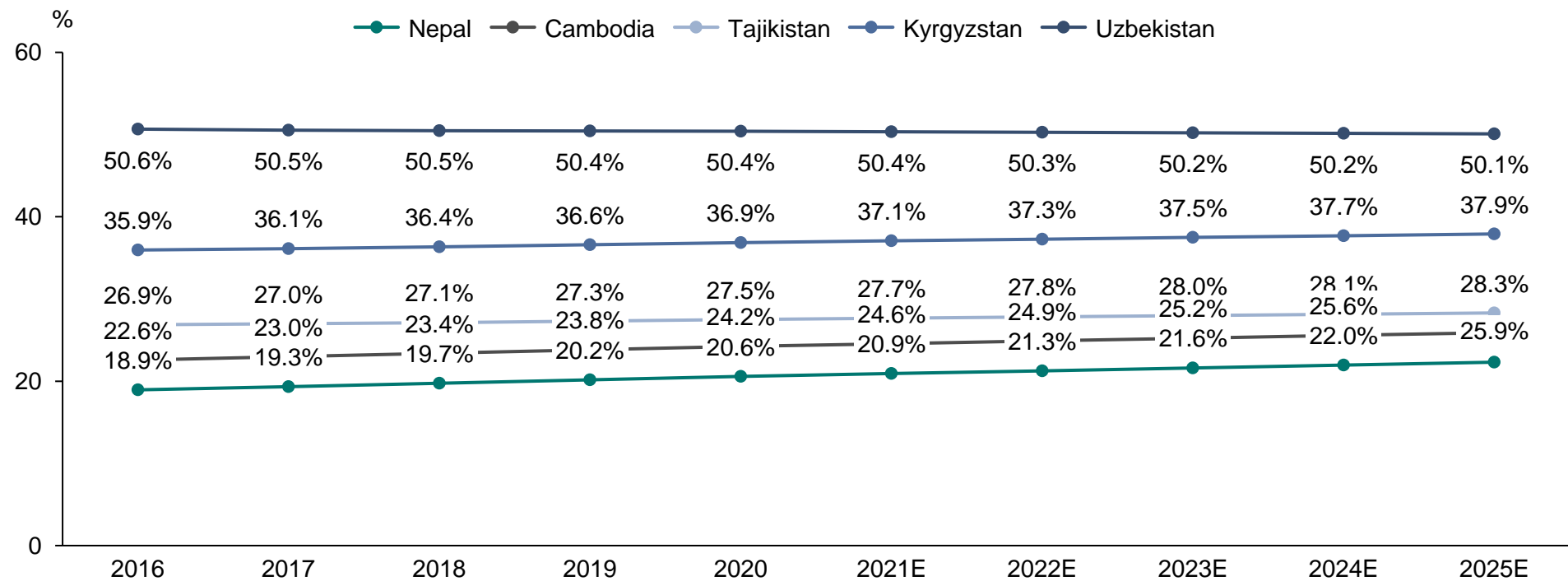
Key analysis

- Kyrgyzstan, Tajikistan, and Uzbekistan are located in Central Asia, a region that stretches from the Caspian Sea in the west to China and Mongolia in the east, and from Afghanistan and Iran in the south to Russia in the north. Despite that Central Asian countries have experienced high rates of economic growth in recent years, their economies still have huge development space compare to other developing countries.
- Central Asia has historically been closely tied to its nomadic peoples and the Silk Road. In 2013, The PRC has put forward the “Belt and Road Initiative” and carried out in-depth cooperation with Central Asian countries, which led the PRC one of the key economic players in Central Asia.
- Cambodia and Nepal are located in Southeast and South Asia. The large amount of foreign investment through various economic policies provides the impetus for the economic development of the two countries.
- The PRC has invested substantially in infrastructure in the selected developing countries, including expressways, railways, airports, and urban construction development, injecting vitality into the economy of the selected developing countries.
- In view of the severe global economic impact of the coronavirus(COVID-19) pandemic, the real GDP growth rates of the selected developing countries fell in 2020 and are expected pick up in 2021, subject to the post-pandemic global economic recovery.

Urbanisation rate in the selected developing countries

-With the improvement of economy, the urbanisation rate in the selected developing countries apart from Uzbekistan have gradually increased in recent years and still has a large space for development in the future

Urbanisation rate, Cambodia, Nepal, Tajikistan, Kyrgyzstan, Uzbekistan, 2016-2025E



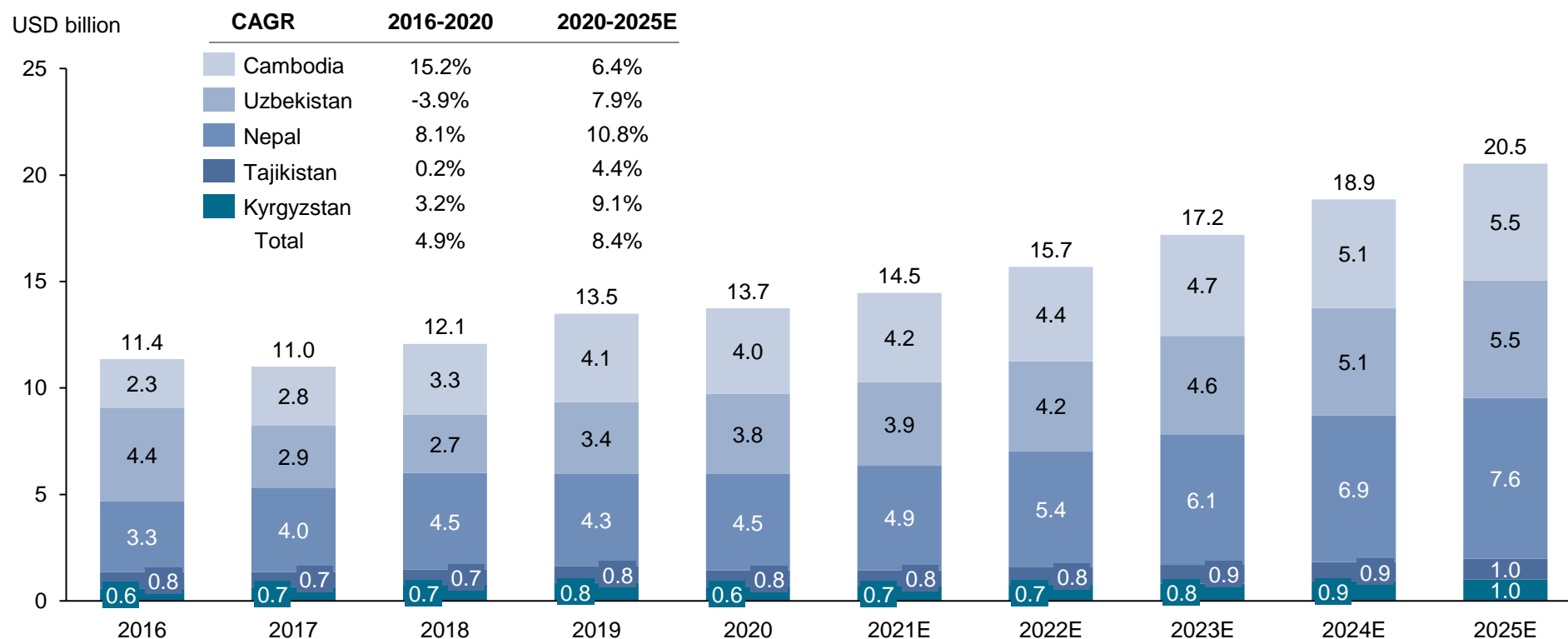
Key analysis

- The urbanisation rate in Nepal, Cambodia, Tajikistan, and Kyrgyzstan are relatively lower and increased steadily between 2016 and 2020. In 2020, the urbanisation rate in Nepal, Cambodia, Tajikistan, and Kyrgyzstan are 20.6%, 24.2%, 27.5%, and 36.9%, respectively. It is expected that with the continuous advancement of infrastructure construction, the urbanisation of Nepal, Cambodia, Tajikistan, and Kyrgyzstan will continue growing in the future.
- The urbanisation rate in Uzbekistan is the highest, compared to the other four countries, with a slight decrease over the past few years. The slowly “de-urbanizing” trend was mainly driven by a faster growth rate of its rural population. However, most of its cities still experienced fast growth over the past few years, and the urban construction demand is expected to continue to grow.
- Compared with other developed regions, the urbanization rate in the selected developing countries is still relatively low. The PRC has put forward the “Belt and Road Initiative” and invested substantially in infrastructure construction in Asian countries. In 2020, there are several infrastructure projects including railways and expressways under construction. Completed infrastructure will help to further enhance the economic development and accelerate urbanisation rate in the selected developing countries.

Nominal GDP of the construction industry in the selected developing countries

- The construction industry in the selected developing countries is expected to continue to expand with a high grow rate driven by the urbanisation construction and the “Belt and Road Initiative”

Nominal GDP of the construction industry, Cambodia, Nepal, Tajikistan, Kyrgyzstan, Uzbekistan, 2016-2025E



Key analysis

- Among the selected developing countries, the construction industry Nepal, Cambodia, and Uzbekistan are relatively developed, with the nominal GDP of the construction industry of USD4.5 billion, USD4.0 billion, and USD3.8 billion in 2020, respectively. The nominal GDP of the construction industry in Uzbekistan experienced a negative growth rate in USD terms over the past few years, mainly as a result of the high inflation rate in Uzbekistan. The nominal GDP of the construction industry in Tajikistan and Kyrgyzstan are relatively lower given that the economy in the two countries are relatively undeveloped.
- In recent years, the urbanisation construction of Uzbekistan and Kyrgyzstan has been continuously advancing with the booming construction industry. The nominal GDP of the construction industry in Uzbekistan and Kyrgyzstan are expected to reach USD5.5 billion and USD1.0 billion, with a CAGR of 7.9% and 9.1% respectively.

Thank you!