Analysis of Chinese international contractors and designers in 2020

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Abstract: Based on the list of top 250 international contractors and top 225 international designers released by Engineering News Record (ENR), this paper detailed the latest statistical analysis and comparison of the top 250 international contractors and the top 225 international designers from the three aspects of ranking, field and region. The seventy-four Chinese international contractors listed on the top 250 in 2020 have international revenues of US$120.01 billion, a slight increase of 0.87% over last year; the overseas design amount of the 24 Chinese designers on the top 225 list in 2020 was US $4.294 billion, a decrease of 15.92% over last year.

1. Introduction
Facing the turbulent international environment and fierce market competition, "the belt and road initiatives" has become an important opportunity for Chinese enterprises "go global" to participate in the international market[1]. Due to the worldwide popularity of covid-19 and the outbreak of oil price war between Saudi Arabia and Russia[2], the international engineering market is facing unprecedented difficulties and challenges. In the post epidemic era, the sustainable development of international engineering market and how Chinese international engineering enterprises meet the challenges are all issues worthy of attention. The analysis of the current situation of international engineering market will help scholars or enterprises to better understand the development and changes of international engineering market, and provide a reference for the internationalization strategy of Chinese enterprises. According to the latest data released by ENR and the data of previous years, the following contents will make a comparative analysis of Chinese enterprises listed on the top 250 and top 225. As shown in Figure 1, the performance of Chinese engineering contractors on the list has maintained a consistent momentum of steady growth, and the competitiveness of traditionally advantageous regions and industries has been consolidated[3]. The total international business income of Chinese companies on the list of top 250 international contractors in 2019 will reach US $120.01 billion. However, it is not easy to achieve growth under the condition of shrinking the total scale and slightly reducing the number of enterprises on the list. The total revenue accounts for 25.4% of the total overseas revenue of the top 250 international contractors, accounting for 1% higher than that of last year. Affected by the turbulent international environment, the total international turnover of Chinese designers decreased significantly in 2019, from US $5.107 billion to US $4.294 billion, and its proportion in top 225's total business also declined, from 7.10% in 2018 to 5.94% in 2019. Only one third of Chinese enterprises achieved growth in international revenue. Since 2016, the growth rate has continued to decline. In 2019, the international income of Chinese designers showed negative growth for the first time, and nearly 70% of enterprises' international revenue declined. However, the situation that the design capability of Chinese design companies is not recognized is changing. The turnover of Chinese international designers in the international market in
2019 is nearly twice that of 2012, and the scale and capacity of Chinese design companies are constantly improving.

![Figure 1 international revenue 2012-2019](image)

### 2. Analysis by ranking

#### 2.1 Analysis of Chinese international contractors by ranking

A total of 74 Chinese contractors were shortlisted for the 2020 top 250 International Contractors, two fewer than last year. The ranking changes of the listed companies and their revenue in the international contracting market are shown in Table 1. There are still three finalists in the top ten of the top 250 international contractors, namely China Communications Construction Grp.Ltd., which ranks 4th, Power Construction Corp.of China, which ranks 7th, and China State Construction Engineering Corp., which ranks 8th. Compared with last year, among the 74 companies, 37 have risen in the rankings, accounting for half of the total number of companies on the list in China. There are eight new companies on the list this year. The biggest rise in the ranking is the Beijing Urban Construction Group Co.Ltd., which is ranked 105th in advance 49. Among the 27 companies that dropped in the ranking, Xpcc Construction & Eng’G (Group) CO., had the largest decline, with a decrease of 59 compared with the previous year.

| FIRM                                           | RANK | 2019 REVENUE $ MIL. |
|------------------------------------------------|------|---------------------|
| 1 CHINA COMMUNICATIONS CONSTRUCTION GRP. LTD.  | 4↓   | 3 23303.8           |
| 2 POWER CONSTRUCTION CORP. OF CHINA            | 7→   | 9 14715.9           |
| 3 CHINA STATE CONSTRUCTION ENGINEERING CORP.   | 8↑   | 14 14143.3          |
| 4 CHINA RAILWAY CONSTRUCTION CORP. LTD.        | 12↑  | 14 8205             |
| 5 CHINA RAILWAY GROUP LTD.                     | 13†  | 18 6571.7           |
| 6 CHINA ENERGY ENGINEERING CORP. LTD.          | 15†  | 23 5325.2           |
| 7 CHINA NATIONAL CHEMICAL ENG’G GROUP CORP. LTD.| 22†  | 29 4478.3           |
| 8 CHINA NATIONAL MACHINERY INDUSTRY CORP.     | 25↑  | 19 4313.5           |
| 9 CHINA PETROLEUM ENGINEERING CO. LTD.        | 34↑  | 43 3337.1           |
| 10 CHINA METALLURGICAL GROUP CORP.            | 44↑  | 44 2851.2           |
| 11 SINOMA INTERNATIONAL ENGINEERING CO. LTD.   | 54↑  | 51 1903.2           |
| 12 QINGJIANG GROUP CO. LTD.                   | 58↑  | 56 1745.2           |
| 13 CITIC CONSTRUCTION CO. LTD.                 | 62↑  | 54 1552.8           |
| 14 CHINA ZHONGYUAN ENGINEERING CORP.          | 63†  | 75 1525.5           |
| 15 SINOPEC ENGINEERING (GROUP) CO. LTD.        | 70↑  | 65 1407.5           |
| 16 CHINA GENERAL TECHNOLOGY (GROUP) HOLDING CO.| 73‡  | 74 1246.8           |
| 17 CHINA JIANGXI INT’L ECON. & TECH. COOP. CO.| 81↑  | 93 1016.1           |
| 18 ZHEJIANG CONSTRUCTION INVEST. GROUP CO., Hangzhou, China | 82‡  | 89 999.8           |
| 19 ZHONGMEI ENGINEERING GROUP LTD.            | 85†  | 99 987.8           |
Table 2 shows the list of Chinese companies that are shortlisted for top 225 international designers in 2020. A total of 24 Chinese companies were shortlisted, and the number has remained unchanged for four consecutive years. The ranking of Chinese designers is constantly rising. Compared with 2019, five companies have risen in the rankings, namely, Power Construction Corp. of China, China Petroleum Engineering Co. Ltd., China Int'l Water & Electric Corp. (CWE), China Metallurgical Group Corp., and China Triumph Int'l Engineering Co. Ltd. Power Construction Corp. of China, which ranked first, has made great progress again, jumping from 16th to 12th, and China Metallurgical Group Corp. has advanced 61 places, which is a great improvement. Seventeen companies dropped in the rankings, and two new companies were added to the list.
3. Analysis by market revenue

3.1 Analysis of Chinese international contractors by market revenue

ENR classifies the construction industry into ten specialized fields: general building, manufacturing, power, water supply, sewerage/waste, industry, petroleum, transportation, hazardous waste, and telecommunications\(^4\). It can be seen from Table 3 that the main businesses of Chinese contractors are concentrated in the fields of transportation, general building, and power. The three areas accounted for 34.16%, 26.02%, and 19.78% of total operating income respectively, accounting for 79.96% of total operating income. Industry/petroleum accounted for only 9.99%, and the business field began to develop from the industrial/petroleum fields to transportation, power and other fields. After years of development, China has made great achievements in foreign contracting projects, and its business scope has gradually diversified. The international business diversification levels showed a clear positive correlation with sales revenue\(^5\).

In construction, many large firms are diversified, and their diversification is recognized as a corporate strategy for growth and risk management\(^6\). As shown in Table 4, in addition to the telecommunications industry, in the other eight major business areas, Chinese companies all occupy a certain position in the lists of the top 10 firms by market revenue. Among the top 10 transportation industries, China Communications Construction Grp.Ltd. ranked first; among the top 10 housing construction industries, China State Construction Engineering Corp. still ranks third; among the top 10 industrial/petroleum industries, China Petroleum Engineering Co. Ltd. ranked fifth; among the top 10 power companies, Power Construction Corp. of China and China Energy Construction Engineering Corp. Ltd., which ranked first, third, and fifth, respectively, their rankings remain the same as last year. Group Co., Ltd., China National Machinery Industry Corporation, and China Zhongyuan Engineering Corp., Ltd., which rose from 9th to 6th; among the top 10 industrial sectors, China Metallurgical Group Corp. won the runner-up; Among the top 10 in the water supply industry, Power Construction Corp.of China ranked third; Among the top 10 in the manufacturing industry, Sinoma International Engineering Co., Ltd. rose from last year’s third place to win the championship; and among the top 10 in the sewer/waste industry, China Communications Construction Grp.Ltd. and China Wuyi Co.Ltd., are both new to the list, ranking third and eighth respectively.
### Tabel 3 Market Revenue in 2019

| Market           | Contractors     | Designers     |
|------------------|-----------------|---------------|
|                  | Int’l revenue   | Per.          | Int’l revenue   | Per.          |
|                  | $ mil.          |               | $ mil.          |               |
| General building | 31220.8         | 26.02%        | 136.2           | 3.17%         |
| Manufacturing    | 2803.6          | 2.34%         | 22.8            | 0.53%         |
| Power            | 23739.1         | 19.78%        | 3024.9          | 70.45%        |
| Water supply     | 3879.0          | 3.23%         | 54.1            | 1.26%         |
| Sewer / waste    | 1459.3          | 1.22%         | 5.5             | 0.13%         |
| Indus. / petroleum | 11985.1       | 9.99%         | 199.3           | 4.64%         |
| Transportation   | 40999.0         | 34.16%        | 660.8           | 15.39%        |
| Hazardous waste  | 11.3            | 0.01%         | 8.8             | 0.21%         |
| Telecom          | 39.5            | 0.03%         | 90.8            | 2.11%         |
| Total            | 120005.9        |               | 4294            |               |

3.2 Analysis of Chinese international designers by market revenue

In 2019, the power field has become an important segment of the overseas business of Chinese design companies. The total international revenue of the industry reached 3,025 million US dollars, accounting for 70.45%; in the power field, Chinese companies have obvious advantages, Power Construction Corp. of China and China Energy Construction Engineering Corp. Ltd. and China Petroleum Engineering Co. Ltd. entered the top ten in this field. Power Construction Corp. of China and Energy Construction Engineering Corp. Ltd. have been among the top two in the power industry for three consecutive years. Power Construction Corp. of China lost the top spot for six consecutive years in 2020. China Energy Construction Engineering Corp. Ltd. surpassed Power Construction Corp. of China grabbed the top spot. As shown in Table 3, transportation ranked second, accounting for 15.39%. Industry/petroleum ranks third with 4.64%. Revenues in traditionally advantageous fields such as transportation, industry/petroleum, and housing construction have declined compared with last year, with housing construction dropping the most. The overseas business layout of Chinese design companies is relatively diversified. Only a few companies are involved in water supply, manufacturing, sewer / waste, telecommunications and other fields, and their anti-risk capabilities are obviously insufficient. While maintaining their original competitive advantages, Chinese design companies must also integrate existing resources, strengthen R&D investment, and improve innovation capabilities to enhance their competitiveness in other business areas.

### Tabel 4 Chinese Contractors in The Top 10 Market Revenue

| GENERAL BUILDING | RANK | FIRM                              |
|------------------|------|-----------------------------------|
| 3                | CHINA STATE CONSTRUCTION ENGINEERING CORP. LTD. |
| 5                | CHINA NATIONAL CHEMICAL ENG’G GROUP CORP. LTD. |
| 6                | CHINA ZHONGYUAN ENGINEERING CORP. |

| POWER | RANK | FIRM                              |
|-------|------|-----------------------------------|
| 1     | POWER CONSTRUCTION CORP. OF CHINA |
| 3     | CHINA ENERGY ENGINEERING CORP. LTD. |

| MANUFACTURING | RANK | FIRM                              |
|---------------|------|-----------------------------------|
| 2             | CHINA METALLURGICAL GROUP CORP.     |
| 5             | CHINA NATIONAL CHEMICAL ENG’G GROUP CORP. LTD. |
| 10            | CHINA NONFERROUS METAL IND. FOREIGN ENG’G |

| WATER | RANK | FIRM                              |
|-------|------|-----------------------------------|
| 1     | SINOMA INTERNATIONAL ENGINEERING CO. LTD. |

| TRANSPORTATION | RANK | FIRM                              |
|----------------|------|-----------------------------------|
| 3              | POWER CONSTRUCTION CORP. OF CHINA |
| 6              | CHINA COMMUNICATIONS CONSTR. GROUP LTD. |
4. Analysis of regional market composition

4.1 Analysis of Chinese international contractors by regional distribution

According to the two indicators of the revenue share of each region and the market share of Chinese contractors in each region, the regional distribution of the Chinese contractors listed in the Top 250 International Contractors in 2020 is analyzed. The specific situation is shown in Table 5. The operating income of Chinese contractors in 2019 mainly comes from the three regions of Asia, Africa and the Middle East. The three together accounted for 88.35% of the total international income of Chinese international contractors, of which Asia accounted for 45.24%, Africa accounted for 28.47%, The Middle East accounted for 14.64%. From the perspective of market share, Chinese contractors accounted for more than 50% of the African market, which is the largest market share among the seven regions, and their market share in Europe, the United States and Canada does not exceed 5%.

### Table 5: Regional Revenue in 2019

| Region | Int'l Revnue $Mil | Turnover % | Market Share % | Increase % | Int'l Revnue $Mil | Turnover % | Market Share % | Increase % |
|--------|------------------|------------|----------------|------------|------------------|------------|----------------|------------|
| ME     | 17568.8          | 14.64      | 24.7           | 2.48       | 385.2            | 8.97       | 4.1            | -44.96     |
| AS/AU  | 54284.9          | 45.24      | 43.4           | 4.42       | 2783.1           | 64.81      | 17.3           | -9.09      |
| AF     | 34167.9          | 28.47      | 61.9           | -6.56      | 421.1            | 9.81       | 13.1           | -29.82     |
| EU     | 4885.0           | 4.07       | 4.6            | 15.24      | 333.4            | 7.76       | 1.8            | 21.15      |
| USA    | 2268.4           | 1.89       | 3.2            | 33.34      | 110.4            | 2.57       | 0.7            | -57.65     |
| CA     | 249.7            | 0.21       | 1.5            | 161.47     | 0.9              | 0.02       | 0.0            | 200.0      |
| LA/CN  | 6340.0           | 5.28       | 23.7           | -12.35     | 260.0            | 6.05       | 7.0            | 24.1       |

Among the top 10 regional markets, Chinese companies still fail to occupy a large market share in the European, American and Canadian regional markets, but have obvious advantages in the other four regional markets. It can be seen from Table 6 that among the top 10 Asian/Australian markets, there are four Chinese companies, and China Communications Construction Group Co., Ltd. still ranks first; among the top 10 in the Middle East, there are 3 Chinese contractors. In Africa, the competitiveness of Chinese companies is strong and well maintained. Six Chinese companies have entered the top 10, and the top five are all Chinese contractors, namely China Communications Construction Group Co., Ltd., China Power Construction Group Co., Ltd., China Railway Engineering Group Co., Ltd., China Railway Construction Co., Ltd., and China State Construction Corporation, China National Machinery Industry Corporation ranked eighth; among the top 10 in the Latin American/Caribbean market, China Communications Construction Group Co., Ltd. ranked second, China Railway Construction Co., Ltd. ranks sixth in newcomers, while China Power Construction Group ranks ninth.

### Table 6: Chinese Contractors in The Top 10 Regional Revenue

| Rank | Firm                          | Rank | Firm                          |
|------|-------------------------------|------|-------------------------------|
| 1    | CHINA COMMUNICATIONS CONSTRUCTION | 1    | CHINA COMMUNICATIONS CONSTRUCTION |
### 4.2 Analysis of Chinese international designers by regional distribution

It can be seen from Table 5 that the market of Chinese designers is mainly concentrated in Asia. In 2019, the revenue of Chinese designers in the Asian market accounted for 64.81% of the total overseas revenue of Chinese designers, but they did not perform well in the European and American markets. International design revenues in the United States, the Middle East and Africa have all fallen sharply, down 57.65%, 44.96%, and 29.82% respectively. The market share in Europe, the United States and Canada is less than 2%. Due to economic nationalism, the international design revenue of Chinese designers in the United States has fallen from US$307.5 million in 2017 to US$110.4 million in 2019. It can be seen that although the design capabilities of Chinese design companies are constantly increasing, the market area is narrow. The market of Chinese international designers is mainly concentrated in Asia, followed by Africa and the Middle East. Although Chinese designers have set foot in Europe and the United States where the market is mature and complete, it is still difficult to occupy a portion of the market share. The share of Chinese international designers in the international design market is uneven.

### 5. Conclusion

Driven by "go global" strategies, Chinese companies are more competitive in the international market. In 2019, Chinese companies have made progress in the international engineering market. In 2019, the total international contracting revenue of Chinese contractors was US$120.01 billion, accounting for 25.4% of the total turnover of 250 international contractors, an increase of 0.87% over last year. The total international design turnover of Chinese designers was US$4.294 billion, which accounted for 5.94% of the total turnover of the top 225 international designers. China has seventy four companies shortlisted in the top 250 international contractors, surpassing the United States and European countries in number; in the ranking of the top 225 international designers, China has 24 companies shortlisted. An objective analysis of the top 250 international contractors and 225 top international designers of Chinese companies, summarizing the laws and adjusting their internationalization strategies, will help Chinese contractors and designers continue to improve and develop gradually. The open international market environment and free competition system are conducive to China's engineering contracting companies and design companies to enter a healthy development process. The entire international engineering market is sluggish. This is both a hindrance and an opportunity. Chinese companies should work harder to improve their overall level and international competitiveness, and achieve surpassing.

The impact of the new crown epidemic on the global economy will gradually become apparent in the

| Rank | Firm                                      |
|------|-------------------------------------------|
| 4    | CONSTRUCTION GROUP LTD.                   |
| 5    | POWER CONSTRUCTION CORP. OF CHINA         |
| 8    | CHINA RAILWAY GROUP LTD.                  |
| 2    | POWER CONSTRUCTION CORP. OF CHINA         |
| 3    | CHINA RAILWAY CONSTRUCTION CORP. LTD.     |
| 4    | CHINA RAILWAY CONSTRUCTION CORP. LTD.     |
| 5    | CHINA STATE CONSTRUCTION ENGINEERING CORP. LTD. |
| 8    | CHINA NATIONAL MACHINERY INDUSTRY CORP.  |
| 6    | POWER CONSTRUCTION CORP. OF CHINA         |
| 7    | CHINA STATE CONSTRUCTION ENGINEERING CORP. LTD. |
| 8    | CHINA ENERGY ENGINEERING CORP. LTD.      |
| 9    | POWER CONSTRUCTION CORP. OF CHINA         |

| Rank | Firm                                      |
|------|-------------------------------------------|
| 1    | CHINA STATE CONSTRUCTION ENGINEERING CORP. LTD. |
| 2    | CHINA RAILWAY GROUP LTD.                  |
| 3    | CHINA RAILWAY CONSTRUCTION CORP. LTD.     |
| 4    | CHINA RAILWAY CONSTRUCTION CORP. LTD.     |
| 5    | CHINA STATE CONSTRUCTION ENGINEERING CORP. LTD. |
| 8    | CHINA NATIONAL MACHINERY INDUSTRY CORP.  |
next few years. Countries will try their best to reduce investment in overseas markets and concentrate their main business transactions at home. Therefore, income in the international engineering market will grow slowly or even negatively. In order to minimize the economic impact of the new crown epidemic on countries, in the post-epidemic era, China should improve and expand infrastructure construction to drive industrial development; increasing employment opportunities and expanding domestic demand are effective actions to reduce risks in the construction industry\cite{7}.

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