Hitachi Research Institute Report

Overseas Advancement of Chinese Corporations Focusing on Infrastructure Export

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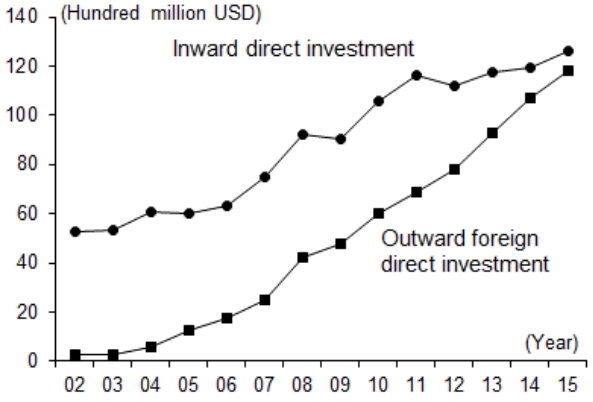
China's "Go Global" strategy, which started in 1999 to promote the overseas advancement of Chinese corporations, has reached a new phase targeting the reduction of excessive domestic production capacity and the improvement of Chinese enterprises' technological capability. This situation is apparent from the acceleration in the overseas advancement of Chinese corporations beginning with high-speed railways and nuclear power generation and the increase in influence of Chinese enterprises on the global market. In the future, Chinese companies will be important for Japanese companies not only as customers and competitors as in the past but also as partners. The opportunity for joint work (collaboration) between Japanese and Chinese companies will increase.

1. Continuous Significant Expansion of Outward Foreign Direct Investment

Among China's direct investment, inward direct investment has continued to significantly exceed outward foreign direct investment even after entering the 2000's (Fig. 1). However, outward foreign direct investment has been continuously and dramatically increasing since around 2005 to even after the Lehman crash in 2008. Outward foreign direct investment excluding the financial sector increased by 73.8% from 2004 to 2008 and continuous high growth of 16.4% has been seen even after 2010. Outward foreign direct investment is about to exceed inward direct investment (Fig. 1). According to statistics (flow) by China's Ministry of Commerce, inward direct investment excluding the financial sector was 119.6 billion dollars in 2014 and outward foreign direct investment was 107.2 billion dollars (the same Ministry of Commerce announced that China's outward foreign direct investment had reached the 140 billion dollar level if the reinvestment amount in third countries and regions by Chinese corporations outside of China is added). Both outward foreign direct investment and inward direct investment reached record-setting amounts. For 2015, while inward direct investment excluding the financial sector was 126.3 billion dollars, outward foreign direct investment caught up and ended at 118 billion dollars.

Even on a global basis the scale of China's outward foreign direct investment is close to the top. According to a ranking of world outward foreign direct investment (flow) by regions and countries (2014) released by UNCTAD (United Nations Conference on Trade and Development), the U.S. is at the top with 336.9 billion dollars of outward foreign direct investment. Hong Kong ranked second due to its outward foreign direct investment of 142.7 billion dollars. China was in third with outward foreign direct investment of 116 billion dollars. The corporate scale of Chinese companies has been expanding, and they are accelerating overseas advancement. Clearly, the influence of Chinese companies in the global market has been increasing further.



Note: Both inward direct investment and outward foreign direct

investment exclude the financial sector.
Prepared by Hitachi Research Institute based on data from the Ministry of Commerce, People's Republic of China

Figure 1 Transition of Inward Direct Investment and Outward Foreign Direct Investment of China

2. "Go Global" Focusing on Infrastructure Export

The "Go Global" policy was presented in 1999 by the government for the purpose of encouraging outward foreign investment. The policy has been included in the national strategy since 2000 and full-scale implementation was triggered when China joined the WTO in 2001. Since then, China has accumulated investment experience in more than 160 countries mainly in Asia, Africa, and Central and South America.

Since 2000 when the "Go Global" policy became a national strategy of China, exports of low-technology products by building sales networks overseas and participation by state-own engineering companies [1] in infrastructure construction projects in resource-rich countries to secure resources including crude oil and minerals spread. Private enterprises also carried out M&As of overseas companies to acquire technology and brands. The purchase of the IBM computer business by Lenovo in 2004 and the acquisition of Volvo by Geely Automobile in 2010 are examples. There were 595 M&As by Chinese companies in 2014 valued at 56.9 billion dollars which reached 46.2% of all outward foreign direct investment.

Since 2015, the "Go Global" policy entered a new phase of focusing on infrastructure exports. The government has been encouraging infrastructure exports with the focus on the high-speed railways and nuclear power business as key sectors which have reached a competitive level including price against companies from advanced countries. In a State Council Executive Meeting in January 2015, Premier Li Keqiang (hereinafter, Premier) held up a policy to strengthen the provision of construction methods and implementation of construction, supply of equipment and parts made in China, and provision of management and maintenance services overseas, and encouraged the policy by stating that proactive participation in global competition will contribute not only to stable growth of the economy but also to industry sophistication. Furthermore, in the State Council Executive Meeting in May 2015, a policy of obtaining demand along countries and regions in the "One Belt, One Road" initiative in coordination with the initiative and promoting global cooperation in production capacity and equipment manufacturing mainly in sectors such as railway, power, telecommunications, and construction machinery, etc. was announced.

According to a report [2] released by the National Development and Reform Commission following the National People's Congress in March 2015, the policy of deepening the strategy to encourage corporations to advance overseas was set with the following three key points. Firstly, China revised the Catalogue for the Guidance of Foreign Investment Industries (hereinafter, CIGF [3]) that clearly states regulations on market entry by foreign companies to strive for the sophistication of domestic industries by attracting foreign corporations with high technological capability (Amended on March 10, 2015 and became effective from April 10). Secondly, China will accelerate advancement overseas with a focus on high-speed railway, ports, roads, and nuclear power businesses as key sectors under the aim of improving the efficiency and quality of outward foreign investment. Thirdly, China will pursue the "One Belt, One Road" (the Silk Road Economic Belt and the 21st Century Maritime Silk Road) initiative and rapidly promote infrastructure links [4] between country borders (First, establishment of the

[1] China Railway Construction Corporation Limited, SINOHYDRO CORPORATION, China Civil Engineering Construction Corporation Group, etc.

[2] "Report on the Implementation of the 2014 Plan for National Economic and Social Development and on the 2015 Draft Plan for National Economic and Social Development"

[3] In China, foreign investment projects are stipulated in the "Catalogue for the Guidance of Foreign Investment Industries" (CIGF). CIGF is issued by the National Development and Reform Commission and the Ministry of Commerce. Foreign investment industries are classified into four categories, namely, "Encouraged", "Permitted", "Restricted", and "Prohibited", and authorities for review and permission and incentives are stipulated for individual categories. Since the first publication in 1995, CIGF has been amended five times in total in a format that reflects the foreign capital policy at that time. In the amendment on March 10, 2015 mentioned here, the overall direction of promoting market opening was presented such as reduction by half (Previous: 79 industries→ Current: 38 items) of the restricted industries for foreign capital entry and a significant decrease in the number of industries with restrictions on the foreign capital percentage (82→46).

[4] For example, the high-speed railway plan "new Eursian land bridge" connecting Urumqi in the Xinjiang Uyghur

"China-Pakistan Economic Corridor" and the "Bangladesh-China-India-Myanmar economic corridor"), and the country will enhance economic cooperation with two country agreements as well as those among multiple countries and regions. This policy conforms to a report on the work of the government delivered by Premier Li Keqiang in March 2016 at the opening of the National People's Congress promoting (1) advanced manufacturing, environmental conservation and energy conservation (smart manufacturing and green manufacturing), modern services, and encouragement of investment by foreign companies in the northeast and mid-west regions, (2) significant progress of "One Belt, One Road" construction, and (3) global cooperation (collaboration) in production capability.

3. Acceleration of Overseas Advancement in High-speed Railway and Nuclear Power Businesses

The trend of the above-mentioned CIGF is for attraction of foreign companies to be limited to fields requiring high technological capability, while requirements for using domestic companies and domestic production are strengthened in other fields, and use of original Chinese technology and capital is treated preferentially. For example, in key infrastructure fields such as power, railway, automobile, and information transmission, overseas capital is basically not allowed to exceed the majority (50% or more of the investment). Another example is preferential treatment of domestic companies for ATMs (Automatic Teller Machines), in which domestic production has been significantly increasing. Therefore, foreign companies have not been able to independently participate in bidding for government projects since 2015. The Chinese government has been promoting domestic production and use of domestic companies in this manner primarily in key infrastructure fields to allow domestic companies to accumulate achievements in the gigantic domestic market and improve their technological capability. As a result, in some fields such as high-speed railways, power, and nuclear power generation, etc., the technological capability of China has reached a competitive level that includes price in overseas markets compared to companies of advanced countries. Corporate restructuring in high-speed railways and nuclear power generation in 2015 targeted the overseas market, thereby indicating that China's "Go Global" strategy has entered a new era.

3.1 Railway Manufacturer Giant CRRC Going on the Offensive in the Global Market

China's exports of railway equipment have greatly increased mainly for ASEAN, the Americas (U.S., Brazil, Argentina), and Africa (South Africa, Ethiopia) at 26.77 billion yuan (a 22.6% increase compared to the previous year) in 2014. Corporate restructuring has been underway in the country under the aim of expanding exports. The two largest state-owned train manufacturers, CSR Group (hereinafter, CSR) and China Northern Locomotive & Rolling Stock Industry Group Corp. (hereinafter, CNR), merged to form CRRC Corporation Limited (hereinafter CRRC) on June 1, 2015 (The merger entailed CSR acquiring CNR with a swap ratio of one CNR share for 1.1 CSR shares). CRRC's total sales of 224 billion yuan (4 trillion 435.2 billion yen) exceeds the total sales of the railway business of Bombardier (Canada), Siemens (Germany), and Alstom (France) combined (Table 1). The merger resulted in the birth of the world's largest train manufacturer. Prior to the merger, Bai Yingzi, director of State Council enterprise reform division, commented that the restructuring of CSR and CNR could be reproduced in other state enterprises under supervision of the State-owned Assets Supervision and Administration Commission, and there is a possibility restructuring that will take place in other state-owned companies besides railway.

Table 1 Comparison of CRRC Corporation and Major Train Manufacturers in the World

	CRRC	Bombardier	Siemens	Alstom
Sales (100 million yuan)	2,240.1	597.1	530.7	427.9
Pre-tax profit (100 million yuan)	119.3	26.7	30.7	11.1
No. of Employees (10,000 people)	17.7	4.0	2.6	2.8

Autonomous Region to the Rotterdam port in the Netherlands which is a strategic stop of maritime trade via Kazakhstan, Russia, Belarus, Poland and Germany with Lianyungang port in Jiangsu Province at its eastern end.

Note 1: Sales and pre-tax profit are for the railway business. For CRRC, total of CSR and CNR.

Note 2: Converted at 6.21 yuan/dollar and 6.97 yuan/Euro.

Prepared by Hitachi Research Institute based on data from the FY2014 annual reports of each company, etc.

Three effects are generally expected of the merger between CSR and CNR. The first is avoiding price competition between state firms. CSR and CNR competed against each other in bidding for a railway project in Argentina in 2013. After ending up in a competition to reduce prices, the bad experience resulted in an approximately 3 billion dollar loss in total for CSR, CNR, and their related enterprises including subcontractors.

The second effect is strengthening technological capability. CSR had a technical partnership with Bombardier and Kawasaki Heavy Industries while CNR teamed up with Siemens and Alstom in technology. Therefore, although the range is limited to the scope stipulated under technical partnership agreements, they are able to mutually complement their technology. In addition, the elimination of duplicate investment in research and development will further improve efficiency.

The third effect is strengthening promotion using diplomatic routes by key government figures toward establishment of a Chinese high-speed railway brand. The government of China set the goal of "establishment of Chinese brands" in "Made in China 2025 (10-year plan to upgrade domestic manufacturing industries)". The country aims to establish the brand of made-in-China high-speed railways which can compete with those of advanced countries in technological capability as "the world's largest train manufacturer". The "One Belt, One Road" initiative is oriented toward infrastructure links connecting China, Central Asia, and respective European countries, and the export of made-in-China high-speed railways is likely to accelerate under the initiative.

Table 2 Expected Effects Due to the CSR and CNR Merger

Avoiding price competition among domestic companies	• Unification of sales activities to overseas customers • Intensifying of financial muscle
Strengthening technical capability	• Mutual complementation of technology • Introduction of cutting-edge technology from corporations under technical partnerships • Improvement of efficiency for duplicate investment in research and development
Intensifying promotion using diplomatic routes	• Establishment of a made-in-China high-speed railway brand in the global market • Export of equipment of Chinese corporations

Prepared by Hitachi Research Institute

3.2 Nuclear Power Business of China Intensifying Its Offensive Against Overseas Markets

Currently, China has 30 nuclear reactors in operation (approximately 7% of the world total), 24 reactors under construction (approximately 37% of the world total), 42 reactors under planning (approximately 24% of the world total), and 136 reactors in the proposal phase (approximately 40% of the world total, all of which are the world's largest (Table 3).

Table 3 Nuclear Reactor Development of Major Countries
(As of March 2016)

	Under operation		Under construction	Under planning	Being proposed
	No. of Units	Output (Mwe)	No. of Units	No. of Units	No. of Units
U.S.	99	98,990	5	18	24
France	58	63,130	1	0	1
Japan	43	40,480	3	9	3
Russia	35	26,053	8	25	23
China	30	26,849	24	42	136
India	21	5,302	6	24	36
Canada	19	13,553	0	2	3
U.K.	15	8,883	0	4	9
Global Total	440	384,006	65	173	337

Prepared by Hitachi Research Institute based on data from the World Nuclear Association

Although China halted exports and domestic

construction of nuclear power (nuclear reactors) due to the impact from the Great East Japan Earthquake in 2011, the government has had a policy of placing nuclear power exports at the center of stimulating technology-intensive industry. In response to an order from Premier Li Keqiang in January 2015 to strengthen exports, the country currently aims to become a major nuclear power exporter by increasing installations of the latest third generation domestically developed Hualong One [5] reactor and developing fourth generation reactors. China concluded atomic energy agreements which are preconditions for the export of atomic energy with 25 countries including the U.S., U.K., Germany, France, Argentina, and Pakistan, and, out of the 25 countries, China has already exported to 4 countries, namely, Pakistan, Romania, Argentina, and the U.K. (Table 4). In February 2015, China reached an agreement with the government of Argentina on export of the "Hualong One" (total amount 7 billion USD).

Nuclear power corporations such as China National Nuclear Corporation (hereinafter, CNNC) and CGN Power Co., Ltd. (hereinafter, CGN Power), and nuclear power generation equipment manufacturers including Shanghai Electric and Dongfang Electric Corporation have drastically increased their technical level. Except for pressure vessel internal parts, domestic parts are used including control rods and a full 85% of the parts used for "Hualong One" are domestic.

Concurrently with the birth of CRRC, a large scale corporate restructuring took place as well in the nuclear power generation industry. In June 2015, the State Nuclear Power Technology Corp and China Power Investment Corporation merged to create the "State Power Investment Corporation (hereinafter, SPIC)". As a result, there are now three major domestic nuclear power players including CNNC and CGN Power. The main contractor for new installation projects of nuclear power plants in Turkey and South Africa is SPIC.

Acceleration of new market development such as in Asia and Africa is also expected in the future. The construction of nuclear reactors in Bangladesh and Kenya in the 2020's is being planned, and by taking advantage of promotion through diplomatic routes by key government figures, abundant national funds, and superiority in price, China will intensify its export offensive.

4. Expanding Opportunities for Collaboration

Amidst the progress in overseas advancement by Chinese corporations, collaboration opportunities between Japanese corporations and Chinese enterprises will increase. In a November 2015 meeting with representatives of the Japanese business world (attended by approximately 200 Japanese enterprise related personnel from three organizations comprised of the Japan-China Economic Association, Keidanren (Japan Business Federation) and the Japan Chamber of Commerce and Industry), Premier Li Keqiang stated that the country will meet the demand for infrastructure construction in developing countries by collaborating the "ample" production capability of China with cutting-edge technologies of advanced countries such as Japan to contribute to economic growth, and he indicated eagerness for collaboration between Japanese and Chinese companies in third countries. His description of China's production capability here is interesting, and in original Chinese, it also can be interpreted as stating that the excessive production equipment of Chinese corporations can be used effectively. In other words, behind China's movement of deepening the strategy of encouraging overseas advancement by corporations, we can see the ulterior motive of striving to eliminate the excessive production capacity of equipment of iron, steel, coal, and cement, etc. (Table 5) in China by deploying to overseas markets.

Table 5 Capacity Utilization of Infrastructure-Related Business Category (%)

		2007	2014	Difference
Manufacturing Industry Overall		79.4	71	- 8.4
	Iron and Steel	81.2	66.1	- 15.1
	Cement & Glass	80.7	68.8	- 11.9
	Aluminum	80.7	69.4	- 11.3

[5] Hualong One is a nuclear reactor integrating the design of the "ACP1000" reactor under development by CNNC with the design of third generation reactor "ACPR 1000+" whose intellectual property rights are owned by CGN.

Prepared by Hitachi Research Institute based on data from the Cabinet Office, Government of Japan

The "13th Five-year Plan (2016-2020)" released in March 2016 also lists the pursuit of collaboration between companies from advanced countries and Chinese companies in the production capacity and equipment manufacturing aspects (For example, development of third country markets by establishing Japan-China joint ventures is conceivable) and the proactive establishment of a financial support system that boosts the said collaboration. There is the possibility of an increase in opportunities where corporations from advanced countries will participate in projects composed by Chinese companies by utilizing development financial institutions such as AIIB (Asian Infrastructure Investment Bank) and New Development Bank BRICS (NDB), and policy banks (national development banks, export import banks). Starting with high-speed railway and nuclear power generation, the influence of Chinese companies in the global market is increasing. In the future, Chinese companies will be important not only as customers and competitors as in the past but also as collaboration partners.

Table 4 Nuclear Power Exports of China (Past and Ongoing Projects)

Country	Power Plant Name	Reactor Model	Domestic/Import Reactor	Construction Cost (Hundred million USD)	Scheduled Operation Start	Chinese Corporation
Pakistan	Chasma-3, Chasma-4	CP300	Domestic	23.7	2016 to 2017	CNNC
	Karachi 1 & 2	Hualong One	Domestic	95.9	Under planning	CNNC
Romania	Cernavoda 3 & 4	CANDU	Canadian	65	Under planning	CGN Power
Argentina	Atucha 3	CANDU	Canadian	58	Under planning	CNNC
	Atucha 4 & 5	Hualong One	Domestic	70	Under planning	CNNC
U.K.	Bradwell	Hualong One	Domestic	-	2023	CGN Power
Turkey	Igneada	AP1000 and CAP1400	AP1000 is manufactured by American WH. CAP1400 is domestically made.	-	Under planning	SPIC
South Africa	Thyspunt	CAP1400	Domestic	-	Under planning	SPIC

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