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PRODUCTION AND SECURITIZATION OF FOREIGN INFRASTUCTURE BY "TEAM KOREA"

Dasom Hong[1]

Abstract

The financialization of infrastructure has emerged as a resolution for alleviating government budget pressures derived from chronic underinvestment in infrastructure and post-global financial crisis recession. Two interrelated phenomena are considered central features of the financialization of infrastructure: the transformation of infrastructure into an alternative asset class and the growth of public–private partnerships (PPPs) in infrastructure development. In particular, the expansion of global PPPs has attracted the attention of various entities, including state-owned enterprises (SOEs). Recently, SOEs have participated in foreign infrastructure PPPs as private sector entities. Unlike conventional private sector involvement in infrastructure PPPs, SOEs aim to achieve public objectives and mobilize both public and private resources to enhance competitiveness within the global PPP market. In this paper, the specificities of SOEs participating in foreign infrastructure PPPs and their implications for the financialization of infrastructure are analyzed using a South Korean SOE: Korean Overseas Infrastructure and Urban Development Corporation (KIND). This reveals why and how SOEs engage in foreign infrastructure PPPs via the drivers and business strategies of KIND. Moreover, it examines infrastructure PPPs managed by KIND to reveal how the business strategies of KIND work in practice. Consequently, this paper suggests that SOEs engaging in foreign infrastructure PPPs attempt to achieve policy objectives through the production and financialization of foreign infrastructure. In the process, SOEs actively take advantage of entities and resources from both the public and private sectors.

JEL classification: R00

Keywords: Financial geography, financialization of infrastructure, state-owned enterprise

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[1] Seoul National University, Department of Geography, e-mail: aboutcity@snu.ac.kr, ORCID: https://orcid.org/0000-0003-3164-6675.

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Introduction

The development of physical infrastructure, such as roads and power plants, requires a large amount of capital. Therefore, infrastructure has been conventionally considered public work financed with public funds (Gatti, 2014; O'Brien & Pike, 2017; O'Neill, 2013). Chronic underinvestment in infrastructure has put pressure on governments to develop and renovate infrastructure using debt and taxation. Besides, recession and sovereign debt crises following the 2008 global financial crisis have reduced the ability of governments to fund infrastructure. Under these circumstances, the financialization of infrastructure has emerged as a resolution for relieving government budget pressures and creating profits for the private sector (Furlong, 2020; Gatti, 2014; O'Brien & Pike, 2017).

Although it is still difficult to define the financialization of infrastructure clearly, it is considered to have increased gradually since the advent of neoliberal urban policies (O'Brien & Pike, 2017, 2019; O'Neill, 2013, 2019; Whiteside, 2019). Furthermore, two interrelated phenomena have been identified as notable features of the financialization of infrastructure. First, infrastructure has increasingly been treated as an alternative asset class for private investors (Gatti, 2014; O'Brien & Pike, 2017, 2019; O'Neill, 2010, 2013, 2019). Second, the governance of infrastructure funding and financing has transformed with changes in the roles of the public and private sectors. In particular, the public–private partnership (PPP) has become a typical form of governance for infrastructure funding and financing, and the number of infrastructure PPPs has increased in both developed and developing countries since the 1970s (O'Brien & Pike, 2017, 2019; Siemiatycki, 2013; Whiteside, 2016). Furthermore, the governance structure has become more complicated as more diverse agents have participated in infrastructure PPPs through advanced financial instruments (Kim, 2014; Siemiatycki, 2013).

In recent years, state-owned enterprises (SOEs) have appeared as significant private entities in the global PPP market. SOEs that participate in infrastructure PPP of another state as private entities are both public and private in nature (Kim, 2012a, 2012b; OECD, 2016; UNCTAD, 2011; World Bank, 2019). Thus, SOEs seek to realize policy objectives based on the national public interest by engaging in foreign infrastructure projects. Simultaneously, SOEs mobilize the public and private resources of their own state to enable competitiveness as "the private sector" in the global PPP market. Despite the growing influence of SOEs, the features of SOEs as investors in infrastructure PPPs—and implications for the financialization of infrastructure—have received little academic attention (Kim, 2012a, 2012b). Therefore, in this paper, the specificities of SOEs in global PPP markets are explored by examining a Korean SOE, the Korean Overseas Infrastructure and Urban Development Corporation (KIND). KIND was established by the Korean government to engage in the production and financing of foreign infrastructure development projects with various public and private actors. In this paper, KIND's drivers and investment strategies are investigated to reveal why and how SOEs take part in the global infrastructure PPP market. Moreover, the ways that SOEs (both private and public in nature) divert circuits of capital in the global PPP market, and what this means for the financialization of infrastructure, are examined.

This paper is presented in the following sequence. The next section reviews the literature on the financialization of infrastructure. There are various ways to conceptualize and understand the term "financialization." However, this paper focuses on how financialization creates liquidity from spatial fixity, which provides opportunities for SOEs to invest in foreign infrastructure. Section 3 reveals the features of an SOE as a foreign investor by examining why and how KIND participates in the global PPP market. This is achieved by analyzing policy objectives that KIND pursues as well as the domestic and international contexts that inspired the advent of KIND. In addition, KIND's business model, which mobilizes public and private resources under the name of "Team Korea" to accomplish policy objectives and to achieve competitiveness in the global PPP market, is scrutinized. Next, in Section 4 this paper maps capital flows of global infrastructure PPP projects managed by KIND. In doing so, the circuits of capital diverted by SOEs are dissected. The final section suggests the ways in which specificities of SOEs change the landscape of the global PPP market, with implications for the financialization of infrastructure.

Literature review

As the influence of financial institutions and markets on economic, social, and cultural life has increased, various academic disciplines, including human geography,

[2] The distinction between funding and financing of infrastructure is considered useful for understanding the financialization of infrastructure (O'Brien & Pike, 2017, 2019; Whiteside, 2019). Funding refers to the source of money to pay for the infrastructure and costs of its financing. Typical sources of funding are taxes, user fees, or other charges. Conversely, financing means how the capital is assembled and structured to invest, so it involves the capital costs provided by actors. A problem for developing infrastructure in contemporary financialized urban settings is to secure funding to pay for the costs of financing infrastructure projects (O'Brien & Pike, 2017, 2019).

have studied financialization (Christophers, 2015; Christopherson et al., 2013; Pike & Pollard, 2015). Urban infrastructure is one of the loci of financialization, wherein urban and economic geographers have explored the uneven and varied ways that urban infrastructure is financialized (O'Brien & Pike, 2019; O'Neill, 2013). Although financialization remains a fluid concept, two interrelated aspects are recognized as central traits of the financialization of infrastructure: the conversion of infrastructure into an alternative asset class, and a change in the form and governance of infrastructure funding and financing.

First, infrastructure has been transformed into a new financial asset class (Furlong, 2020; Leyshon & Thrift, 2007; O'Brien & Pike, 2017, 2019; O'Neill, 2013, 2019). Financial institutions and investors have searched for alternative asset classes since the 2008 global financial crisis. As a financial asset, infrastructure generates long-term, low risk, stable, and income-oriented revenue because it provides vital services for the majority of the population and is usually guaranteed by governments. Hence, global financial investors have looked for opportunities to invest in infrastructure across the world (Leyshon & Thrift, 2007; O'Brien & Pike, 2017, 2019; OECD, 2013). Second, governments have reduced public debt and expenditure under austerity following the global financial crisis and sovereign debt crisis. To bridge their infrastructure gaps, governments had to seek innovative funding and financing practices and to attract private capital. As a result, the governance of infrastructure funding and financing has become more intricate, consisting of various actors from both the public and private sectors. Furthermore, the roles of the private and public sectors have changed[3] (O'Brien & Pike, 2017, 2019; O'Neill, 2013, 2019; Siemiatycki, 2013; Whiteside, 2016, 2019).

Public–private partnership is a common infrastructure financing and funding practice concerning financialization, which demonstrates both aspects of the financialization of infrastructure. Recently, diverse types of PPPs have expanded globally in terms of both number and scale[4] (Heslop, 2020; Leyshon & Thrift, 2007; O'Brien & Pike, 2017; O'Neill, 2013; Siemiatycki, 2013). Furthermore, it is recognized as a replacement for public funding, enabling governments to deliver infrastructure without burdening the public sector balance sheet. At the same time, both demand and investment in infrastructure PPPs by global financial entities have grown (O'Brien & Pike, 2017; Siemiatycki, 2013; UNCTAD, 2011). This suggests that the public and private sectors cooperate in providing infrastructure when and where their interests coincide. Moreover, the prerequisite for this is "the existence of large urban infrastructure items" with "the generation of the cash flows that transform the material flows of capitalism into financial products" (O'Neill, 2013, p. 441).

This corresponds with the precondition of extracting and creating value from built environments as suggested by Christophers (2010). According to Christophers (2010), the core of the argument for financializing property is a notion that the property value can be unproblematically separated from immobile use-value through financialization. The property and its embedded use-value are fixed in a place. On the contrary, the title to revenue generated from the property can circulate across the world through financialization (Christophers, 2010; Gotham, 2009; Harvey, 1982). Harvey (1982) described this process as the treatment of real estate as a pure financial asset, which allows the interest-bearing capital to flow continuously through the daily use of fixed, long-lived, and immobile use-values.

Nevertheless, the use and value of a property are fundamentally inseparable, and property itself does not produce any value. This means that unlocked value from property is always derived from surplus values generated elsewhere (Christophers, 2010; Harvey, 1982; Lapavitsas, 2013; O'Neill, 2013). Consequently, financialized infrastructure contributes to captured and (re)distributed surplus values created in other places because of its materiality (Harvey, 1982; O'Neill, 2013). In other words, geographically remote investors can invest in infrastructure in a particular region to earn financial profits derived from

[3] It is worth noting that governments' role and influence have increased, rather than decreased, in the governance of infrastructure financing and funding. Though the engagement of private capital has expanded, governments retain a pivotal role in governance, such as organizing and mediating the various actors involved in governance. Therefore, several scholars emphasize hybridity derived from multiple agents and their relationships. They also argue that the financialization should be understood beyond the dichotomy of states and markets (Leyshon & Thrift, 2007; O'Brien & Pike, 2017, 2019; O'Neill, 2013, 2019; Whiteside, 2019)

[4] There are multiple types of PPPs, so the definition of PPP varies across contexts. Besides, the partnership between the public and private sectors to finance and operate infrastructures has existed for centuries. However, the relationship between the public and private sectors in contemporary PPPs is distinguished in terms of the distribution of responsibilities and risks (Siemiatycki, 2013). Grimsey and Lewis (2007) defined PPP as „a risk-sharing relationship" between the public sector and one or more partners from the private sectors with a shared aspiration to deliver a public service. As such, the private sector, especially financial actors, become more deeply involved, which has changed the landscape of delivering infrastructure.

the region. Furthermore, as the interest-bearing capital can flow across the world, the circulation of values via infrastructure can be geographically broadened to attract diverse agents at different geographical scales into PPPs.

One of the emerging international investors in the global PPP market is the SOE (Heslop, 2020; Kim, 2012b, 2012a; OECD, 2016; Teixeira & da Silva; UNCTAD, 2011), which, by investing in foreign infrastructure PPPs as the private sector, have both a public and private nature. Therefore, they divert the circuit of capital to achieve their national public interest by extracting values from other countries. In addition, they utilize distinguished business strategies from other private entities because they can mobilize private and public resources of their state. Given that international investors' influence on spatial compositions of a specific region has increased with financialization (Aalbers, 2019, 2020; Dörry & Handke, 2012; O'Brien & Pike, 2017; Siemiatycki, 2013), it is necessary to examine the ways in which SOEs take part in infrastructure PPPs as a private sector entity. However, there is a lack of studies on the features of SOEs investing in infrastructure PPP and their implications for the financialization of infrastructure (Kim, 2012b, 2012a; Teixeira & da Silva). Thus, the aim of this paper is to explore how SOEs change the landscape of the global infrastructure PPP market based on their distinctive nature. To do so, a South Korean SOE established to take part in the global infrastructure PPP market is examined, focusing on its drivers, investment strategies, and capital structure.

State-owned ebterprises as a private entity in the global PPP market

In June 2018, the South Korean government established an SOE called the Korean Overseas Infrastructure and Urban Development Corporation (KIND) in compliance with the Overseas Construction Promotion Act. The primary objective of KIND is to provide comprehensive support for Korean corporations to enter the global infrastructure PPP market. This section presents analysis of the domestic and international contexts in which KIND emerged together with its policy objectives, which KIND attempts to achieve by engaging in foreign infrastructure PPPs. Then, the business strategies of KIND are investigated. KIND links a variety of entities from the public and private sectors under the name of Team Korea and encourages cooperation between entities to enhance competitiveness within the global PPP market. By examining KIND's drivers and business strategies, this section reveals the characteristics of SOEs as private entities among global infrastructure PPPs.

The advent of KIND

Changes in domestic and international contexts related to the infrastructure and financial industry drove the South Korean government to establish KIND. The official website of KIND describes how the growth of the global PPP market and domestic need for overseas expansion of construction and finance industries led to KIND's inception. First, the global PPP market has expanded due to the urbanization of developing countries and the financial burdens of governments following the global financial crisis. Consequently, the number and scale of PPPs across the world have risen significantly since the mid-2000s (see Figure 1).

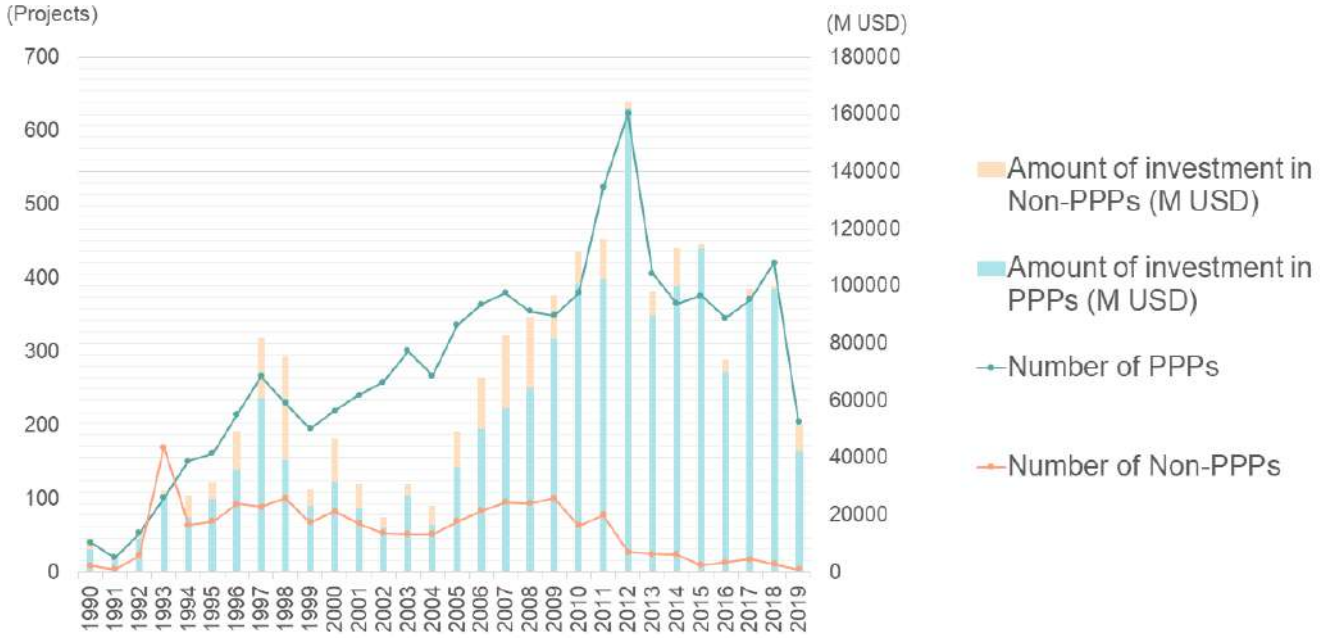
Moreover, governments have increasingly attracted foreign agents to infrastructure PPPs[5]. Multinational banks such as the World Bank and developed financial instruments encouraged the proliferation of PPP globalization. Several states discerned that the expansion of the global PPP market could offer a new opportunity for overseas construction and investment. For instance, the Japanese government complements and strengthens construction companies' capability to enter the global PPP market by founding supportive SOEs. The Korean government also recognized the need for a response to the changing context to improve Korean construction companies' competitiveness (Kim, 2015; Kwak et al., 2018; MOLIT, 2014, 2018; Park & Jo, 2012; Siemiatycki, 2013; Son, 2013).

Second, demand from domestic industries—particularly the construction and financial industries—also influenced the emergence of KIND. The construction industry led to the economic development of Korea. The gross fixed capital formation (GFCF) of Korea is higher than those of other OECD countries (see Figure 2). The Korean construction industry, however, has declined due to domestic market saturation. Furthermore, overseas construction and infrastructure corporations faced challenges because orders from Middle Eastern countries decreased due to low oil prices after the mid-2010s. As Middle Eastern countries covered a substantial proportion of overseas construction orders, the damage to the construction industry was severe (see Figure 3).

[5] Here, the role of global entities as the private sector of infrastructure PPPs are not limited to financing the projects but also to encompassing the construction of infrastructures.

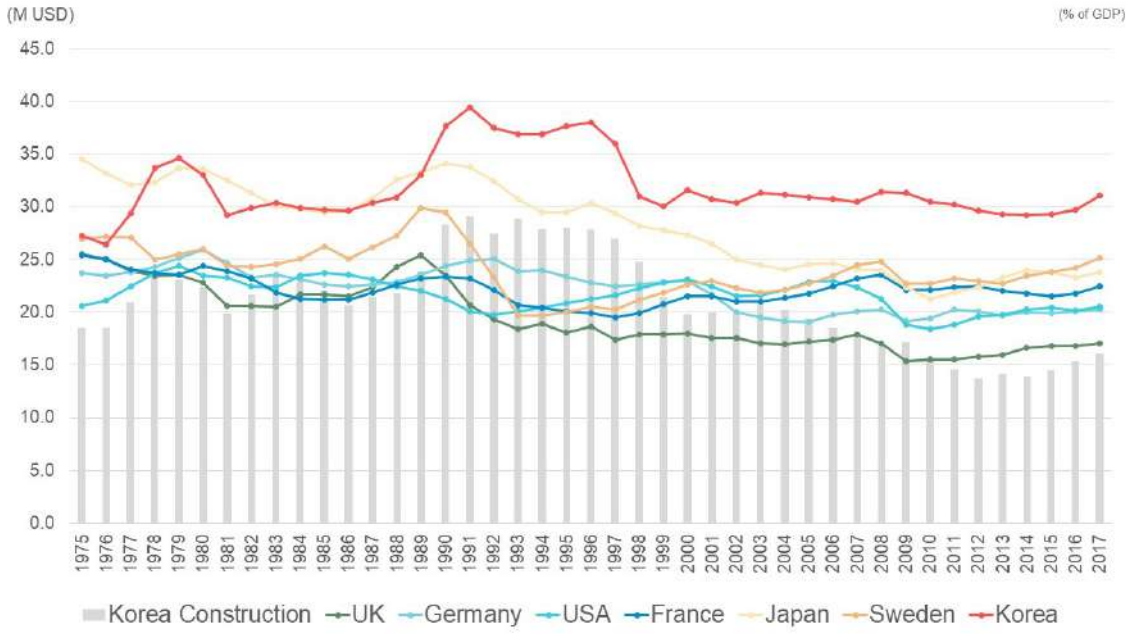
Consequently, the growing PPP market became an alternative for construction companies. However, Korean construction companies have focused on outsourcing for engineering, procurement, and construction (EPC) projects; thus, they could not immediately adapt to PPPs requiring both development and investment. Therefore, the Korean government decided to institute a specific supportive organization for overseas expansion of the construction industry. Furthermore, the government has made efforts to support it, including legislation, policy development, and the establishment of public funds such as the Global Infrastructure Fund (Lee & Ji, 2018; Ministerial Committe on Economic Sector, 2018; MOLIT, 2014, 2018; Son, 2013)

Figure 1: Number of Global PPPs and Amount of Investment in PPPs



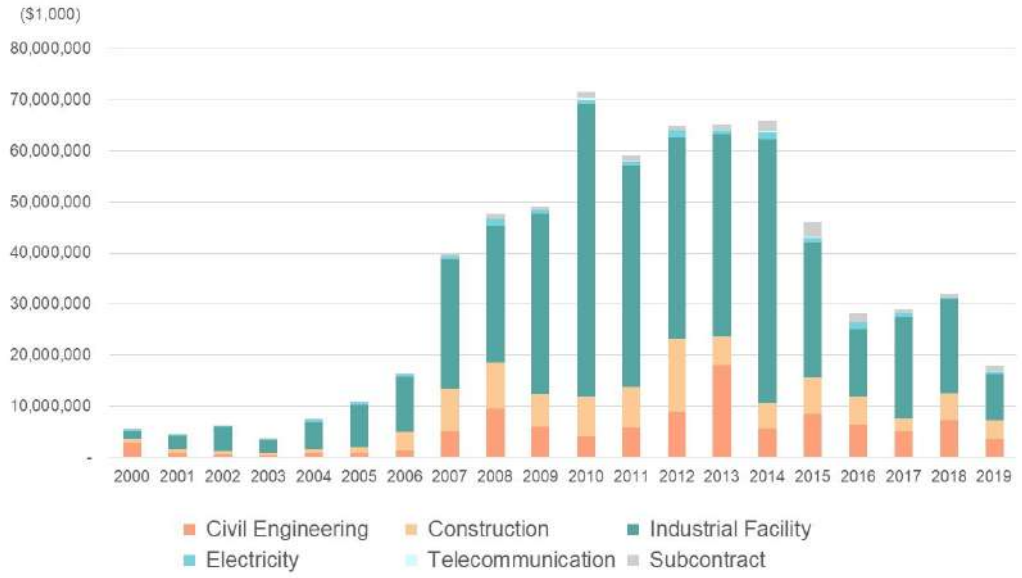
*Source: World Bank, Infrastructure Finance, PPP & Guarantees (*https://ppi.worldbank.org/)

Figure 2: 1975–2017 GFCF in OECD Countries and Value of Construction Investment in South Korea



*Source: K-Indicator (*www.index.go.kr/unify/main.do?clasCd=10)

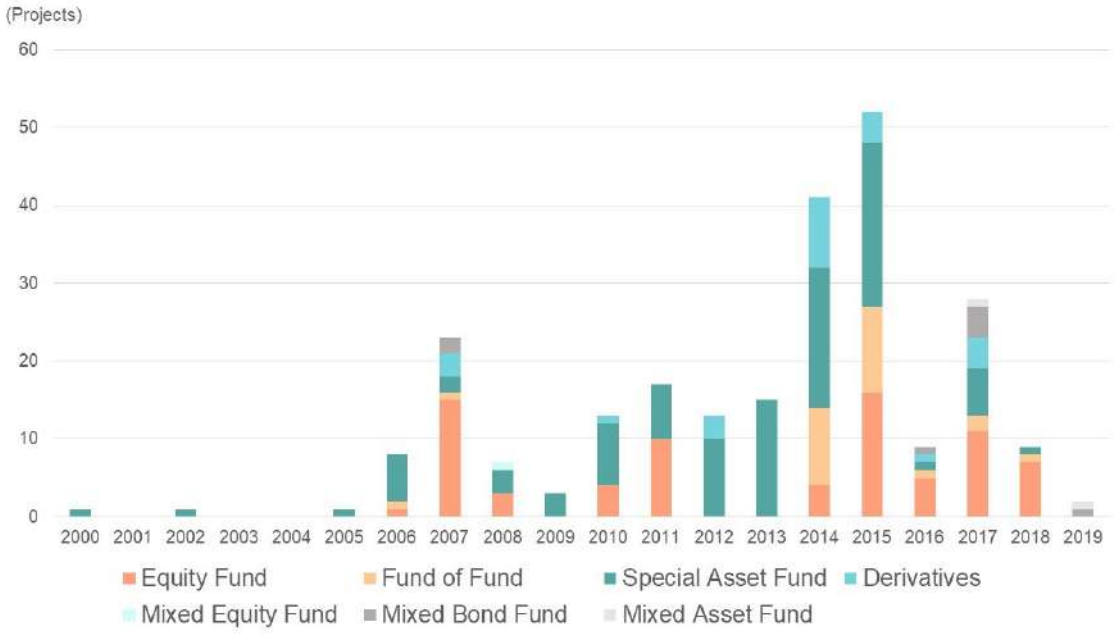
Figure 3: Value of Overseas Construction Orders by Type



Source: International Construction Information Service (http://www.icak.or.kr/)

In addition, the financial industry's demand for infrastructure-backed financial products (such as infrastructure funds and securities) has increased under low-growth and low-interest conditions. In particular, international financial investors have taken part in global PPPs through infrastructure funds, which have contributed to the growth of global PPPs and their relevant capital market. Hence, Korean financial actors also recognize infrastructure funds as an alternative asset class generating a higher return than conventional securities. Consequently, the number of infrastructure investment funds has increased since 2010 (see Figure 4), together with significant institutional investors such as the National Pension Service (NPS), gradually expanding infrastructure investment (Jo & Jeong, 2016; Kim, 2017; KIND; Lee & Ji, 2018; MOLIT, 2018; National Pension Service Investment Management, 2019). Figure 5 shows that the NPS has raised investment in infrastructure since 2010, particularly in foreign infrastructure.

Figure 4: Number of Infrastructure Investment Funds Issued in South Korea



*Source: Korea Financial Investment Association Electronic Disclosure System (*http://dis.kofia.or.kr/)

The South Korean government devised a comprehensive resolution to overcome the construction industry crisis by offering new investment opportunities for financial actors. KIND was a comprehensive solution allowing both construction and financial industries to satisfy their needs via global infrastructure PPPs. Ultimately, KIND was established with investment from SOEs related to infrastructures and finance: Korea Land & Housing; Construction Guarantee; Korea Eximbank; Korean Railroad Corporation; Korean Expressway Corporation; K-water; Incheon International Airport Corporation; Korean Airports Corporation; and Korea Rail Network Authority (KIND).

Figure 5: Amount of Investment in Infrastructure Assets by NPS

*Source: National Pension Service Investment Management (*https://fund.nps.or.kr/)

KIND'S BUSINESS STRATEGIES TAKING ADVANTAGE OF BOTH PUBLIC AND PRIVATE OBJECTIVES

While other entities engaging in PPPs as the private sector could pursue private interests, SOEs aimed to achieve policy objectives via foreign infrastructure PPPs. KIND sought to accomplish the public objectives of resolving the construction industry's crisis and expanding opportunities for investment to domestic financial actors by participating in PPPs as the private sector. As such, SOEs being of both a public and private nature is reflected in the way that KIND supported Korean corporations to enter the global PPP market.

The aim of KIND was to function as a coordinator, facilitator, and investor to support Korean corporations and achieve policy objectives. First, as a coordinator, KIND organizes a strategic network called "Team Korea" with agents from both public and private sectors and their resources. Team Korea, the central business strategy of KIND, refers to the cooperative network of domestic entities of finance, EPC, operations and management, and law from both public and private sectors to participate in foreign infrastructure PPPs. Any SOEs relevant to infrastructure and finance, private construction and engineering companies, and financial actors usually take part in Team Korea as members. Thus, KIND endeavors to offer a one-stop service encompassing all entities and resources necessary for infrastructure PPP in the global market by properly connecting various entities from the public and private sectors to each phase of PPP (KIND; Ministerial Committe on Economic Sector, 2018; MOLIT, 2018). In other words, KIND seeks to strengthen the competitiveness of actors in the global market by mobilizing and integrating requisite entities for infrastructure PPPs under the name of Team Korea. Therefore, the vision of KIND—"Leading the World Infrastructure Market, Team Korea,"—reflects such a purpose.

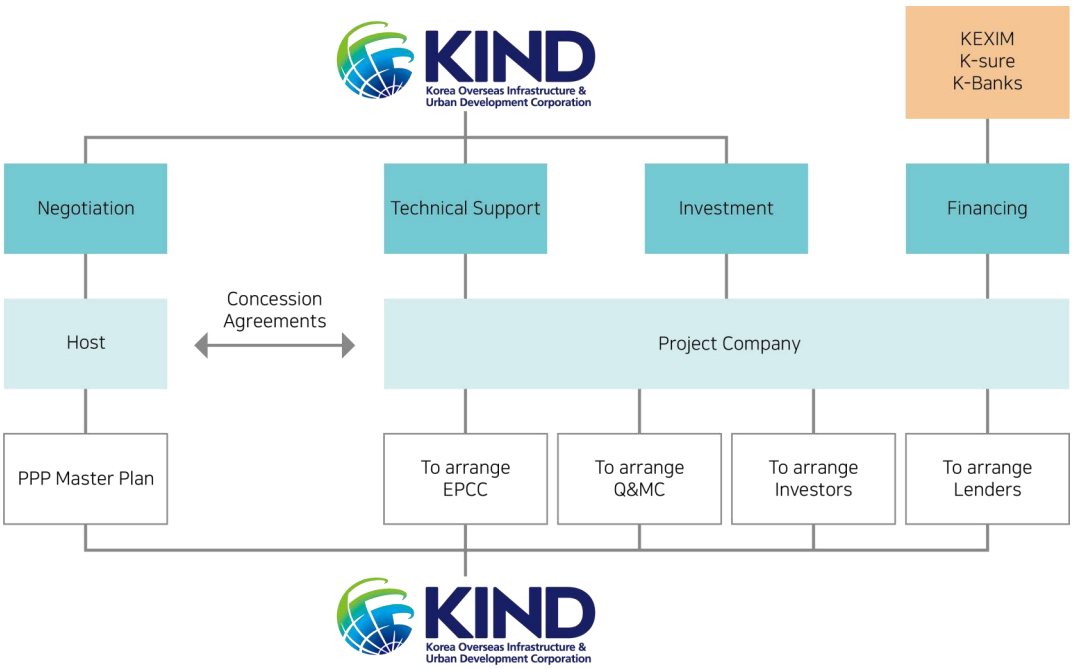
Individual entities unable to participate in foreign infrastructure PPPs can take the opportunity to cooperate with other actors as part of Team Korea. In particular, construction corporations lacking investment capability to make inroads into foreign infrastructure PPP can enter the global PPP market by collaborating with financial institutions. Moreover, as both public and private agents constitute Team Korea, they can enjoy the advantages of both public and private sectors. For example, the members of Team Korea can take advantage of public and private resources. In addition, KIND attempts to constitute the "Team Korea Platform." As the form and members of a governance change following conditions of a specific PPP, so KIND tries to form a workforce pool to mobilize appropriate agents and resources whenever needed.

Second, as a facilitator, KIND connects Team Korea with international actors, including foreign governments and multinational banks, to seize opportunities for PPPs. Here, national credibility is critical. National credibility contributes to the amicable negotiation of SOEs with host countries or international organizations (Kim, 2012b, 2012a). KIND takes advantage of national credibility to seize foreign infrastructure PPP opportunities for Team Korea and enhance the bargaining power of Team Korea. Infrastructure SOEs occasionally help Team Korea to take part in PPPs. This is based on their previous PPP experience with the host country and the resultant credibility derived from that relationship. Even if infrastructure SOEs have no PPP experience beforehand, the technical assistance provided by infrastructure SOEs may improve the reliability of Team Korea.

Lastly, as an investor, KIND raise funds from both the public and private sectors to invest in infrastructure PPPs where Team Korea takes part. This complements insufficient funding capabilities of construction companies and provides new investment opportunities for domestic financial actors. For instance, KIND actively utilizes government-led funds, such as the Global Infrastructure Fund (GIF) and the Global Plant Infrastructure Smart City Fund (PIS), to enhance Team Korea's bargaining power in foreign infrastructure PPPs by offering financial resources. KIND also attempts to distribute financial profits derived from foreign infrastructure PPPs to the domestic financial actors, including individual investors and households via those funds. Moreover, KIND offers subordinated loans to PPPs of Team Korea to encourage private investors to engage in low-risk unsubordinated loans and plans to issue bonds and equities enabling the expansion of investment opportunities (Joint association of related ministries; KIND; MOLIT, 2018). Thus, the form of financial support provided by KIND determines the governance structure of Team Korea, as demonstrated in Figure 7a, b, and c)[6].

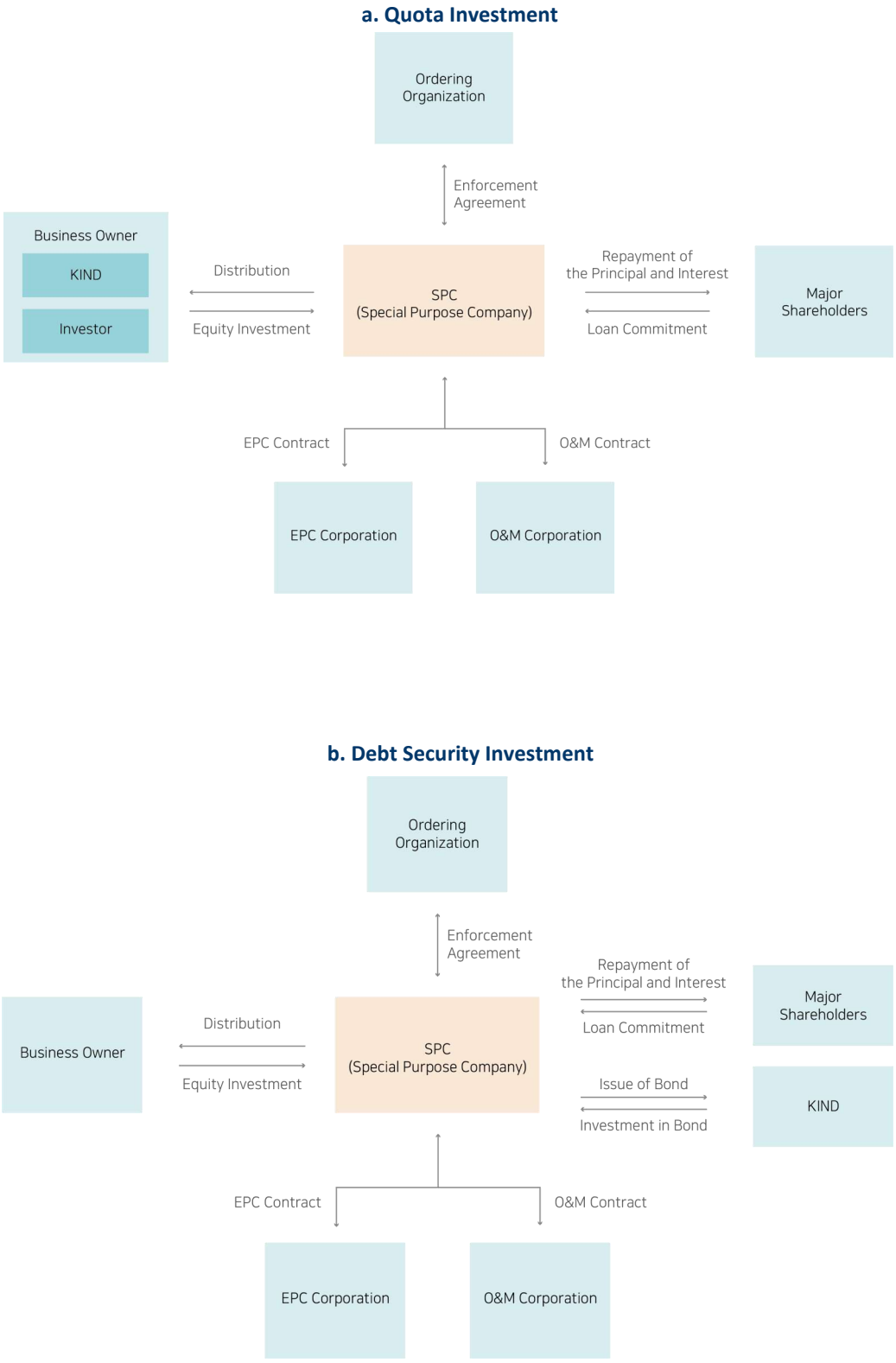
[6] Of course, the specific organization of business models varies depending on different situations.

Figure 6: KIND's Total Solution for PPP Projects

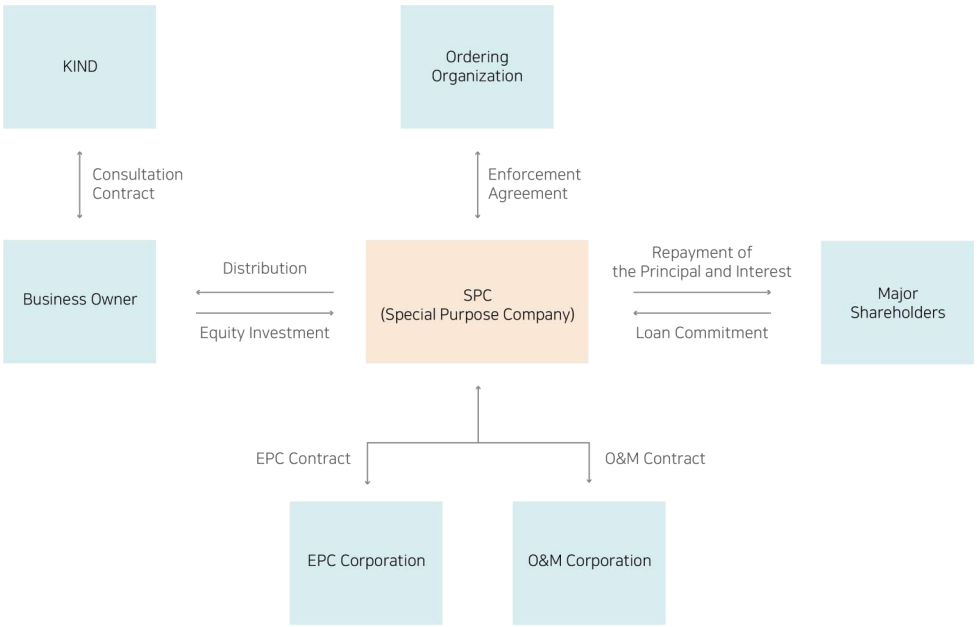


Source: Korean Overseas Infrastructure and Urban Development Corporation (http://www.kindkorea.or.kr/eng/?p=13)

Figure 7: The Governance Structure of Team Korea



c. Consultancy on Business and Finance



*Source: Korean Overseas Infrastructure and Urban Development Corporation(*http://www.kindkorea.or.kr/?p=14)

In summary, Team Korea participates in foreign PPPs as the private sector, but it benefits from both public and private resources owing to KIND's support. As a public institution, KIND can integrate private and public resources, which makes Team Korea more competitive than conventional private entities participating in PPPs. Furthermore, KIND provides national credibility, allowing Team Korea to engage in more PPPs on better terms. Moreover, KIND mobilizes funds from the people to support Team Korea's successful entry and stable settlement in foreign infrastructure PPPs. Simultaneously, KIND shares the financial revenue generated from foreign infrastructure PPPs with the people. As such, SOEs can be considered both public and private in terms of their purposes and business strategies.

Geographical expansion and diversion of the circuits of capital by Team Korea

KIND's purposes and business strategies presuppose that profits generated from infrastructure fixed in other states can flow into Korea via infrastructure PPPs. In other words, Team Korea expands and diverts the flow of surplus value to Korea created in the other states by taking part in the production and investment of the infrastructures via PPPs. Furthermore, KIND seeks to distribute revenue to the population through government-sponsored financial products, such as the GIF and the PIS. This section reveals how KIND diverts the circuit of capital by mapping capital flows of PPPs where Team Korea participates. As of August 2020, KIND has carried out 17 projects (see Tables 1–3). In this section, 2 cases from the 17 projects are analyzed at the operation stage, demonstrating different aspects of Team Korea. The two cases are Portugal's Lisbon solar power plant project and Turkey's Kirikkale thermoelectric power plant project.

Case 1: Portugal: Lisbon solar power plant project

In 2009, the Korean government raised GIF 2 with the private sector to offer financial support to Korean overseas construction companies[7]. The GIF 2 is a blind fund approaching $170 million. The solar power plant project in Lisbon is the first project to receive GIF 2 funding. Hanwha Q Cells, a private Korean solar power company, built a 17.8 MW solar PV cluster expected to generate 37.4 GWh per year in Lisbon and Setúbal. Hanwha Q Cells established a consortium with Martifer Solar, a Portuguese private solar power company, in construction, oper-

[7] Most projects in the operation stage were organized around GIF before KIND was established. SOEs that invested in KIND transferred their shares of GIF so that KIND could take part in the existing PPP projects as both major shareholder and supportive organization.

ation, and management sectors. However, after the acquisition of a construction license, Martifer Solar sold the license to Hanwha. Therefore, Hanwha Q Cells built the solar power plant almost entirely alone. Hanwha Q Cells and Martifer Solar planned to operate and manage the solar plant together after construction. In 2013, the construction was completed, and the solar plant has been in operation since then (Frades, 2013; Kim, 2017; MOLIT, 2012) .

Table 1: KIND's PPP Projects in Feasibility Study Phase

No.	Project Name	No.	Project Name
1	Costa Rica Metropolitan Railway	6	Myanmar Urban Development
2	Georgia Hydroelectric Power Plant	7	Vietnam Urban Infrastructure (Wholesale market for agricultural and fisheries products)
3	Iraq Solar Power Plant	8	Indonesia Urban Transportation (LRT and BRT)
4	Bangladesh Highway	9	Mozambique Combined Thermal Power Plant
5	Indonesia Automobile State Industrial Facility		

*Source: Korean Overseas Infrastructure and Urban Development Corporation (*http://www.kindkorea.or.kr/?p=55*)*

Table 2: KIND's PPP Projects in Construction Phase

Project Name	Kazakhstan Almaty Circular Road	Australia Banneton Solar Power Plant	Turkey Gaziantep Hospital	Turkey Kirikkale Thermoelectric Power Plant
Project location	Kazakhstan Almaty	Australia Banneton	Turkey Gaziantep	Turkey Kirikkale
PPP model	BOT	BOO	BLT	BOOT
Fund	GIF 3	GIF 3	GIF 3	GIF 1
Investment type	Equity	Equity	Equity	Mezzanine
Construction period	50 Months	10 Months	3 years	30 Months
Operation period	15 years 10 months	25 years	25 years	30 years
Power capacity	66km (road length)	110.2 MW	1,892 (sickbed)	926 MW
Total Investment	750M USD	180M AUD	602M EUR	1,065.9M USD
GIF Investment	15M USD	39M AUD	30.9M EUR	38.2M USD
KIND Investment		13.1M AUD	15.1M EUR	27M USD

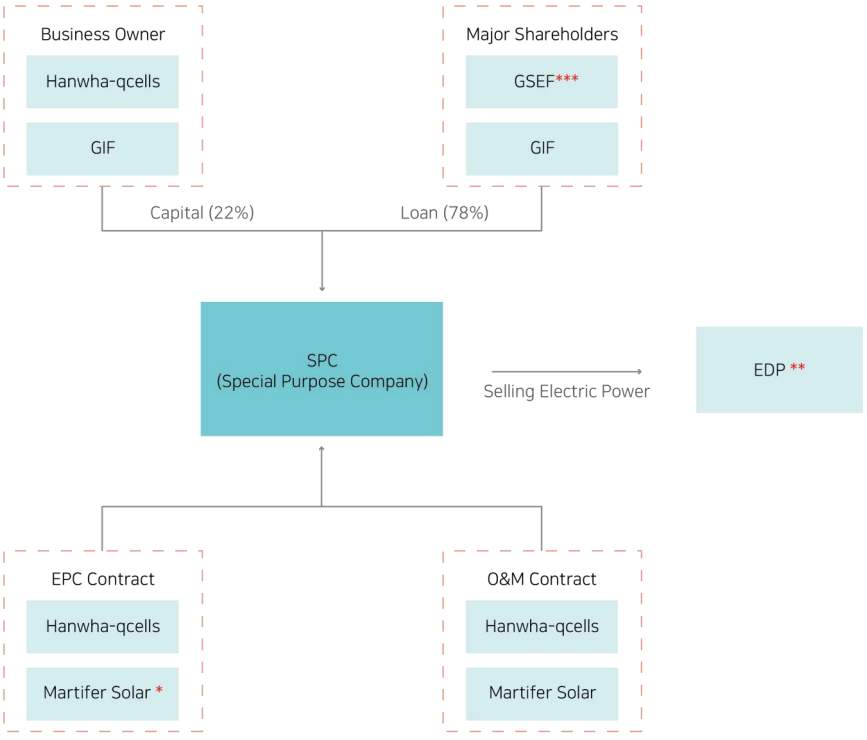
*Source: Korean Overseas Infrastructure and Urban Development Corporation (*http://www.kindkorea.or.kr/?p=55*)*

Table 3: KIND's PPP Projects in Operation Phase

Project Name	Chile Talca Solar Power Plant	Chile La Acacia Solar Power Plant	Australia Barcaldine Solar Power Plant	Portugal Lisbon Solar Power Plant
Project location	Chile Talca	Chile Cachapoal	Australia Barcaldin	Portugal Lisbon
PPP model	BOO	BOO	BOOT	BOOT
Fund	GIF 3	GIF 3	GIF 3	GIF 2
Investment type	Equity and Bond	Equity	Equity and Loan	Equity and Debt
Construction period	-	10 Months	17 Months	10 Months
Operation period	25 years	25 years	25 years	20 years
Power capacity	10.4 MW	9.5 MW	25 MW	17.6 MW
Total Investment	13.2M USD		78.6M AUD	59.5M EUR
GIF Investment	5.7 M USD		37.6M AUD	30.9M EUR
KIND Investment	5.7 M USD		16.7M AUD	14.4M EUR

*Source: Korean Overseas Infrastructure and Urban Development Corporation (*http://www.kindkorea.or.kr/?p=55*)*

Figure 8: Business Model for Portugal's Lisbon Solar Power Plant Project

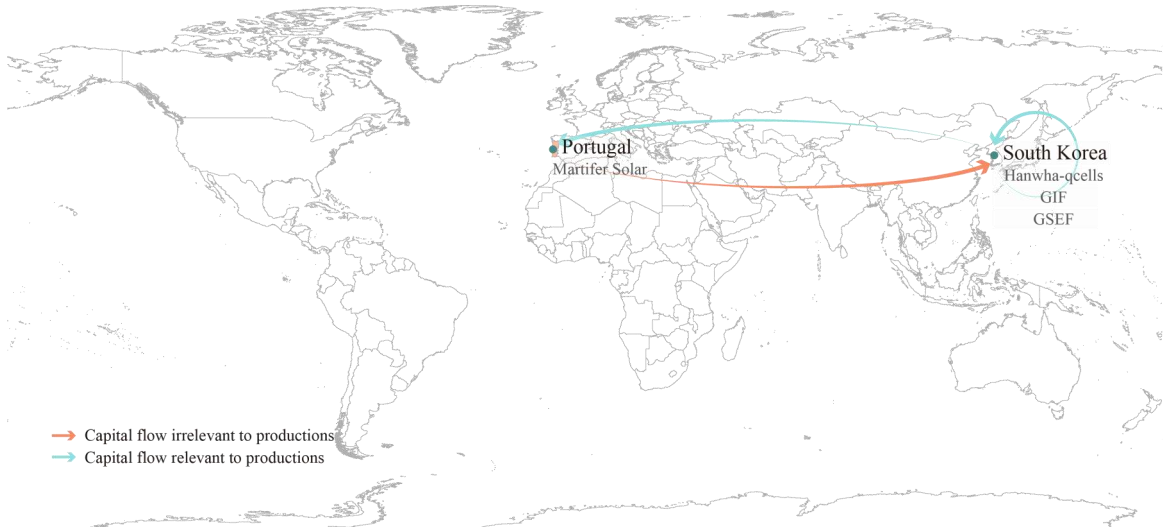


* Portuguese global construction company specialized in photovoltaic project
** The largest Portuguese power company
*** Global Solar Energy Fund

Source: Kim (2017). The Status and Features of the Government-led Infrastructure Fund. POSRI Issue Report, 2017(3), 1.

The agents founded a Special Purpose Company (see Figure 8), and Hanwha Q Cells Korea ($8.5 million) and GIF 2 ($0.85 million) became the business owners of this project. Most of the capital for this project relies on loans from GIF 2 ($31.4 million) and the Global Solar Energy Fund ($39.9 million). The Global Solar Energy Fund (GSEF) is a private fund, raised by Shinhan BNP Paribas Asset Management Co., LTD. in May 2012 (Kim, 2017; MOLIT, 2012). As a result of tracing the fund, it was discovered that the Hanwha Group (the parent company of Hanwha Q Cells) is the primary holder of GSEF. According to their official financial statement, the Hanwha Group owns all beneficiary certificates of GSEF. By October 2019, the SPC redeemed $10.2 million from the loan from GSEF, with the rate of return that GSEF yields approaching 35% (KOFIA). Further, the expected return rate of GIF 2 is 8.41% (Kim, 2017), so KIND may receive corresponding revenue.

Figure 9: Capital Flow of Portugal Lisbon Solar Power Plant Project



Source: Own work

Where the capital flow from this project is divided into stages of production and revenue generation, the direction of capital flow is shown in Figure 9[8]. In the production stage, capital moves from the public and private sectors of Korea to both Portuguese and Korean companies. After the production of infrastructure, the power plant generates electricity. The electricity is then sold to the residents in Lisbon and Setúbal, whereby revenues flow to the Korean private and public sectors that invested in this project. In short, the user fee of the power plant, derived from the surplus values created by the Portuguese residents, is spent on the repayment of construction and financing costs. As Korean entities dedicated to construction and financing, the revenues flow to Team Korea. In addition, GIF and Hanwha Q Cells receive operating income for 20 years because they are the business owners. Although Martifer Solar also earns operating income as a contractor of operation and management, this is the only part where Portuguese entities earn profits within the overall investment structure.

Case 2: Turkey Kirikkale Themoeltric Power Plant Project

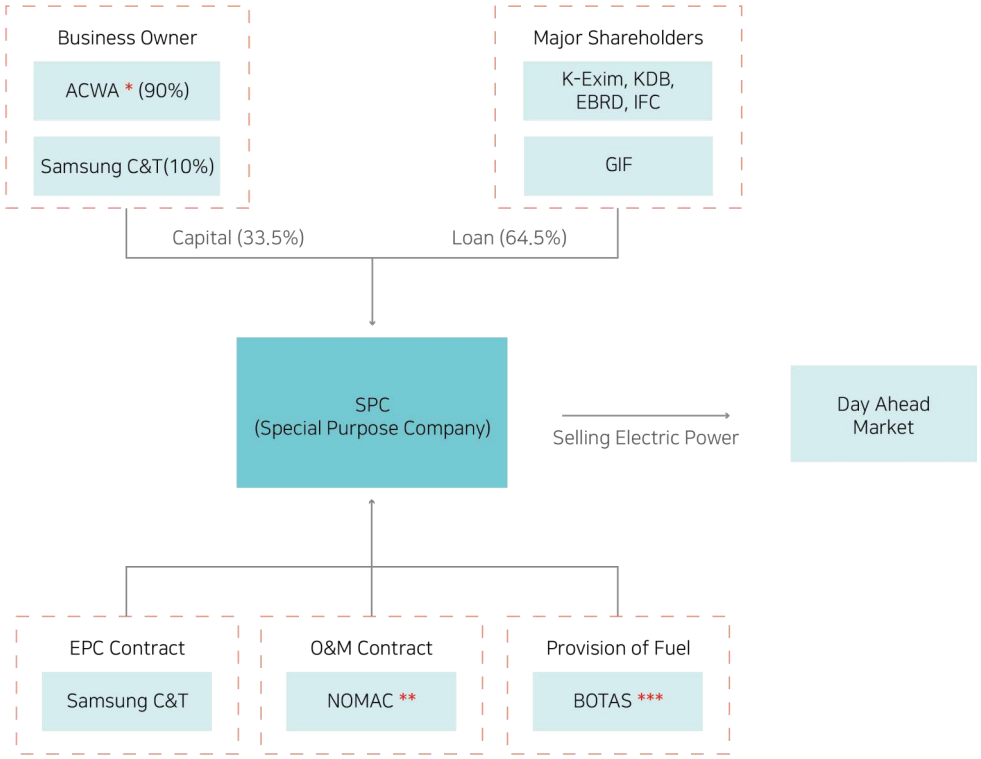
The thermoelectric power plant project in Kirikkale is the first project funded by GIF 1. GIF 1 was created earlier than GIF 2 but could not find projects in which to invest for a long time. In 2015, GIF 1 finally decided to loan $38.2 million to this project. The project's outline is to build a 926 MW thermoelectric power plant and lease it to the Turkish government for 30 years. Unlike in case 1, international agents took part in this project. Consequently, the role of Team Korea is relatively diminished, which is reflected in the governance structure. GIF 1 is not involved in the ownership, and the Korean company Samsung C&T only holds 10% of shares ($91 million). The other shares are held by the ACWA Power Int ($342 million), a Saudi Arabian SOE. Moreover, Samsung C&T only engages in

[8] Although Figure 9 does not describe micro-scale capital flows, such as capital inflows to subcontractors or local financial intermediaries, it shows the overall capital stream.

EPC contracts, and an affiliated company of ACWA Power Int, NOMAC, takes operation and management contracts.

A Turkish corporation, BOTAS, provides fuels for the generation of electricity (IFC, 2014; Kim, 2017; MOLIT, 2015).

Figure 10: Business Model for Turkey's Kirikkale Thermoelectric Power Plant



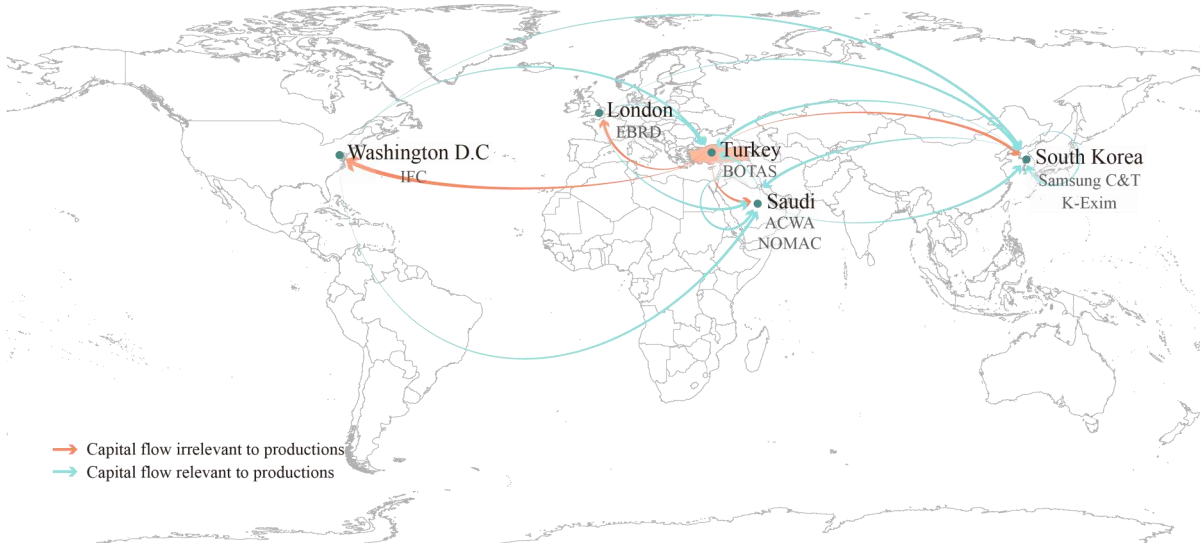
* A state-owned IPP enterprise of Saudi
** A affiliated company of ACWA
*** A state-owned gas enterprise of Turkey

Source: Kim (2017). The Status and Features of the Government-led Infrastructure Fund. POSRI Issue Report, 2017(3), 1.

Overall, the financial structure of this project shows more complex networks between Team Korea and international financial institutions. The Export–Import Bank of Korea ($91 million), Korea Development Bank ($45 million), and GIF 1 ($38.2 million) are connected to this project. When the project was planned, this connection was arranged by the MOLIT. However, as the GIF 1 was transferred to KIND, KIND took the role of coordinator. Furthermore, international financial institutions, the European Bank for Reconstruction and Development ($250 million) and the International Finance Corporation ($125 million), also constitute its governance (Kim, 2017; MOLIT, 2015; Ulgen, 2014). Hence, capital movement is more intricate.

Figure 11 demonstrates that Turkish agents participating in both ownership and investment are excluded from the flow of financial profits. Team Korea only participates in the financial investment sector, but it secures a steady stream of financial revenue. In this structure, the objective of Korean construction companies' overseas expansion cannot be achieved; however, at least the goal of offering an alternative asset class for domestic financial actors can be achieved. Thus, Team Korea often only engages in financial investment in foreign infrastructure PPPs and attempts to distribute the revenue to several entities through financial instruments such as the GIF.

Figure 11: Capital Flow of Turkey's Kirikkale Thermoelectric Power Plant



Source: Own work

Geographical expansion and diversion of the circuits of capital

Both these cases demonstrate that KIND and Team Korea geographically expand and divert the circuits of capital penetrating foreign infrastructures by being involved in PPPs. These revenue streams can be divided into two flows. The first stream is related to the development of infrastructure, which flows to construction companies. The second stream is relevant to the investment in infrastructure, which flows to business owners and creditors. As represented in these cases, Korean construction companies usually take both revenue streams by engaging as business owners and creditors. Further, the financial profit stream is a source by which KIND distributes profits originating from foreign infrastructure to the population. KIND utilizes opportunities with a wider range of entities. Although global infrastructure PPPs generally expand and divert the circuits of capital, KIND is different from the conventional private entities in PPPs in that it leads revenue flows to several entities of Team Korea rather than a private corporation. This suggests that SOEs realize the national interest rather than private interest via financialized infrastructures.

Conclusion

The driver behind KIND's support for Team Korea to take part in the global PPP market is its policy objectives of resolving the construction industry crisis and expanding financial investment opportunities. Such objectives reflect the need for both the production and financialization of space. The construction industry, faced with crisis due to decreases in effective demand, needs to search for another space to produce for the continuous circulation of capital. The financial industry demands an alternative asset class generating stable revenue streams by financializing space. Thus, KIND endeavors to achieve its policy objectives by producing and financializing foreign infrastructures.

However, there are two prerequisites for this. First, Team Korea should compete with other private entities in the global infrastructure PPP market to accomplish PPP contracts with host countries and to be the private sector for foreign infrastructure PPP. Therefore, KIND takes advantage of public capacities as an SOE to mobilize entities and resources from the public and private sectors. Further, it utilizes national credibility and policy finance, such as government-led funds, to enhance the competitiveness of Team Korea in the global PPP market. Based on KIND's public capabilities, Team Korea can seize the opportunity to participate in PPPs as a private sector entity to produce and financialize foreign infrastructure.

The second prerequisite is that the values originating from the locus of infrastructure could be unproblematically separated from the fixed space and transferred to Team Korea. The revenue streams flowing from the host countries to Korea might be divided into flows related to space production and financialization. Meanwhile, as identified

in Section 4, construction companies in charge of producing space often take both revenue streams by participating in the PPPs as business owners or creditors. The source of both revenue streams is user fees paid for the use-value of a spatially fixed infrastructure. Residents of the region pay for the surplus value that they create somewhere as a fee for using the infrastructure, and the value is transferred to Team Korea through infrastructure PPPs and financial instruments. In particular, given the infrastructure provides services necessary for residents' daily lives, the generation of user fees would be sustained. Therefore, user fees for infrastructure could be converted into stable and continuous revenue streams for Team Korea.

Furthermore, financial profits generated from foreign infrastructure might be distributed to Korean financial actors through policy finance (such as GIF). The Korean government also plans to create another finance policy to distribute revenues to more of the population, including individuals and households. This suggests that the value derived from one country could be diverted to another country via financialized infrastructure and SOEs investing in infrastructure. This is the distinctiveness of SOEs operating in the financialization of infrastructure. In existing PPPs, private entities capture value through financialized infrastructure. Conversely, when SOEs invest in infrastructure PPPs, the circuit of capital diverts toward other countries (and their population) rather than private corporations. Although global infrastructure PPPs generally expand and divert the circuits of capital, SOEs realize the national interest rather than private interest.

So far, KIND's financial instruments, such as GIF and PIS, have not been opened up to all the public; however, KIND plans to expand financial opportunities to the general public. Furthermore, SOEs relevant to infrastructure try to provide public services to citizens at a lower price by generating revenue from foreign infrastructure. As KIND seeks to solve the construction crisis and share financial profits, the appropriation of value by KIND and Team Korea is justified in the public interest. However, as the critics of PPPs point out, the appropriation of value generated from foreign infrastructure can add burdens to the budgets of developing countries and increase the cost of public services. Hence, it is necessary to raise questions about the public interest of KIND and Team Korea.

References

Aalbers, M.B. (2019). Financial Geographies of Real Estate and the City A Literature Review. *Financial Geography Working Paper Series*, *21*, 1–46.

Aalbers, M.B. (2020). Financial Geography III: The Financialization of the City. *Progress in Human Geography*, *44*(3), 595–607. https://doi.org/10.1177/0309132519853922.

Christophers, B. (2010). On Voodoo Economics: Theorising Relations of Property, Value and Contemporary Capitalism. *Transactions of the Institute of British Geographers*, *35*(1), 94–108.

Christophers, B. (2015). The Limits to Financialization. *Dialogues in Human Geography*, *5*(2), 183–200.

Christopherson, S., Martin, R., Pollard, J. (2013). *Financialisation: Roots and Repercussions*. Oxford University Press UK.

Dörry, S., Handke, M. (2012). Disentangling the Geography of Finance and Real Estate: Competing Space-times of Decision-making and Uneven Spatial Development. *Articulo-Journal of Urban Research*, *9*.

Frades, O. de. (2013). Martifer Solar and Hanwha Q Cells Korea Complete a 17.8MW PV Project in Portugal. *Martifer Solae Press Release*.

Furlong, K. (2020). Geographies of Infrastructure 1: Economies. *Progress in Human Geography*, *44*(3), 572–582.

Gatti, S. (2014). *Private Financing and Government Support to Promote Long-term Investments in Infrastructure*.

Gotham, K.F. (2009). Creating Liquidity out of Spatial fixity: The Secondary Circuit of Capital and the Subprime Mortgage Crisis. *International Journal of Urban and Regional Research*, *33*(2), 355–371.

Grimsey, D., Lewis, M. (2007). *Public Private Partnerships: The Worldwide Revolution in Infrastructure Provision and Project Finance*. Edward Elgar Publishing.

Harvey, D. (1982). *The Limits to Capital*. Chicago : University of Chicago Press. http://snu-primo.hosted.exlibrisgroup.com/82SNU:82SNU_INST21454986850002591

Heslop, L.A. (2020). A Journey through "Infraspace": The Financial Architecture of infrastructure. *Economy and Society*, 1–18. https://doi.org/10.1080/03085147.2020.1733843

IFC. (2014). IFC Funds ACWA Power Plant, Boosting Turkey's Sustainable Energy Development. *Press Release*.

Jo, J., Jeong, C. (2016). *Strategy of Finance to Promote Overseas Construction Project: Focus on Boosting Overseas Construction Specialied Fund*.

Joint Association of Related Ministries. (n.d.). The Development of the Global Plant Infrastructure Smart City(PIS) Fund. *2019*.

Kim, H. (2014). Financialization of Infrastructure Provision by Public-Private-Partnership?: A Perspective of Financial Geography. *Space and Environment*, *24*, 110–143.

Kim, H. (2015). *Trend of Infrastructure Investment in Asia*.

Kim, L. (2017). *The Status and Features of the Government-led Infrastructure Fund* (No. 3; POSRI Issue Report).

Kim, Y. (2012a). Foreign Direct Investments of Economic Infrastructure-Related Public Companies in Korea (1): Theoretical Considerations, Trends and Strategies of Companies FDI. *Journal of the Economic Geographical Society of Korea*, *15*(1), 1–25.

Kim, Y. (2012b). Foreign Direct Investments of Economic Infrastructure-Related Public Companies in Korea (2): Typologies, Characteristics of FDI and Interpretation of Nationality Issues. *Journal of the Economic Geographical Society of Korea*, *15* (2), 166–191.

KIND. (n.d.). *About KIND*. Retrieved February 1, 2020, from http://www.kindkorea.or.kr/?p=7

Kwak, S., Cheong, J.W., Lee, J., Kim, J., Kim, M.L. (2018). *The Growth of the ASEAN Construction Infrastructure Market and Its Implication for Korean Construction Companies* (No. 18–05; Policy Analysis).

Lapavitsas, C. (2013). *Profiting without Producing: how Finance Exploits us All*. Verso Books.

Lee, Y., Ji, M. (2018). Changes in the Environment of Global Infrastructure Investment and Implications for the Korean Financial Sector. *Korean Economy Forum*, *10*(4), 75–110.

Leyshon, A., Thrift, N. (2007). The Capitalization of Almost Everything: The Future of Finance and Capitalism. *Theory, Culture & Society*, *24*(7–8), 97–115.

Ministerial Committe on Economic Sector, (2018). *Construction Industry Innovation Plan*.

MOLIT, (2012). Global Infrastructure Fund(GIF), Invested in Portugal Solar Power Plant. *Press Release*.

MOLIT, (2014). *Study on Strategy and Policy Plan for Overseas Expansion of Construction Engineering Industry*.

MOLIT, (2015). Global Infrastructure Fund(GIF) is Activated! *Press Release*.

MOLIT, (2018). Official Launching of KIND: a Reliable Partner for Overseas Expansion. *Press Release*.

National Pension Service Investment Management, (2019).

O'Brien, P., Pike, A. (2017). The Financialization and Governance of Infrastructure. In *Handbook on the Geographies of Money and Finance*. Edward Elgar Publishing.

O'Brien, P., Pike, A. (2019). 'Deal or no Deal?'Governing Urban Infrastructure Funding and Financing in the UK City Deals. *Urban Studies*, *56*(7), 1448–1476.

O'Neill, P.M. (2010). Infrastructure Financing and Operation in the Contemporary City. *Geographical Research*, *48*(1), 3–12.

O'Neill, P.M. (2013). The Financialisation of Infrastructure: the Role of Categorisation and Property Relations. *Cambridge Journal of Regions, Economy and Society*, *6*(3), 441–454.

O'Neill, P.M. (2019). The Financialisation of Urban Infrastructure: A Framework of Analysis. *Urban Studies*, *56*(7), 1304–1325.

OECD, (2013). *Annual Survey of Large Pension Funds and Public Pension Reserve Funds: Report on Pension Funds' Long-term Investments*. OECD Paris.

OECD, (2016). *State-Owned Enterprises as Global Competitors: A Challenge or an Opportunity?* OECD Publishing Paris.

Park, D., Jo, Y. (2012). Vitilization of Infrastructure Financing in Developing Countries. *Journal of Korean Economic Development*, *18*, 65–90.

Pike, A., Pollard, J. (2015). *Economic Geography Economic Geographies of Financialization*. https://doi.org/10.1111/j.1944-8287.2009.01057.x

Siemiatycki, M. (2013). The Global Production of Transportation Public-Private Partnerships. *International Journal of Urban and Regional Research*, *37*(4), 1254–1272. https://doi.org/10.1111/j.1468-2427.2012.01126.x

Son, Y.-J. (2013). The Change of Paradigm in Constrcution Industry for Expansion of Overseas Construction Business. *Construction Engineering and Management*, *14*(2), 5–10.

Teixeira, F.A., da Silva, G.T.F. (n.d.). State-owned Enterprises and Foreign Infrastructure Investment in Brazil after the 2008 international financial crisis. *Desenvolvimento Em Debate*.

UNCTAD, G. (2011). World Investment Report 2011. *United Nations Publication*.

Whiteside, H. (2016). *Austerity Infrastructure Financialization, Offshoring, and Tax Sheltering Public-Private Partnership Funds*.

Whiteside, H. (2019). Advanced Perspectives on Financialised Urban Infrastructures. *Urban Studies*, *56*(7), 1477–1484.

World Bank. (2019). *Private Participation in Infrastructure (PPI) 2019 Annual Report*. The World Bank.

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