KOREA'S ECONOMY

2011

a publication of the Korea Economic Institute and the Korea Institute for International Economic Policy

Volume 27

ISSN 1054-6944

Volume 27

KOREA'S ECONOMY

2011

SYSTEM ARCHITECTURE FOR EFFECTIVE GREEN FINANCE IN KOREA

By Kim Hyoung-tae

Every country is increasingly interested in the green economy and developing green growth. Different principles, strategies, and methods have been announced. Korea has also acknowledged the importance of the green economy. Because this is a common interest around the world, Korea is pursuing various ways to collaborate with other nations. At the same time, Korea has also formulated a unique framework for developing its green economy, and it has designated green growth as part of the national strategy. The Presidential Committee on Green Growth came up with the vision, objectives, and policy direction.[1]

Green technologies and industries are relatively new and do not have much of a track record. In this sense, they can be thought of as risky; therefore, financing for these projects cannot depend on traditional financial mechanisms and sources. For effective financing for innovative green technologies and industries, the right system architecture is more important than any particular type of institution or instrument.

The framework I will present here focuses more on functions than on institutions. Regardless of country, these functions have to be delivered if a solid green financial system is going to be established. The differences will be in how these functions are delivered and who does what. The functions of the green finance architecture can be divided into three dimensions. They are the legal foundation, the financing avenues (bank loans, credit guarantees, and capital markets), and the information production and certification system. In this article, I will discuss each of these in more detail.

Legal Foundation

In Korea, the Framework Act on Low Carbon, Green Growth covers the legal principles for the green economy, which includes green finance. The two main purposes of the act are to (1) lay down the foundation necessary for low carbon and green growth by utilizing green technology and green industries as new engines for growth, and (2) pursue the harmonized development of the economy and environment and contribute to the improvement of the quality of life of every citizen.

"To design the right system architecture for green finance, three layers need attention: the legal foundation, the financing tools, and the information production and certification."

As for green finance, the act has highlighted some key areas of importance. For example, emphasis has been placed on both the development of new financial products for supporting green growth and private investments to establish infrastructure for green growth. Also, the need to reinforce the public disclosure system for information about corporations' green financing is reflected in the law. It can also be said that the legal framework encourages the establishment of a carbon market and increasing transactions there. This act defines specialized firms called green industries investment companies (GIICs), which basically are collective investment schemes that specialize in green technologies and industries.[2] The GIICs' investment

1. The Presidential Committee on Green Growth oversees and orchestrates green policies, which are distributed to government agencies. The identity and function of the committee is mandated by the Framework Act on Low Carbon, Green Growth.

2. Collective investment schemes are defined in the Financial Investment Services and Capital Markets Act.

targets are green research and development projects, businesses, and industries.

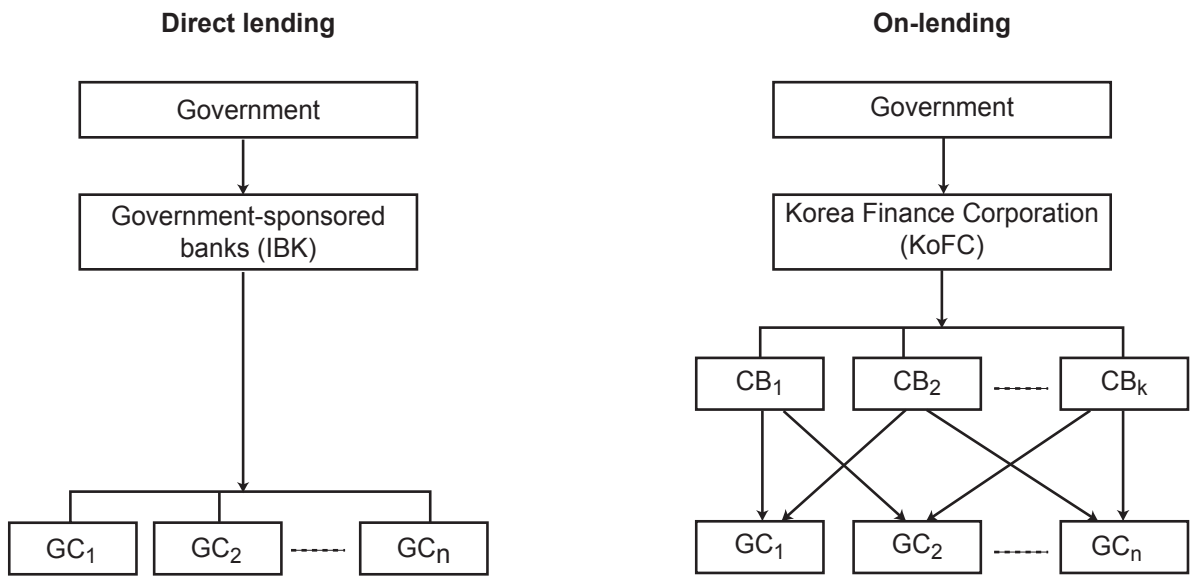
Although the laws and details of the legal foundation are important, some basic principles must be kept in mind. To build up a system for effective green finance, the focus should be on the green finance system as a whole rather than on any individual financial institution or instrument. The system should reflect the capacity and development stage of specific financial markets: for example, different mechanisms of providing loans, credit guarantees, and equity capital. In designing the architecture, the starting point is to recognize the economic properties of green companies, which include their high risk, lack of any track record, and information asymmetry. Last, the availability of several exit routes is a key success factor for effectively financing green companies, especially so for green venture capital and green private equity funds (PEFs).

Green Finance through Bank Loans and Credit Guarantees

Bank Loans

Bank loans have always been a traditional source of funding for all businesses. Loans for green finance come from government-sponsored financial institutions and regular commercial banks. In Korea, government-sponsored banks are still playing a significant role. They provide 75 percent of total green loans while commercial banks account for the remaining 25 percent. The three kinds of so-called policy lending methods are direct lending, on-lending, and the green deposit scheme.[3] On-lending is a policy lending

Figure 1: **Comparison of Direct Lending and On-Lending in Korea**



Key:
CB = commercial bank
GC - green company
IBK = Industrial Bank of Korea

Source: Author's concept.

3.Direct lending is preferable when commercial banks and markets are not working properly. The downside of this approach is that government-sponsored financial institutions have to fully take on the risk. On-lending is more market friendly and the risk is shared by the government and commercial banks.

scheme where the government allocates capital only to commercial banks, and then those banks provide funding to green companies. This approach contrasts with direct lending where the government-sponsored banks provide loans directly to companies. ***Figure 1*** shows the different routes of money lent through direct lending and on-lending.

At the moment, Korea is taking advantage of the on-lending method because the country has well-functioning commercial banks that screen, monitor, and provide loans to green companies. For the on-lending mechanism, the main vehicle through which the government directs funds to commercial banks is the Korea Finance Corporation (KoFC). The KoFC is a special organization in Korea and was designated in 2010 as a leading government-sponsored institution for green finance. Besides providing loans, the KoFC also participates as a limited partner to green PEFs and green venture capital funds.

Another lending system is the green deposit scheme, which is modeled after a system developed in the Netherlands. The government is not directly involved in the lending process in this system, unlike the on-lending system. Instead, the government provides tax benefits to depositors who then offer deposits to banks for low interest rates. In short, commercial banks can access cheaper capital and offer that to green companies at low rates. An important point to note here is that commercial banks have to distribute only 70 percent of the funds to companies with "green certificates."[4] The banks are free to use the other 30 percent for more profitable projects.

Credit Guarantees

Because of the high risk of green finance as well as its long investment horizon, credit guarantees are a prerequisite for activating financing to green companies, especially during the early stages. There are three main sources of credit guarantees: public institutions (government-sponsored provider), private organizations (monoline insurance companies), and financial instruments (credit derivatives like credit default swaps).[5] In Korea at the current time most guarantees are from public institutions because the other two sources are still not functioning as well as expected. There are two main public credit guarantee providers: the Korea Credit Guarantee Fund (KCGF) and the Korea Technology Guarantee Fund (KTCGF). They plan to expand credit guarantees for green companies from $3 billion (in 2009) to $7 billion (in 2013). Article 31 of the Framework Act on Low Carbon, Green Growth specifies special privileges for green technology and green industries; it states that KCGF and KTCGF "may provide credit guarantees preferentially to green technology and green industries or preferentially treat green technology and green industries in terms and conditions of guarantee."

Information Production and Certification

Information asymmetry is one of the big challenges associated with financing to green technologies and companies. Solving this problem is crucial for effective system architecture for green finance. One of Korea's solutions is a green certification system, which is identified in the Framework Act on Low Carbon, Green Growth. The economic role of the certification system is to reduce information asymmetry between green companies and investors about the quality of the companies. As a result, this system is expected to increase the market credibility of green companies. This system has two important bodies: the Green Certification Committee (GCC) and the Korea Institute of Advancement of Technology (KIAT). The GCC decides which applicants are qualified for certification. KIAT, a public institution founded in 2005, is a technology evaluating public institution that evaluates the green technologies and reports the results to the GCC.

Green Finance through Capital Markets

When designing a framework for effective green finance, I emphasized the systemic and bird's-eye view. This is especially relevant when we draw up the

4. The green certification system will be discussed during the overview of the information and certification system.

5. In a credit default swap contract, the protections for the seller's position is the same as writing an insurance policy or selling put options.

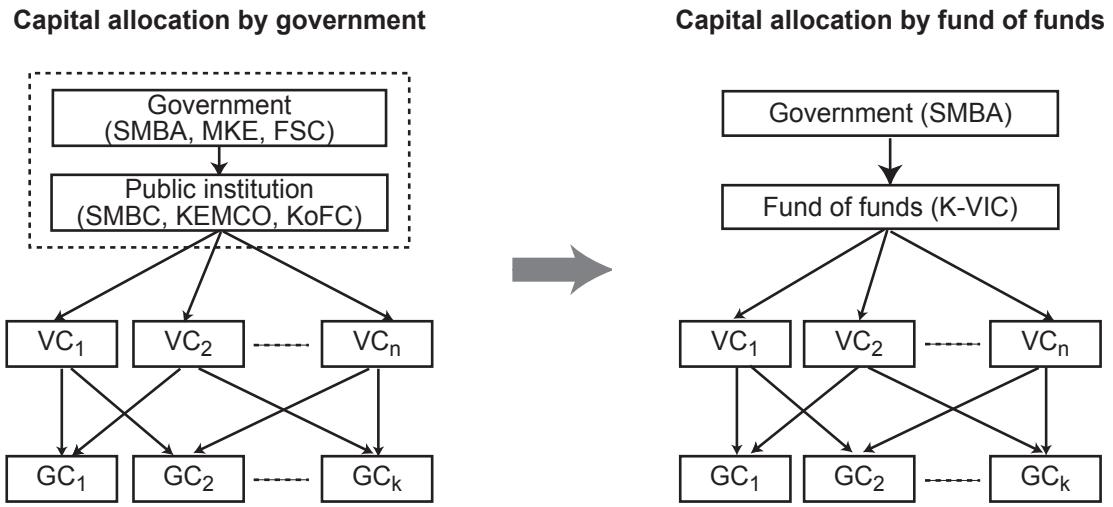
capital markets for green finance. We need to pay more attention to every part of the capital markets as they interact during the process of providing financing for green companies. In this section I will discuss venture capital and PEFs, especially in relation to exit routes. And I will also go over other market infrastructure for green finance.

Capital Allocation though Venture Capital

Despite the government's changing role, the Korean venture capital market still depends heavily on government-sponsored capital. The Korean government bodies that support venture capital firms are the Small and Medium Business Administration, Ministry of Knowledge and Economy, Ministry of Environment, and Ministry of Culture and Tourism. They are major limited partners for venture capital funds in Korea. Because the certification system specified in the Framework Act is reducing significantly the information asymmetry problems facing green companies, venture capital firms will be more comfortable with investing in certified companies. As a result, venture capital firms that are interested in green companies are expected to increase in size and diversity. Since 2009, three green venture capital funds have been established.

Before 2006, equity capital was distributed by government-sponsored institutions such as the Small and Medium Business Corporation (SMBC) and the Korea Energy Management Corporation (KEMCO). But, the Korea Venture Investment Corporation (K-VIC) was established in 2006 to play the role of a "fund of funds." Since then, most equity capital is allocated through K-VIC. The same mechanism applies to green companies. K-VIC allocates funds to venture capital

Figure 2: **Venture Capital Allocation through a Fund of Funds in Korea**



Key:
FSC = Financial Services Commission
GC - green company
KEMCO = Korea Energy Management Corporation
KoFC = Korea Finance Corporation
K-VIC = Korea Venture Investment Corporation
MKE = Ministry of Knowledge and Economy
SMBA = Small and Medium Business Administration
SMBC = Small and Medium Business Corporation
VC = venture company

Source: Author's concept.

firms, which then invest in green companies. ***Figure 2*** shows how equity capital flows to venture capital firms and green companies via K-VIC.

Exit Routes for Venture Capital

In the design of the capital market architecture for green finance, the most important policy issue is related to diverse exit channels. The two main exit routes for venture capital and PEFs are initial public offerings (IPOs) and mergers and acquisitions (M&As). Korea has an active new market, the KOSDAQ, which comprises more than 1,000 listed companies.[6] It has special listing standards for venture companies defined according to the venture business authorization system and also for green companies defined in the Framework Act. In accordance with the act, green companies can apply according to special listing standards on the KOSDAQ. That does not mean that they are automatically accepted. During the period 2000–10, IPOs in the KOSDAQ accounted for more than 80 percent of exits for venture capital. The other important exit is through M&As, a method that becomes even more important when IPOs are hard to achieve during a stock market downturn. Only 15 percent of exits were by M&As. The situation is almost the opposite in the United States, where from 2000 to 2010 only 20 percent of exits were through IPOs and the remaining 80 percent were by M&As. In 2009, special-purpose acquisition companies (SPACs) were introduced in Korea to facilitate M&As through the exchange platform. SPACs provide an exit that combines IPOs and M&As, where the M&A is executed in the public exchange market. In 2010, Green Korea SPAC, a SPAC for green companies, was created by Daewoo Securities.

Capital Allocation though Private Equity Funds

PEFs, especially buyout funds, search for companies that they can control. They usually purchase all the available shares or at least the amount necessary for control. They are not interested in being a minority shareholder. In Korea, PEFs are already established and have a reputation for offering a good service in the capital markets. PEFs are also important in green finance. Although venture capital is still significantly dependent on government-sponsored capital, private equity is not as reliant on those funds. Some green PEFs are created and fully operated by the private sector; they are in addition to government-sponsored green PEFs. Most green PEFs in Korea are interested in the renewable-energy field. The main targets have technologies in solar photovoltaic energy, wind power, and light-emitting diodes. They also have clean development mechanisms and certified emission rights. The first carbon PEF in Korea was set up by the Ministry of Knowledge and Economy in 2007, and it invests in companies that have greenhouse-gas-reducing technologies.

Market Infrastructure

Green companies are still risky, and investors will look for ways to diversify risk. Hence, a stock index is necessary. KRX Green is a green stock index provided by the Korea Exchange (KRX).[7] The index consists of 20 companies with green certificates and global competitive technologies. As of January 2011, two exchange-traded funds (ETFs) are listed on the KRX. ETFs are mutual funds publicly traded on the exchange. The two ETFs are the Tiger Green, managed by Mirae Asset Management Group, and KTB Great Green, managed by KTB Asset Management Group.

Another key part of the market infrastructure is the emission-trading system (ETS), which is one of the main tools for implementing the cap-and-trade system. The Korean government has decided to release the ETS after 2015 because it would add a heavy burden on companies if released earlier. The ETS is unpopular all over the world because of limits on gas emissions imposed on industries and companies. In Korea, the ETS is already an economic issue and is quickly becoming a political issue. The draft of the "ETS Act" was proposed in March 2011. Currently, it seems that it will require strong government will to push through the ETS system. If it is mandated, then the next step will be creating the right instruments. On global exchanges where ETS products are already traded, the instruments include cash-based products and derivatives—for example, futures. Some exchanges concentrate on cash products, others on derivatives,

6. Among new markets, KOSDAQ is fourth in the world according to the number of listed companies.

7. The market macrostructure in Korea is a three-tier system consisting of the Korea Stock Exchange as the main board, KOSDAQ as the new market, and FreeBoard as the over-the-counter market.

while others have a mixture of both. Korea plans to introduce both cash-based and derivative instruments in order to satisfy the demand for hedging tools and to increase market liquidity.

Securitization as a Green Finance Mechanism

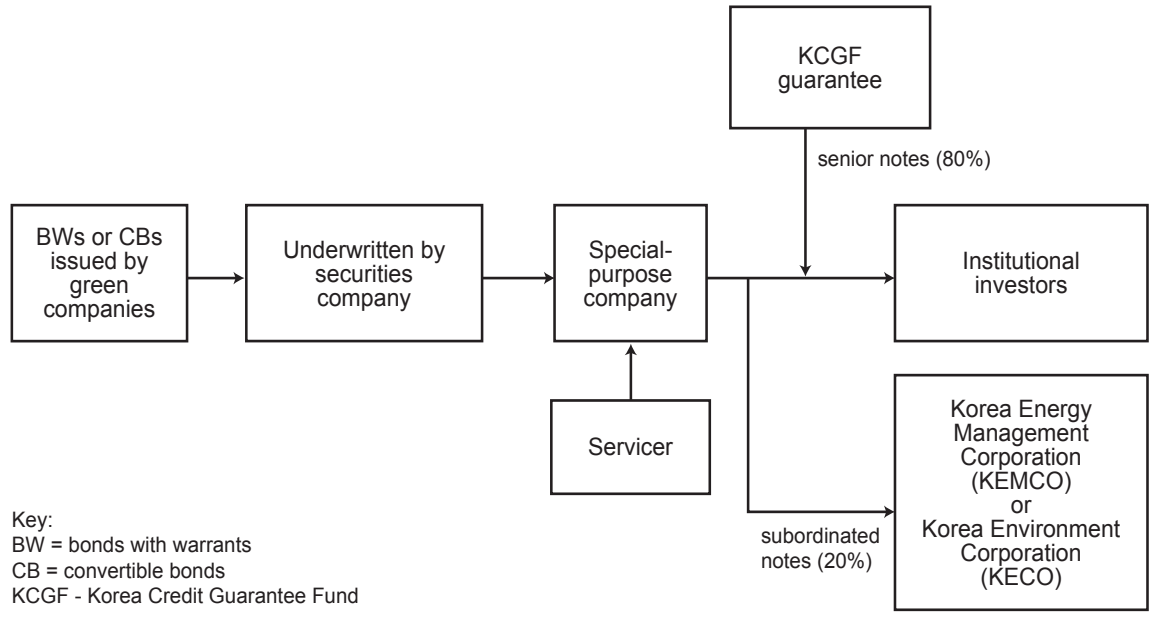
Because of their high credit risk, green companies have to depend on a financing mechanism that separates the credit risk from the issuing companies. This is where securitization or asset-backed securities (ABS) come into play. Korea can take advantage of these tools to activate green finance because Korea has an active and sophisticated ABS market. And when it comes to corporate financing, ABS is second only to corporate bonds. Many companies are making full use of this financing avenue.

There are several reasons why the ABS market has been successful in Korea. The most important factor was the government's institutional support in enacting the Asset-Backed Securities (ABS) Act. It clarified the rules for securitization and obviated legal obstacles to securitization. The ABS Act also clearly specified who can be originators, what kind of assets can be securitized, what kind of vehicles can be used, what process should be followed, what kind of securities can be issued, and what information should be publicized. A crucial part of the securitization process lies in the clear segregation of assets from the default risk of an originator. Protecting securitized assets from seizure in the case of bankruptcy, the so-called bankruptcy remoteness, is crucial for the development of an ABS market. A "true sale" under the ABS Act is synonymous with the more commonly used term, bankruptcy remoteness. By clearly defining the true sale, the government removed legal uncertainties related to asset transfer and, as a consequence, encouraged active involvement from a wide variety of originators, investors, and investment banks.

Another important success factor was the detailed and prompt information disclosure system. The Financial Supervisory Service came up with an electronic data analysis, retrieval, and transfer system—the DART system—through which detailed information is quickly released.

An example of applying securitization to green finance

Figure 3: **Securitization as a Financing Scheme for Green Companies in Korea**



Source: Author's concept.

is the primary collateralized bond obligation. The typical underlying assets of securitization are bonds with warrants or convertible bonds issued by green companies. These equity-linked bonds are popular because the equity portion provides incentives to underwriters and investors. Securities companies then underwrite these assets and transfer them to a special-purpose company. At this point, the KCGF provides a credit guarantee. Finally, the process results in two types of securities: senior notes and subordinate notes. The senior notes usually get AAA ratings and are sold to institutional investors. The tricky part is finding investors who will take the subordinate notes because they are risky instruments. When the originators are green companies, the Korea Energy Management Corporation (KEMCO) or the Korea Environment Corporation (KECO) are the best candidates to purchase the subordinate notes. As the market develops, private capital in the form of hedge funds, for example, is expected to invest in these notes. ***Figure 3*** shows the securitization process.

Conclusion

To design the right system architecture for green finance, three layers need attention: the legal foundation, the financing tools, and the information production and certification. Independent political bodies such as the Presidential Committee on Green Growth and a solid legal framework are also important. This is especially true if the financial markets are not particularly sophisticated. Korea's markets function well but are still not as sophisticated as the U.S. markets. As for the order of development, the typical model is to first develop loans and guarantee systems, and then develop the capital markets. Loans, credit guarantees, and capital markets interact with each other. This is seen in well-functioning capital markets that make it possible to expand green loans through securitization. In designing financial architecture, the interaction among the loan markets, credit guarantees, and capital markets should not be neglected.

In the early stages of developing the system architecture for green finance, government-sponsored institutions are crucial. However, depending too much on the government is not desirable because of the possible heavy fiscal burden to the government. Therefore, competent market players and infrastructure must be fostered. Capital markets are vital for green financing because green companies, while innovative, can be risky. To activate green finance through capital market players like venture capital and PEFs, there must be more diverse and wider exit routes for recycling their capital. The securitization market offers great opportunities for green finance. Korea has been successful here because it has backed up the securitization market with a solid legal framework. This is very important and cannot be overemphasized.

Although green finance may have great potential, the reality is that it is just one part of the bigger financial system. The growth of the green finance market will only follow the development of the financial system as a whole. Hence, Korean policymakers should focus on improving and reforming the entire financial market rather than trying to develop only green finance.

Kim Hyoung-tae is currently the President of Korea Capital Market Institute (KCMI). This article is based on his presentation at the Korea Economic Institute (KEI) on 13 April 2011.

Selected Commentary

Korea and the World Economy
C. Fred Bergsten, Peterson Institute for International Economics

Korea's Challenges and Opportunities in 2011
Chae Wook, Korea Institute for International Economic Policy

A Reflection on the Seoul Summit
Paul Volcker, Former Chairman of the Federal Reserve

The G-20: Achievements and Challenges
SaKong Il, Korea International Trade Association

Korean Green Growth in a Global Context
Han Seung-soo, Global Green Growth Institute

Korea's Green Energy Policies and Prospects
Whang Jooho, Korea Institute of Energy Research

Additional Commentary and Analysis

Korea: Economic Prospects and Challenges after the Global Recession

Achievements in Seoul and Korea's Role in the G-20

Africa and South Korea's Leadership of the G-20

Korea's Green Growth Strategy: A Washington Perspective

An Ocean in Trouble, An Ocean of Opportunity

System Architecture for Effective Green Finance in Korea

Economic Implications for South Korea of the Current Transformation in the Middle East

Korea-Africa: Emerging Opportunities

U.S.-Korea Economic Relations: A View from Seoul

A New Phase in China–North Korea Relations

Increasing Dependency: North Korea's Economic Relations with China

The Economics of Reunification

Human Resources and Korean Reunification

Korea-China Economic Partnership: The Third China Rush

Korea Economic Institute

1800 K Street, N.W
Suite 1010
Washington D.C., 20006