Legal and Institutional Study on Green Finance

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Abstract

Green finance is generally known as a financial service like loan and investment focusing on eco-friendly economic activities, however, in a broad sense, it includes various actions of financial institutions, intended to actively reduce environmental risk in case that environmentally hazardous element is found in common economic activities. The Scope of Green Finance is can be classified into Supportive Green Finance, Preventive Green Finance, Integrated hybrid Green Finance.

Supportive Green finance indicates a financial service that supports low carbon, green growth industry by providing funds to production of goods and services that increase energy efficiency and improve environment. Preventive Green finance means the actions block funding to those activities violating environment in order to prevent corporate environmental encroachment, for example, CERCLA. Integrated hybrid type of Green finance essentially has both characteristics of support and prevention, for example, Emission Trading Scheme (ETS).

International green finance has developed mainly by UN-led and UN-related green finance movements: UNEPFI, PRI, Global Compact, EPs, CDP.

Each nation like Germany, United States, Netherlands, Japan, Korea now supports actively for green businesses such as new reusable energy, the technology for reduction of carbon emission, and CDM or JI. In the mean time, the private sector joins in the green finance movement to establish the ETS and the infrastructure of green finance.

Despite of social interests and state's supports on green finance, its realization in financial market is way below expectation. Its reasons are as follows; 1) the lack of social agreement, 2) the collision of consideration on environment as a public good and market principles in financial market, 3) the lack of risk distribution methods and assessment method for a long term investment, 4) the lack of human resources for technology and environmental market analysts of green finance, 5) the lack of information infra for green finance, and 6) the lack of infra for carbon emission trading.

The government should build the infra for green finance and provide the policy loan. In addition to that government should provide clear policy goal, guideline and information for target industries or sectors. Financial institutions should develop the methods of green finance and raise the number of specialists for green finance, and citizen should actively play a role as a customer of green finance products. When these three axes can cooperate with each other, green finance can be true green finance.

Keywords: Green Finance, Green Growth, Environment, ETS, UNEPFI

Ⅰ. Introduction

Since the United Nations Framework Convention on Climate Change (UNFCCC), governments around the world have carried out Green Growth policy that enables sustainable growth along with environment protection, for example, the support for low carbon green industry and implementation of carbon emission trading scheme. In order for the success of the national policy, it should be backed up by the flow of the funds where the finance plays the major role.

Environment and finance have been considered unrelated, and their relation has not been given any interest so far. There have been few attempts to combine environment with finance, which are limited to sporadic fundraising for supporting eco-friendly industry or financial institutions' assistance for environmental movement.

Therefore, the study is to review the mutually cooperative mechanism of environment and finance that is so-called Green finance, and also to acquire implications for institutional development.

Ⅱ. The Concept and Scope of Green Finance

A. The Concept of Green Finance

Green finance is generally known as a financial service like loan and investment focusing on eco-friendly economic activities, which is defined in a narrow sense; whereas, in a broad sense, it includes various actions of financial institutions, intended to actively reduce environmental risk in case that environmentally hazardous element is found in common economic activities. Green finance is belonging to 'Ethical financing'.[1]

The Scope of Green Finance is can be classified into Supportive Green

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1. Benjamin J. Richardson, *Ethical finance in Britain: a neglected prerequisite for sustainability*, 5(2) Env L Rev, 111 (2003). According to Benjamin J. Richardson "'Ethical financing' involves the exercise of environmental, social and other ethical criteria in the selection and management of investment and lending portfolios…."

Finance, Preventive Green Finance, Integrated hybrid Green Finance. Supportive Green finance indicates a financial service that supports low carbon, green growth industry by providing funds to production of goods and services that increase energy efficiency and improve environment not only in terms of nationwide industrial structure, but also in people's everyday life, for example, loaning from banks and direct funding through non-monetary institutions from securities. Specifically, developments of Green Index, composition of Green Funds, or preferential loan treatment for Green technology developers have been recently discussed.[2]

Preventive Green finance means the actions block funding to those activities violating environment in order to prevent corporate environmental encroachment, for example, lender liability of CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) in US.

Integrated hybrid type of Green finance essentially has both characteristics of support and prevention, for example, Emission Trading Scheme (ETS). Through ETS, governments establish and support the infrastructures to control the amount of carbon emission through 'cap and trade system' and to allow selling credits as a financial commodity.

B. Supportive Green Finance – from the case of Korea

1. Details of Supportive Green Finance

Article 28 of the Low Carbon Green Growth Act suggests the forms of supportive Green finance as: 1) fundraising and financial support to assist Green economy and Green industry; 2) development of new financial products to support low carbon, green growth; 3) revitalization of private investment on establishing infrastructure for low carbon, green growth; 4) reinforcement of disclosure system for green business management information; 5) expansion of financial support for green management companies; and 6) revitalization of carbon market's opening and trading. Article 29 specifies hereof to allow establishing investment institutions as a collective investment agency according to Capital Market and Financial Investment Business Act[3], aiming at investing assets in green technology and industry to distribute the profits to the

2. Roh, Hee-Jin, Green Finance 36 (2010).

3. Capital Market and Financial Investment Business Act art. 9 Cl.18.

investors. Those collective investment agencies would invest to R&D business, green industry, companies investing in green industry and technology and etc. In this type of investment, however, there would be disadvantages including the high investment risk on commercializing green technology or prolonged commercialization. Due to these disadvantages, the investment might not be revitalized, thus, the intervention of typical governmental policy finance would be necessary.

2. Financial Support through Governmental Policy Finance

'Policy Finance' means "the financial support that is accomplished for government to promote the special area's development. There are many pros and cons to policy finance, but the need to policy finance is gaining persuasive power in the point that government should compensate the needed area by government since it can't be maintained and developed only by market principle".[4]

Article 3 of the Low Carbon Green Growth Act provides the legal basis that public institutions are able to invest in investment firms for green industry, as well as addresses that government finance would support the fund in whole or in part. Additionally, according to clause 2 of Article 31 that addresses Credit Guarantee Fund established in accordance with the Korea Credit Guarantee Fund Act and Technology Credit Guarantee Fund established in accordance with the Korea Technology Credit Guarantee Fund Act are able to primarily give credit guarantee or preferential treatment in guarantee conditions to green technology and green industry, it is allowed to provide financial support for green industry through every possible means of major governmental policy finances.

3. Supervision and Control over Supports

The investments in green technology industry fundamentally have disadvantages that make hard for a financial institute to independently invest due to the high risk on retrieving investments or prolonged period in payback.

4. Choi, Seung Pil, *Main Issues and Institutional Assignments in Policy Finance through Banks – Focusing on the Supporting System to Small and Medium Enterprises*, 31 HUFS Law Review Rev, 642 (2008).

Therefore, governments may bear partial amount of investment through governmental policy finance, or the entire amount in case of high investment risk.

However, the administration of funds through financing requires appropriate system to supervise and control, which is prescribed in clauses 4 and 5 of Article 29 of the Low Carbon Green Growth Act. The financial committee may claim data submission for corporate business and property to investment firms for green industry financed from public institutions, and relevant government offices can request the corresponding data to the committee, if necessary. If relevant offices determine on-site examination after reviewing the submitted data or reports, they could request the examination of the corresponding corporate to the committee. The committee may cancel the business registration in case that there are serious problems as the result of the examination.

Furthermore, in case of financial supports through Credit Guarantee Fund and Technology Credit Guarantee Fund that are two major axes of current governmental policy finance, the supervision and control would follow each individual regulation. Article 43 of Korea Credit Guarantee Fund Act addresses that the financial committee claims data submission along with on-site examination for the corresponding institutions, and Article 44 addresses to impose liability to relevant personnel on damages due to willful misconduct or gross negligence during the relevant business process, as well as to impose joint liability to the person in charge of supervision and control. Articles 47 and 48 of Korea Technology Credit Guarantee Fund Act have similar provisions, too.

4. Supports for Minor Green Enterprises

Supporting small and middle enterprises is the constitutional obligation of the government in accordance with clause 3 of Article 123 of the Constitution. Those supports also have significant meanings in terms of Green finance.

When small middle enterprises manage green industry or green technology, the Low Carbon Green Growth Act addresses the supports for those companies aside from the Promotion of Small and Medium Enterprises Act, such as: 1) supporting primarily the joint enterprise of a large enterprise and a small enterprise; 2) supporting large enterprises' technology instruction, technology transfer and technical staffing for small enterprises; 3) promoting small enterprises' industrialization of green technology; 4) providing public facilities for promoting green technology development; and 5) training, supplying professional manpower for green technology and green industry, and overseas expansion.

5. Relation with Socially the Responsible Investment (SRI)

The social responsive investment of financial companies is closely related with the revitalization of Green finance. Under the traditional financial structure, it would not be preferable to invest high risk Green industry according to typical investment principles. However, as corporate social responsibility (CSR) is emphasized nowadays, Green finance can be a form of socially responsive activities that a financial institution can contribute to a society, for example, social responsible investment (SRI).[5] In this point how financial instrument can be set to promote environmentally responsible financing?

If so, what is the target of investment of green finance? The main target of investment of green finance is green business. Hence, the certification for green business has a significant meaning because it clarifies the target of investment of green finance. Therefore, the clause 2 of Article 32 of Low Carbon Emission Green Growth Basic Law suggests that the government can certify the suitability of green technology, green projects, and green products, or a green corporation, or make public institutions purchase green products and service, or do technological consulting in order to spur green technology and industry.

C. Green Finance as a Preventive Method

1. Green Finance as a Preventive Method and Related Issues

Green finance as a preventive method means that a financial institution has a responsibility as a lender when it makes a loan to a corporation that runs environmentally hazard business. This loaner's responsibility also means that a bank can control how a corporation treat environment. Is this possible?

We can think that a proper management of environment and an investiga-

5. Roh, Hee-Jin, *supra* note 2, at 36.

tion on whether an applicant violates environmental regulations are preconditions of loan. In the mean time, we also can think that financial institutions actively make a loan to a corporation that has a good record on environmental issues, or relax conditions for loans, or make conditions for loans more beneficial. In any case, it is up to financial institution's will. However, it is difficult for financial institutions to adopt these standards for loans in reality because there is an issue of profit.

The problem is whether we make financial institutions take some legal responsibility(lender liability) no matter there are mistakes of the institutions when the institutions directly or indirectly involve the management of corporations that get loans from the institutions or the institutions take over or run a facility producing environmental pollution. Besides the cause and effect relationship, there can be a counterargument of why a financial institution even assesses and judges whether environmental damages are or not in a situation where a financial institution is difficult to assess the technology of a corporation when it wants to borrow money on the ground of the technology. In addition, some can argue that this is originally a job of the government, and it is not right for financial institutions to do that.

Currently, the lender liability of financial institutions is discussed at the level of academia, but the law on it rarely enacted in reality, and we can find its main shape from CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) of the US.

2. The Lender's Liability in CERCLA & the Lender Liability Act

According to CERCLA, a corporate acquirer can receive immunity from liability as an innocent purchaser only if the purchaser did not know toxic substances or environmental damages were produced in a purchased facility by a third party, and if there is no reason of the purchaser were aware of it, or only if the purchaser was in an emergency. Besides these, the acquirer takes liability for environmental damages the facility produces.[6]

When we apply this to a financial institution, the institution can take liability in case the institution becomes the owner of a facility by foreclosure or

6. 42 U.S.C. Art. 9601(35)(A). For more detailed information about lender liability of CERCLA *see* Jae-Hyup Lee, *A Legal Study on the Environmental Liability of Financial Institutions and its Responses*, 3(1) Environment Policy Review (2004).

by being paid loans with the facility containing hazardous waste.[7] However, a creditor has immunity from liability when a creditor is not directly engaged in the management of the facility.[8] The problem is a standard of judgment for directness.

Day-to-day operation was adopted as a standard of judgment for direct participation in management in the precedent of Mirabile Case[9]. However, the standard has been criticized for its strictness, and then in Fleet Factors Case[10], the court ruled that a creditor cannot have immunity for liability when there is capacity-to-influence. However, unlike Fleet Factors Case, the 9th circuit court of appeals ruled that a creditor takes liability only when it directly runs a facility[11], so the standard for immunity should be discussed more.[12]

In 1996, Asset Conservation, Lender Liability and Deposit Insurance Protection Act('Lender Liability Act') set as a condition for liability considerable, practical, and direct involvements like a financial institution's influences on daily operation or business decisions, especially on toxic substances. The influence may be described as "participation in management".[13] However, a creditor can have immunity from liability only if it removes the leakage of toxic substances or its possibility, or demands measures to the leakage.[14]

CERCLA & the Lender Liability Act means that financial institutions have strong economic incentive and motive to control the borrower's operation and to investigate his own real property.[15] ISO(International Organization for Standardization) 14001 is useful method to offer a window to analyze the borrower's position for environmental issues and risk.[16]

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7. William L. Thomas, *The Green Nexus : Financiers and Sustainable Development*, Summer Georgetown International Environmental Law Review, 909 (2001).

8. Jae-Hyup Lee, *supra* note.6, at 8.

9. U.S. v. Mirabile, 15 E.L.R 20992 (E. D. Pa. 1985).

10. U.S. v. Fleet Factors Inc., 901 F.2d 1550 (11th Cir. 1990).

11. In re Bergsoe Metal Corp., 910 F.2d 668 (9th Cir. 1990).

12. Jae-Hyup Lee, *supra* note 6, at 9.

13. William L. Thomas, *supra* note 7, at 909.

14. Jae-Hyup Lee, *supra* note 6, at 10.

15. William L. Thomas, *supra* note 7, at 911-912.

16. William L. Thomas, *supra* note 7, at 917-918.

3. Discussion on the Lender's Liability in Korea

There is no clear legal ground for the lender liability. However, adopting strict liability, Soil and Environment Protection Act recognizes the liability of acquirers of pollution facilities to cleanse or compensate for damages. Therefore, the clause 3 of Article 23 of the act grants an acquirer or an buyer who wins an auction the liability of cleansing pollution, but the acquirer can have immunity if bona fide and without fault.

In terms of the precedent, the court ruled that Seoul Bank has a liability of cleansing when a real estate the bank bid produces pollution in case of 'Hwaseon Keymetal'.[17] However, unlike CERCLA of the US there is still no clear legal ground on the lender liability in Korea, so it is necessary to discuss its legalization.

D. Integrated Hybrid Green Finance - Carbon Emissions Trading[18]

An effort to reduce carbon emissions spurred by UNFCCC adopted at United Nations Conference on Environment and Development in June 1992, each nation now does not set a reduction goal for carbon emissions, but also makes an effort to run carbon emissions trading wholeheartedly. By the carbon emissions trading scheme, at the standardized trading center, one can trade one's remaining carbon emission right under Cap & Trade, or one can trade one's carbon emission right that is acquired by CDM(Clean Development Mechanism, in Article 12 of the Kyoto Protocol) or JI(Joint Implementation, in Article 6 of the protocol) business. This aims at efficient distributing carbon emission right, and ultimately reducing carbon emissions globally. At the same time advanced countries make an effort to produce energy efficient facilities and invest on carbon reduced facilities.[19] Along with this change invest international financial agencies like World Bank(IBRD) and private institutions like Tricorona, RWE, Vitol, ENEL, Marubeni and etc.

17. Supreme Court of Korea 1997.8.22, 95 Nu 1774

18. Carbon Emission Trading is already discussed much in the previous studies, so hereby we just introduce it.

19. *See* Sander Simonetti, *Legal Protection and (the Lack of) Private Party Remedies in International Carbon Emission Reduction Projects*, May Journal of Energy & Natural Resources Law Rev (2010).

through funds in carbon emission right for capital gain.[20]

As a trading object, carbon emission right will be traded as a form of financial stock, and it is expected that there are various derivatives on carbon emission rights. In Korea, carbon emission rights will be traded at the Korea Exchange, and internationally carbon emission rights are traded at ECX, Bluenext, Nord Pool, EEX etc.[21] of Europe or CCX of US. This trading of carbon emission rights has elements of finance, so it can be classified into one of green finance.

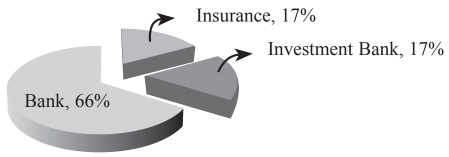
Ⅲ. International Trend of Green Finance

International green finance has developed mainly by UN. Now, we look into mainly UN-led and UN-related green finance movements.

A. UNEPFI (The United Nations Environment Programme Finance Initiative)

UNEPFI was established as sustainable development was agreed globally at Rio Summit in 1992, and 28 advanced financial institutions including HSBC, Deutsche Bank, and UBS participated in it. This establishment is based on statement by banks on environment and sustainable development. Currently, about 200 financial institutions participate in the initiative, and they play a role to develop and boost finance related with sustainable development.[22] Nowadays, 66% of these financial institutions are banks.

< Composition of Financial Institutions in UNEPFI >[23]



20. *See* ARNAUD BROHÉ, NICK EYRE & NICHOLAS HOWARTH, CARBON MARKET, EARTHSCAN 87 (2009).

21. For more information about it *see* Choi, Seung Pil, *Legal and institutional study on greenhouse gas emission allowance & trading –With a focus on the study of the European emission allowance & trading*, 3(2) Env L Rev Rev 171-208 (2009).

22. http://www.unepfi.org.

23. http://www.unepfi.org/signatories/index.html?&no_cache=1.

Green Climate Fund(GCF) was also founded within the framework of the UNFCCC according to Copenhagen Accord to assist law-carbon, Climate-resilient development in developing countries. The Fund supports adaption and mitigation activities of developing countries to counter GHG, and to assist REDD(Reducing Emission from Deforestation and Forest Degradation)[24].

B. Principles for Responsible Investment: PRI

It was firstly proposed to representatives of 20 world-class investment institutions of 12 nations that was invited by UN Secretary General in 2005, and made at the instigation of UNEPFI and Global Compact. Its main contents are as follows; First, when one makes a decision on investment, one should consider ESG (environmental, social, and corporate governance) issues. Second, one should actively connect ESG issues with one's investment principles and management. Third, one should demand an investee to open ESG issues. Forth, financial industry should follow PRI and make an effort to implement it. Fifth, financial institutions should cooperate each other in an effort to raise the efficiency of PRI implementation. Sixth, one should report the implementation and progress of the principles, and one can do these by exercising one's vote on ESG issues, and improving the process of investment, and the disclosure of information, and monitoring.[25]

C. UN Global Compact

At the World Economic Forum held in Swiss in 1999, it was proposed by Kofi Annan, the UN Secretary General, and started at July 2000. Participants of the initiative adopted core values of four areas like environment, human rights, labor, and anti-corruption, and set 10 principles, which are related

24. UNEPFI, The Green Climate Fund(GCF) : The private financial sector's perspective 1 (2011).

25. http://www.unpri.org/principles/ "1. We will incorporate ESG issues into investment analysis and decision-making processes. 2. We will be active owners and incorporate ESG issues into our ownership policies and practices. 3. We will seek appropriate disclosure on ESG issues by the entities in which we invest. 4. We will promote acceptance and implementation of the Principles within the investment industry. 5. We will work together to enhance our effectiveness in implementing the Principles. 6. We will each report on our activities and progress towards implementing the Principles."

with core values, as the principle and strategy of participated corporations. In terms of environment, strategies for caring for climate[26], water sustainability, other natural resources, and ecological challenges are the main contents, and the initiative carries out compliance activities and risk assessment.[27]

D. Equator Principles (EPs)

The Equator Principles (EPs) are a credit risk management framework for determining, assessing and managing environmental and social risk in project finance transactions. In other words, the principles argue that one should not lend loans to projects that can bring environmental and social damages. The EPs are adopted voluntarily by financial institutions and are applied where total project capital costs exceed US $10 million. The EPs makes an effort to provide the minimum standards in assessing environmental impact of projects. The EPs are based on the World Bank Group Environmental, Health, and Safety Guidelines.[28] The EPs consist of 10 principles broadly; 1) Review and Categorization[29] of Risks and Impacts on Society and Environment, 2) Social and Environmental Assessment, 3) Expansion of Applicable Social and Environmental Standards, 4) Expansion of Action Plan and Management System, 5) Consultation and Disclosure, 6) Grievance Mechanism, 7) Adoption of Independent Review, 8) Making A Contract on Compliance(Covenants), 9) Establishment of Independent Monitoring and Reporting System, and 10) EPFI Reporting.

E. Carbon Disclosure Project (CDP)

The Carbon Disclosure Project is an independent not-for-profit organization that is collecting and holding information related with carbon emissions from

26. http://www.unglobalcompact.org/Issues/Environment/Climate_Change/.

27. http://www.unglobalcompact.org/Issues/Environment/environmental_stewardship_strategy.html.

28. http://www.equator-principles.com/index.php/about-the-equator-principles.

29. Category A : Projects with potential significant adverse social or environmental impacts that are diverse, irreversible or unprecedented, Category B : Projects with potential limited adverse social or environmental impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures; and, Category C : Projects with minimal or no social or environmental impacts.

the world major corporations, and analyzing it, and distributing analyzed data to institutional investors, corporations, policy makers, consultants, public institutions, governments, and academia. Especially, CDP contributes to activate green finance by delivering relevant information to financial institutions and institutional investors to assess investment risks or chances when they make a decision on investments for climate change. 551 institutional investors, holding US $71 trillion in assets under management, currently participated in CDP.[30]

Ⅳ. Green Finance in the Developed Countries

A. Finance for Green Business

1. General Characteristics of Green Finance

It seems that there is not much difference in green finance among major nations when we look at them from the distance. Each nation now supports actively for green businesses such as new reusable energy, the technology for reduction of carbon emission, and CDM or JI. In the mean time, the private sector joins in the green finance movement by following the principles of Global Impact, PRI, and SRI which were established by international organizations like UN. Among these, the government policy for green finance is one of the most important elements. Although funds will be channeled into green business in the long run by the law of the market, the government should play a role in the short run because of the risk of uncertainty and profitability compared to conventional investment. The role includes providing policy financing, setting Guidelines and infrastructures including developed environmental risk assessment system in public-private partnership.[31] Private financial institution is not willing to invest without governmental assistance for high risk, long development times.[32] Special regard will be paid to the fact in adaption process. In process including mitigation process presents

30. https://www.cdproject.net/en-US/WhatWeDo/Pages/overview.aspx.

31. Nele Matz, *New Strategies for Environmental Financing ?*, ZaöRV Rev, 514 (2003).

32. UN(UNFCCC), Investment and financial flows to address climate change, FCCC/TP/2008/7 11 (26. November 2008).

public finance several mechanisms: credit line (senior debt, mezzanine debt), guarantee, project finance fund, contingent grants, carbon finance and grant for technical assistance.[33] Therefore, each of nations now makes an effort to establish the Emission Trade System and the infrastructure of green finance.

Project Financing (PF) is an important financial tool in green finance. PF can be applied not only to the governmental policy finance, but also the private finance. Project finance is the long term financing of infrastructure and industrial projects based upon the projected cash flows of the project rather than the balance sheets of the project sponsors. The PF has been utilized for the expansion of social overhead capital, but nowadays it is used to finance green business or to build green facilities. Equator Principles become the bridge that connects PF with green finance. As we already studied, the principles place emphasis on the social and environmental responsibilities of financial institutions as the source of finance, so financial institutions have to make a decision of loans after assessing the environmental impacts, and pay an attention to the project ever afterward. In the process it is necessary for financial institution to establish internal self-control system to monitor and to control the financing.[34] The global financial institutions like JP Morgan, Bank of America, Rabobank, and BNP Paribas now run major PFs.

2. Green Finance in Germany

As the leader of green finance, the core of green finance in Germany is the improvement of social recognition. Based on such ground, Germany has the well-developed system. Green finance in Germany is divided into the governmental policy finance and the pure private finance.

The policy finance is mainly provided by KfW (Kreditanstalt für Wiederaufbau). This institution has played a role of supporting the general industries in Germany, and now focuses on financing green business. KfW as the institution for policy-based finance directly provides funds to projects, and supports to financial institutions that are making loans to green businesses.

KfW raises funds for the protection of environment and weather, provides supports for corporations that invest CDM or JI businesses, and provides

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33. UN(UNFCCC), *supra* note 32, at 74.

34. Benjamin J. Richardson, *Financing Environmental Change: A New Role for Canadian Environmental Law*, Vol. 49 McGill Law Journal Rev, 162 (2004).

funds for pan-European ETS in solidarity with Europe Investment Bank. The solidarity funds include KfW EIB CO2 Programme I and KfW EIB CO2 Programme II, and this enables the institution to distribute risk and secure abundant financial sources.[35] On the other hand, Post 2012 Carbon Credit Fund was established in 2008 as the future-oriented fund of KfW. This fund was not established only by KfW, and but EIB, Caisse des Dépots (Frankreich), Instituto de Crédito Oficial (Spanien), KfW Bankengruppe und Nordic Investment Bank together. Meanwhile, KfW runs ERP Environment Protection and Energy Saving Programme in order to provide supports for small business and professional independent business owners that make an investment for the environment protection, energy reduction, and reusable energy, and provides loans with a low interest rate on a basis of 10 and 20 years at maximum.

Banks are main players making loans to green business in the private finance sector. Lending money to corporations and providing financial service, major banks including Deutsche Bank follow UN Global Compact and PRI. By this, they do not provide commercial service, but also induce corporations to reduce and lessen environmental risks.

3. Green Finance in the United States

Green finance in the United States is mainly divided into the role of policy-based finance including pension funds, the role of private financial institutions, and CERCLA, already above mentioned. CERCLA codifies the responsibility of lenders. In other words, when financial institutions take facilities and materials that bring environmental damages, and also has liability to take remedial response actions. Furthermore, it recognizes the liability of financial institutions that made a loan to business activity when it brought environmental damages, so it tries to induce financial institutions to take environmental issues into account when they lend money.

Like the cases of other nations, government financial institutions play a major role in green finance. As risk is usually in grey area to the private financial institutions, and as their rule number one is the pursuit of profits, the institutions usually take a negative attitude toward green finance. Teachers' pension fund and public employee pension fund have invested into clean and

35. http://www.kfw.de/kfw/de/KfW-Konzern/Klimaschutz/Klimaschutzfonds/index.jsp

energy technologies, and Export-Import Bank of the United States, a state-owned institution, provides long term loans with low interest rates. Also, over 10% of the investment it makes is used to support for the production and export of reusable energy and eco-friendly products in accordance with the Act for Foreign Spending Budget. [36]

In the private finance sector, Citi Group runs Energy Efficient Mortgage, and BOA(Bank of America) runs Flee Loans in order to make investment for the improvement of fuel efficiency, and also runs Private Equity for the establishment of sustainable mechanism to protect forests. Citi Group's SDIP (Sustainable Development Investment Program) has launched private equity for the sustainable management of forest and industrial waste, and BOA provides loans with a low interest rate to non-profit organizations so that they can purchase sensitive lands and carry out the sustainable management of forest. Besides these, Shore Bank's Eco-deposit provides supports for corporations contributing to the reduction of pollution sources and the protection of natural resources by lending a specific percentage of the deposit. [37]

In the insurance sector, the National Association of Insurance Commissioners (NAIC) approved a mandatory climate risk disclosure standard for insurers with annual premium revenue of $500 million or more. The standard requires insurers to disclose to regulators and investors the financial risks they face from climate change. If insurers maintain insurance contract that increases risk due to climate change, this will increase the liability of insurers, so the financial soundness of insurers will be influenced. Therefore, insurers are launching insurances that are different in premium in regard to the environment-friendly extent of the insurance. [38]

< Green Finance Products in the United States >[39]

Fields	Products
General Retail Banking	Green Mortgages, Green Home Equity Loan, Green Car Loan, Green Commercial Building Loan

36. Hwang, In-Hyek, *Green Finance, settle down in Korea ?*, The Banker Rev, 29 (2009).

37. UNEP Finance Initiative, 2007; Ministry of Government Legislature, A Study on the Legislation of Green Finance in Developed Countries 110-111 (2009).

38. Gu, Jeong-Han, *Recent situation of eco-friendly financial product*, 18(31) KIF Weekly finance brief, 13 (2009).

39. Ministry of Government Legislature, A Study on the Legislation of Green Finance in Developed Countries 109-110(2009).

Corporation and Investment	Green Project Finance, Green Securitization, Green Venture Capital & Private Equity, Green Indices, Green Commodity
Asset Management	Green Fiscal Funds, Green Investment Funds, Carbon Fund
Insurance	Green Insurance, Carbon Insurance

* Source: MINISTRY OF GOVERNMENT LEGISLATURE, A STUDY ON THE LEGISLATION OF GREEN FINANCE IN DEVELOPED COUNTRIES 109-110 (2009).

4. Green Finance in Netherlands

Green Fund Scheme, launched in 1995, is the representative of green finance in Netherlands. This is a system that provides funds to green projects through tax benefits(tax deduction for interest payments and dividend yields from the Green Fund)[40], and in which the government, banks, depositors, and investors participate together. First of all, project developers apply loans to banks with the green-bank license, and the banks take an examination of it. Next, the developer has to be examined its project for the environment-friendly extent of the project by SenterNovem or Dienst Regelingen, government agencies. If the developer passes the examination, the developer can acquire green certificate. Banks will raise funds from savings or through issuing bonds, provide the funds with lower interest rates than the interest rate in the market, and supply 70% of the raised funds more. As depositors or investors can have tax benefits, they can make up for the loss from the lower interest rates and lower return of bonds. If the financial institution does not provide 70% of the total raised funds to green projects, the institutions have to reimburse the tax benefits it received. Meanwhile, the government puts restrictions on the scale of government-supported-projects per corporation; a corporation can't receive government's supports excessively. [41]

However, this scheme covers organic farming and fishing, protection of forest, and new renewable energy as its investments, so it had been now examined for its governmental subsidies whether it violates EC Treaty Art. 87.3 or not. However, EU approved it only for the investment to green development,

40. Benjamin J. Richardson, *supra* note 1, at fn.156.

41. Gu, Jeong-Han, *Green deposit & green bond in Netherland*, 18(39) KIF Weekly finance brief , 9 (2009).

so the scheme gained its momentum.[42] In addition, this system of Netherlands is now being studied as a good example of green finance.

< Interest Rates in Green Fund Scheme >[43]

Items	Normal Loans (%)	Green Loans (%)
Paid Interest Rate of Banks	5	2.5
Pre-tax Income of Investors	5	2.5
Tax	2.5	0
Post-tax Income of Investors	2.5	2.5
Compensation for Risk	1	2.2
Interest Rate of Funds	6	4.7
Source: SenterNovem, Institute for Korea Finance, The Status and Tasks of Green Finance, Finance VIP Series 2010-01 16 (2010).		

5. Green Finance in Japan

In Japan, state-owned financial institutions play a great role in green finance because of risk. DBJ provides loans to corporations differently by examining their level of environmentally conscious management in the Environment Rating System. Meanwhile, JBIC also provides financial supports for Japanese corporations' overseas CDM and JI. Also, the government raised funds for the protection of local environment in order to secure directly financial sources, and funds of no interest rate that support environment-related business for 5 years.

Private financial institutions' green finance began as a form of social responsible investing of corporations. Eco Fund, launched in 1999, is the representative of it. Then, new kinds of trust funds for investment have been adopted as green finance. Meanwhile, financial institutions need to know which corporation is environment-friendly in order to lend money to it. Therefore, they differentiate their financial support by adopting the environment certification system. For example, Sumimoto Bank provided low interest rate SMBC-Eco loans to small and medium business that acquired ISO 14001.

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42. www.thegovmonitor.com/world_news/europe/revised-green-fund-scheme-gets-approved-10074.html.

43. SenterNovem, Institute for Korea Finance, The Status and Tasks of Green Finance, Finance VIP Series 2010-01 16 (2010).

Mitsubishi UFJ did not only support green corporations with environment funds and financing, but also provide low interest rate loans to small and medium business that actively deals with environment issues.[44] In addition, it launched trust funds for the protection of wild life. Besides these products, there are a lot of green finance products pushed by various financial institutions like Bank of Tokyo, Mizuho Bank, Nihon Core Insurance.

6. Green Finance in Korea

Green finance in Korea is also divided into policy-based finance and private finance. The policy-based finance of Korea is processed mainly by Korea Development Bank, Korea Export-Import Bank, and Korea Credit Guarantee Bank. Korea Development Bank supports for green business with loans, PF, private equity fund, and venture investment, and Korea Export-Import Bank supports for Korean corporations' overseas JI and CDM. Korea Credit Guarantee Bank guarantees green business. Private financial institutions provide supports for green projects through PF. Photovoltaic power station project is being supported by using PF by some financial institutions.

In reality, Korea's green finance is mainly carried out by the government. The government implements it through the Five-Years Plan for Green Development and the vitalization plan of the fund inflow. Its details are as follows; first of all, three directions are suggested in the Five-Year Plan; vitalizing policy-based financing for green technology and industry, building infrastructure for green finance, and raising carbon trade market. These directions take concrete shape in the vitalization plan; first of all, green technology and industry are sorted out as the target of green finance by implementing the green certification. Being based upon this, green depositors and investors receive tax benefits for their money, and banks lend the money to green corporations or industries at low interest rates like Green Fund Scheme of Netherlands. Second, the concrete methods of financial support are defined. As private investment for the developing green technology is rare due to its high risk, the government budget will be channeled into the development of green technology. At the stage of commercialization, policy-based finance will be provided, and at the stage of growth, private capitals will be provided through the capital market.

44. Ministry of Government Legislature, *supra* note 37, at 162-163.

Private capital is attracted through long-term savings, bonds, and ABS. At the stage of standardization, the plan supports the establishment of carbon finance, the development of stock market index of green industries, green insurance, and the overseas expansion of green projects and industries.

In the mean time, a plan for the vitalization of financial and monetary support, announced in 2001, crystallizes these as follows; the expansion of human resources and departments specialized in green finance in the state-owned financial institutions, the establishment of investment corporation of green industry, the improvement of incentive to green licensed corporations' finance, R&D, export, and sales, the expansion of investment to ESCO (energy service company), and vanquishing information asymmetry by delivering real time information through a integrated green finance portal.[45] However, the problem is discerning which projects are really green, like other nation's cases. In fact, there is a tendency of 'Green wash' that relates almost all projects with green, and financial institutions can't judge correctly whether a project is really related with green, and this is so called 'Green bubble'. In addition, 1) the pattern of green finance in Korea is simple because most green financing from private financial institutions are just lending money, and 2) the size of private financing in green finance is very small relative to that of the government, so it is difficult to say that green finance is vitalized in Korea.

B. Emission Trading System - Focusing on Institutional Framework[46]

1. Recent Development of ETS

In regard to green finance, ETS means the creation of the market for emission rights. In connection with cap-and-trade system, institutions like selecting the standards for National Allocation, setting procedures of the allocation, establishing the certification system, and making the reporting system are necessary, but the market infrastructure centering on trade mechanism is

45. Presidential Committee on Green Growth of Korea, Status of green finance policy (2010).

46. Carbon Emission Trading has been already discussed much in the previous studies, so I briefly describe the institutional framework in this section.

the most important element in regard with finance. Therefore, the most exchanges are now closely related with the existing exchanges, or the existing exchanges play a role of the market.

Nowadays, Europe has the most developed market. Europe accounts for the bulk of the market with ECX as the center. ECX's trade norms are regulated by ICE futures Europe. ICE futures Europe is the futures exchange located at England, and deals the futures under the supervision of FSA based upon FSMA (Financial Services and Markets Act) 2000. Therefore, ICE futures Europe has its own rights to supervise itself, but is supervised ultimately by FSA. In the mean time, the results of emission trading at ECX are cleared by LCH Clearnet (London Clearing House Limited and Clearnet).[47]

The legal ground of ETS of Europe is the guidelines of emission trading system (Directive 2003/87/EC[48]). The major contents of the guidelines consist of Allocation Plan, the ground articles on emission trading, Banking (Carry-over), Monitoring and Reporting Guideline, Verification System, the history of emission trading, disciplinary measures for overuses, the improvement of transparency, and the guarantee of access to information. Being based on the guidelines, nations of Europe went through the revision of their domestic laws.[49] Germany enacted TEHG (Gesetz über den Handel mit Berechtgungen Zur Emission von Treibhausengasen), and England enacted Climate Change Act. In TEHG of Germany, chapter 1 provides general provisions, chapter 2 provides certification and supervision over emission, and chapter 3 provides the allocation of emission rights, the core of emission trading system. Emission rights, the Nation Allocation, the procedure of the allocation plan, the allocation of emission rights, the considerations over the allocation, the legal remedy, the verification of emission rights, and the register for emission trading are provided in chapter 3. Chapter 4 provides emission trading that includes the enforcement of provisions to financial institutions, and the transfer of emission rights. Chapter 5 provides the provisions on sanctions, and

47. Choi, Seung Pil, , *supra* note 21 at 187.

48. Directive 2003/87/EC of the European Parliament and of the Council of 13 Oct. 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

49. Javier De Cendra De Larragán, *Too much harmonization? An analysis of the Commission's proposal to amend the EU ETS from the perspective of legal principles*, *in* Climate Change and European Emissions Trading, 67 (Michael Faure & Marjan Peeters eds., 2008).

chapter 6 provides the provisions of monitoring, electronic controls, and an investment fund.[50]

Meanwhile, the US enacted the American Clean Energy and Security Act in 2009 so as to set a solid legal ground of adopting cap-and-trade. However, the system is not adopted actively at the federal level because of concerns on the degeneration of profits of the US industries. Therefore, a state or a group of states that pay attention to environmental issues firstly began to adopt the cap-and-trade. For example, the state of California announced that it would maintain emission till 2020 at the level of 1990, and would begin to put restrictions on emission from 2012. In addition, along with the eastern states of Canada, the north eastern states of the US announced RGGI(Regional Greenhouse Gas Initiative)[51]. Northeastern and Mid-Atlantic states have capped and will reduce CO2 emissions from the power sector 10 percent of emission of 2009 by 2028. Meanwhile, the states of Canada and the western states of the US have developed the Western Climate Initiative[52] to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. However, the US has much experience of running a market for sulfur dioxide emissions allowances which is very similar with CO2 cap-and-trade, so it is known that the US has no technical problem to implement CO2 cap-and-trade. In addition, CCX, a voluntary cap-and-trade, is run successfully.

Japan made a legal ground of cap-and-trade by enacting the legislation on global warming. The legislation provides that allowance will be bound to one's allowance account, and transferred to a receiver with a record of transfer, and this is a requirement of transfer. In addition, Japan made a legal ground to implement cap-and-trade in terms of finance by revising the Financial Product Trade Act in Dec. 2008.

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50. For TEHG *see* Choi, Seung Pil, , *supra* note 21.

51. The Regional Green Gas Initiative (RGGI) was the first regional cap and trade program in the US. Ten states participate in the initiative: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. Several states and Canadian provinces (as observers): Pennsylvania, Québec, New Brunswick, and Ontario. *See* Erik, B. Bluemel, *Regional regulatory initiatives address GHG leakage in the USA*, *in* CLIMATE CHANGE AND EUROPEAN EMISSIONS TRADING, 227 (Michael Faure & Marjan Peeters eds., 2008).

52. Arizona, California, Montana, New Mexico, Oregon, Utah, Washington + British Columbia, Manitoba, Ontario, and Quebec,

< Major Carbon Emission Exchanges, Products and Characteristics >[53]

Exchange	Country	Over-the-Counter-Business	Futures	Characteristics
ECX	UK		EUAs, CERs, Futures/Option	No. 1 in the Size of Deals, 40% of Emission Market of Europe
Nord Pool ASA	Norway	EUAs	Forward/Swap CERs Forward/Swap	Including Electricity
Blue Next	France	EUAs, CERs	Futures	No. 2, 3 in Europe
EEX AG	Germany	EUAs	Futures/Option CERs Futures	No. 2, 3 in Europe, including Electricity
CCX	US	CFI	Futures/Option	No. 1 Futures Exchange in the World
CCFE	US	-	CFI Futures/Option	

*ECX: European Climate Exchange, EEX: European Energy Exchange, CCX: Chicago Climate Exchange, CCFE: Chicago Climate Futures Exchange, EUA: EU emission Allowance, CER: Certified Emission Reduction, CFI: Carbon Financial Instrument

2. ETS in Korea

Cap-and-trade in Korea is processed at the Korea Exchange. However, the legal infrastructure is necessary for traders to make a deal. Article 3 of the Capital Market and Financial Investment Business Act provides that financial products are defined as what should repay to purchasers of the products with valuable properties at a specific moment, and defined as which value can be lower than when it is purchased. Therefore, stocks or derivatives based on emission rights can be traded. In addition, Article 4 of the Act defines underlying asset as “risk belongs to natural, environmental, and economic phenomena, and what can generate price, index, interest rates, and units”, so stocks or derivatives based on emission rights can be traded. Meanwhile, carbon

53. RohHee Jin, Green Finance 82(2010), Choi, SeungPil, *Legal and institutional study on greenhouse gas emission allowance & trading - With a focus on the study the European emission allowance & trading*, 31(2) Journal of Korea Environment Law Association 186 (2009).

fund as one of the main measures of green finance can be traded because Article 6 of the Act does not put any restrictions on the definition of syndicated investment business. In addition, KRX is designated as the emission trading organization, so there is no difficulty in using well-developed infrastructure of KRX. Of course, the government should make an effort to establish infrastructure. At last, as private capitals can't participate in green finance market due to risk of uncertainty, the understructure should be formulated by sharing risk information, and improving professionalism in order to remove the risk.

Ⅴ. Conclusion

Despite of social interests and state's supports on green finance, its realization in financial market is way below expectation. Its reasons are as follows; 1) the lack of social agreement, 2) the collision of consideration on environment as a public good and market principles in financial market, 3) the lack of risk distribution methods and assessment method for a long term investment, 4) the lack of human resources for technology and environmental market analysts of green finance, 5) the lack of information infra for green finance, and 6) the lack of infra for carbon emission trading.

Green finance is led by the government for environment protection and sustainable development. In the mean time, financial institutions do not show activeness in green finance or demand the government guarantees or loans because green finance has its risk and profits are the most critical decision factor of financial institutions. However, there is a limit of the governmental aids. In addition, it is necessary for the institutions to participate voluntarily in green finance because green finance has a great meaning to our society.

Green finance can succeed when the government, NGOs, and corporations cooperate with each other. The government should build the infra for green finance and provide the policy loan. In addition to that government should provide clear policy goal, guideline and information for target industries or sectors.[54] Financial institutions should develop the methods of green finance and raise the number of specialists for green finance, and citizen should actively play a role as a customer of green finance products. When these three axes can cooperate with each other, green finance can be true green finance rather than green bubble.

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54. Benjamin J. Richardson, *supra*note 34, at 162-164.

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