

Financing a Green Future

An examination of China's banking sector for green finance

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Abstract

With the rapid economic development, China has accelerated its trade and investment at home and abroad. China's banking sector, in supporting financial activities with capital flow, has become an emerging force at international financial stage. Meanwhile, this numerous amount of cashes provide banks an environment for excessive lending and investments. The increasing environmental accidents have shown that banks' reckless decisions in lending to companies or project with environmental risks might lead to irretrievable environmental problems. To tackle the growing environmental threats and to build Chinese banks with social and environmental responsibilities, three Chinese government departments jointly released the "Green Credit policy" in 2007. To date, the policy, being implemented for its fifth year, has been proved effective in restricting bank lending to energy intensive and high polluting projects within China. Based on the policy, many banks have established own internal policies and measures for incorporating environmental aspects into current practices. Besides, some banks have proactively issued CSR reports and adopted international initiatives to improve their environmental performances. Nevertheless, the barriers are still remained. Towards green finance, China's banking sector, in partnership with the government and civil society, has to address the emerging challenges and opportunities, such as improving transparency in information disclosure, monitoring environmental conducts in overseas lending. Ultimately, Chinese banking will realise financing for sustainability.

Keywords: Green Finance, Chinese Banking, Sustainable Banking, Green Credit, the Equator Principles

Executive Summary

Within the financial industry, banks in general have a crucial role in supporting companies and projects with a series of financing activities and thus exert significant influence on their clients' operations that have produced or have the potential to produce negative effects on the environment. Thus, addressing environmental concerns is considered critical for banks.

To date, Chinese banking have also become an emerging force on international financial stage. Three Chinese banks have entered into the world's top five banks ranked with the profit of 2008. Abroad, China's lending to developing countries in 2009 and 2010 has reached to US\$110 billion in total. This loan size has surpassed the commitments of US\$100.3 billion from World Bank assistant that is even a record of loan amount in response to the global financial crisis during the past two years. Such immense amount of cash provides Chinese banks an environment for excessive lending and investments, and thus some of their reckless decisions have already led to irretrievable environmental problems inside and outside China.

As a response to the growing environmental threats, in 2007, three Chinese government departments collectively released the "Green Credit Policy" to restrict banks lending to energy intensive and high polluting companies and projects as well as to encourage those environmental-friendly projects. With this policy leverage, majority of Chinese banks have made some progresses in their domestic financial businesses, but there are still barriers and emerging problems that failed to be addressed.

Therefore, the main goal of this research is to examine how Chinese banks are incorporating environmental principles into their financing activities and how green finance developed in China. Providing such a comprehensive and multi-perspectives overview on this issue are helpful for scholars to understand the development of green finance in the context of China, so as to make efforts to speed "greening" process for China's banking sector. In order to make this question clear, five specific research questions have been tackled in the discussion. They are: 1) what particular roles does China's banking play in green financing? 2) How did Chinese green finance regulations develop? And how did they affect on China's banking sector? 3) To what extent have Chinese banks implemented in compliance with the "Green Credit Policy"? 4) What are progresses and challenges at Chinese banks in green financing? 5) What efforts have been made by stakeholders to contribute to the "greening" process?

Through the examination of Chinese banks' environmental performance, these questions have already been answered: the Green Credit Policy has essentially created a series of effective tools for Chinese banks, such as the environmental information sharing database, "blacklist" for environmentally-noncompliance enterprises, and it made some individual banks start developing own internal policies and procedures for their transactions. However, there are still challenges remained for incorporating this policy into current banks' transactions. For instance, there is lack of corresponding assistance from local governments; some controversial industries are not existed in the credit "blacklist"; the policy cannot be applied to banks' overseas investment due to geographic limitations. In addition to the policy compliance, only a few smaller -sized Chinese banks have been proactively adopting international green financing principles such as the EPs, UNEP FI, but it is unclear whether they are taking these stringent principles fully seriously. Compared the trend and good practices with other international peers, Chinese banks still fall behind in some areas, such as developing comprehensive systems for environmental risk management, transparency in disclosure of environmental information, monitoring their environmental conduct abroad, and capacity building of banking employees.

However, these gaps and weaknesses will be addressed not only by banks themselves, but also collective efforts by governments, NGOs, media, and other stakeholders. Banks can not regard the Green Credit Policy as a terminal but a threshold. They should enhance their internal expertise by building capacities with international good experience, developing their corporate environmental governance from top to bottom level of personnel. They need develop specific environmental risk management strategies and standards in terms of different bank portfolio. Moreover, enhancing stakeholder participations and improving transparency in reporting are also necessary to them. In order to step further in green financing, the government is suggested to design appropriate financial incentives, so that banks could price loan products according to risks in various degrees, such as a tax incentive for banks who grant loans to green enterprises and projects with favorable rates. By means of dynamic green finance policies, banks would be encouraged to apply interest rate differentiation or to produce innovative green financial products to stimulate sustainable financing.

In conclusion, according to the four actions to sustainability theory, the concept of value from China' banking sector in green finance should go a step further by transiting from being preventative to being offensive. It simply means that banks are expected to hold thinking from "it is bad to emit numerous GHG" to "it is good to reduce the CO₂ emission; from "cannot be part of environmental accident" to "take steps to be part of solution". In this way, Chinese banking industry would cross the threshold into a new promising period of green financing towards sustainability.

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Abbreviations

ABC – Agriculture Bank of China

AMCs – Asset Management Companies

BRIC – Brazil, Russia, India, China

BOC – Bank of China

CAR – Capital Adequacy Rate

CBD – Convention on Biological Diversity

CBRC – China Banking Regulatory Commission

CDP – Carbon Disclosure Project

Chexim – Export-Import Bank of China

CSR – Corporate Social Responsibility

EITI – Extractive Industries Transparency Initiative

ERM – Environmental Risk Management

EPs – Equator Principles

EPFIs – Equator Principles Financial Institutions

FDI – Foreign Direct Investment

GHG – Greenhouse Gas

GRI – Global Reporting Initiative

ICBC – Industrial and Commercial Bank of China

IFC – International Financial Initiatives

IPO – Initial Public Offering

MEP – Ministry of Environmental Protection

NDRC – National Development and Reform Commission

NGOs – Non-Governmental Organisations

NPL – Non-performing Loan

OECD – Organization for Economic Cooperation and Development

UEGC – UN Global Compact

UNEP – United Nations Environment Program

UNEP FI – United Nations Environment Program Finance Initiative

UNFCCC – United Nations Framework Convention on Climate Change

UNPRI – UN Principles for Responsible Investment

WestLB – Westdeutsche Landesbank

1 Introduction

1.1 Background

1.1.1 Bank and Sustainable Development

In the development of human society, production and consumption of various industries have been bringing about great impacts on the environment. Within the financial industry, banks in general have a crucial role in supporting companies and projects with a series of financing activities and thus exert significant influence on their clients' operations that have produced or have the potential to produce negative effects on the environment. Thus, addressing environmental concerns is considered critical for banks. In recent years, a group of civil society organizations, acting as the third party to track financial institutions' operations for their impacts to the people and society, have discovered that some banks dealing with the increasing quantity of loan might ignore environmental and social impacts caused by the projects or companies they funded. However, when severe environmental accidents occurred, the direct responsible party such as companies are often exposed and penalised, but not so often to those lending banks who actually play a more important role to fund the projects (Chan, 2007).

Actually, banks can give full scope to financial leverage. Addressing environmental and social issues is critical to prevent their economic losses as well as to keep their reputation intact. It is unwillingness for banks to see the funded projects are stopped halfway by external social pressure or direct protects from local NGOs and communities whose homes are suffering from pollution. However, if business as usual, most of them like to green their businesses (Personal interview, Apr. 8, 2011). Here cites a sentence from Bjorn Stigson, the president of the World Business Council for Sustainable Development once said to financial sector: "If financial institutions do not understand and reward sustainable behavior, progress in developing more sustainable business practices will be slow" (Durbin, Steve, Hunter, & Peck, 2006). This statement did not merely indicate the important role of banks in project approval by granting a loan, but also pointed out the distinct opportunities for them to urge their borrowers, project companies and project sponsors, to improve environmental performance in their business. For instance, beside inspection on loan application, offering a favourable loan rate is attractive for companies as long as they proactively invest environmental-friendly projects or adopt clean technologies in their activities.

1.1.2 Chinese banks as an emerging force at international market

In China, banking sector is still playing a dominating role in facilitating capital flow in the framework of financial system. With the rapid development of economy, China has accelerated its trade and investment at home and abroad. In order to keep the pace with this trend, Chinese banks, in supporting with financial activities, have also been enhancing their capacities to compete for international market. To date, Chinese banking have also become an emerging force on international financial stage. In the early 2008, when western banks were struggling with the overwhelming global financial crisis, three Chinese banks have entered into the world's top five banks ranked with the profit of 2008 (The Banker, 2009). Abroad, China's lending to developing countries in 2009 and 2010 has reached to US\$110 billion in total. This loan size has surpassed the commitments of US\$100.3 billion from World Bank assistant that is even a record of loan amount in response to the global financial crisis during the past two years (Dyer, Anderlini, & Sender, 2011).

With this trend, Chinese banks are being awash with cash. By the end of 2010, the outstanding balance of deposits maintained by banks have increased to RMB73.3 trillion (CBRC, 2010),

which is 1.8 times China's 2010 GDP (National Bureau of Statistics of China, 2011). This immense amount of cash, with more money injected from the government, provides Chinese banks an environment for excessive lending and investments (Chan, 2007). However, some of their reckless decisions have already led to irretrievable environmental problems. For example, at home, in the halting construction of the Xiamen petrochemical project at south China in 2007, the loan of RMB6.8 billion, jointly granted by five Chinese commercial banks had accounted for big proportion of the project financing (China Economic Times, 2007). In 2010, Zijing mining group, being blamed for sewage leakage from its copper smelter at its mine in Fujian province, has ever financed by several well-known banks for its Initial Public Offering (IPO) in 2008. Abroad, the Gibe III dam, the ongoing hydropower project as well as the largest public infrastructure project in Ethiopia, which is being underwritten by Industrial and Commercial Bank of China (ICBC) for a US\$4,000 million contract, has encountered oppositions from local NGOs and communities who argued that the dam project had brought a series of adverse environmental impacts to Lake Turkana and potentially intensified the tribal conflicts (International Rivers, 2009; Banktrack, 2010).

1.2 Problem Statement

Today, the question is no longer to argue if banks should address the sustainable aspects of the activities they support, but how they do it. Specifically, it should be addressed what essential standards banks should apply, how they incorporate environmental concerns into their practices and how they assure its compliance.

On a global scale, many of the world's leading banks have established lending policies themselves and utilised different voluntary guidelines to implement their environmental agendas, which has been a trend towards social and environmental sustainability in banking industry.

In china, as a response to the growing environmental threats and to build Chinese banks with social and environmental responsibilities, in 2007, three Chinese government departments including Ministry of Environmental Protection (MEP), jointly with the People's Bank of China and China Banking Regulatory Commission, released the "Green Credit Policy" to regulate banks lending from environmental perspective (MEP, PBC, & CBRC, 2007). The policy intends to prohibit loan to energy intensive and high polluting projects and to encourage those environmental-friendly projects with favourable lending policy in China. With this policy leverage, major Chinese banks have made some progresses in their domestic financial businesses based on the provisions of the green policy. But, there are still barriers and emerging problems that failed to be addressed (He & Zhang, 2007).

Now that four years has passed since the first Chinese green lending policy was issued, it is a good time to have a comprehensive review on banks' performances in compliance with this credit policy, and further to identify the challenging issues that Chinese banks are facing. Through literature review, it can be found that previous studies on green credit or sustainable financing of China just sweepingly reviewed the implementation of the Green Credit Policy from China' banking sector at home, but often overlooked the investigation of their overseas investments that have caused environmental destruction to host countries as it is out of the scope of the policy. However, this disregard has been frequently raised by the international society as a controversial issue in recent years. At the same time, systematic analysis and discussion are not sufficient, such as what international principles are available for Chinese banks to adopt, how global and domestic circumstance of green finance are, which stakeholders are engaged and what roles can they play in this field.

Sustainable banking and green finance, as an emerging concept, are in the intersectional field related to environmental policy, financial service and social economic development. Therefore, providing a comprehensive and multi-perspectives overview on this issue are helpful for scholars with different educational background to understand the development of Green finance in the Chinese context, so as to make efforts to speed up “greening” process for China’s banking sector.

1.3 Purpose and Research questions

In order to make this problem clear, the main goal of this research is to examine how Chinese financiers, especially for Chinese banks, are incorporating environmental principles into their financing activities. It is a foundational work to understand the development of Chinese green financial policies and regulations, current situation and challenges of green finance for Chinese banking. It is also expected to contribute to current discussions and researches conducted by different stakeholders who help to build Chinese banks with environmental accountability in their lending activities.

Specifically, through understanding the theatrical frame about sustainable banking and green finance from a global level, and examining how Chinese banks implement in compliance with the “Green Credit Policy” at home and their environmental conducts abroad, the paper has provided a baseline to identify challenges and opportunities at China’s banking sector, and how these elements would be improved in future. In addition, the paper will initially explore about how stakeholders seek to steer the behaviour of Chinese banks in financing. Therefore, these research questions have been shaped and will be tackled by the following discussion:

Research Question 1:

What particular roles does China’s banking play in green financing?

Research Question 2:

How did Chinese green finance regulations develop? And how did they affect on China’s banking sector?

Research Question 3:

To what extent have Chinese banks implemented in compliance with the “Green Credit Policy”?

Research Question 4:

What are progresses and challenges at Chinese banks in green financing?

Research Question 5:

What efforts have been made by stakeholders to contribute to the “greening” process?

1.4 Research method

The objective of this thesis will neither utterly deny existing lending policies or frameworks nor create a completely new approach for Chinese banks to change their attributes in running business in the context of China’s economic system. Instead, it intends to explore how existing policies and performances could be further improved and developed by indentifying problems. In terms of different angles of penetration, the research is mainly divided into three basic sections: (1) Theoretical review: it is to have the topic conceptualized by identifying bank’s role in an economic system, relationship of banks and the international environmental

standards and norms related to green financing, as well as financial terms and transactions raised in the following discussion; (2) Analysis of this topic in the context of China: it is to use the theoretical framework to analyse the development of green finance in China and examine current environmental conducts of Chinese banking (3) Reflection and discussion: The paper will look into the challenges and opportunities, and further think about how banks and other stakeholders contribute to it ?

Thus, qualitative analysis will be applied for this interdisciplinary research. Three specific research methods are mainly used, including literature review, interview and stakeholder analysis:

Literature review is conducted to define a theoretical background about the role of banks in the economic system, how banks operate in a lending transaction, what environmental impacts have been produced, and what the driving forces are for banking sector proactively towards “green”. In addition, by reviewing websites of international institutions who have established relevant standards for green financing, such as IFC, UNEP FI, World Bank and so on, the author has understood that those existing lending policies and norms from a global level could be applied to Chinese banks. The books introducing knowledge of financial matters help clarify certain financial terminologies that are related to the topic, and they also help the author with the mere educational background of environment study to fill the knowledge gap. Through reading the earlier academic papers and researches that discuss about historical development and status quo of this issue, the research questions have been shaped.

Interview is a main approach for data collection in this thesis, and they are conducted by different forms including face to face interview, telephone communication, as well as through “Question and Answer” session of the workshops. During two-month stay in Beijing for thesis research, the author personally conducted twelve face to face interviews, and participated three workshops related to Green finance and Chinese overseas investment that were respectively organized by World Resource Institute, Friend of Earth and Green watershed - a Chinese NGO with a focus on monitoring Chinese banks’ environmental records. At the workshops, people from different institutions were invited to present their organizational point of views and findings from their focus area for research. Some participants expressed their personal options about the practical barriers in the context of Chinese political system setting. Although these comments are not recorded in the paper, they are significant for the author to deeply comprehend the current implementation of the China’s banking industry. In general, the interviewees from different industries are all with substantial experiences. In order to collect objective facts, interviewees are selected from banking sector, academic institutes, NGOs, and environmental consultant companies. (See the Appendix I). It is a shame that face to face interview with governmental officials who made the Green Credit Policy was absent due to certain reasons. Instead, the point of views from the government are primarily collected from media coverage released by China’s official media and partly are imparted from the interview with the officer from the Chinese Academy for Environment Planning, a leading think tank for MEP of China.

Another methodology used is the **stakeholder analysis**. A stakeholder is any person, group or institution who will be impacted by business practice, or anyone who has a strong interest in what the business do or produce and has something to obtain or lose once condition changes. Stakeholder analysis is to identify key stakeholders and the relationship between different stakeholders and the things they concern most (Schwalbe, 2006). By using this analysis, the paper has identified the key stakeholders for bank to integrate environmental concerns into its business, and in the last section, strategies and approaches for the

stakeholders' engagement have been proposed in order to accelerate the speed of "greening" process for Chinese banking.

1.5 Thesis Outline

According to research methods stated above, this paper will be divided into five chapters for detailed introduction.

Chapter 1 is thesis introduction, which consists of background introduction, problem identified, research questions, purpose, methodology, outlines, scopes and limitations of the thesis.

Chapter 2 builds up a theoretical frame for this topic by introducing the concept of sustainable banking and green finance. Sustainable banking is explicated by identifying roles of bank, the correlation between banking and the environment, and exploring driving forces for banks to take actions. In the part of green finance, the author identifies banking's pathway to green finance by citing Dr. Jeucken's theory of four-phase action for sustainable banking. Also, some typical international standards and initiatives are particularly introduced in order to seize the current development of green finance in the context of global level.

Chapter 3 gives a background introduction about Chinese banking industry, where readers can gain a basic understanding of the reasons why Chinese banks are chosen for the study. This chapter also lays the groundwork for the next chapter.

Chapter 4 looks into the case of Chinese banking for green finance. It is illustrated by introducing the existing green regulations issued by the government related to financing, explicating the "Green Credit Policy", and identifying progresses and challenges in implementation of this credit policy.

Chapter 5 finally, based on the understanding of current circumstance of Chinese banking and reviewing their practices, main barriers will be indentified, and strategies for banks and external stakeholders including governments, civil society and media will be explored, so as to speed up greening process for Chinese banking sector.

1.6 Scope

Green finance is a significant and broader concept encompassing various financial institutions and a wide range of sustainability issues. Due to the limited frame of research, it is not possible for the author to address all aspects. Therefore, in order to make the discussion with a focus, the paper attempts to delimit the boundaries of study by clarifying the four key terms that frequently present in the paper afterwards.

"Green": in some studies, the term "green" and "sustainable" normally refer to define a broad range of social, ethical and environmental dimensions. However, for the purpose of this report that tends to look into environmental aspect, "green" and "sustainable" in the discussion is primarily to describe banks' impacts on the environment, environmental responsibility as well as environmental performances in their lending activities.

Chinese banking sector: there are various financial institutions playing significant roles in the economic life by providing different financial services, such as banks, financial analysts, insurers, stock brokerage, and investment management companies. However, compared with other emerging financial agencies, banks historically have inherent relationship with enterprises and individuals, so that it may impact on the environment through their

transactions. The target for examination in the thesis is Chinese banking. This is because that, with the rapid economic development, Chinese banks, in supporting Chinese businesses with numerous capital flows, have become a force to be reckoned with in the international stage. Consequently, a great deal of issues related to environmental sustainability has emerged from their lending practices inside and outside of China.

Indirect environmental impacts: environmental impacts induced by banks can be seen from direct and indirect efforts. Direct impacts, also called as internal impacts, are related to the operations within banks, such as energy usage, waste disposal, business travels that may directly bring influences to the environment. Indirect environmental impacts or external impacts refer to the impacts caused by banks' clients who are provided with financial services. Compared with direct environmental impacts, indirect impacts seem more significant that should be dealt with. Therefore, indirect impacts from bank's transactions are mainly discussed, and thus banks' lending activities that mostly contribute to these impacts will be essentially examined in the study.

From preventive to offensive phase: Dr. Jeucken (1999) has illustrated four phases for banking achieving final sustainability, but most of Chinese banks are still in a transaction period from preventive to offensive stage at present, which means that the prioritised tasks for green financing in China currently focus on how to "green" the lending to companies or projects. Although green financial products and services to individuals have been available in some developed countries as well as in some Chinese banks, such as green credit card, energy efficiency mortgage, eco-savings deposit (UNEP FI, 2007), these environmental banking products will not be discussed in the paper at this stage.

1.7 Limitation

The theoretical frame applied to this paper are originally from the paradigm distilled from the experience and analysis of the banking sector in developed countries, such as North America, and European countries. Some of theories may not completely fit for China's banking sector whose characteristics is unique under different social and economic system. For example, in stakeholder analysis, how banks react to the stakeholders' concerns about sustainability may have geographic and organizational differences. Therefore, to gain further insight into the collective efforts from Chinese banking and its stakeholders, multi-stakeholder studies need to be taken in the light of circumstance in China that will not amplified in this study.

For the data collection, the information about China's banking sector are primarily from the materials disclosed by banks, including annual reports, CSR reports, relevant macroscopic statistics, banks' websites, internal pamphlets, and media coverage. However, it has to be pointed out that information disclosure system in Chinese banking is still in its early stage of development, and the disclosure of content from the existing medium is very limited. Furthermore, Chinese banks historically has a habit of telling only good news but hiding negative information, so that some key data related to banks lending is difficult to acquire.

Personal interviews have been conducted to help understand the current situation of implementation inside of banks, but the interviewees expressed unwillingness to have their opinions disclosed, and some chose to remain anonymous due to commercial confidential concerns and internal regulation to disclosure to the public. In this case, the study may not access to some key data related to the topic.

2 Analytical framework

2.1 Sustainable banking

In this chapter, the paper firstly maps out the roles of banks in macroeconomic system and the main functions being as a financial leverage in their major businesses. Then, the author analyses the indirect environmental impacts and risks of banking and identifies the driving forces for banks to take environmental action.

2.1.1 The role of bank

Before exploring the roles of banks, several financial terms raised in the arguments will be explained. First, bank is one of players in financial industry. **Financial industry** is defined as an industry that provides services encompassing a range of financial institutions, and it contains many financial businesses including lending, investment, insurance, money management, and trading services. **Financial institutions** are defined as a series of institutions that provide capital and financial services to their clients, such as banks, financial analysts, insurers, stock brokerage, and investment management companies. **Banking industry** is one subject of financial system. The core business of banking is to provide access to loans to enterprises, large-scale projects or individuals. In the case of lender, bank can give loans to the creditworthy parties with competitive interest rates. Meanwhile, bank also accesses to its own saving and investment portfolio through a range of transactional services (EconomyWatch, 2010).

2.1.1.1 Influence in a macroeconomic system

In the economic development, banks play an important role as one type of financial intermediaries: they deliver surplus capital to people with shortages, by providing financial products and services such as investment, lending, advising, saving, settlement and trust of real estate business (EconomyWatch, 2010). To illustrate the influence of banks in a macroeconomic system, Figure 2-1 presents a simplistic model that shows how financial market interacts with different stakeholders including governments, general public, global market, as well as companies. (Figure 2-1) The gray arrows indicate money flows. Individuals or households pay taxes to government, consume and import goods from international markets, save or borrow money at banks. Governments receive taxes, and then pay subsidies or invest certain industries as return. Companies are financed with banks' loans or other direct investment, and then produce goods. Goods are traded at the international market by import and export businesses. All these actors involved in this typical cyclical system have to deal with financial interventions through financial market where banks always act as the most important financial intermediary within an economy.

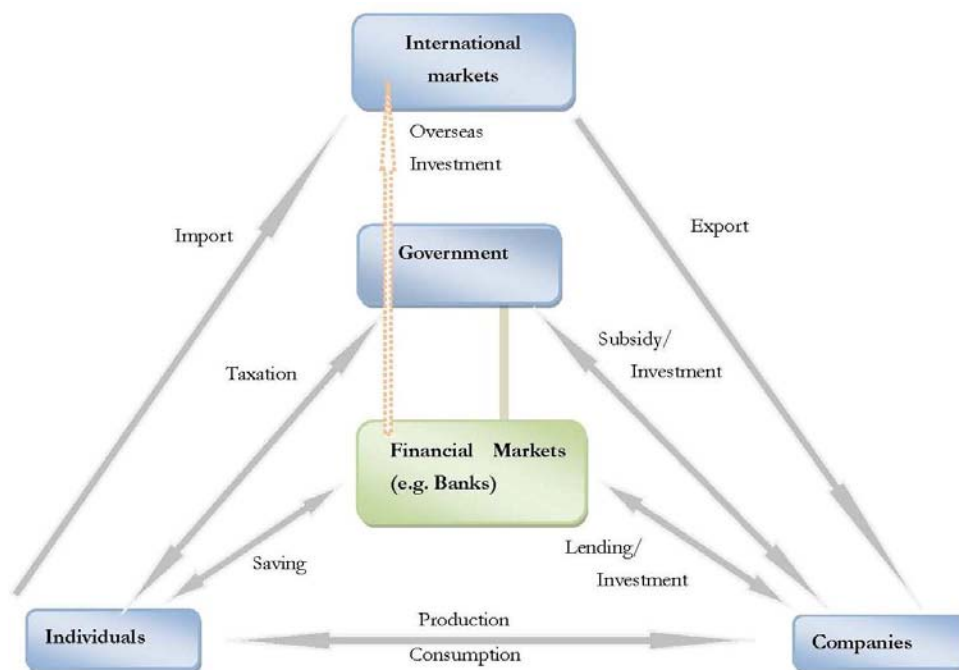


Figure 2-1 The role of the financial Markets in an economic system

Source: Adapted from Jeucken and Bouma, 1999, p.24

2.1.1.2 The transaction model of bank

According to the specialise in function of financial services, banks can be distinguished into investment banks, commercial banks, saving banks and so on, but the actual categories may vary from different economic system of country. Unless otherwise specified, banks in this paper mainly refer to commercial banks whose main responsibility is to accept deposits and provide loans. There are two main types of incomes for banks from their normal business: interest earnings and provision earnings from intermediate transactions. Although more financial services have been expanded as the extension of banks' businesses, the large incomes of banks are still interest earnings that are from debt financing including credit, loan, or bond that require borrowers to repay the full amount and interest over time. (Personal interview, Apr. 8, 2011)

As a whole, acting as a financial intermediary, a bank in general has two main functions. First, bank transforms money without limits of amount scale, duration and location, which means a bank can collect short-term surpluses of money from different creditors in place A to meet another long term need from a debtor in place B. Second, bank has to assess risks before capital transformation. As the long-historical market development in banking, banks have a comparative advantage in knowledge regarding industrial information, due diligence and relevant legislation. Thus, they have been considered to be well equipped to value the financial and environmental risks by using their efficient credit assessment system and instruments, so as to be able to spread the risks (Delphi international LTD, 1997; Jeucken & Bouma, 1999).

To know how banks work in providing capital, it is necessary to understand a basic transaction model of banks. See the figure 2-2.

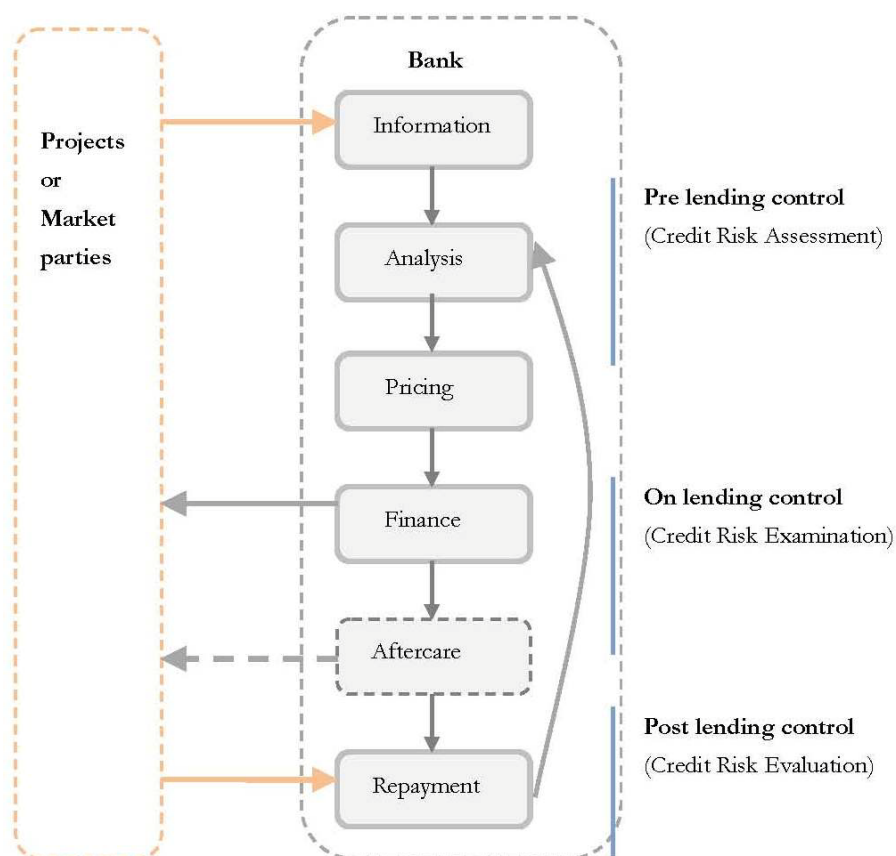


Figure 2-2 The transaction model of bank (e.g. Lending transaction)

Source: Adapted from Delphi international LTD, 1997, p.4

This model can be roughly applied to most of financing services to a client that is provided within bank as decision making process, such as granting a loan, credit facilities, underwriting of bond issuances, project finance, and mortgages. Here takes lending transaction as an example. In order to justify borrower will be able to pay back, bank will estimate the actual and potential risks involved in those companies or projects including economic, political and social ones, for a credit risks assessment, which can be conducted by a due diligence review. Most importantly, “**Analysis**” of a cost is one of the essential considerations in order to make profitable decision. The early proposition may be rejected by an initial decision that is made of analysis outcomes. “**Pricing**” by setting a rational interest rate will be determined by the market, which will be primarily dependent on the types of lending including long-term or short-term loan, project finance, cooperate finance, as well as the risks that have been identified in estimation. “**Aftercare**” is often conducted once loan has been approved. During the financing period, bank is willing to support their clients with providing provision services, so as to enhance and expand the business. Finally, through the experience of the whole transaction, analysis process will collect the feedback for a review and update, where credit risks examination is conducted. (Delphi international LTD, 1997)

2.1.1.3 The function of being a financial leverage

With the understanding of transaction model of bank as indicated above, it can be highlighted that bank should be responsible for reducing imperfect information between various market actors who have inadequate knowledge.

On the one hand, banks have the power to give approval to a loan at the early stage regarding its policies for due diligent. Once bank provides polluting project or company with loan, it

might suffer environmental accidents, and could not get the money back in the end due to its clients being negligent of their duties and ignored the stringent environmental regulations. Thus, bank is likely to apply systematic and effective environmental risk management to minimise transaction costs in terms of its self-interest (EBRD, 1995).

On the other hand, bank can attach a price, such as setting a rational interest rate, to reduce the risks: those with high environmental risks will be charged for higher interest rate. For the debt side, it is also quite possible for banks to take in cheaper money by paying less interest for its own funding, as its credit portfolio is comparatively with high quality and low risks that does not need to pay more to secure the lending. In contrast, offering a favourable loan rate may be more attractive for companies as long as their proactively invest sound projects or adopt clean technologies in their activities. This tariff differentiation of bank actually stimulates to internalise environmental costs into market price. Besides, due to its attractive interests in supporting the business, banks have the chance to influence the business they funded to improve environmental performances in the financing period (Jeucken & Bouma, 1999).

Actually, in many cases, it is impossible to quantify how much environmental pollution should be imputed to bank, as it does not create pollution directly even though but its clients do. In recent years, by developing some international standards and bank's due diligence in environmental aspect, bank has been dealing with this issue. However, in its actual practices, obtaining accurate environmental data and conducting comprehensive analysis are still key obstacles, as it is difficult for banks to estimate environmentally related risks and potential impacts in their own narrow field. In addition, bank is reluctant to send market signal about the relationship between environmental matters and lending rates to its clients by itself useless it has own interest in it. Thus, this requires bank to develop new mechanism for current market with concerning environmental responsibilities. It also needs policy makers to use market-based instrument to establish an appropriate structure that ensures banks to reinforce signals for rewarding environmental friendly behaviours and penalising the bad ones. In this sense, bank is likely partnered with government of being a distinct financial leverage (Jeucken & Bouma, 1999).

2.1.2 The correlation between banking and the environment

The core concept of sustainable development refers to the facts that social, economic and environmental objectives should be achieved simultaneously and interdependently in the development process. These three pillars should be integrated and balanced with essential trade-offs through mutually supportive policies and practices (OECD, 2002). This is the same to financing activities toward sustainability, that their practices should also concern environmental, economic and social problems related to each transaction. In this discussion, the author will primarily focus on the environmental aspect.

2.1.2.1 The environmental impacts of banking

Banking is always considered as a clean, high-tech service industry with minimal environmental and social impacts, but the truth is not the case. In order to clearly identify the environmental impacts caused by banks, one has to distinct them from between direct and indirect effort (Delphi international LTD, 1997). Direct impacts are related to the operations within banks, such as energy consumption for lighting, heating, using PCs and ATM machines, water and paper usage, waste disposal, business travels that may increase greenhouse emissions. Indirect impacts, also called as external environmental impacts, refer to the impact caused by banks' clients who are provided with financial services. This covers a wide range including selling financial products, deposit, and lending transaction. These activities are becoming more and more important for the world economic development. At

the same time, they also bring severe impacts on biodiversity, climate change, water, air and water pollution, resource depletion with the method of providing financial supports to those high impact industries such as forestry, power generation, mining, oil and gas, fisheries, agriculture and infrastructure. Comparing with direct environmental impact, the indirect one seems more significant and deserves more considerations.

According to the research scope that mainly discusses about banks' financing services provided to their clients, the term "environmental impact" raised in the paper primarily refers to the latter one- indirect impact or external impact. This is because that indirect environmental matters caused by banks' external businesses are more significant compared with relatively low environmental impacts from banks' daily operation.

2.1.2.2 The environmental risks for banking ¹

Conversely, banks are also affected by environmental risks that may lead them to economic loss and unsavory reputation. Once their clients stop halfway by environmental problems or are under punishment by violating stringent environmental policies, banks may not get their loans back and have to face reputational risk. Thus, besides the liability from the banks' own operations, greater risks are from bank's commercial lending and credit issues, that can be categorized into five types (Weber, Fenchel, & Scholz, 2005; Weiler, et al., 1997):

A Risk of loan default by debtors

The loan debtors have to pay extra cost for compensation and cleanup by mandatory, since they result in the pollution by violating the environmental legislations. The capacity for repayment to bank thus become weak or the debtor may be under bankruptcy.

B Risk of reduced value of collateral

The properties as collateral may get polluted, such as chemical contamination, which may lead the value of collateral reduced due to the cost of cleanup. Correspondently, the risk level for expected repayment is raised.

C Risk of changing market with environmental concerns

In recent years, market has changed due to the increasing environmental awareness of consumers as well as more newly released stringent environmental regulations. The changing environmental attitudes of market may make debtors hardly sell out their products and indirectly affect its capacity to pay back the loan to the bank.

D Risk of bank's liability

As banks may directly have business in collateralized properties, they are liable for the cleanup of contamination or personal injuries caused by the properties.

E Risk of reputation damaged

Due to the low credibility in environmental and social responsibility, shareholder or investor of the bank may outflow.

¹ Banking's environmental risks indicated here are mainly from commercial banks within debt transactions. Investment banks take the risks mainly from the effect of environmental liabilities on value of the companies in which they own equity (Weiler, Murray, Kelly, & Ganzi, 1997).

2.1.3 Driving forces to take actions

Bank's financial operation lies on its stakeholders who result in internal and external driving forces for bank to incorporate environmental responsibility into its internal policies and implement them within daily businesses. To gain and maintain valuable credibility, bank must take actions by tracking how stakeholders perceive, what are important to them and what can it do to meet stakeholders' expectations.

2.1.3.1 Driving forces from stakeholders

For a bank, stakeholders can be identified in terms of internal and external influence. (See the figure 2-3) Internal stakeholders normally contain employees and shareholders. External stakeholders consisting of government, supplier, clients, competitors, other financial institutions, NGOs, media as well as the general public, may exert pressure from their own standpoints, and thus have different level of influences upon the bank. This will also affect how and where bank can impact the environment and to what extend bank can be driven to change for good environmental practices.

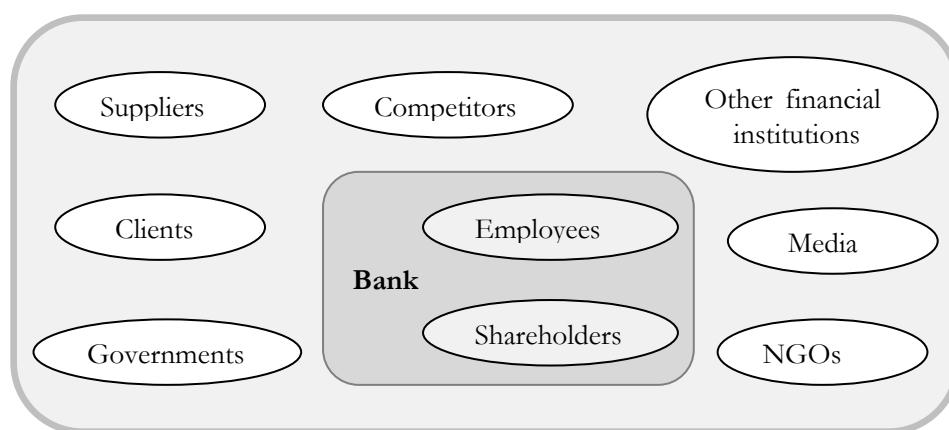


Figure 2-3 Stakeholders of a bank

Source: Adapted from Jeucken and Bouma, 1999, p.29 & ING group, 2011

Among them, the driving forces for bank to take action towards sustainability are particularly from government, NGOs, clients and shareholders, and these are illustrated below:

Government is regarded as a major driving force for banking sector by formulating financial regulations and guidelines, or enacting relevant laws to support green banking activities. So far, banks have reacted to government attempts by legislating on their external environmental impacts cautiously, and they are disinclined to become the implementer of governmental policies (Jeucken & Bouma, 1999). However, in some countries, such as China, to those policy or state-owned banks, the government may exercise influence on decision making of bank's internal aspect by the state fiscal policies (Personal interview, May 3, 2011).

NGOs or civil society groups are increasingly challenging responsibilities and accountabilities in banks' operations against financing companies or projects that are harmful to the environment and the society. This has been reflected in Collevocchio Declaration which was released in 2003 and endorsed by over 100 civil society groups. The declaration calls on financial institutions to embrace six commitments to sustainability so as to retain their social license to operate, including "sustainability", "doing no harm", "responsibility", "accountability", "transparency", "sustainable markets and governance" (BankTrack, 2003).

Meanwhile, banks sometimes may face external reputational pressures kept up by NGOs and media arguing about their controversial investments. To date, banks are becoming more aware of these reputational risks, and have been establishing a dialogue with civil society, in order to improve their environmental and social performances (Personal interview, May. 3, 2011).

Consumers, who treat themselves more like **clients** than stockholders, are becoming increasingly aware of the responsibility of businesses. According to a study launched by Rockbridge and the R. H. Smith School of Business in 2007 (Colby & Woodall), consumers are not only concerned about financial products that they buy or they are served, but also feel optimistic that their individual or joint action against banking's reckless lending can help the environment. For instance, in some developed countries, they may call on brands of banks to take responsibility for reducing impacts on climate change, such as restricting investment in nuclear or coal mining as government fails to make efforts on these issues (Colby & Woodall, 2007). Otherwise, banks may suffer pressures from losing their potential clients as well as withdrawing fund by investors.

However, **shareholders**, also seen as investors, not only exert pressure in minimising risk exposure, but also bring opportunities to move banks towards environmental sustainability with regard to new green business. The environmental financial products and services, with growing interests in low carbon market and clean technology, are either driven by shareholders or by clients. In the first case, banks are accountable to investors who naturally seek to maximise their risk adjusted return². When recognizing an environmental concern as competitive opportunity, they will define one or several financial products or services as a response. Currently, stakeholders increasingly care good business practices with sustainable and responsible concerns. For the latter case, when corporate clients express a demand for emerging service which may soon become highly profitable, the growing importance competitive pressures will drive more banks to diversify their product range to fill the market niche (Delphi international LTD, 1997; UNEP FI, 2007).

However, as Jeucken (1999) indicated in his research within the scope of Europe Union, how banks interact with their stakeholders' concerns about sustainability has geographic and organizational difference.

2.1.3.2 Four phases action to sustainability banking

In the book "Sustainable Finance and Banking" (2001), the author Marcel Jeucken has identified four phases action that banks should take for sustainability. As illustrated in figure 2-4, they are sequentially defensive banking, preventative banking, offensive banking and sustainable banking. In this model, the bank that has several business divisions is classified as a whole entity. And the first three terms are defined as the stages or attitudes of banking with respect to environmental issues.

² Risk-adjusted return refers to the return of an investment by measuring how much risk is contained in producing this return, which is generally represented as a number or rating. Risk-adjusted return can be applied to investment funds and portfolios.



Figure 2-4 A typology of banking and sustainable development

Source: Jencken, 2001, p.71

In the **defensive phase**, bank remains inactive or even resists emerging environmental regulations since its interests may be damaged or indirectly affected by the damage of its clients. The cost for environmental management tends to be avoided.

In the **preventive phase**, bank merely integrates organizational environmental management and environmental risk management into its daily business, because it has identified the potential cost saving through implementing these internal processes. The driving force from governments, NGOs who challenge banks' practices by legislation or reputational risks will also make bank step into this stage inevitably.

In the **offensive phase**, when bank recognises an environmental concern as competitive opportunity in financial market, they will develop corresponding environmental-friendly products or services as a response and then market them. For example, in North America, Citigroup and Citizens Bank of Canada have provided energy efficient mortgages³ products to customers. Additionally, Green Card Visa⁴, linked to global offsets, is currently available in a Dutch bank (UNEP FI, 2007). The attitudes of offensive banks can be regarded as proactive and innovative. By using this strategy, banks are expected to reach the win-win solution. However, it is still to be noted that, a real win-win situation will hardly lead to sustainability, because environmental costs in reality are not internalized into current price system completely.

The ultimate stage is **sustainable phase**. To be a sustainable bank, all activities of bank are sustainable.

Bank will not merely minimise risks exposure by self-interests but contributes to the society towards sustainability. It means that a bank does not invest in ecologically unsound business in spite of gaining great profitability. However, in reality, such strategy would result in loss of profit, since the most of their businesses could not be financed by shareholders in that way. It

³ energy efficient mortgages, also refers to green mortgage, provides considerably lower interest rates than market level for consumers who buy energy efficient homes and retrofitting with energy efficient appliances or clean power (UNEP FI, 2007).

⁴ The Green Card Visa is the first credit card to provide an unique emissions offset program in the world. It is to offset greenhouse gas emissions released from the manufacturing and the products or services people consume, by using the Green Card Visa for purchase. Customers can offset their without paying extra fees (UNEP FI, 2007).

may work unless all banks act on a similar basis (Bouma, Jeucken, & Klinkers, 2001). Therefore, the current situation of banks still has a certain distance from the goal of sustainable banking.

2.2 Green finance in banking sector

In this chapter, the paper will discuss about how green finance develops, how banking involves in green finance towards sustainability, and existing international standards and green financial initiatives for financing in a global sense will be introduced.

2.2.1 The concept of Green Finance

Green Finance, also known as Green Financing, has been boosting to improve the environment and promote economic growth for the financial industry. It refers to diverse financial services and products provided by financial institutions for sustainable development (UNEP FI, 2007). Green finance was firstly raised at the beginning of the 1990's, when the United Nations Environment Program (UNEP) worked with industry to develop environmental management strategies that they were convinced that the financial industry maintaining their businesses might have a significant influence on the environment (UNEP FI, 2010). In fact, this concept has been mentioned for several years. But to date, it has not yet been normatively defined by any international bodies, as it depends on specific financial entities allocating capital to specific purposes with integrating environmental and sustainability factors.

2.2.2 Bank's pathway to green finance

According to previous studies and literature reviews (Durbin, et al., 2006; Perez, 2007; UNEP FI, 2007), green finance, within the banking sector, can be presented in a wide spectrum of market-based lending or investing businesses, involving retail banking⁵, project financing, asset management, types of loans and investment finance that are all responsible for the environment and society. In specific, banks should not only reduce environmental impact in their financing, but also proactively finance green companies and technologies, develop new green financial products, as well as further develop the carbon market for low-carbon economic growth. So far, for the sake of reducing risk exposure by self-interest, most banks in developed countries have managed environmental risks in lending decisions by undertaking environmental risk management (ERM)⁶, but standards may vary from internal policies of different banks. In terms of the typology of banking and sustainable development raised by Dr. Jeucken, green finance can be considered as a strategy that contributes to the transition from preventive banking to offensive banking (Guo, 2005).

On the way to "green" financial activities, since the 1990's, a series of emerging policies or initiatives⁷ from different dimensions have been impelling banks to improve environmental performances in their financing services:

⁵ Retail banking refers to the banking institutions who execute transactions directly with consumers, rather than corporations or projects. The transactions contain mortgages, savings, account management, personal loans, credit cards, and so on (Wikipedia, 2011).

⁶ As raised by the European Bank for Reconstruction and Development (2001), environmental risk management is defined as the process by which a financial institution can identify, evaluate, control, transfer and monitor environmental risks or potential environmental risks related to the transaction. ERM can be used for most of banks' investing and lending transactions. The purpose of ERM is to minimize risk exposure (EBRD, 2001).

⁷ The policies or initiatives identified in the section are associated with environmental aspects. Social aspects including human rights, child labor, corruption, indigenous people, will not be stressed in this paper in particular.

- A **International environmental laws and treaties:** such as Kyoto Protocol linked to the United Nations Framework Convention on Climate Change (UNFCCC) on climate change, and Convention on Biological Diversity (CBD). Although they are government-based obligations, banks as well as other social entities need to work towards fulfillment of commitments.
- B **Initiatives of UN agencies or OECD:** consisting of “OECD Guidelines for multinational enterprises”; “UNEP finance initiative”; “UN Global Impact”; “UN Principles for Responsible Investment” (UNPRI) applied to investors for asset management. These voluntary commitments address social and environmental impacts on business and financial institutions, and they are evolving gradually.
- C **National environmental finance policies:** the national laws have setted environmental or social standards to guide banks’ financing activities and performances, and also enforced banks to design own internal policies. For example, China has issued “Green Credit Policy” in 2007 in order to regulate banks lending to comapnies and projects that are with high enviromental risks (MEP, et al., 2007); Dutch government has made “Policy Document on Environment and Economy” to banks since 1998 (Jeucken & Bouma, 1999).
- D **International initiatives & standards initialed by business or bank alliance and civil society:** including “Extractive Industries Transparency Initiative (EITI)” with focus on financial transparency in mining, oil and gas sectors; “The Climate Principles” developed by the Climate Group and an international group of financial institutions, addressing to reduce climate change risks; “Global Reporting Initiative” (GRI) provides a sustainability reporting framework, and “The Equator Principles” (EPs) that applied to project financing. These standards, mostly with a focus on certain sectors or issues, can be used as benchmarks for banks’ practices.
- E **Individual bank policies:** all standards, norms and national policies need to be translated into the level of individual banks, to curb environmental impacts on lending and investments in specific sector. One example of best practices is from Westdeutsche Landesbank (WestLB). WestLB, as one of the largest lenders to energy industry in Germany, has published its first environmental policy about lending to coal-burning power generation. In addition to requiring bank’s due diligence of environmental regulations, this policy also asks operators to carry out carbon capture and storage (Nicholls, 2010; WestLB, 2010). Another good practice is from Rabobank and HSBC. These two banks have sequentially committed to take a step away from directly financing tar sands oil projects (Rabobank, 2010). In recent years, some leading banks have been setting string enter standards to improve environmental performances in specific sectors, which has been a future trend for other banks to follow with.

2.2.3 Significant international standards & initiatives

In order to gain insight into these collective standards related to green finance in the context of global scale, this part will explicate several collective policies or initiatives that can be adopted by financial institutions especial for banking to incorporate environmental criteria into their practices. Although they are voluntary-based global initiatives, these standards have been an external element to stimulate banks to sign up. To adopt an initiative or standard is regarded as a commitment by bank who should integrate certain criteria of sustainability into its banking services. But, whether the commitment is truly in effect relies on further integration of the criteria with bank’s internal policy for lending or investment. With respect to each standard or initiative, it is merely relevant for a particular sector or issue policy, and its

limitations are still remained. To seize a basic understanding, five essential representatives will be examined as followed:

UNEP Finance Initiative

In 1992, The United Nations Environment Program Finance Initiative (UNEP FI) was launched when UNEP joined with a group of commercial banks to promote awareness of the environmental agenda into the banking industry. UNEP Finance initiative is a unique partnership between UNEP and financial sector. It can be seen as the initial idea of Green Finance. Later on, the initiative keeps engaging more financial institutions including investment and commercial banks, insurers and fund managers into close dialogues about connecting environmental protection with sustainable economic development. It aims to integrate environmental considerations into present financial services and practices. Currently, around 190 financial institutions from over 40 countries have signed to the UNEP FI statement. Signatory institutions to the UNEP FI statement also have chance to learn from the network about the latest trends and practices on how to seize green opportunities for growth as well as to shape sustainable finance agenda in their own development (UNEP FI, 2010, 2011).

However, this statement is signed on a voluntary basis, with a focus on promoting clean and renewable energy investment by financial institutions. The initiative does not restrict banks' financial transactions and does not contain any of essential industry that may bring crucial impacts, and does not address any environmental issues, such as climate change, biodiversity loss, and hazardous emissions and so on. Moreover, there is no external inspection to verify banks' compliances.

The Equator Principles

In 2003, the Equator Principles (EPs) were launched and were initially adopted by some leading global banks, such as Citigroup Inc., The Royal Bank of Scotland, Westpac Banking Corporation. It serves as "a set of voluntary standards for determining, assessing and managing social and environmental risk in project financing" (EPs, 2006). The EPs is based the performance standards on social and environmental sustainability of the International Financial Initiatives (IFC) and World Bank Group's Environmental, Health and Safety general guidelines⁸, and it provides a common benchmark and framework for project finance⁹. The adopting entities, known as Equator Principles Financial Institutions (EPFIs), make their own social and environmental policies, procedures and standards for their financing activities, and ensure not to give loans to projects where the borrowers do not comply with the standards stated in the EPs. At the same time, EPFIs have responsibilities to ensure the borrowers know the content of principles and to guide them on how to incorporate principles into planned project. They also require their clients to report the intention of compliance with EPs' standards if they are able to continue to seek financing for the project afterwards. These

⁸ IFC has established a series of policies including Environmental and Social Safeguard Policies, Disclosure of Information, Pollution Prevention and Abatement Guidelines and environmental and social screening criteria, which has been currently applied to all investment projects. The policy defines IFC's roles in supporting project performance with its clients to minimize adverse environmental impacts to communities (IFC, 2006a, 2006b).

⁹ Project finance also refers to non-recourse finance. It is a method of funding where the borrowers access to the resource for starting a project while the lenders mainly looks to assets and revenues generated by the project as the repayment to secure their loans. This kind of financing is primarily for large infrastructure projects such as power station, mining, infrastructure of transportation. In this situation, the lender relies solely on the cash flow of project and its collateral. As a consequence, they may indirectly have to face complex social and environmental risks that are encountered by the project. If the project fails, they are likely to lose a large amount of money (IFC, 1999; UNEP FI, 2007).

principles can be applied to all new projects with total capital costs equator to or above US\$10 million wherever domestically or globally. So far, there have been nearly 70 financial institutions on a global scale adopting and implementing the EPs. Different from the UNEP FI statement, the EPs specifically provides sector standards that guide EPFIs to manage independently and govern the policies by themselves (EPs, 2006).

Nevertheless, the EPs only apply to project finance and incidental advisory services, which is a comparatively narrow market within the financial sector. Project finance is often applied in particular infrastructure and industries including mining, power plant, oil and gas, dam construction (Project finance 2002). In 2009, the global project finance market had a volume of US\$179.7 billion. Compared to the global syndicated loan totaled US\$ 2,257 billion and the global bond and equity market (US\$6,447 billion), less than 2% of an average bank's financing activities were applied by the EPs (Gelder, Herder, & Kouwenhoven, 2010).

UN Global compact

The UN Global Compact (UNGC) contains ten voluntary principles. The signatory banks commit to avoid violating human rights, comply with labour standards, against corruption and protect the environment. With respect to it focus sector, the UNGC (2011) respectively addresses “businesses should support a precautionary approach to environmental challenges; undertake initiatives to promote greater environmental responsibility; and encourage the development and diffusion of environmentally friendly technologies”. This initiative is also voluntary-based and it does not restrict banks' financial transactions. Another issue should be noted is, the UNGC does not require banks to verify whether companies that they invested have similarly supported this principles (Gelder, et al., 2010).

Carbon Disclosure project

The Carbon Disclosure project (CDP) is a non-profit organization that impels corporations, investors and other organizations to disclose the greenhouse gas (GHG) emissions of their operations and assess their potential exposure to climate change related risks. It provides participants with their climate impacts by applying climate change reporting system. For a bank, the initiative can exactly calculate out about which part of GHG output is attributed to its financing to a company. But, the CDP has no standards or exclusion criteria to delimitate direct effects of bank forms its lending to companies who actually do not disclose their carbon emission (CDP, 2011; Gelder, et al., 2010).

As a whole, each of these initiatives has been signed by a group of banks of worldwide, which significantly enhances banks' sustainability and strengthens their environmental risks management. Figure 4-3 has shown the participation of organizations in the global initiatives. The accession to international financial norms helps banks with international experiences and innovative practices to gain more reputation, public's recognition and investors' favours. Eventually, all these will bring economic benefits to the signatory banks in the long run. At the same time, these banks may also face more challenges including the public's supervision, restriction with stricter standards and increasing demand for financial transparency, which might bring about interests loss in the short term due to the current competition within financial industry (Yu, 2010).

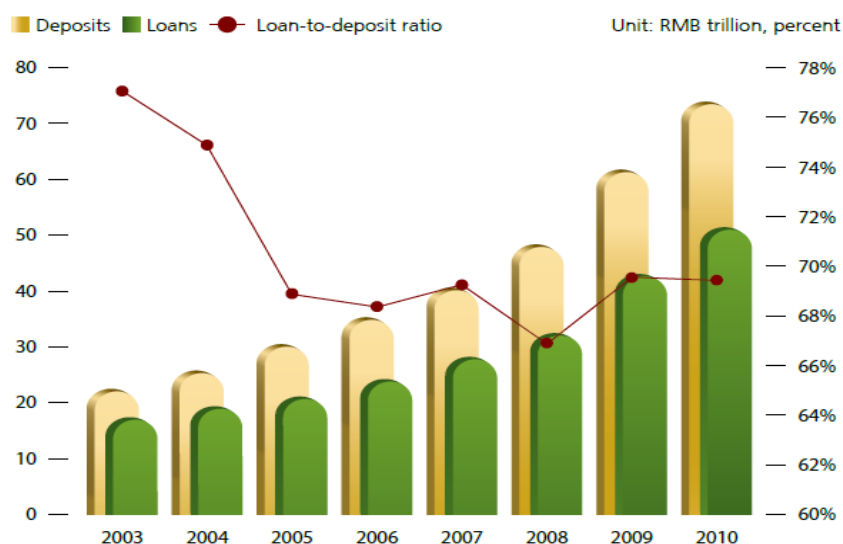
3 Background of Chinese banking industry

Starting from this chapter, the paper will look into Chinese banking, to give overview about current status of Chinese banking system and identify existing problems in their operations that have been raised by Chinese scholars. All of this background information will contribute to understanding the following issues about why the “Green Credit Policy” was issued to regulate Chinese banks and how green finance develops in China.

3.1 Role of Banks in China’s economy

According to statistics of McKinsey Global Institute Global Financial Stock Database (Farrell et al., 2006), banking sector is still playing a dominating role in facilitating capital flow within China’s financial system. Although the proportion of domestic stock market has been rapidly increased, banks in China are still the main place where the general public, companies, small and medium business investors can keep their money. Compared with the share of bank deposits in the financial system typically less than 20% in developed economies and 50% in emerging markets¹⁰, bank deposits respectively represent 83.1%, 80.5% and 75.2% of financial stock in China from 2008 to 2010 (Global Finance, 2011). By the end of 2010, the outstanding balance of deposits maintained by banks have increased to RMB73.3trillion (CBRC, 2010) that is equal to 1.8 times China’s 2010 GDP of RMB39.7 trillion (National Bureau of Statistics of China, 2011).

Meanwhile, banks lending are the major source of corporate financing, where over half of bank loans go to the State-Owned Enterprises (SOEs) and about 30% goes to private companies (Personal communication, Apr. 6, 2011). In banks’ deposits and savings accounts, roughly half of them are from households. In the past two years, the amount of loans granted by Chinese banks at home was whopping. According to the China Banking Regulatory Commission Annual Report, the outstanding loans¹¹ made by Chinese banking institutions went up to RMB42.6 trillion (US\$6.55 trillion¹²) and RMB50.9 trillion (US\$7.83 trillion) respectively in 2009 and 2010, and it is still growing. (Figure 3-1)



¹⁰ The data of 2004 financial stock components: in India, people have about 43% of their money in banks and the rest in other instruments like stocks and bonds. In the US, only 19% of money is in banks.

¹¹ Outstanding loans, also refers to loan balance, is not the amount of loan, but the loans that have to be repaid. As the exact data about total loans cannot be found from public free sources, this figure of outstanding loan is cited here to present the growing trend of lending by Chinese banks.

¹² Quote: Yahoo finance, 13 May 2011, the exchange rate is USDCNY= 6.5

Figure 3-1 Deposits, loans & loan-to-deposit ratio (2003-2010)

Source: China Banking Regulatory Commission Annual Report, 2010, P27

Such data has indicated that, once Chinese banks facilitating such a large amount of money intermediately make reckless loans, it could easily overheat the economy and indirectly bring about adverse impacts to the environment and the society. Therefore, Chinese banking, as the most significant financial institution in China, is a major factor that contributes to the development of green finance, thus it needs to be examined in this study.

3.2 Chinese banks compete for international market

China has been growing from 5% of global GDP in 1978, 15% in 2003 and that is likely to rise to 23% in 2030 (Maddison, 2007). Given increasing economy weigh in the global development, China has accelerated its trades and investment at home and abroad. To keep the pace with this trend, Chinese banks, in supporting with financial activities, have become an emerging force to compete for international market.

According to the Banker Top 1000 World Banks issued by the Banker magazine, as the end of 2009, when the western Banks were struggling with the overwhelming global financial crisis, three Chinese banks including Industrial Commercial Bank of China (ICBC), China Construction Bank (CCB) and Bank of China (BOC), have been entered into the world's top five most profitable banks based on their earnings in 2008, and the growing strengths continued in 2010. As reported by the Banker magazine, in overall, there are 84 Chinese banks in the Top 1,000 world ranking accounting for 25% of pre-tax profits of the Top 1,000 banks (Financial Times, 2010).

Consequently, in order to broaden their global presences at international markets, many Chinese banks have also been building their capacities by starting their businesses to provide cross border financial services. By the end of 2009, five large commercial banks have founded 86 subsidiaries outside of China and acquired equity or invested in five foreign banks. Their activities have covered various financial services including commercial banking, insurance, and investment (CBRC, 2010).

For China's overseas investment, two Chinese policy banks – China Development Bank (CDB) and Export-Import Bank of China (Chexim) are responsible for almost all of Chinese overseas financing that is waving the world. As noted in the research done by the Financial Times, Chinese overseas lending to developing countries in 2009 and 2010 has reached to US\$110 billion. This loan size has surpassed the commitments of US\$100.3 billion from World Bank assistant that it is a record of loan amount in response to the global financial crisis during the past two years. At the end of 2010, the CDB's total loan balance of foreign exchange has stood at US\$141.3 billion by extending to over 90 countries. The policy banks together with other large commercial banks, like ICBC, BOC, have invested in countries from Africa, South America and Southeast Asia by financing projects related to natural resources (CDP, 2011; Dyer, et al., 2011). In that way, Chinese banks have also been increasing their global influence to the global environment.

3.3 Banking system in China

In terms of different attributes, Chinese banking system can be regarded with composition of four basic bodies: Central bank, Supervision authority, Policy banks and commercial banks. (See the Figure 3-2)

Attribute	Sub-category	Name of individual bank	Amount
Central bank	People's Bank of China (PBC)		1
Supervisory authority	China Banking Regulatory Commission		1
Policy banks	China development Bank (CDB); Export and Import Bank of China (Chexim); Agricultural development bank of China(ADBC)		3
Commercial banks	State-owned commercial banks	Industrial Commercial Bank of China (ICBC); Bank of China (BOC); China Construction Bank(CCB); Agricultural Bank of China (ABC) ; Bank of Communications.	5
	Joint-stock commercial banks	e.g.: China Merchants Bank; China CITIC Bank; Shenzhen Development Bank; Industrial bank; Huaxia Bank.	12
	City commercial banks	Not to be dwelled	147
	Rural cooperative banks and rural credit cooperatives	Not to be dwelled	2869
	Locally incorporated foreign banking institutions and foreign bank branches	Not to be dwelled	130
Others banking institutions¹³	Not to be dwelled		

Figure 3-2 Composition of Chinese banking system (As of 2010)

Source: Adopted from CBRC Annual Report, 2010

Central bank

People's Bank of China (PBC) is the central bank of China, who is responsible for China's macroeconomic management including regulating money supply, controlling interest rates, formulating monetary policy and regulating financial market in China (PBC, 2011).

Supervision authority

The responsibility of China Banking Regulatory Commission (CBRC) is to regulate and supervise banking institutions by formulating governing rules, authorising banks' business, testing senior managerial personnel, as well as producing reports and statistics for the whole banking sector in China (CBRC, 2008).

Policy banks

¹³ According to CBRC (2010), other banking institutions include "63 trust companies, 107 finance companies of corporate groups, 17 financial leasing companies, four money brokerage firms, 13 auto financing companies, four consumer finance companies, 349 village or township banks, nine lending companies and 37 rural mutual cooperatives. Overall, banking institutions numbered 3,769".

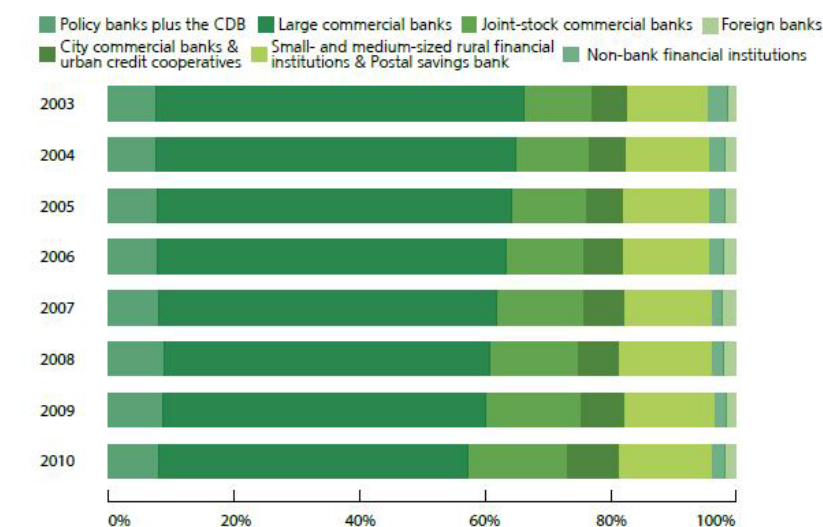
There are three policy banks in China. They are China Development Bank (CDB), Export and Import Bank of China (Chexim) and Agricultural Development Bank of China (ADBC). They are mandated by the central government who provides sufficient financial and political support to them. The operations of policy banks are mainly under the governmental directives and macroeconomic policies. Their lending primarily goes to develop basic and mainstay industries, agriculture, large -scale infrastructures and overseas financing (Huang, 2006) .

Commercial banks

In terms of different ownerships, commercial banks are mainly comprised by five large state-owned commercial banks, 12 joint-stock commercial banks¹⁴, 147 city commercial banks, over 2869 rural cooperative banks and rural credit cooperatives. Besides, about 130 foreign banking institutions and foreign bank branches have also been pouring into Chinese banking sector. Among these commercial banks, fourteen Chinese-funded banks have been listed on the stock market (CBRC, 2010).

Generally speaking, the first echelon of china’s commercial banks comprises five big commercial banks, also called as “Five big” banks. They are all majority stock-owned by the state, and they occupy a dominant position in Chinese banking system that account for almost half of the total asset. The top executives in these “Big five” are mostly former bankers of the central bank that are appointed by the Chinese government (Personal interview, Apr.8, 2011). Besides, they have dominances in long-established customer relationships, supports from the government and their domestic business network and historical recognitions from Chinese citizens. The second echelon consists of twelve joint-stock banks that are owned by a combination of the national or local governments and domestic or foreign investors. For some of them, the local governments still hold controlling stakes (Huang, 2006). Compared with the “Big five” state-owned banks, the joint-stock commercial banks are comparatively smaller in size and market share, and present less risk-averse (Chan, 2007).

Seen from the measurement of asset size by CBRC (See the Figure 3-3), the first two echelons - five large commercial banks and 12 joint-stock commercial banks, have been as the largest two types of banking institutions measured by asset size, respectively accounting for around 49.2% and 15.6% of the total China’s banking assets in 2010 (CBRC, 2010).



¹⁴ By the end of 2010, there are 12 joint-stock commercial banks in total. They are China Merchants Bank; China CITIC Bank; Shenzhen Development Bank; Industrial bank; Huaxia Bank, Shanghai Pudong Development Bank, Evergrowing Bank, China Everbright Bank, China Zheshang Bank, Guangdong Development Bank, Shenzhen Development Bank and China Bohai Bank (CBRC, 2010).

Figure 3-3 Market share (by assets) of China's banking institutions (2003-2010)

Source: China Banking Regulatory Commission Annual Report, 2010, P26

In addition, according to the first quarter report in 2010, big four state-owned commercial banks¹⁵, enjoying high lending abilities with making about over 50% loans of China, are dominant in loan amount of Chinese commercial banks. Relatively, joint-stock commercial banks usually in smaller size and market share, are expected to be flexible to give loans to more innovative projects or technologies that help shift traditional industrial lending towards a knowledge based economy (Cai, 2010).

Hence, due to the dominating portion of market share and a large amount of loan among the China's banking institutions, these two types of commercial banks will particularly be examined on the implementation of the "Green Credit Policy" and their environmental performances.

3.4 Existing problems in banks' operation

China's banks absorb deposits from individuals and companies, and then lend the money to SMEs or large project-based borrowers normally with state-backed to build infrastructures, power plants and real estates (Personal interview, Apr. 8, 2011). The majority profits of banks come from the difference between the rate they charge borrowers and the interest rate they pay depositors. In order to protect Chinese banks from fierce competition, such spread, referred as net interest margin, is set by the People's Bank of China-Central bank, who fixes the upper limit for saving interests and lower limit for lending rate. This business model of Chinese banks is built on profits from lending, and thus banks have to lend as much as they can in order to meet the CAR (capital adequacy rate) required by the banking regulator. Under this pressure, banks have to make new loans until they cannot balance debts and credits, and they have to back to the capital market for financing. Although the amount of loans granted in 2009 has doubled that of 2008, this unsustainable model has made Chinese banks exposure to various dangers and risks that resulted in non-performing loan (NPL) increased. However, not all of the loans granted had gone to creditable or reliable projects, and a large portion of loans may never repaid (Anderlini, 2010; Ouyang, 2010). The NPL created by the state-owned commercial banks are finally handled by four financial asset management companies (AMCs)¹⁶ established by the government. The AMCs buy the NPLs, and then can forgive many of the bad loans by selling them to other investors at a deep discount, and the investors can try to recover the loans (Personal communications, May. 3, 2011). In addition to the AMCs, the banks themselves have also transformed some proportions of NPL into their equities, but the exact amount is not known (Huang, 2006).

On the side of bank's internal operations, most of Chinese commercial banks have established both credit risk management system and business development system that are to manage credit risks into their lending processing and set credit risk management as an independent sub-department for branches (Guo, 2005). However, it is difficult for banks in China to obtain adequate and reliable information on the credit histories, financial, environmental and social performances of borrowers. Banks themselves had not strictly and proactively collected such

¹⁵ In these two years, the ministry of finance has hold over 50% stakes in Bank of Communications, and thus Bank of Communications has been listed as the fifth state-owned commercial banks, as so-called "Five big" banks. But "Four big" are still used to be raised in some of studies (Personal interview, May 10, 2011).

¹⁶ The four financial asset management companies created by the government are Huarong, Great Wall, Cinda and Orient AMCs. They were set up in 1999 to manage non-performing loans transferred from China's Big Four state owned banks.

information since 2006 when the first state credit reference centre¹⁷ was launched. Moreover, due to lack of specialised knowledge obtained by lending employees, skills for credit risk assessment remain deficient and loan pricing are poor in many branches of banks. (Farrell, et al., 2006). At the same time, many of them are still subject to political influence over lending decision, although the governments at different levels are far less intervention than they used to be (Personal communication, May. 3, 2011). Despite efforts have been made to improve CRM, so many banks continually are prone to lending heavily to large state-owned enterprises. This is because that the state-owned enterprises in comparatively large scale always have government backing them, which seems a relatively low risks option for banks (Farrell, et al., 2006).

Last but not least, most of Chinese banks have not yet approached international standards of corporate governance and transparency. Corporate governance in Chinese banks is still weak and inefficiency, and sometimes it is difficult to get reliable and accurate information. The relevant lending data is also few (Chan, 2007).

¹⁷ Credit reference centre was established in 2006 by Chinese central bank, which also refers to Credit Information System Bureau. It is responsible for building up credit reporting system and database by collecting and providing credit information of individual s and enterprises, in order to solve information asymmetry in the development of credit market (Credit Reference Center, 2011).

4 Chinese banks for green finance

4.1 Green regulations and green finance policies

Having realised that China's current environmental situation tends to hinder its economic and social development and potentially threaten state's stability and international standing (The World Bank & SEPA, 2007), Chinese government has set out to accelerate reform to solve the environmental problems. Starting from 1995, they have produced a series of approaches combining economic and environmental policies to combat pollution. As mentioned in the Chapter 2, national environmental finance policies are essential to regulate banks' financing activities and performances. The fact in China is that these green finance regulations were indeed comparatively effective to enforce banks to design own internal policies for green finance.

4.1.1 Intention of making environmental finance policy

Environmentally, the rapid economic development has been accompanied by serious environmental problems to China and also the countries it invests in. In 2007, China has overtaken the US as the world's largest carbon dioxide emitter. Air and water pollution has now become a major concern that is threatening Chinese people and the state's stability (The World Bank & SEPA, 2007).

Economically, pollution and over-consumption of natural resources and energy have been serious bottlenecks that are hurting China's GDP growth. According to the statistical communiqué of China's environment, since 1981, the annual expense in pollution control has been keeping growing with average annual growth rates of 20.8%. As of 2007, it has been increased to 1.36% of GDP (CECC, 2009).

In response to the explosion of environmental and society costs and overheating economy, since the mid 1980s, the Chinese government has announced a group of stringent environmental regulations to curb pollution and energy consumption for different industries. Basically, environmental policymaking in China in the past decade has also gone through a period converting from end-of-pipe, command and control-based focus to source prevention and incentive and market-based for continuous improvement (Tojo, 2010). The Chinese government has been incorporating more market-based instruments that reward environmentally superior practices and punish the bad to supplement their traditional efforts on demanding for pollutant control and pollution treatment, such as "Green public procurements", "Environmental taxes" in terms of different industries, products, and pollution level, and "Green trade" to enhance the environmental monitoring on export companies (Aizawa & Yang, 2010).

Particularly, when China's National Climate Change Program was issued in 2007, China have pledged to reform its economy structure for the sake of controlling CO₂ emissions, improving energy efficiency and developing clean technologies. By all the measures, China aimed to achieve to reduce 20% of energy consumption per unit of GDP by 2010, and consequently reduce CO₂ emissions (NDRC, 2007). Meanwhile, as the data indicated in the last chapter, Chinese banking has provided about 80% of financial stock and hold a big proportion of the total capital available to industry. Such data has shown China's banking sector has potentially to be engaged to help the state to achieve the objective of energy saving and emission reduction when realising the industrial development. Hence, the same year of 2007, the government also started regulating the financial industry to help achieve this environmental objective by introducing financial institutions with a series of green finance policies.

4.1.2 Green polices to Chinese financial sector

Within financial sector, many of financial institutions in other countries have established own financing policies and utilised different international voluntary guidelines to implement their environmental agenda. However, due to the characteristics of Chinese financial system, there are few Chinese financial institutions that have approached international environmental and social standards by voluntary. Under such circumstance, Chinese government intervenes to integrate environmental protection into the financial system reform. Since 1995, several governmental authorities has started collectively releasing a series of directive-based regulations so as to set principles for investments and lending performances, and substantially enforced banks to design own policies.

The first green regulations relevant to banks lending were presented in 1995. They are respectively “Announcement on credit policy for environmental protection released by People’s Bank of China (PBC, 1995) and “Announcement on making use of credit policy for promoting environmental protection” issued by State Environmental Protection Administration¹⁸ (SEPA, 1995), which both required financial institutions to pay attentions to environmental protection in their lending. However, this first attempts did not walk to the implementation phase, as economic growth at that time was the top priority in any case and collaboration among different governmental authorities was not sufficient (Aizawa & Yang, 2010).

In the next eight years, no new green policies targeting to financial sector was produced by the Chinese government. As of 2004, National Development and Reform Commission (NDRC), jointly with PBC and CBRC issued “Announcement on further strengthening industrial policy and credit policy to control credit risks”, which intended to accelerate the upgrading of the industrial structure and strictly control credit risks so as to solve the problems of explosive growth in lending and blink expansion of certain industries. In the appendix of this announcement, a list of redundant low-level constructions including a portion of polluted production facilitates were banned and restricted (CBRC, PBC, & NDRC, 2004). Then, in 2005 and 2006, another two policies “Regulation on accelerating adjustment of industrial structure” and “Announcement on accelerating adjustment of industrial structure with excess capacity” were released by the State Council, which were to require financial institutions and other administrative departments to adjust national industrial structures with excess capacity by optimising loan structures and land supply (State Council, 2005, 2006). In the provisions of each policy, banks lending is both raised that should not be given to the projects and enterprises which were phased out due to severe pollution. However, these policies neither specified environmental risks in particular nor identified due diligence of the financial sector, and thus they could not be seen as real environmental financial policies.

Until July of 2007, the first series of real green finance policies were officially launched by the Chinese government, which has been seen as an new approach to curb environmental pollution and has been approved as the most powerful element influencing green finance in China today (Aizawa & Yang, 2010). These green finance polices, enacted by the Ministry of Environmental Protection (MEP) and other financial regulatory departments make use of the power of financial industry to provide incentives or restrictions to their clients in terms of pollution level or energy use. They are “Green Credit Policy”, “Green Securities Policy” and “Green Insurance” respectively. As their names suggest, each policy has its own focus: “Green Credit Policy” is to regulate banks lending, which is also a core policy that contributes to

¹⁸ In March of 2008, State Environmental Protection Agency was upgraded to administrative level of ministry – an equal weight as other Chinese ministries, and later is called as Ministry of Environmental Protection (MEP).

Chinese banking for green finance. This policy will be explicated in the following chapter; the “Green Insurance” system is to regulate insurance companies to ensure that companies take responsibilities for environmental accidents and secure victims to get due compensation; the “Green Securities Policy” has put pressures on 13 heavily polluting industries to pass environmental assessments before pursuing initial public offering (IPO) or refinancing, and regulated listed companies approaching to China’s capital market (Chan, 2007; Zhu, 2008).

In addition, these policies further advanced some environmental principles that had been introduced in China's 11th Five-Year Plan (from 2006 to 2010) including: restraining pollution and energy consumption from certain industries tagged by MEP; putting environmental consideration into financial decision; supporting and promoting environmental-friendly enterprises and technologies (Yu, 2010). As the same time, MEP has created some phrases to conceptualise these principles. For example, “Three Simultaneities” policy refers to pollution prevention that should be considered in the designing, constructing and using phases. “Two High” targets the industries which are designated by MEP as energy intensive and highly polluting in production capacity (Tam, 2008). Moreover, institutional structure change also accelerates the efforts to implement environmental legislation. In order to emphasise the importance of environmental protection, in March of 2008, State Environmental Protection Agency was upgraded to administrative level of ministry – MEP, an equal as other Chinese ministries. To MEP, this upgrade gained not only administrative increases, but also the weight of political position especially in issuing or sign-off any legislations or policies. However, to fully influence and incorporate environmental concerns into other ministry’s legislations, the MEP still need time and its increasing political strengths (Chan, 2007).

Last but not least, in 2009, the “Guidelines on Corporate Social Responsibility for Chinese banking sector” was issued by the China banking association to promote the policy (China Banking Association, 2009): The guidelines indicates that financial institutions of banking sector should take responsibilities in economic , social and environmental aspect and are required to issue their corporate social responsibility (CSR) report annually. For environmental aspect, it requires banking sector to take environmental responsibilities in supporting national industrial policies and environmental policies, moving forward the implementations of green credit for emission reduction and energy saving. It is also worth mentioning that the guidelines encourage the institutions to study the experience of the Equator Principles and to understand related international environmental treaties, norms and standards.

In order to have a clear brief about the development of China’s green finance regulations and policies related to financial sector as indicated above, a table will be illustrated (Figure 4-1):

Time	Full name of document	Issuing Org.	Relevant components
1995-2-6	Announcement on credit policy for environmental protection	PBC	To pay attention to environmental protection in their lending
1995-2-14	Announcement on making use of credit policy for promoting environmental protection	SEPA	
2004-4-30	Announcement on further strengthening industrial policy and credit policy to control credit risks	NDRC, PBC,	To accelerate upgrade of industrial structure and credit risks control to prevent explosive growth

		CBRC	
2005-12-2	Regulation on accelerating adjustment of industrial structure	State Council	To optimize lending structure for adjustment of national industrial structures
2006-3-12	Announcement on accelerating adjustment of industrial structure with excess capacity	State Council	
2007-7-12	Opinions on preventing credit risks and implementing policy of environmental protection	MEP, PBC, CBRC	Green Credit Policy (Emphasis for discussion)
2009-1-12	Guidelines on Corporate social responsibility for Chinese banking sector	China Banking Association	To take environmental responsibility in supporting national industrial policies and environmental policies

Figure 1-2 Green finance regulations relevant to China’s banking sector (1995-2009)

Source: Adapted respectively from PBC, 1995; NDRC, 2004; State Council, 2005 2006; MEP, 2007; China Banking Association, 2009.

4.2 Green Credit Policy to China’s banking sector

The direct green policy to regulate bank lending is the “Green Credit Policy”, which is regarded as the most well known and best developed one within those environmental economic policies raised above. In July 2007, MEP, in partnership with PBC and CBRC, released a new credit policy "Opinions on preventing credit risks and implementing policy of environmental protection" that has come into force by mid of 2008 (MEP, et al., 2007). The Green Credit Policy requires Chinese financial institutions especially for banks at all levels to constrain loan financing to high energy consumption and high polluting companies and projects but to towards those who favor energy efficiency and CO₂ reduction.

According to the provisions, the “Opinions”¹⁹ consists of three substances (Aizawa & Yang, 2010; MEP, et al., 2007):

First, it is to strengthen commercial banks on the management of their environmental performances. It means banks have to consider the state industry policy and borrowers’ environmental practices when granting a loan. Specially, bank should neither lend money to disqualified companies and new projects that cause heavy pollution or run with energy intensive, nor to projects that fail environmental impact assessments. The lending should be restricted to the companies that have already obtained loans but later are reported in violation of environmental legislations. If projects are in phase-out list designed by the state industry policies, banks must stop the lending and existing loan must be called in. Conversely, they should towards projects favoring energy conservation and emission reduction.

¹⁹ The "Opinions" is shorten from the policy "Opinions on preventing credit risks and implementing policy of Environmental Protection" and will be used in the following discussion.

Second, it is to establish environmental information sharing scheme between environmental regulatory departments and the financial institutions. “Options” requires that all levels of environmental protection departments should provide financial sector with accurate environmental information, releasing credit blacklist which will list companies who illegally obtain discharge permit and exceed standard of sewage discharging and projects which have been set up but not passed Environmental Impact Assessments. Meanwhile, environmentally-friendly enterprises will be listed as good examples to be competitive. PBC and CBRC should work with environmental authorities to assist banks to integrate this information into existing credit risk management system, and supervise banks’ implementations. Based on such information, banks can inspect companies’ environmental performances. Furthermore, all these participants should strengthen communication and training on a regular basis.

Third, the provisions identify liabilities for violation of the policy. In specific, if staff of environmental authorities violates law, regulation or any discipline, they will be imposed relevant administrative sanctions. If commercial bank extends loan to projects that violate environmental regulations or the credit policy, severe penalty will also be imposed in accordance with laws. Additionally, staff of relevant organizations in charge should bear liabilities if the loan posed serious problem.

Having drawn a lesson from the first generation green policy announced in 1995 (SEPA, 1995), this Green Credit Policy, this green credit policy of 2007 was created along with the national environmental agenda, and it has been risen to a status proceeded by three ministries. Three responsible authorities – MEP, PBC and CBRC working closely, intended to establish a solid platform for environmental information sharing in order to ensure implementation of the policy (Aizawa & Yang, 2010).

As a whole, the launch of the Green Credit Policy has received broad supports and positive comments from central government, Chinese banking sector, government authorities, and NGOs. It has been seen to form an initial framework on green lending and helps China’s banking sector move forwards to green finance.

4.3 Progresses and Challenges in implementation of the Green Credit Policy

In fact, the Green Credit Policy has substantial impacts on two sides: on the one hand, the policy responds to curb increasing energy demand and pollution of China. On the other hand, banks attain their inherent appeals to control credit risks from lending, as they can find out information about companies that violated environmental regulations or caused severe environmental incidents through environmental information sharing scheme, so as to minimize economic loss from their lending decisions.

4.3.1 Progresses of banks’ implementation

Different from international initiatives which are signed by banks on a voluntary basis, China’s banks have no choice but response to the Green Credit Policy enforced by the state government. By reviewing various records and data disclosed at public channels, banks’ implementation in compliance with Green Credit Policy primarily can be presented from three dimensions (Aizawa & Yang, 2010): (1) establishing internal credit policy; (2) data collection on loans called-in or withheld; (3) and extending green credit to energy efficiency and other environmental friendly projects.

Of the commercial banks, some banks have started developing own internal system including database, measure, procedures for implementing this national policy in line with the

“opinion”. These bank-level credit policies are varied in the degree of specified guidelines. For instance, as one of “five big” state-owned commercial banks, ICBC has developed a set of lending policies to stress on “two high” industries and explicated lending goal and implementation measures for the next three year. Moreover, it is reported that ICBC has set up a database of clients’ environmental risks. As of Feb 2008, about 47,000 of its 60,000 clients’ environmental information have been recorded in the system (MEP 2008). CCB has also created credit guidelines especially for high environmental risk industries, and developed an early-warning system to remind its sub-departments when they close to the quotas for lending to energy intensive sectors designated by the headquarter. Particularly, CCB has issued a quarterly newsletter to send to the banking industry about monitoring risks and the “early-warning signals” to remind relevant industries to adjust their business strategies as well as to catch emerging green opportunities (Gelder 2010). The Bank of Communication reported that it has defined different levels of categories to identify environmental impacts of its clients and has upgraded credit risk system to monitor environmental records of its borrowers timely (Personal interview, Apr 8, 2011). The Industrial Bank with superior performance in adopting the Equator Policy has developed the policy of "Environmental and Social Risk Management" which indicates specific rules for approving certain industries to access to credit. Particularly, as of end of 2010, seven listed banks including ICBC, CCB, BOC, ABC, Bank of Communications, Industrial Bank, Shenzhen Development Bank, Ningbo Bank and China CITIC Bank, have also respectively proposed “one vote veto” system as prerequisite in approving credit application, which means they will deny lending to enterprises with environmental violation and suspend loan to companies and projects that are restrained by industrial policies (Aizawa & Yang, 2010 ; Yu, 2010).

According to statistics from the 2009 CSR report²⁰ of China’s banking sector issued by China Banking Association (2010): banks have reduced lending to highly polluting and high energy intensive projects. According to incomplete statistics in 2009, loan balance of China's coke industry was RMB27 billion in total, RMB23 billion decrease compared to the level of 2008. Thermal power industry were RMB269 billion, RMB188 billion less than the figure in 2008. In 2009, 2,348 clients involved in “two high” industries had been withdrawn from banks’ loan, 823 increases compared to the year of 2008.

Meanwhile, banks have increased investments in green industries and projects. See the Figure 4-2: In 2009, RMB856 billion from China’s banking sector have been loans to support 6,412 energy efficiency and environmental protection projects with covering 4,099 enterprises. There were 3,429 increases compared to the 2007 level (China Banking Association, 2010).

Year	Investment to energy saving and environmental protection projects (billion)	Percentage of total loans (%)	Projects involved in the investment	Enterprises involved in the investment
2007	341.1	2.70	2,715	3,505
2008	371.0	3.11	2,983	3,615
2009	856.0	8.93	6,412	4,099

²⁰ The CSR report of 2009 for China’s banking sector released by China Banking Association is the latest data available at its website. The version of 2010 will be released in June of 2011.

Figure 4-2 The statistics of loans to energy saving and environmental protection projects by China's banking sector. (2007-2009)

Source: China Banking Association, 2010. p63

Although such incomplete statistics have shown that the launch of Green Credit Policy had fundamentally changed landscape of Chinese banking towards to green financing, there are still a group of banks who are not willing to provide information to the public about their implementation in compliance with Green Credit Policy. There are still potentials for more commercial banks engaged in this process.

4.3.2 Challenges lying ahead

Converting a concept into practice needs a long and dynamic transition process. The same is true for banks to adopt a new policy. In the past, with increasing loan demands for rapid development in China, the mode of seeking profits and returning with less consideration of environmental and social impacts used to be a main way for banks to make decision on lending. To change their traditional operations in financing to a responsible practice, banks indeed have to go through a tough transition process in their perception, systemic reformation and actual practices.

So far, with this innovative "Green Credit Policy" launched in 2007, most of Chinese banks have made progresses and gained experiences from their loan operations in compliance with general guidelines and national environmental standards. Despite many efforts done by banks and governments, there are still some challenges remained for incorporating this policy into current banks' transactions. To evaluate a policy comprehensively is a complex and time-consuming task. Many scholars have already intended to evaluate the Green Credit Policy from different perspectives. In this paper, the author attempts to generalise these deficiencies into following aspects:

First, Green Credit Policy is based on "opinions" that most of its standards are still in principle level. Due to lack of expertise on evaluating environmental risks of borrowers, banks may have difficulties in setting detailed implementation guidelines for supervising companies' performances. Specifically, regarding to certain industries related with clean technologies, discharge or emission permit, energy consumption and sustainability in supply chain, there are no tangible standards or specification stated by government authorities (Zhu, 2008).

Another obstacle is that the blacklist issued by MEP is far from enough to achieve goal of emission reduction in 2020. At present, although some banks have pioneerly tried to define credit guidelines for "two high" industries including mining, chemical production, coke, textile, papermaking, cement production, this is far from enough to cover other industries with high environmental and social risks. Particularly in China, 78% power generation relies on coal, and the rate is expected to continue without significant change until 2020 (Matisoff & Chan, 2008). Nevertheless, some banks still listed environmental-sensitive projects in their green portfolios. For example, as CCB indicated in its CSR report of 2009, hydropower, nuclear power plants, and coal fired plants with clean combustion technology have been listed as supportive projects of "Green Credit" (CCB, 2009). Actually, whether these projects can be seen as alternatives for green energy is still controversial, as they are not sustainable solution that may cause catastrophes and other social concerns. But, few or none of such projects have been in blacklisted by MEP in 2007 yet.

Third, the policy only acts on the large enterprises able to gain loans from banks. A large group of small and medium size enterprises with high pollution risks do not access to credits

through banks, but turn to private capitals. These private financing channels that are open to them without asking environmental requirements are currently under controlled (CCICED, 2009).

Fourth, it is difficult to implement the Green Credit Policy without corresponding assistance from local governments. China's local governments are used to protect their local industries or companies, sometimes even to those heavy polluters who are always a major tax contributor to local economy (Zhu, 2008). Local environmental agencies, who take responsibility in collecting data from polluting companies and enforcing sanctions to control them, are line managed by local government instead of MEP, although this situation are improving after MEP upgraded to ministry level. Due to such existing regional protectionism, barriers are generated to local banks and environmental agencies (Personal interview, May.3, 2011).

Fifth, lack of transparency in information disclosure is highlighted after a scrutiny to the implementation of Chinese banking. Civil society groups, including Green Watershed, WWF and International Rivers argued in recent reports, saying that banks might hind key data of lending practices, especially for the environmental and social impacts behind controversial projects, such as developing nuclear power, dam constructions. Information from banks about annual loan amount and borrowers distribution are insufficient. In addition, borrowing enterprises sometimes may attempt to hide environmental information that led information asymmetry (International Rivers, 2008; Yu, 2010).

Last but not least, existing employees of banks are lack of sufficient knowledge of environmental legislation and standards. As a consequence, they merely review loan application in accordance with a paper approval of Environmental Impact Assessment, and consequently make a loan decision with ambiguous judgments. This has badly jeopardized the effect of policy Implementation (Personal interview, May. 3, 2011).

4.4 Other indexes to examine environmental performance

4.4.1 Selection of indexes and banks

Besides banks' compliances with the Green Credit Policy, there are still a series of indexes to evaluate environmental performances of banks from other perspectives. For example, in a recent report "Close the Gap" (Gelder, et al., 2010) issued by Banktrack – an international NGO for tracking operations of banks on their effect on people and the environment, benchmark to monitor banking institutions has been developed by indentifying specific industrial sectors and their correspondent environmental impacts. For instance, the sectors include agriculture, fishery, forestry, mining, oil and gas, and power generation while their impacts are from biodiversity, climate, toxics emission, transparency and so on. However, as green finance initiatives for Chinese banking has just in its infancy, it is inadequate to evaluate environmental practices of Chinese banks by approaching such international benchmark. Therefore, in this part, paper will refer to some key indexes to examine a group of representative banks, in order to have a thorough understanding about environmental conducts of Chinese banks with regard to their lending activities.

Banks examined are primarily selected from two criteria. One is to refer to the fourteen listed banks²¹, list that can represent asset size of bank, and the other is built by the top 15 Chinese

²¹ As of 2010, the fourteen Chinese funded listed banks are ICBC, CCB, BOC, Bank of Communications, Industrial Bank, China Minsheng Banking, China CITIC Bank, China Merchants Bank, Huaxia Bank, Shanghai Pudong Development Bank, Shenzhen Development Bank, Bank of Beijing, Bank of Ningbo and Bank of Nanjing.

Banks based on tier 1 capital²² that represents bank strength (See the appendix II). Among them, nine banks involve in both lists. They are ICBC, CCB, BOC, Bank of Communications, Industrial Bank, China Merchant Bank, Huaxia Bank, China Minsheng Bank, and China CITIC Bank. Selecting these two lists has two main concerns: first, listed banks are normally with adequate capital and loan transactions. The asset of the fourteen listed banks has contributed over half of the total assets of Chinese banking. In addition, five big commercial banks and nine of twelve joint-stock commercial banks appeared in either of two lists have already account for over 60% of total banking assets of the banking sector (CBRC, 2010), and thus been seen as backbone for taking more responsibilities in their financing. Second, China's relevant national laws and regulations have set higher demands for listed banks on cooperate governance, information disclosure and social responsibility. For the sake of protecting own benefit, the general public, as a creditor or stockholder as well as a tax payer to sustain state-owned banks, has right to monitor banks on environmental performances.

The elementary evaluation indexes are partly identified from Dr. Yu in his study on recording the listed Chinese banks on environmental performances (2011), which includes “environmental policies and measures”, “adoption of international principles or initiatives”, “information disclosure on banks’ environmental efforts”, “Environmental conducts for overseas investment”. As the index of “environmental policies and measures” has been mostly examined in Chapter 4 by having reviewed Chinese banks’ implementation in compliance with the Green Credit Policy, the left four indexes will be examined respectively.

4.4.2 Adoption of international principles or initiatives








Actually, committing to international principles or initiatives means that China's banks have to apply more stringent standards based on their current implementation of the Green Credit Policy, and thus banks historically would rather avoid adopting them.

However, in recent years, more and more Chinese banks have been competing for the international market. In order to establish a global presence and build a responsible image, they gradually realise the importance of commitment to these international standards, and begin applying this idea. For example, China Development Bank, one of three policy banks, was the first Chinese bank to sign the UN Global Compact in 2006 (UN Global Compact, 2011). Of commercial banks, three joint-stock commercial banks including Industrial Bank, China Merchants Bank, and Shenzhen Development Bank, and one city commercial bank - Bank of Shanghai, have successively signed UNEP FI Statement on the Environment and Sustainable Development (UNEP FI, 2011). Industrial Bank is comparable leading in committing green initiatives among commercial banks in China, as it has been the only Chinese bank joined the Carbon Disclosure Project, and also been the only Chinese bank who proactively adopted the EPs which have already been widely adopted by other international commercial banks (CDB, 2011; EPs, 2011). Moreover, Industrial Bank has been building its internal policies and procedures for integrating environmental and social consideration into current credit review processes, and has established a Sustainable Development Unit to implement the EPs (Aizawa & Yang, 2010). In contrast, “five big” state-owned commercial banks have not been in any accession related to green financing standards or principles until now. For using sustainability reporting framework, six banks including ICBC, BOC, CCB, CDB, China Merchants Bank, China CITIC Bank, have started applying GRI framework in reporting environmental performance in their annual reports (GRI, 2011). See the Figure 4-3.

²² Tier 1 capital, also called core capital, includes paid-up shares and common stock, which is common characteristic to show bank's strength in banking system (The World Bank, 2011).

Figure 4-3 Participation of Organizations in Global Initiatives (Data sources was accessed on May 10, 2011)

Participation of Organizations in Global Initiatives (Data sources was accessed on May 10, 2011)

Principles/Initiatives	Global Signatories /users (Approx.)	Signatories /users in China	Signatories /users of China's banks	Bank names
 EPs	72 financial institutions	1	1	Industrial Bank
 GRI	1800 organizations	80	6	BOC; ICBC; CCB; CDB; China Merchants Bank; China CITIC Bank;
 UNEP FI	190 financial institutions in 40 countries	4	4	Shenzhen Development Bank; Industrial Bank; China Merchants Bank; Bank of Shanghai
 EITI	51 companies and 17 countries	None	None	None
 UN Global Compact	8,000 participants, including 5,300 businesses in 130 countries	220	1	CDB
 CARBON DISCLOSURE PROJECT	534 financial institutions	4	1	Industrial Bank
 PRI	892 organizations in 49 countries	1	None	None

Data sources: UNGC, 2011; UN PRI, 2011; UNEP, 2010; EPs, 2010; EITI, 2011; GRI, 2011; CDP, 2011

The table has shown that Chinese banks are still at the threshold of participating global standards and initiatives. However, it can be found that much bigger commercial banks have already expressed their interests in accession. For example, CCB has drafted an internal processing rule to guide their clients for loan application in line with the EPs. It is doing some preparing work in order to adopt the EPs soon (Yu & Wu, 2009). China CITIC Bank has also composed a pamphlet about “Shaping a future for sustainable finance – Interpretation of the Equator Principles” in 2009 to better comprehend the EPs (China CITIC Bank, 2010).

4.4.3 Information disclosure on banks’ environmental efforts

At present, as there is no mandatory regulations or standards to exert forces upon banks to disclose environmental information, Chinese banks always provide their environmental information on a voluntary basis, through public disclosure medium, such as website, CSR report, annual report, released internal policies, institutional bulletin and pamphlets. In June of 2006, Shanghai Pudong Development Bank issued the first CSR report of China’s banking sector which contained policies and initiatives that contribute to economic development, social welfare and volunteering activities to protect the environment (Shanghai Pudong Development Bank, 2007). After then, CCB, BOC, CDB, and ICBC successively published their first CSR report in 2007 and 2008. To date, all of banks examined have already issued their annual CSR reports and theoretically described procedures and principle in applying environmental responsibilities. Six banks including ICBC, BOC, CCB, CDB, China Merchants Bank, China CITIC Bank have also started using GRI framework in sustainability reporting. However, the extent of environmental information reporting varies from bank to bank. Some CSR reports are still with focuses on banks’ charity activities, donation, and initiatives for local community development. Regarding to environmental responsibility, banks tend to describe them in a theoretical way, such as whether they have complied with government environmental regulations and how they incorporated the Green Credit Policy into their internal policies. Data related to actual environmental impacts and lending implementation is rare.

4.4.4 Environmental conduct in overseas investment

During research period, the only statistics can be found about how China’s commercial banks involve in overseas investment is from a latest report issued by Chinese Academy of Sciences (Li, 2011). It is noted that ICBC, BOC, CCB, ABC, Bank of Communications, China Merchants Bank, China Minsheng Bank, as well as Export-Import Bank and CDB have been gradually engaged in “Greenfield Investment²³” and “Equity Investment²⁴” in varying degrees during recent years. However, regarding to lending abroad and project financing, banks involvement and relevant data are not publicly available. Hence, it is inaccessible to further know their environmental performances in this area through a public disclosure. Moreover, in terms of Dr Yu’s initial findings from his research on monitoring environmental records of Chinese banks (Yu, 2010) only two of listed Chinese-funded banks gave a direct response to this query. In the responses, China Merchants Bank reported that its overseas investment was primarily in USA, Europe, Asia and Africa, covering industries like natural gas and oil exploitation, mining, manufacturing, renewable energy and overseas trades, and total overseas investment of 2009 amounted to US\$1.34 billion, increasing by 0.29% of the amount in 2008.

²³ Greenfield Investment refers to a type of FDI where a corporate begin a new business abroad by building new construction or facilities, such as branch offices.

²⁴ Equity Investment means to invest money in a firm by owning or holding its shares. For example, a bank can hold stock shares of another bank through mergers or acquisitions.

Additionally, China Merchants Bank also said they had started complying with international environmental standards but not indicated standards in specific. Industrial Bank reported that it had not been involved in any overseas investment. For the left listed banks, information is unknown. In all, based on the current findings and data available, environmental information disclosure related to banks' lending transactions abroad is not sufficient.

4.5 Environmentally-contentious projects

Despite having established internal green policies in compliance with the national credit policy, the real examination of a bank's environmental performance should look into the actual impacts induced by bank's transactions on the ground. Below are two examples about environmentally-controversial projects financed by Chinese banks inside and outside of China. However, due to limited data available from banks and companies sides, these two examples which have been overlooked by the government and banks themselves are both disclosed by civil society groups and international media.

4.5.1 Dalian Oil Pipeline explosion

A pipeline was on fire and then exploded at the night of 16th of July 2010 in Dalian, Liaoning, China. Further investigation into the incident revealed that the leakage of additives in oil of a Panama oil tanker was responsible for setting off the inferno and leakage of oil as gasoline gushing from a ruptured pipeline exploded. In addition, China National Petroleum Corporation in Xingang Harbour, Dalian was blamed as well for failing to repair the breakdown gasoline pumps which cannot cut off the pipeline to prevent the fire from spreading. This incident triggered out a catastrophe for the environment. Oil leaked from the tanker contains poisonous chemical components severely threatening the health of marine wildlife. More importantly, these chemicals are hardly disposable by natural processes so that the great impact would carry on for 10 years or more. However, previous documents indicate that the Xingang Harbour was criticised publicly by EIA four years ago but no punishment was merited and thus not a single improvement was witnessed since then.

There are three banks involved in funding this project. They are Bank of China, Bank of communications and China Construction Bank (Wang, 2010; Xinhua Net, 2010; Yu, 2010).



Figure 4-4 An oil slick floating off the coast after pipeline explosions in Dalian China (July 17, 2010)

Source: © AP Photo/Xinhua, Tian Jingyue

4.5.2 Gilgel Gibe III dam

The Gibe III Dam is an under construction project over the Omo river in Ethiopia with an expected output of about 1,870 Megawatt (MW). The dam transcends any other kind in Ethiopia in terms of total investment which is up to US\$17,500 million and 85% of the construction expenses that is 4.59 thousand million dollars was agreed to be financed by ICBC according to their contract. However, this project has been severely protested by the local government, NGOs and inhabitants for the lack of EIA before constructions which contradicted “Convention on Biological Diversity” “UN Declaration on the Rights of the indigenous peoples” as well as the local environmental law and for the great threat the dam would generate on local ecosystem. Since the Omo River is the only source of water available to inhabitants living in the southwest of Ethiopia and the north of Kenya, the dam would evidently disturb flood cycles of the river, threatening the health of marine wildlife, the balance of ecosystem and thus lives of inhabitants. Hearing the voices of disapproval from international and local NGOs, such as , the World Bank and African Development Bank have already delayed their financing until reports on this project from EIA has been received, so the lack of capital is another challenge facing the great dam.

ICBC has agreed to offer US\$4,000 million to Ethiopia's Gibe III dam project. In May of 2010, an open letter jointly from three NGOs including International Rivers, BankTrack, and Friends of the Lake Turkana had been written to the chairman of ICBC telling the arguments about ecological destruction and the bank’s environmental responsibility (Bosshard, 2010; International Rivers, 2009; Zhang, 2010).

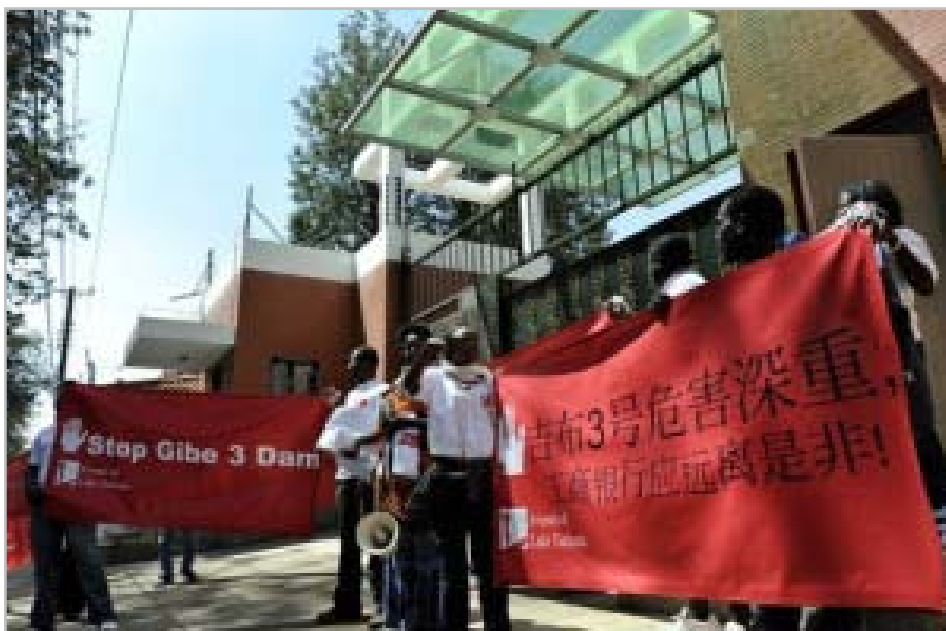


Figure 4-5 Friends of Lake Turkana demonstrate against China's involvement in Gilgel Gibe III

Source: © Friends of Lake Turkana

5 Challenges and opportunities towards green finance

According to the examination in Chapter 4, it can be found that Chinese banks have been making great progresses, although the Green Credit Policy and relevant green regulations issued by the Chinese government are still at an early stage of implementation. However, based on four phases typology of banking and sustainable development (Jeucken, 2001), banks in China at present are just in a transaction period from preventive stage to offensive stage, as many of them have started integrating environmental risks into its credit risk management while some leading banks have proactively promoted green projects with their lending. Compared with environmental performances of international pioneering peers, there is much work to fill the gap. Thus, efforts from Chinese banks themselves, as well as government and civil society, should be made to accelerate “greening” processes for Chinese banking by facing the challenges and seizing the opportunities.

5.1 Main challenges and opportunities at Chinese banks

Nowadays, the challenge has no longer been the lack of awareness from banks themselves, but focus on how they do it. With assistance of regulation review, workshop discussion and personal interview with people from banks, main challenges from banks that may impact future environmental performances have been identified and will be illustrated as below. Further, these challenges could also be correspondent opportunities for Chinese banks to catch.

5.1.1 Collective standards and localisation

In the last chapter, the index of adoption of international principles or initiatives by Chinese banks has been reviewed, where few of them have applied stringent international standards or norms. For example, according to The Banker magazine’s Top 1000 World Banks for 2009, four big state-owned commercial banks including ICBC, CCB, ABC and BOC, have been ranked into the Top 25 World banks based on their tier 1 capital. By making use of this ranking, the gap for signing to be EPFIs has been exposed in comparison with other banks. See the Figure 5-1. Obviously, four of five who have not been EPFIs yet, are Chinese banks.

Rank	Bank	Country	EPFI or not
1	JP Morgan Chase & Co	US	Y
2	Bank of America Corp	US	Y
3	Citigroup	US	Y
4	Royal Bank of Scotland	UK	Y
5	HSBC Holdings	UK	Y
6	Wells Fargo & Co	US	Y
7	Mitsubishi UFJ Financial Group	Japan	Y
8	Industrial and Commercial Bank of China	China	N
9	Credit Agricole Group	France	N
10	Santander Central Hispano	Spain	Y

11	Bank of China	China	N
12	China Construction Bank	China	N
13	Goldman Sachs	US	N
14	BNP Paribas	France	Y
15	Barclays Bank	UK	Y
16	Mizuho Financial Group	Japan	Y
17	Morgan Stanley	US	Y
18	UniCredit	Italy	Y
19	Sumitomo Mitsui Financial Group	Japan	Y
20	ING Bank	Netherlands	Y
21	Deutsche Bank	Germany	Y
22	Rabobank Group	Netherlands	Y
23	Societe Generale	France	Y
24	Agricultural Bank of China	China	N
25	Intesa Sanpaolo	Italy	Y

Figure 5-1 Adoption of the EPs for the Top 25 World banks based on Tier 1 capital of 2009

Data source: Adopted from EPs, 2011; The Banker, 2009.

As Chinese banks help more Chinese Businesses "Go Global" with their tremendous lending, pressures to sign international standards and initiatives from both international society and domestic trend of accession are increasing, particularly for adopting the EPs for project financing. On global level, other international banks are urging China's peers to adopt intentional principles as same as they applied, because they intend to avoid competitors weakening these stringent regulations for the market. Hence, those Chinese banks with overseas transactions, mainly including two policy banks - Chexim and CDB, are primarily under the pressure on adopting the EPs for their project financing work in host countries of the world.

Within domestic banking industry, the EPs are often considered as well-known international standards for environmental and social sustainability, although project financing is not very common to comparably smaller-sized Chinese banking institutions. Through interviews with bank staffs, all of them have expressed desires of adopting strict environmental standards in line with the EPs, but they similarly held concerns about the difficulties in localising such intentional standards to fit the context of China. For example, the EPs require bank to produce loan documentation in terms of ten principles for implementation when making a lending decision, which is not a conventional transaction procedure in banks in China. To date, only Industrial Bank has adopted the EPs in 2008. However, as if the problem on how

to integrate these standards into current transaction procedure is worked out, more Chinese banks are expected to sign the EPs voluntarily in the coming years (Personal interview, May 10, 2011).

Besides, a trend can be seen from current participation of green initiatives in terms of the Figure 4-3: some medium size joint-stock commercial banks not fully owned by the state, have shown to be active in adopting and implementing international green standards and norms. Industrial Bank is one of leading representatives, who firstly adopted the EPs and the Carbon Disclosure Project as well as joined as signatory to UNEP FI with other three banks – China Merchants Bank, Shenzhen Development Bank and Bank of Shanghai. In contrast, policy banks and big state-owned commercial banks have prone to be less active in accession. This situation may be attributed to two reasons: greater flexibility in managing smaller credit portfolios; and a desire to raise the banks global profile by applying international norms (Chan, 2007). In its annual report for implementation of the Equator Principles, Industrial Bank (2009) has indicated that it intended to become the greenest bank in China. This has shown that applying international principles would not negatively affect profitability but improve the quality of bank lending. Moreover, these comparable smaller banks, as pilots, have been showing possibilities to green financing.

5.1.2 Environmental conduct abroad

The “Go Out” strategy was formally issued in 2001 by the Chinese government for China’s the tenth 5 -year plan (2001-2005), which was to encourage Chinese enterprises to expand overseas. When the policy was launched, the main barrier to Chinese enterprises for expansion abroad was the lack of financing. In order to solve this problem, China’s banking sector, in supporting with adequate capital, corporate merger and acquisitions, has been mobilised by the government’s efforts (Chan, 2007). First, the state government stimulated activities of its two policy banks, Export-Import Bank and CDB, to expand overseas lending activities. Then, as Chinese enterprises began expanding abroad, big commercial banks especially for ICBC and BOC, have also been motivated to develop their s financing activities abroad. According to statistics, Foreign Direct Investment(FDI) from China’s financial industry has rapidly increased, reaching to 45.99 US billion in 2009 (Li, 2011). See the Figure 5-2.

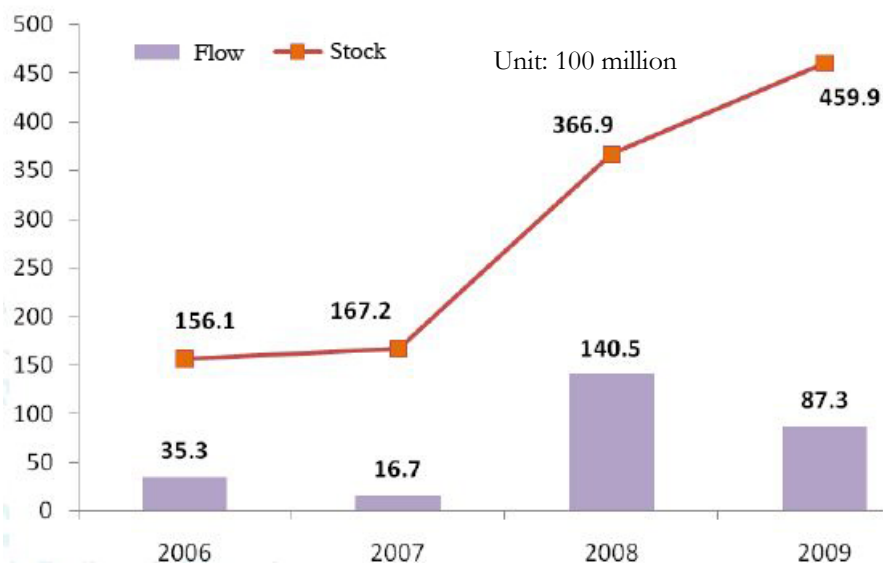


Figure 5-2 Foreign Direct Investment of China’s financial sector (2006-2009)

Source: Ministry of Commercial, P.R. China Li, 2011.p2

In addition, as recently reported by the Financial Time, Chinese overseas lending to developing countries of 2009 and 2010 in total has reached to US\$110 billion, which has surpassed the loan commitments of US\$100.3 billion from World Bank assistant in response to the global financial crisis during the past two years (Dyer, et al., 2011).

Having utilized loans, Chinese companies are engaged in many projects outside China, and consequently may bring environmental and social impacts on host countries and local communities. In fact, in recent years, some international NGOs, such as Banktrack, Friend of Earth, and International Rivers, have already pointed out that Chinese companies investing in Africa and Southeast Asia did not have sufficient track records with regard to labour and environmental standards, and criticised certain Chinese banks for supporting these businesses from behind (Chan, 2007; International Rivers, 2008).

Actually, in response to growing FDI and potential investment risks, the government has successively issued three primary policies, which are “Nine Principles on Encouraging and Standardizing Foreign Investment” (Apr. 5, 2007); “Guidelines on Sustainable Management of Overseas Forests by Chinese Enterprises” (Sep. 3, 2009); “Announcement on Strengthening Regulation on investment of the State-owned companies (Sep. 19, 2008)”. Last year, “Guidelines for Environmental Practices in Foreign Investment Activities of Chinese Enterprises” has also been issued by Chinese Academy for Environment Planning (CAEP) of MEP requiring compliance with laws of China and the host country, enhancing transparency (CAEP, , 2010). See the Figure 5-3.

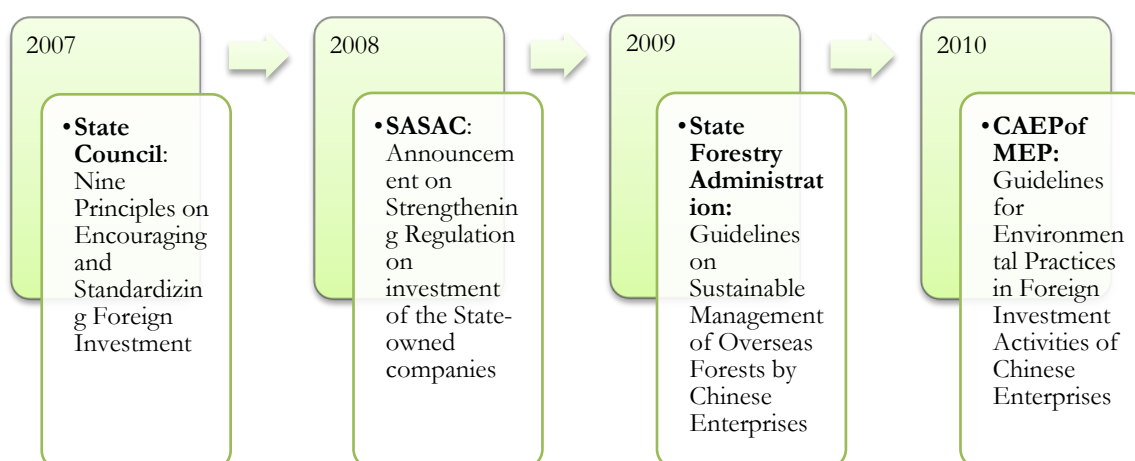


Figure 5-3 China's Emerging Standards for Banks & Enterprises overseas Investments (2007-2010)

Source: State Council, 2007; State Forestry Administration, 2009; SASAC, 2008; CAEP, 2010.

However, most documents mentioned above, such as reporting, guidelines for sustainable investment, were so far not paid sufficient attention. For example, by examining the banks' materials for public disclosure, few Chinese commercial banks have mentioned their overseas business and involvement in international project finance. This might have two reasons: first, in the past few years, commercial bank in China did not have close connection with the international stage. Therefore, most of their lending activities did not have a large exposure on a global scale than they have from international society today, and relevant financial policies and transaction procedures were designed in the context of Chinese market. Second, although CSR and Green credit have been frequently raised by most of Chinese banks at home, social responsibility investment out of China are still new and thus difficult for them to have a global CSR focus in this early stage. (Personal interview, Apr. 8, 2011; May 3, 2011)

This is however changing as more Chinese banks are emerging in global market, Some Chinese banks have undergone pressures from global stakeholders including international peers, civil society group, such as the Gibe III dam project in Ethiopia where ICBC was severely criticised for the irresponsible funding by international and local NGOs. To become a leading global brand, Chinese banks should be more cautious about their lending abroad and project financing in terms of environmental and social aspects, and develop overseas standards and implement them.

5.1.3 Transparency in information disclosure

Information disclosure is essential for banks. UNEP has defined this in the principle 7 of “Goals and Principles of Environmental Impact Assessment(EIA)”: “Before a decision is made on an activity, government agencies, members of the public, experts in relevant disciplines and interested groups should be allowed appropriate opportunity to comment on the EIA”(UNEP, 1987). Environment is listed as one of important aspects where transparency is required, demanding disclosure of environmental information.

In China, information disclosure is also stipulated in a series of national policies or consortium standards, including “Commercial bank Law of the People's Republic of China” (Dec. 27, 2003 modified)”(Standing Committee of the National People's Congress, 2003), “Company Law of the People's Republic of China” (Oct. 27, 2005), “Administrative Measures on Information Disclosure by Listed Companies” (Jan. 30, 2007), “Measures on Information Disclosure of Commercial Banks”(July 3, 2007). Particularly in 2009, the China Banking Association (2009) has issued the “Guidelines on Corporate Social Responsibility for financial Institutions of China’s banking”, which requires banks to take their corporate responsibilities of economic, social and environmental aspects. See the Figure 5-4. In their provisions, banks are required to disclose information publicly and release annual report and CSR report, should pay attention to report quality to satisfy the public’s right to know; and are open to public supervision.

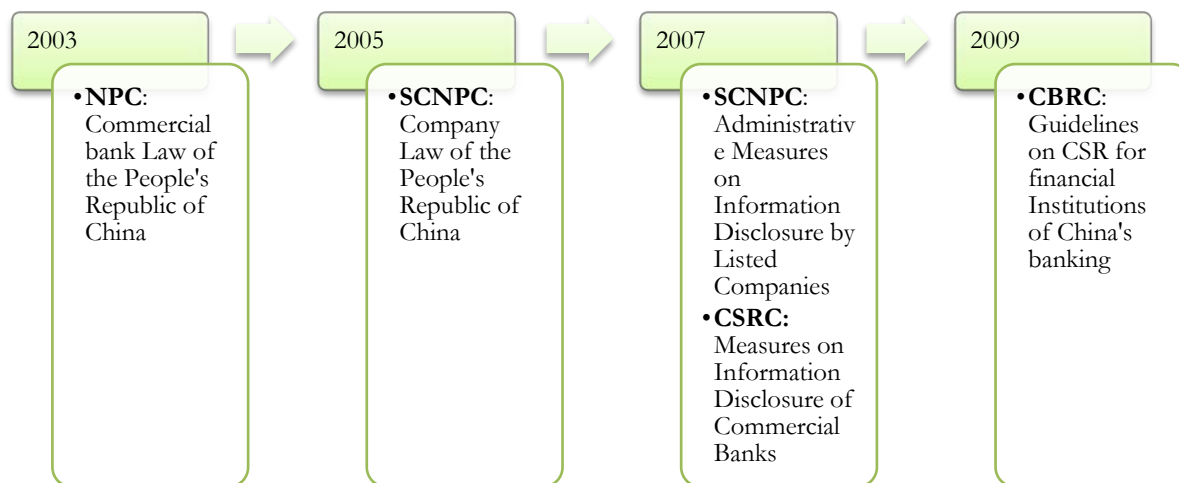


Figure 1-2 China’s Emerging Standards for information disclosure (2003-2009)

Source: Standing Committee of the National People’s Congress, 2003; Standing Committee of the National People’s Congress, 2005; China Securities Regulatory Commission, 2007; NPC, 2007; China Banking Association 2009

In the past, Chinese banks have not disclosed their efforts and impacts on sustainability, and thus banks' CSR reports or annual reports that publicly report internal environmental risk control and relevant environmental policies are relatively rare. To date, when more banks being listed at publicly traded stock markets for financing inside and outside of China, the disclosure of such information are increasingly expected from both banks' stakeholders and shareholders. For shareholders, it is simply because they worry about the bank where they invested are affected by environmental risks, and thus suffer economic losses.

Reporting Environment information is an essential component of information disclosure for banking sector. However, among all these "announcement" and "guidelines" mentioned above, there is no governmental authority to assess the extent and accountabilities of information provided by banks. Having initiatively examined these public disclosure of environmental information issued by a dozen representative Chinese banks, it can be found that some banks have already theoretically indicated proper policies, internal guidelines, procedures and due diligence that are related to their primary transaction. However, some key significant information and relevant data related to bank lending transaction are not publicly available, or the information provided is not sufficient to assess on the ground impacts induced by banks' transactions, such as how much loans they denied and withheld to control lending to "two high" industries and how much they have financed to promote green projects.

It has to be admitted that information disclosure system in Chinese banking is still in its early stage of development, and the disclosure of content related to environment is still very limited. Historically, Chinese banks have a habit of telling only the good news and not the bad. So, some key information in negative aspects might be hidden. Lack of transparency in information disclosure makes it difficult for the public to discern if loans of certain banks are truly "green" and affects overall understanding of banks' performance in green financing. Actually, banks would benefit not only from being more transparent themselves, but also from asking increased transparency from borrowers. By requiring their clients to be more transparent in disclosure, banks would dissuade clients from hiding their environmental risks.

5.2 Characteristics and efforts of stakeholder

5.2.1 Government

Government, in China, plays a decisive role in promoting green finance. In other countries, green finance tends to be implemented on a voluntary basis, although a few developing countries, such as Brazil and India, have also created a quasi-regulatory policy to promote green lending (Aizawa & Yang, 2010).

Having learnt lessons from the first green policy in 1995 that was lack of enforcement and interdepartmental collaboration, MEP, PBC and CBRC have worked closely to set up an implementation platform, where the three ministries have been assigned to take own responsibility and enhance official and unofficial collaboration for the "Green Credit Policy". Under this policy, MEP's main task is to build environmental information system in order to transfer information of corporate environmental performance to its local bureaus at different levels, and then keep the information added and updated. Local environmental protection bureau are also responsible to periodically update PBC with information about enterprises' environmentally non-compliance, to make these update access to banks for its credit risks assessment system. PBC is responsible for guiding banks to use companies' environmental information in credit risk assessment systems. CBRC is mainly to guide and supervise Chinese banks to ensure that they have set companies' environmental compliance as an independent factor for credit review and Credit granting. Moreover, Banks' performances in compliance

with the Green Credit policy have been embodied into the CBRC's regulation and supervision (Aizawa & Yang, 2010).

Besides individual responsibilities, the three ministries are also taking measures to enhance close collaboration. At the beginning, they conducted consultation and research with state-funded think tanks to complement the notion of green credit (Personal interview, May 4, 2011). In 2007, they released a series of official documents related to green credit individually and collectively where the "Opinion" is the core. In order to share accurate and timely environmental information into bank credit system, PBC and CBRC signed a "Notice" in 2008 about collaboration in providing sufficient information services to banks (MEP & PBC, 2008). At the same time, provincial and local governments who directly face environmental challenges on the ground are also actively participated in the policy implementation by issuing their local rules. As estimated, there were over twenty provinces and cities that have made local policies to elaborate their implementation rules and procedures in line with of the Green Credit Policy (MEP, 2008). Moreover, governmental officials have started approaching international community including International Finance Corporate, the World Bank, WWF to learn international experience and good practices in promoting green credit (Aizawa & Yang, 2010).

Nevertheless, the remaining deficiencies should be tackled by Chinese government agencies. For instance, few specification of industry-based green credit policy have been developed, which makes it difficult for banks to discern companies' performances in terms of industrial environmental standards. Trainings for bank lending staffs on environmental risk assessment and environmental regulations are not adequate. Furthermore, relevant policies to guide and inspect Chinese banks' environmental conduct abroad are still absent. Therefore, the governments' responsibilities for policy implementation have to pay close attention on these challenges.

5.2.2 NGO, media

Besides the government, some other stakeholders also contribute to the development of green finance in China, which particularly includes NGOs and the media.

On a global scale, international NGOs, such as Friend of Earth (US), Banktrack, WWF, International Rivers and Greenpeace have started conducting their researches and on-the-spot investigations related to banks lending outside of China, monitoring environmental operations of Chinese banks in overseas project finance. Chinese environmental NGOs are quickly establishing themselves as an important voice in the discussion of China's green finance. They are showing that NGOs in China are applying more diversified methods to advocate environmental sustainability and can make significant contributions to Chinese banks as they implement environmental finance policies. For example, in 2007, the Institute of Public and Environmental Affairs has launched the China water pollution map by listing the companies that violated environmental regulation, which enhances company information disclosure of environmental aspect. The institute's work also potentially contributes to green credit of the banking sector, as it supplements the environmental sharing database organised by the governments. Since 2008, Green watershed, a Yunnan province - based NGO, in partnership with other eight organizations, has established the "Green Banking Innovation Award" in terms of ranking criteria, in order to promote banks to consider their crucial roles in sustainable development. In 2009, several Chinese NGOs working together voiced concerns about the environmental practices of Asian Pulp and Paper, a world's leading pulp and Paper Company in Asia, for its evaluation period pre-IPO.

As for efforts from the media sector, some environmentally- sensitive concerns are becoming a mainstream topic for some business papers. For example, *Caijing*, a semimonthly financial magazine, released a series of critical articles on CSR reporting of companies and disclosed pollution accidents caused by local enterprises. Starting from 2008, *The Economic Observer* weekly, another influential media within China's financial sector, jointly with Chinese NGOs, organized the "Best China Banks Ceremony" to award the green bank.

NGOs and the media can help banks to inspect environmental practices of borrowing companies, as they have comparatively sufficient on the ground experiences in field investigation and discover environmental risks. But, as such work is in its infancy, lack of financial knowledge and expertise in banking operation still challenge Chinese NGOs. In addition, less transparency and information disclosure of Chinese banks remain as severe problems as well. Conversely, improving financial transparency on transactions would also make banks to benefit from timely and accurate information provided by NGOs or the media, so that these information could be valuable for banks to assess credit risks, especially for environmental risks management.

6 Conclusion

In conclusion, China is still in its initial stage of green financing, there have been encouraging and welcome progresses in this “greening” process in the last four years.

The Green Credit Policy, as a policy instrument issued by three governmental agencies, has essentially created a series of effective tools for Chinese banks, such as the environmental information sharing database, “Blacklist” for environmentally- noncompliance enterprises. This policy also made some individual banks start developing own internal policies and procedures for their transactions. However, the best practice would be that the policy could impel bank to develop internal system that reflects priorities in the aspects of environmental and social sustainability, particularly to enhance environmental risk management and strengthen its goodwill through environmentally lending portfolio.

On the whole, only a few smaller – sized Chinese banks have been proactively adopting international green financing principles such as the EPs, UNEP FI, but it is unclear whether they are taking these stringent principles fully seriously. Compared the trend and good practices with other international peers, Chinese banks still fall behind in some areas, such as developing comprehensive systems for environmental risk management, transparency in disclosure of environmental information, monitoring their environmental conduct abroad, and capacity building of banking employees. These gaps and weaknesses will be addressed not only by banks themselves, but also collective efforts by governments, NGOs, media, banks’ clients and other stakeholders. In order to step further in green financing, some suggestions are proposed in the following words:

To regard the Green Credit Policy as a threshold not a terminal

Undeniably, the Green Credit Policy has already been recognized by international financial community as a significant attempt of regulation for green banking in the context of China. However, it is also necessary to take measures to ensure that the policy would not confine banks’ understandings and green practices merely in a preventative phase. It is rather important to encourage banks to develop all-around environmental risk management systems that go beyond those procedures to inspect clients’ environmentally non-compliances. For instance, banks should enhance their internal expertise by building capacities with international good experience and developing their corporate environmental governance from top to bottom level of personnel. In order to emulate international peers, they need to increase understanding environmental trends and regulations timely, and set out to develop specific environmental risk management strategies and standards in terms of different bank portfolio. Furthermore, enhancing stakeholder participations and improving transparency in reporting are also necessary beyond merely compliance with the policy.

Besides, instructing banks by creating the “blacklist” for lending restriction will not be the only approach. The government needs to go a critical step by designing appropriate and innovative financial incentives, so that banks could price loan products according to risks in various degrees, such as a tax incentive for banks who grant loans to green enterprises and projects with favorable rates. By means of dynamic green finance policies, banks would be encouraged to apply interest rate differentiation or to produce innovative green financial products to stimulate sustainable financing.

To enhance engagement of Chinese NGOs

So far, governmental regulators have started approaching international community including IFC, the EPs, UNEP FI to learn international experience and good practices in promoting green credit. Also, some Chinese banks like ICBC, and Industry Bank have set meetings with international environmental NGOs such as WWF and Banktrack. Nevertheless, Chinese local environmental groups have not been formally invited and encouraged for an assistant to monitor companies' environmental practices on the ground. Actually, Chinese NGOs have potential advantages in helping banks to implement green regulations, as they have comparatively sufficient experiences in field investigation and environmental risks exposure. Thus, an initial partnership with Chinese NGOs could begin in the coming future.

To monitor Chinese banks' environmental conduct abroad

It must be noted that the Green Credit Policy is only applied to conducts within China. Such geographic limitation has already exposed certain Chinese banks under unpredictable risks. In some developing countries, environmental legislations and governance are relatively inadequate and weak, and thus simply applying local legal permission is not enough to ensure that environmental risks are tracked and managed. In fact, the experience obtained from the Green Credit Policy in China would bring an opportunity for Chinese banks and governments to address sustainable conduct in overseas investment. For Chinese government, they need to instruct banks on how to apply the Green Credit Policy in the context of global scale. For Chinese banks, they need to practice green international standards and initiatives in China, so as to gain confidence in applying them to overseas businesses.

According to the four actions to sustainability theory, the concept of value from China' banking sector in green finance should go a step further by transiting from being preventative to being offensive. It simply means that banks are expected to hold thinking from "it is bad to emit numerous GHG" to "it is good to reduce the CO₂ emission"; from "cannot be part of environmental accident" to "take steps to be part of solution". In this way, Chinese banking industry would cross the threshold into a new promising period of green financing towards sustainability.

Bibliography

- Aizawa, M., & Yang, C. F. (2010). Green Credit, Green Stimulus, Green Revolution? China's Mobilization of Banks for Environmental Cleanup. *Environmental Management*, 19(2), 119-144.
- Anderlini, J. (2010). Uniform results highlight risks building up for China's lenders. *Finance Time* Retrieved Apr.15, 2011, from <http://www.ftchinese.com/story/001034388/en>
- BankTrack. (2003). Collevocchio Declaration: The role and responsibility of financial institutions. Amsterdam.
- Bosshard, P. (2010). The Gibe 3 dam - a test case for China's role in Africa Retrieved Mar 3, 2011, from www.internationalrivers.org/en/node/5682
- Bouma, J.J., Jeucken, M., & Klinkers, L. (2001). *Sustainable Banking: The Greening of Finance*. Sheffield: Greenleaf Publishing Limited.
- Zhongguo duiwai touzi zhongde huanjingbaohu zhengce [Announcement on Strengthening Regulation on investment of the State-owned companies] (2010).
- Cai, M.Y. (2010). State-owned banks enjoy high lending ability Retrieved Jan 8, 2011, from http://www.chinadaily.com.cn/business/2010-05/05/content_9812775.htm
- CBRC. (2008). The main functions of the CBRC Retrieved 2011/03/22, 2011, from <http://www.cbrc.gov.cn/english/info/yjhj/index.jsp>
- CBRC. (2010). China Banking Regulatory Commission 2010 Annual Report. Beijing China Banking Regulatory Commission.
- Guanyu jingyibu jiaqiang chanye zhengce he xindai zhengce xietiao peihe kongzhi xingdai fengxian youguan wenti [Announcement on further strengthening industrial policy and credit policy to control credit risks], CBRC 746, C.F.R. (2004).
- CCB. (2009). China Construction Bank CSR report in 2009. Beijing: China Construction Bank.
- CCICED. (2009). Nengyuan Xilv he Huanjingbaohu jingji zhengce - Guohehui zhengce yanjiu baogao 2009 [Energy Efficiency and Environmental Economic Policies - CCICED Policy research report 2009]. Beijing China Council for International Cooperation on Environment and Development
- CDB. (2011). About us Retrieved Mar 30, 2011, from www.cdb.com.cn
- CDP. (2011). About CDP Retrieved May 1, 2011, from <https://www.cdproject.net/en-US/WhatWeDo/Pages/overview.aspx>
- CECC. (2009). Reseach on China's environmental industry Beijing: China Environment Chamber of Commerce.
- Chan, M. (2007). Time to Go Green: Environmental Responsibility in the Chinese Banking Sector: Friends of the Earth, BankTrack.
- China Banking Association. (2009). Zhongguo yinhangye jinrong jigou qiye shehui zeren zhiyin [Guidelines on Corporate social responsibility for Chinese banking sector]. Beijing: China Banking Association,.
- China Banking Association. (2010). 2009 Niandu zhongguo yinhangye shehuizeren baogao [Chinese Banking Social Responsibility Report of 2009]. Beijing.
- China CITIC Bank. (2010). China CITIC Bank 2009 CSR Report. Beijing: China CITIC Bank.
- China Economic Times. (2007). Xiamen PX xiangmu Daikuan kenengzaocheng daizhang [The loan to the halting Xiamen PX project may lead to bad debts] Retrieved Apr 3 2011, from http://www.china.com.cn/city/txt/2007-06/06/content_8349018.htm
- Colby, C., & Woodall, G. (2007). Banking on Green: Responding to Consumer Concerns about the Environment. Retrieved from <http://www.rockresearch.com/greenbankingpaper.pdf>
- Credit Reference Center. (2011). About us Retrieved May 10, 2011, from <http://www.pbccrc.org.cn/>

- Delphi international LTD. (1997). The role of financial institutions in achieving sustainable development - To the European commission. In 2.0 (Ed.). Brussels.
- Durbin, A., Steve, H., Hunter, D., & Peck, J. (2006). Sustainable Finance - Moving from paper promises to performance: WWF.UK.
- Dyer, G., Anderlini, J., & Sender, H. (2011, 2011-01-18). Scale of China's lending revealed Retrieved Mar 20, 2011, from <http://www.ftchinese.com/story/001036539/en>
- EBRD. (1995). *Environmental Risk Management for Financial Institutions*. London: European Bank for Reconstruction and Development.
- EBRD. (2001). *Environmental Risk Management for Financial Institutions: a manual for EBRD's for financial intermediaries* (2 ed.). London: European Bank for Reconstruction and Development.
- EconomyWatch. (2010). Banking Industry Retrieved 6 Jan, 2011, from <http://www.economywatch.com/banking/>
- EPs. (2006). The "equator principles" *A financial industry benchmark for determining, assessing and managing social & environmental risk in project financing*.
- EPs. (2011). Adopting financial institutions. Retrieved May 18, 2011, from <http://www.equator-principles.com/index.shtml>
- Farrell, D., Lund, L., Rosenfeld, J., Morin, F., Gupta, N., & Greenberg, E. (2006). Putting China's Capital to Work: The Value of Financial System Reform. San Francisco: McKinsey Global Institute
- Financial Times. (2010). The Banker top 1000 - break up would devastate British banking industry Retrieved May 12, 2011, from <http://www.ft.com/cms/s/2/b6bccf26-8382-11df-8451-00144feabdc0.html#axzz1N4Yjy3iP>
- Gelder, J.W., Herder, A., & Kouwenhoven, D. (2010). Close the Gap - Benchmarking investment policies of international banks. Nijmegen: BankTrack.
- Global Finance. (2011). Hou weiji shidai zhongguoshangye yinhang fazhan zhilu [Development for Chinese commercial banks in post financial crisis] Retrieved May 10, 2011, from <http://finance.ifeng.com/opinion/finob/20110509/3998204.shtml>
- GRI. (2011). Global Reporting Initiatives report list Retrieved May 5, 2011, from <http://www.globalreporting.org/ReportServices/GRIReportsList>
- Guo, H. (2005). *Pathways to Sustainable Banking in China: From Environmental Risk Management to Green Financing*. Master, Lund University, Lund.
- He, D.X., & Zhang, X.L. (2007). Dui woguo shangyeyinhang tuixing lvsexindaizhengce wenti de sikao [Thoughts for Chinese commercial banks implementing Green Credit Policy]. *Shanghai Finance*, 12.
- Huang, B. H. (2006). Non-performing loan of China's banking system. Tokyo Meiji Gakuin University
- IFC. (1999). Project Finance in Developing Countries *IFC's lessons of experience*. Washington: International Finance Corporation.
- IFC. (2006a). Environmental, Health, and Safety Guidelines *Environmental and Social Standards*: International Finance Corporation.
- IFC. (2006b). Performance Standards *Environmental and Social Standards*: International Finance Corporation.
- Industrial Bank. (2009). Green Declaration - annual report for implementation of the Equator Principles Industrial Bank.
- International Rivers. (2008). New Financiers and the environment - Ten perspectives on how financial institutions can protect the environment. Berkeley: International Rivers.
- International Rivers. (2009). Fact Sheet: GIBE III DAM, ETHIOPIA. Berkeley: International Rivers.

- Jeucken, M. (2001). *Sustainable Finance and Banking*. London: Earthscan Publication Ltd.
- Jeucken, M., & Bouma, J.J. (1999). The changing environment of banks. *Greener Management International*, 27, 21-35.
- Li, Z.M. (2011). Zhongguo jinrongye haiwaitouzi: jiyu,tiaozhan he zhanlve zhuanxing [Overseas investment of China's financial Sector: Opportunity, Challenge and Strategic transition] *Policy Brief* (Vol. 016). Beijing: Research Center for International Finance of Chinese Academy of Sciences
- Maddison, A. (2007). *Chinese Economic Performance in the Long Run* (Second ed.): OECD Publishing.
- Matisoff, A., & Chan, M. (2008). The Green Evolution: Environmental Policies and Practice in China's Banking Sector.
- MEP. (2008). MEP makes public the stage-based progress in green credit policy implementation Retrieved Apr 12, 2011, from http://english.sepa.gov.cn/News_service/news_release/200803/t20080310_113.htm
- Notice on standardizing the provision of enterprises' environmental violation information to PBC's credit report system (2008).
- Guan yu luoshi huan bao zheng ce fa gui fang fan xin dai feng xian de yi jian [Opinions on Preventing Credit Risk and Implementing the Policy of Environmental Protection], MEP 108 C.F.R. (2007).
- National Bureau of Statistics of China. (2011). 2010 Guomingjingji he shehuifazhan tongjigongbao [statistical communique on the 2010 national economic and social development] Beijing.
- NDRC. (2007). China's National Climate Change Programme. Beijing: National Development and Reform Commission.
- Nicholls, M. (2010, 1 March 2010). WestLB unveils lending policy on coal-fired power plants Retrieved Apr 19, 2011, from <http://www.environmental-finance.com/news/view/1018>
- OECD. (2002). *Sustainable Development Strategies: A Resource Book*. London: Earthscan Publication Ltd.
- Ouyang, X.H. (2010). Sidahang zhongjian yewu qianbannian zengshou 1200 yi. [Banks' intermediary services increased 120 billion]. Retrieved from <http://finance.sina.com.cn/china/jrxw/20100903/23118601754.shtml>
- Guanyu guanche xindai zhengce yu jiaiqiang huanjing baohugongzuo youguan wenti de tongzhi [Announcement on lending policy for environmental protection], PBC 24 C.F.R. (1995).
- PBC. (2011). About People's Bank of China Retrieved May 5, 2011, from <http://www.pbc.gov.cn/publish/english/952/index.html>
- Perez, O. (2007). The New Universe of Green Finance: From Self-Regulation to Multi-Polar Governance. In O. Herberg Dilling, F. and Winter. G, (Ed.), *Responsible Business: Self-governance and Law in Transnational Economic Transactions*. Oxford: Hart Publishing.
- Rabobank. (2010). Annual Report 2010 Rabobank Group - Dialogue with society. Amsterdam
- Schwalbe, K. (2006). *Introduction to Project Management* (I ed.). Boston: Course Technology.
- Guanyu yunyong xindai zhengce cujin huanjingbaohu gongzuo de tongzhi [Announcement on making use of lending policy for promoting environmental protection], SEPA 105 C.F.R. (1995).
- Shanghai Pudong Development Bank. (2007). Jiji jianxing zeren, pufayinhang fabu 06 qiye shehui zeren baogao [Taking responsibilities, SPD released 06 CRE report] Retrieved May 13, 2011, from http://www.spdb.com.cn/docpage/C419/200706/0628_419_14914.aspx
- Commercial bank Law of the People's Republic of China, Presidential order 13 C.F.R. (2003).

- Cujing chanye jigou tiaozheng zanxing guiding [Regulation on accelerating adjustment of industrial structure], State Council 40 C.F.R. (2005).
- Jiakuai tuijin channeng guosheng hangye jigoutiaozheng de tongzhi [Announcement on accelerating adjustment of industrial structure with excess capacity], State Council 11 C.F.R. (2006).
- Tam, M.K. (2008). China's Banks Should Open Up to the World About Green Issues
Green Investments (Vol. II). Beijing: Greenpeace.
- The Banker. (2009). The Top 1000 World banks 2009. *The Banker*, 7.
- The World Bank. (2011). Private Sector AAG definitions and sources Retrieved May 13, 2011, from <http://econ.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:21323537~menuPK:1192714~pagePK:64133150~piPK:64133175~theSitePK:239419~isCURL:Y,00.html>
- The World Bank, & SEPA. (2007). Costs of pollution in China-Economic estimates of physical damages. Beijing: The World Bank and State Environmental Protection Administration, P. R. China.
- Tojo, N. (2010). *Introduction to Environmental product policy*. Environmental Management in Industry. Duplicated. IIIEE. Lund University. Lund.
- UN Global Compact. (2011). About the UN Global Compact Retrieved May 1, 2011, from <http://www.unglobalcompact.org/AboutTheGC/index.html>
- Goals and Principles of Environmental Impact Assessment (1987).
- UNEP FI. (2007). Green Financial Products and Services - Current Trends and Future Opportunities in North America. Toronto ICF Consulting Canada, Inc.
- UNEP FI. (2010). About UNEP FI -- Background Retrieved Jan 8, 2011, from <http://www.unepfi.org/about/background/index.html>
- UNEP FI. (2011). UNEP Statement by Financial Institutions on the Environment & Sustainable Development. UNEP FI website.
- Weber, O., Fenchel, M., & Scholz, R. W. (2005). Integration of environmental risks into the credit risk management process of banks *GOE Report* (Vol. No. 4-2005). Zurich: GOE and ETH.
- Weiler, E., Murray, B.C., Kelly, S.J., & Ganzi, J.T. (1997). Review of Environmental Risk Management at Banking Institutions and Potential Relevance of ISO 14000. North Carolina: Research Triangle Institut.
- WestLB. (2010). Policy for Business Activities Related to Coal-Fired Power Generation *WestLB policy for standards*: WestLB.
- Wikipedia. (2011). Retail banking. from Wikipedia http://en.wikipedia.org/wiki/Retail_banking
- Yu, & Wu, X. (2009). Chidaoyuanze: yinhang lvsexindai yu kechixu fazhan de "baipishu" [The Equator Principles: Green Credit of Banking and White paper for Sustainable development]. *Financial Management and Research*, 1.
- Yu, X.G. (2011). Zhongguo yinhangye huangjing jilu [Environmental report on Chinese banks]. Kunming: Green Watershed.
- Zhang, K. (2010). Puhuaishengtai? gonghang feizhou shuili daikuan xiangmu yinzhengyi [Ecological destruction? Controversial hydropower project financed by ICBC] Retrieved Feb 2, 2011, from <http://bank.rj.com.cn/2010/06/3002187688071.shtml>
- Zhu, P. (2008). Green Finance in China -CSR Asia Retrieved Jan 13, 2011, from <http://www.pacificenvironment.org/article.php?id=2838>

Appendix I

Interviewees list - face to face interview

Type	Institution	Contact person	Identity
Banking sector	Industrial and Commercial Bank of China -	anonymous	Beijing Branch, Credit Manager
	Bank of communication	Ke Li	Beijing Branch, Manager for SME Credit
	Export-Import Bank of China	anonymous	Beijing Branch, officer
NGOs	BankTrack	Johan Frijns	International Coordinator
	Burma Rivers Network	Ah Nan	Campaigner
	Friends of Lake Turkana, Kenya	Ikal Angelei	Director as well as project-affected person by the Gibe III Dam
	Friends of the Earth, US	Michelle Chan-Fishel	Director of economic policy programs, a founder of Banktrack, with expertise on China sustainable finance
		Adina Matisoff	Sustainable Finance Analyst in China
	International Rivers	Peter Bosshard	Policy director, working on China's overseas dam builders and financiers
	Moving Mountains	Yimin Yi	Program officer, focus on China overseas investment in Africa
	Green Watershed	Xiaogang Yu	Director, the chief author of "Records of Chinese Banking"
Greenpeace China	Philip Wei	Sustainable Finance Officer	
Media	China Environment News	Ms. Chen	Journalist
	China Development Brief	Tao Fu	Chief editor
UN & Foundations	UNEP Financial Institutions Initiative	Paul Clements-Hunt	Head of Unit
		Peng Wei	Asia Pacific Task Force Coordinator
	Heinrich Böll Foundation	Xiaojuan	Program manager, China overseas

		Wang	investment
Academic institutes	Chinese Academy for Environment Planning, MEP	Chazhong Ge	Director
	Global Environmental Institute	Peng Ren	Climate Change Program Officer
	Institute for Environment and Development	Yong Ge	New Venture program officer, - lending to SMEs
Consultant companies	BSR	Xinzhuo	Advisory Manger for sustainable investment
	Syntao	Peiyuan Guo	General Manager, conducted a PHD study on sustainable banking in 2004

Appendix II

The Top 15 Chinese Banks based on Tier 1 capital in 2009 (US\$M)

Country ranking	World ranking	Bank	Tier 1 capital
1	7	Industrial Commercial Bank of China (ICBC)	91,111
2	14	Bank of China (BOC)	73,667
3	15	China Construction Bank Corporation (CCB)	71,974
4	28	Agricultural Bank of China (ABC)	39,786
5	49	Bank of Communications (BOC)	22,625
6	67	China CITIC Bank	14,526
7	80	China Minsheng Banking Corporation	12,998
8	81	China Merchants Bank	12,928
9	97	Industrial Bank	11,279
10	108	Shanghai Pudong Development Bank	9,546
11	136	China Everbright Bank	6,799
12	155	Bank of Beijing	5,372
13	178	Huaxia Bank	4,328
14	218	Guangdong Development Bank	3,147
15	226	Bank of Shanghai	3,000