GREENING CHINA'S FINANCIAL SYSTEM

CHAPTER 5:

PROBLEMS AND DIFFICULTIES IN THE DEVELOPMENT OF CHINA'S GREEN FINANCE

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CONTENTS

EXECUTIVE SUMMARY

In recent years, financial market policy-makers and regulators in China have shown leadership in advancing their roles in creating a green financial system. However, the impacts to date have been constrained by countervailing forces. In particular, the performance criteria on which local government officials are assessed still prioritizes economic growth over environmental compliance. The positive externalities of green projects and negative externalities of pollution are still not yet fully monetized to provide an incentive for green investment, while weak implementation of environmental regulations provides perverse incentives for investing in polluting enterprises.

Green finance can help to counteract these pressures, but it suffers from an incomplete policy and legal system, with legislation still at the stage of guideline policies and declaratory documents that lack a system of accountability for violations or failure to implement. They offer only general policy principles instead of specific implementation rules. Comparing this with measures for access to finance for rural enterprises, where financial policy measures have been more extensive, suggests there is lots of space to expand China's policy support system for green finance. In addition to legal rules and financial incentives, there is a need for greater coordination within government in the development of specific technical knowledge and skills within the financial sector. While it is clear that there are many problems and limitations in the current development of green finance in China, the foundations have been laid, and there is significant room for advancement.

1 INTRODUCTION

Over recent years, financial market policy-makers and regulators in China have shown leadership in creating a green financial system. China's four financial regulators have all made progress in greening the parts of the financial system for which they are responsible, and have acknowledged their mandates to ensure that financial markets fulfill their purpose in supporting China's transition to a sustainable economy (e.g., Zadek & Chenghui, 2014; Jun & Yu, 2014). The volume of green finance in China has grown, alongside the establishment of the market infrastructures and related policies (Xiang, 2012). China has taken the lead in the development of green credit policies. However, China must still overcome a series of problems and barriers to green finance to effectively support the strategic targets of making ecological progress as proposed at the Third Plenum of the 18th Communist Party of China Congress. This report looks at the barriers and problems in the policy system, their repercussions for the current state of development of green financial markets, and the potential lessons and considerations for the ongoing development of the green financial system.

2 POLICY SYSTEM BARRIERS

2.1 DIVERGENT INTERESTS OF KEY PLAYERS

Green finance involves many players, including various levels of governments, financial institutions (FIs), investors and financiers, and other stakeholders, each with their own interests. The promotion of green finance must take into account the interaction of the governments' goals and those of market players. In practice, the large deviation between interests within governments and market players has resulted in the underdevelopment of green finance in China (Xian & Liping, 2014). Key factors are:

- **Performance evaluations create a gap between the interests of central government and local governments.** Although GDP growth is no longer the single highest priority in the evaluations of local leaders and officials, environmental protection still accounts for a very low percentage of their score, and is often seen as a mere formality. Some local government officials therefore still regard GDP growth as their main target, overwhelming environmental factors. Local governments can pressure financial and environmental authorities to give companies loans or progress to an initial public offering (IPO), even if they fail the environmental tests.
- **Uncosted environmental externalities make investing in greener production and products uncompetitive.** The development of green finance largely comes from the strong support and promotion of administrative power and fails to effectively encourage the active behaviours of market players. The root of the large gap between the interests of government and market players is the failure of policy and institutional arrangements to enable the positive externalities of green projects and negative externalities of pollution to be monetized and to provide an incentive for green investment.
- **Weak implementation of environmental regulations provides perverse incentives for investing in polluting enterprises.** Enterprises are often able to reduce their costs by skirting environmental regulations, reducing the demand for green finance and weakening the momentum for financial institutions to operate green financial business. As far as green credit is concerned, "two high and one excessive" enterprises are still attractive for commercial banks, as they still offer high profits and high returns on investment.[1] Small and medium-sized enterprises in the energy conservation and environmental protection sectors find it hard to obtain credit due to the lack of a track record, high technological risks and the lack of a collateral or guarantee mechanism. Therefore a high proportion of loans still go to "two high and one excessive" projects despite some drops.

2.2 INCOMPLETE LEGAL SYSTEM

Green finance depends on laws and regulations. China's legislation of green finance started in 1995 with the Notice on Relevant Matters of Implementing Credit Policies and Enhancing Environmental Protection by the People's Bank of China (PBC), and many regulations and regulatory documents have been promulgated since then (see Table 1).

Although China has been active in legislating to promote green finance, the legal framework is not complete. The major defects include:

- **Low legislative level.** In general, the State Council and the State Council's ministries and commissions have issued green-finance-related laws, rather than the National People's Congress and its Standing Committee. Most legal documents of lower orders function as guideline policies and declaratory documents and lack the coercive force and authority required for laws.
- **The lack of provisions on legal liabilities.** The existing green financial legislation is composed largely of recommendations and declarations that financial institutions are encouraged to implement,

[1] "Two high and one excessive" is a phrase used in China's industrial and green finance policies to indicate energy-intensive, highly polluting and excessive-production-capacity industries.

but that lack a system of accountability for violations or failure to implement. Without substantive legal liability backed up by enforcement, this only puts weak pressure on enterprises, investors and financial intermediaries.

- **Lack of specific requirements.** The existing legislation is composed mainly of opinions and guidelines offering general requirements that are hard to enforce and put into effect in practice. For example, the Green Credit Guidelines only stipulate general policy principles, directions and framework, and do not provide specific performance standards in areas such as energy and water use, which makes it hard for the banks to implement.

To sum up, the opinions and guidelines issued to date do not yet articulate a complete system of implementable and robust green financial laws. It is unlikely that they will provide sufficient financial and legal guarantees and institutional support to enable the full development of green finance to meet China's needs for investment that enables sustainable development.

TABLE 1: CHINA'S SYSTEM OF GREEN FINANCIAL LAWS

Narrow Definitions	
Notice on Relevant Matters of Implementing Credit Policies and Enhancing Environmental Protection (PBC, 1995)	• Strengthen the environmental management of the banks to avoid environmental risks and encourage commercial banks to invest in environmental protection products.
Opinions on Implementing Environmental Protection Policies and Rules and Preventing Credit Risks (SEPA, PBC, CBRC, 2007)	• Establish a communication mechanism between the State Environmental Protection Agency (SEPA), People's Bank of China (PBC), China Banking Regulatory Commission (CBRC) and Financial Institutions. • Restrict credit support for projects that have failed environmental evaluation approval or criteria. • Banks should issue categorized loans according to national industry policies. • Restrict working capital loans for enterprises that discharge pollutants or emissions in violation of the laws.
Green Credit Guidelines (CBRC, 2012)	• Banks to introduce sustainability into loan application procedures. • Banks to adopt differentiated and dynamic credit policies. • Banks to implement risk exposure management system and establish relevant statistics system.
Green Credit Statistics System (CBRC, 2013)	• The system classifies green credit into 12 types. • Banks required to collect statistics on the annual energy conservation and emission reduction capacity of green credit projects.
Green insurance	
Guiding Opinions on Environmental Pollution Liability Insurance (SEPA, CIRC, 2007)	• Identifies industries, enterprises and areas with serious environmental risk to conduct pilot projects of environmental pollution liability insurance.
Guidelines for the Pilot Projects of Compulsory Environmental Pollution Liability Insurance (MEP, CIRC, 2013)	• Compulsory environmental pollution liability insurance system to be launched in industries with high environmental risks.
Green securities	
Notice on Documents to be Submitted When Production and Operating Companies in Heavily Polluting Industries Apply for IPO (CSRC, 2008)	• Enterprises engaged in heavily polluting industries that apply for IPO to be required to submit to review by SEPA.
Guiding Opinions on Strengthening the Regulatory Work of Listed Companies in Respect of Environmental Protection (SEPA, 2008)	• Environmental review to be made a compulsory requirement for IPO or refinancing.

Green finance	
Opinions of the State Council on Accelerating the Development of the Energy-Saving and Environmental Protection Industry (State Council, 2013)	• China will expand investment and financing channels; vigorously develop green credit; strengthen support for energy conservation and environmental protection projects according to the principles of risk control and commercial sustainability; actively innovate financial products and services; explore the practices of including franchise into the scope of mortgage (pledge) collaterals for loans; support green credit and financial innovation; establish the green bank rating system; support financing guarantee agencies to provide more and higher guarantees to energy conservation and environmental protection enterprises; support issuance of green bonds of various types; take steady measures to develop the sink trading; and encourage private investment in the field of energy conservation and environmental protection.

2.3 NATIONAL STRATEGY NOT YET TRANSLATED INTO COMPLETE LEGAL SYSTEM

Embedding "ecological progress" in China's development has meant putting social and economic sustainability at the heart of the national strategy (Zheqiang, 2012). This creates the space and opportunity for the development of a green financial system. However, it should be noted that, to date, measures have been fragmented and tactical, and are not yet effectively connected to each other and into a policy system that successfully internalizes environmental externalities to provide sufficient stimulus for investment.

The development of measures to support green finance can be compared to measures that have been undertaken to address rural and small and micro enterprises' lack of access to finance. The State Council and concerned ministries and commissions have enabled preferential support through monetary policies, fiscal and taxation policies, credit policies, capital market policies and insurance policies, which go beyond the limited policy support and recognition given to green finance. As Table 2 shows, this comparison reveals that there is lots of space to expand China's policy support system of green finance.

TABLE 2: COMPARISON OF POLICY SUPPORT FOR FINANCIAL INCLUSION AND GREEN FINANCE

Policy-makers	Rural Finance & Financing for Small and Micro Enterprises	Green Finance
State Council	• **Several Opinions of the General Office of the State Council on Financial Services Facilitating the Development of Agriculture, Rural Areas and Farmers** (April 2014). • **Guiding Opinions of the General Office of the State Council on the Financial Support for Economic Restructuring, Transformation and Upgrading** (July 2013) integrates financial resources to support small and micro enterprises and enhancing credit support for agriculture, rural areas and farmers. • **Guiding Opinions of the General Office of the State Council on Taking Various Measures to Effectively Reduce the High Costs of Corporate Financing** (August 2014) provides strong support for agriculture, rural areas and farmers and small and micro enterprises. • The **Opinions of the State Council on Supporting the Healthy Development of Small and Micro Enterprises** (November 2014) provides for 10 policies and measures in such aspects as fiscal support, taxation preferences, financial support, public services and policy information connection to promote targeted support, enhance the survival rate and quality of small and micro enterprises, and support their healthy development.	• The **Guiding Opinions of the General Office of the State Council on Taking Various Measures to Effectively Reduce the High Costs of Corporate Financing** (August 2014) "provide[s] strong support for such key fields as energy conservation and environmental protection," but there have been no special support policies up to now.

PBC	• Re-lending for agriculture and small businesses issued specially to rural financial institutions and small city commercial banks. • Targeted lowering of reserve requirement ratio for commercial banks with a certain proportion of loans for agriculture, rural areas and farmers, and small and micro enterprises.	• Not entitled to relending support and not included in the scope for targeted lowering of reserve requirement ratio.
CBRC	• Lending related to loans to agricultural households and small and micro enterprises shall not be included in the performance evaluation index of loan-to-deposit ratio.	• The adjustment of loan-to-deposit ratio does not cover green finance.
Capital market	• Commercial banks are allowed to issue special financial bonds for agriculture, rural areas, and farmers and special financial bonds for the development of small and micro enterprises.	• No similar products as special green financial bonds.
Insurance market	• High importance is attached to the development of agricultural insurance, and special regulations on agricultural insurance have been issued.	• No special regulations on green insurance.
MOF	• Relevant subsidies provided to businesses related to the development of agriculture, rural areas and farmers, and small and micro enterprises, including business operation subsidies of FIs, and agricultural insurance premium subsidies and corresponding preferential taxation policies.	• FIs operating green finance and other relevant businesses are seldom directly entitled to fiscal and taxation incentive policies.

2.4 LACK OF CLEAR CONCEPTS AND DEFINITIONS

The lack of a complete, explicit and detailed conceptual framework for green finance in China has led to various issues in practice, including:

- **Narrow understanding of green finance may restrict the development of policies and market practice.** For example, green insurance is understood internationally to include the range of insurance plans concerning environmental risks, including climate change, pollution and environmental damage. In China, green insurance at the current stage is seen more narrowly as involving environmental pollution liability insurance. Opportunities for addressing issues such as climate change, for example, are not currently considered with the green insurance field, restricting the application of insurance as a tool for sustainable development.[2]
- **Fragmented concepts and disparate definitions do not support coordinated policy-making.** For example, the majority of green credit in China goes to traditional heavy industries for much-needed technological upgrading to control pollution and increase energy efficiency. This is in line with industrial goals. However, statistical methods for monitoring bank lending do not differentiate between green credit and overall volume of loans by sector. Therefore, paradoxically, if banks issue more green finance, primarily to heavy industry, they will be assessed as giving greater finance for restricted industries.
- **Lack of a systematic assessment framework for the macro and micro effects of green finance.** The existing monitoring system fails to accurately assess the adequacy of the green finance supply in relation to China's environmental targets. In order for the authorities to assess progress and gaps in relation to environmental policy targets, they need a standard environmental assessment methodology as a means for transforming these overall goals into quantitative directives for the financial institutions, including the banks.

2.5 LACK OF HIGH-LEVEL COORDINATION

The development of a green financial system involves a range of supervisory authorities concerned with both environmental protection and economic performance. Therefore, it is necessary to strengthen high-level coordination. Although there has been some progress in establishing communication mechanisms between authorities involved in developing the green financial system, the level of coordination remains insufficient.

[2] For example, vehicle insurance is not seen as part of "green insurance" in China; therefore, national policy support towards electric vehicles has not been translated into insurance regulatory policies, and the practices for vehicle insurance do not make a distinction between electric vehicles and fuel vehicles.

- **Information-sharing mechanisms have not been fully implemented.** Many provinces and cities have not established or fully operationalized communication mechanisms between environmental and financial regulators, as is called for in the legislation.
- **The information-sharing mechanism relies on one-directional information flow.** For example, in relation to green credit, the current policy documents only require that the environmental authorities provide information on environmental violations to the financial regulators and do not require that financial regulators share the credit information of the enterprises with the environmental authorities. This one-directional flow of information does not help to enhance the supervision function and enable mutual trust among the authorities, thus blocking the establishment of effective cooperation.
- **Lack of clear regulatory frameworks of rights and responsibility in the management of green finance laws.** The lack of operable working standards after the issuance of the policies has left the financial institutions at a loss as to what to do and reduced the effects of the policies.
- **No effective external supervision from the general public.** Issues relating to green finance and environmental security are in the public interest, but the general public has no right to know the relevant financing information related to the environmental violations of polluting enterprises.

2.6 INSUFFICIENT SUPPORTING POLICIES

The development of a supporting mechanism has started late and, to date, has not played a strong role in promoting green finance.

- **Complementary and necessary parts of policy systems have not been developed.** For example, the requirements for risk assessment under the green credit system were established initially in 2007, but the credit risk evaluation system was only formally established in 2014. Pricing and charging mechanisms for internalizing environmental damage costs and reflecting scarcity of environmental resources have not yet been adequately formed, leading to weak incentives for market players to increase their diligence in managing environmental risk or their investment in environmental protection.
- **Fiscal and taxation incentive policies are not being directed at financial institutions.** The current fiscal and taxation support policies are mainly targeted at energy conservation and environmental protection enterprises or projects, but there are no corresponding supporting incentive policies for the financial institutions themselves to develop products and capacities to support the development of such enterprise or projects. For example, there are no such preferential policies such as fiscal discounts, tax reduction or exemption, pretax provisioning, independent write-off of bad loans in the field of green credit, or premium subsidies from the central treasury (e.g., for green insurance).
- **Little attention has been given to capacity building in the financial sector.** Green finance requires specific technical knowledge and skills, beyond those of general finance. There are no special plans in the financial institutions for the professional development needed to assess green projects and carry out environmental risk evaluation.

2.7 UNDERDEVELOPMENT OF MARKET SERVICE INTERMEDIARY SYSTEMS

Green finance requires expertise in environmental risk evaluation and carbon trading and the ability to assess diverse businesses. Professional service providers are needed to provide supporting services for the financial institutions to conduct green financial businesses. However, most of the professional service providers, including the credit rating agencies, asset appraisal institutions, accounting firms, law firms and consulting companies have not entered the field of green financial services. Other specialist intermediary service providers, such as environmental damage assessment agencies, environmental risk evaluation agencies and data service companies, have not been established. The absence and underdevelopment of the professional intermediary service system is one of the key factors that restrict the rapid development of green finance.

3 LIMITATIONS IN THE DEVELOPMENT OF GREEN FINANCIAL PRODUCTS AND SERVICES

China's green financial system remains characterized by insufficient overall volumes and the domination of banking "green credit" as the channel for green finance, while the green insurance and green securities markets are still in rudimentary stages. Within banking, traditional working capital loans remain the primary channel for green finance, while such new products as green financial leasing, carbon financial products and Clean Development Mechanism (CDM) factoring financing are just fragmentary explorations at this stage. Specifically, there are some concrete and critical problems in the various types of green financial services.

3.1 GREEN CREDIT

Undoubtedly, green credit has accounted for the principal part of China's green financial business. According to statistics from the China Banking Association, the balance of the energy conservation and environmental protection loans reached RMB 1.6 trillion (USD 259 billion) and the green credit balance of 21 major banks approached RMB 5.2 trillion (USD 839 billion) by the end of 2013 (China Banking Association, cited in Xinhua Economic New Service, 2014). However, there are a series of practical issues restricting the development of China's green credit.

- **The relevant policies are not strongly operable.** Up to now, the Green Credit Guidelines and their supporting statistical regulations have not given concrete standards for implementation—for example, for discharges and emissions, energy efficiency and recycling performance expected for green industries or the technologies that should be considered. The policies do not enable early risk prevention, but instead rely on problems being reported by the environmental protection authorities. They also do not cover the whole life cycle of a loan—for example, environmental behaviours of the enterprises before and after receiving the credit.
- **The supervision on green credit is inadequate and lacks sufficient and effective incentive and assessment.** Currently, the promotion of green credit still mainly relies on the consciousness and social responsibility of the banks, and no explicit sanction and reward system has been established.
- **There is not a unified approach to information disclosure by the banks.** As different banks have their own definitions of green and "two high and one excessive" industries, the information disclosed by different banks lacks comparability and cannot be simply aggregated or compared.[3]
- **Traditional working capital loans still dominate** and there are no tailored special green financial products.
- **Commercial and political pressures make it hard to effectively implement green credit policies.** On the one hand, banks are under pressure from local governments to issue loans to non-green projects; on the other hand, they also face pressures to make short-term profits under the existing performance evaluation mechanism. In green project investments, long-term large risks and low returns are not commercially attractive.

3.2 GREEN INSURANCE

Currently, the major green insurance product in China is environmental pollution liability insurance, which indemnifies enterprises against the cost of cleaning up of major environmental accidents or site remediation. Environmental pollution liability insurance has started to play its role in using the market mechanism to prevent and disperse environmental risks. However, the relatively narrow guarantee scope compared with developed countries has restricted the understanding of its potential in preventing and reducing environmental risks and supporting environmental sustainable development. In addition, green insurance still faces the following questions in its development:

[3] The Green Credit Statistics System (《绿色信贷统计制度》) taking effect in 2013 has, to a certain degree, alleviated the above issues.

- **Companies offering environmental liability insurance have not developed professional attractive products.** Insurance companies do not have the specific knowledge needed, and most insurance policies are not tailored to meet clients' needs. In many cases, policies have many exclusion clauses and barriers to compensation.[4]
- **A compulsory environmental pollution liability insurance system has not been established.**[5] Two ministerial-level regulations jointly issued by the State Environmental Protection Agency (SEPA) and China Insurance Regulatory Commission (CIRC) provide the major foundations for the development of environmental liability insurance. But they have limited powers. Even though the 2013 Guidelines for the Pilot Projects of Compulsory Environmental Pollution Liability Insurance mentioned the establishment of the compulsory environmental liability insurance system, it was only a guiding opinion and not legally binding. In practice, most environmental liability insurance policies are purchased voluntarily, but there is a low level of uptake at present, giving little coverage to ensure equitable compensation to victims in the event of an accident.
- **The implementation of key supporting mechanisms is still difficult.** A special assessment and appraisal institution for environmental pollution damages has not yet been established in most regions of China.

3.3 GREEN SECURITIES

Though the basic framework of China's green securities system has been defined, relevant regulations and rules are not complete, and there are also many issues in their implementation. For example:

- **Limited coverage by environmental audits and supervision systems.** Environmental protection audit opinions are required only for the IPO application of heavily polluting industries and not for all the IPO applications of all industries. At the same time, there are no environmental audit requirements for the refinancing of listed enterprises. It is noteworthy that the environmental audit system has failed to prevent the frequent occurrence of environmental pollution events by Chinese listed companies.
- **Weak information disclosure system requirements.** The disclosure requirements do not adequately cover the emission or discharge of major pollutants by enterprises and the measures and effects of the pollutant control.
- **Implementation remains at pilot stage.** Implementation of the system for environmental performance assessment of listed companies has only been carried out in a few pilot areas. As yet, there is no nationwide and complete standard for the environmental performance assessment of listed companies.

3.4 EMISSIONS QUOTAS AND TRADING

Despite years of development, China has not yet established a national emission allowance trading system, and the current emission allowance trading market is still small with limited market liquidity and trading infrastructure. Key problems are:

- **Lack of relevant laws.** Relevant existing laws, including the Law on the Prevention and Control of Atmospheric Pollution and the Law on the Prevention and Control of Water Pollution, mention pollutant control licenses, but have not specified the legal status of tradable emission allowances.
- **Lack of monitoring, reporting and verification systems.** The precondition for the implementation of emission allowance trading is the accurate monitoring of enterprises' emissions. Monitoring and measurement of emissions and energy are functionally scattered among different governmental agencies in China, with inconsistent approaches to definitions, statistics and data quality assurance.

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4 Currently, a majority of the environmental pollution liability insurance products only cover the third party's direct property loss and casualties, as well as the cleanup expenses and legal fees caused by the unexpected pollution accidents, and exclude indirect and ecological losses.

5 Article 52 of the Environmental Protection Law, newly revised in 2014, only stipulates that "the state encourage the purchase of environmental pollution liability insurance," which falls far behind the expectations of the insurance sector.

- **A true market has not been established.** Many enterprises participating in emission allowance trading pilots are not market players in the true sense. Moreover, the transactions have been of the forced-marriage type arranged by the administrative authorities, where prices are also subject to government intervention. This is one of the important reasons restricting the promotion of China's emission allowance trading after over 20 years of practice.
- **Design questions remain in setting up the emission allowance system.** No method for the reasonable allocation of quotas has been agreed, and emission reduction quotas have tended to be allocated hierarchically. This system design itself has restricted the development of the carbon market.

4 CONSIDERATIONS FOR THE ONGOING DEVELOPMENT OF CHINA'S GREEN FINANCIAL SYSTEM

It is clear that, while there are many problems and limitations in the current development of green finance in China, the foundations have been laid, and there is significant room for advancement.[6] Through an analysis of international and Chinese experience, this report asserts that green financial mechanisms can play a key role in sustainable development.

Demand for green finance is policy driven by and depends on environmental costs and benefits becoming material to enterprises and their investors, through a combination of environmental regulations; macro-economic, fiscal and industrial policies; regulatory standards; disclosure standards; and governance standards. Market actors, including policy-based FIs, commercial FIs and Internet-based FIs, should respond to these regulations, price signals and credit guarantees by developing financial products such as green credit, green insurance, green bonds and green venture capital funds that support green investment.

Green investment includes both financing new green industries (in areas such as research and development, environmental protection facilities, new energy, resource recycling, green manufacturing and ecological agriculture) and also financing energy- and resource-efficient investments in traditional heavy industry. These two approaches are not mutually exclusive.

More broadly, green investment entails a fundamental enhancement of the efficiency and effectiveness of the financial system in assessing risk and allocating capital. As such, green finance should occupy a core position in financial market reform in China. It is not an additional requirement to be imposed, but should be seen as a core driver of efficiency and effectiveness. If environmental factors are not considered in investment, this will lead to irrational allocation of funding, higher risks, weaker and more volatile economic growth, and profit taking and instability in financial markets.

The demand to drive green finance is shaped by public policies that make environmental costs and benefits explicit and salient throughout the investment supply chain. Three clusters of policies can be identified (as laid out in the recent report by the Green Finance Task Force (2015) convened by the People's Bank of China and the United Nations Environment Programme's Inquiry: Design of a Sustainable Financial System):

- **Real economy policies to shift the relative balance of risks and returns to green investment.** These measures increase the returns on investment of clean products by increasing the revenues from clean products (for example, by providing subsidies to clean energy) and reducing the returns on investment of polluting products by reducing the price support to these products.
- **Financial system policies to shift the balance of risks and returns to green investment.** These measures increase the returns on investment by reducing taxes and loan interest rates and other costs to investors in green projects and by reducing the returns on investment of pollution products by increasing the taxes and loan interest rates associated with investments that increase environmental damage.
- **Policies to enhance the sensitivity of enterprises and decision-makers.** These policies increase the importance given to social responsibility in the management and performance of enterprises and turn them from passive to active mode in their awareness of environmental risks and opportunities.

Environmental pollution has strong negative externalities and results in market failures. Traditional solutions tend to focus on sanctions against polluters. However, sanctions can be undermined by governmental failure due to ineffective institutions and asymmetric information. The purpose of green finance is to help solve the double failures of the market and government by incorporating environmental factors into risk

[6] See also the discussion in Yuping & Yuanpeng (2014); Tongyu (2014).

management on investments that are supported by diversified financial instruments, market mechanisms and the analytical capacity of the financial sector (see, e.g., Zhenmin, 2013; Daoxu, 2014).

However, green finance cannot replace the need for effective environmental regulations; rather, it provides early risk prevention and middle-stage supervision to prevent violations before they happen. Ultimately, however, strong regulations are needed to provide the signals that enhance the attractiveness of energy conservation and emission reduction enterprises. They need to simultaneously turn investment away from enterprises and projects that are at greater risk of sanction through industrial policies or violations of the environmental laws.

REFERENCE LIST

China Banking Regulatory Commission. (2012). Green Credit Guidelines. Retrieved from http://www.cbrc.gov.cn/chinese/files/2012/E9F158AD3884481DBE005DFBF0D99C45.doc

China Banking Regulatory Commission. (2013). *Green Credit Statistics System*. CRBC General Office.

China Securities Regulatory Commission. (2008) *Notice on Documents to be Submitted When Production and Operating Companies in Heavily Polluting Industries Apply for IPO.* Beijing: CSRC.

Daoxu, Z. (2014). Role of government in green finance. *China Finance, 4*.

Green Finance Task Force. (2015). *Establishing China's green financial system*. People's Bank of China and UNEP Inquiry: Design of a Sustainable Financial System. Retrieved from http://www.unepfi.org/fileadmin/communications/EstablishingChinasGreenFinancialSystem.pdf

Jun, M. & Yu, S. (2014). Green finance policies and their application in China. *China Finance Review, 2*.

China Insurance Regulatory Commission. (2013). *Guidelines for the Pilot Projects of Compulsory Environmental Pollution Liability Insurance.* Beijing: Ministry of Environmental Protection.

People's Bank of China. (1995). *Notice on Relevant Matters of Implementing Credit Policies and Enhancing Environmental Protection*. Beijing: PBC

State Environmental Protection Agency. (2008). *Guiding Opinions on Strengthening the Regulatory Work of Listed Companies in Respect of Environmental Protection*. Beijing: SEPA.

State Environmental Protection Agency & China Insurance Regulatory Commission (2007). *Guiding Opinions on Environmental Pollution Liability Insurance*. Beijing: SEPA & CIRC.

State Environmental Protection Agency, People's Bank of China & China Banking Regulatory Commission. (2007). *Opinions on Implementing Environmental Protection Policies and Rules and Preventing Credit Risks*. Beijing.

Tongyu, W. (2014). Ideas on promoting innovation of green finance mechanism. *Macroeconomic Management, 1*.

United Nations Environment Programme. (2014, June). *Inquiry into the Design of a Sustainable Financial System*. Retrieved from http://web.unep.org/inquiry/

Xian, Z. & Liping, Z. (2014, October). *Green finance: The financial mechanism turning green mountains and blue water into the land flowing with milk and honey.* Internal report of Project Team of Development Research Center of the State Council. Beijing: State Council of the People's Republic of China.

Xiang, D. A. (2012). Review of research on green finance. *Journal of Zhongnan University of Economics and Law, 6*.

Xinhua Economic News Service. (2014, June 26). *China's loans to high pollution, energy consumption and overcapacity industries.* Retrieved from http://www.banktrack.org/manage/ems_files/download/china_s_loans_to_high_pollution_energy_cons_pdf/china_s_loans_to_high_pollution_energy_cons.pdf

Yuping, C. & Yuanpeng, Z. (2014). Construction of the green financial system: Problems and solutions. *Financial Theory and Practice, 9*.

Zadek, S. & Chenghui, Z. (2014). *Greening China's financial system: An initial exploration*. Winnipeg, MB: IISD/DRC.

Zhenmin, Z. (2013). Comparative studies on green finance systems in China, Japan and ROK. *Heilongjiang Social Sciences, 6*.

Zheqiang, Z. (2012, September). *Green economy and green development*. China: China Financial Publishing House.