CCICED – The China Council for International Cooperation on Environment and Development is a high level, non-profit international advisory body reporting to China's State Council. CCICED suggests policy recommendations on important environment and development issues of China. It is supported by many organizations within and outside of China. The 2015 study summarized in this report was financially supported by China, Canada, Australia, the Asian Development Bank, and others. We are grateful for the efforts of both Renmin University and the World Resources Institute, among others, during the conduct of this work. Further information is available at www.cciced.net

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Abbreviations Used in Text

AIIB	Asian Infrastructure Investment Bank
CBRC	China Banking Regulatory Commission
CCICED	China Council for International Cooperation on Environment and Development
CELI	Compulsory Environmental Liability Insurance
CIRC	China Insurance Regulatory Commission
CSRC	China Securities Regulatory Commission
FDI	Foreign Direct Investment
GFTF	CCICED Green Financial Reform Task Force
INDC	Intended Nationally Determined Contribution
IPO	Initial Public Offering

NDRC	National Development Reform Commission
NGO	Non-governmental organization
OBOR	One Belt and One Road
PBOC	People's Bank of China
PPP	Public Private Partnership
RMB	Renminbi

Developing China's Green Finance System

China's Transformative Green Growth

China has entered a 'new normal' period of transformative change in development strategy centered on building a moderately prosperous society (**小康社会**) by the conclusion of the 13th Five Year Plan in 2020, while setting the stage for an Ecological Civilization with higher quality urban, rural and industrial development. In line with emerging international norms including the 2015 United Nations Sustainable Development Goals for 2030, and the 2015 Paris Agreement on Climate Change, nothing short of transformative green growth is contemplated by China.

A new term, 'greenization', signals the breadth and depth of China's green development effort—reaching across all sectors and regions such as the Yangtze River Economic Zone, and extending to China's international relationships with new initiatives such as 'One Belt and One Road' (OBOR) and the Asian Infrastructure Investment Bank (AIIB). China's green development is intended to enhance China's long-term competitiveness, improve quality of life, and ground the economy in new and cleaner sources of growth.

China's high ambitions on environment and development will lead to an unprecedented demand for green financing. To 2030, China's domestic green investment needs could range to more than 120 trillion RMB, covering the 13th, 14th and 15th Five Year Plans. Attracting private investment is essential as only a small portion of these needs can be met by the available public funds. Even as it pursues its domestic agenda, China also has the opportunity to play a global role in promoting green financial development and green economic transformation in developing countries through its influence in bodies such as the G20 and newly established multi-lateral financial institutions.

Green Finance Progress

Globally, there is substantial innovation in green finance across all segments of the financial system. The focus is now evolving from isolated innovations towards systematically greening the entire financial system within countries. The goal is not to establish parallel systems of green finance served by a few institutions, but rather to re-align incentives so that capital flows away from "brown" and towards "green".

Box 1. Working Definition of Green Finance Reform

Green financial reform includes innovations in institutions, policies, financial markets, and the technologies required to encourage and incentivize private capital to invest into green industrial chains, resource efficiency, and environmental protection, plus green regional development in both rural and urban areas. The intent of such reforms is to influence decisions by all stakeholders across the entire financial system. Numerous research projects have been done in this area in recent years, including work by the UNEP Inquiry, the People's Bank of China, International Institute for International Development (IISD), UNEP-Finance Initiative, the Climate Bonds Initiative, the OECD, the Development Research Center of the State Council, and others.

In recent years, substantial research efforts on green finance mechanisms have been undertaken (see Box 1 for examples). A key message of such work is that promoting green finance goes beyond simply developing new financing structures. Successful greening of the financial system requires addressing demand side barriers, supply side solutions, and developing the right enabling environment through policies, market signals, and changing organizational cultures for solutions to flourish.

CCICED Green Finance Task Force (GFTF)

In early 2015 the China Council for International Cooperation on Environment and Development (CCICED) convened a task force to provide policy recommendations on ways to meet China's future green finance needs to 2030. The GFTF is co-chaired by Chen Yulu, former President of Renmin University and Andrew Steer, President of the World Resources Institute. CCICED has reported the GFTF recommendations to China's State Council after review by CCICED Members at the Annual General Meeting in November 2015. This summary publication provides key results and recommendations. The main report is available in Chinese and English at http://www.cciced.net and https://www.sfu.ca/china-council/council-documents.html

Magnitude of China's Green Investment Needs

Estimated Demand in Six Sectors (2014 -2030)

Drawing upon the Chinese government's announced goals, major initiatives, and standards, the GFTF has developed estimates for China's green financing needs for the periods of 2014-2020 and 2021-2030 (see Tables 1 and 2) for three scenarios. The scenarios (Box 2) are based on the application of different assumptions regarding national goals and required environmental standards. In aggregate, the GFTF estimates that investment needs from 2014-2030 will range from 40 trillion RMB (lowest scenario) to more than 120 trillion RMB in the highest scenario .

Box 2. Assumptions Underpinning Projections of Green Finance Needs in China

Low scenario – *green development goals as of 2013, maintaining the level of environmental protection as of 2013, and maintaining the levels of investment at that time. However, these investments may not be sufficient to achieve the country's green development goals.*

Middle scenario – *investment needed to achieve the environmental standards of 2013 combined with the green development goals as updated in 2015.*

High scenario – *environmental standards set in 2015 combined with the green development goals as updated in 2015.*

The green financing estimates in this report cover six sectors only, hence the total need for all green-related investments actually will be larger [1]. The sectors studied by the Task Force include: sustainable energy, infrastructure (including environmental protection infrastructure), environmental remediation, industrial pollution control, energy and water efficiency, and selected green products (cars and buildings). Consideration was given as to whether the needs of these sectors can be met through private investment (e.g., renewables) or whether they will require substantial public financing (e.g., certain types of remediation). This distinction becomes important when considering policy options and assessing whether the market offers tools suited to the individual risk characteristics and potential commercial return of each sector.

1. *Other important sectors for green investment exist such as climate adaptation, ecosystem protection, sustainable agriculture, etc. The six sectors covered by the GFTF are the most reliably quantified and address a significant cross-section of China's green investment needs.*

Table 1 . Estimated needs for Green Finance in China (2014-2020)

in billion RMB

Primary Sources	Category	Sub-category	Low	Medium	High
Private Funds	Sustainable Energy	Renewable and Clean Energy (electricity generation)	3,230	4,580	5,540
		Biomass Energy (non-electricity generation)	190	360	360
	Industrial Pollution Control	Industrial Wastewater	330	670	990
		Industrial Air Pollution	80	490	840
		Industrial Solid Waste	10	720	960
	Environmental Remediation	Industrial Land	3,200	4,200	5,200
Private Funds and Public Funds	Other Infrastructure, including for Environmental Protection	Municipal Water Supply	720	1,530	1,530
		Municipal Wastewater Treatment	170	900	1,440
		Municipal Rail Transportation	3,850	4,550	4,550
		Municipal Solid Waste Treatment	130	360	650
	Energy and Resource Efficiency	Energy Efficiency	800	1,350	1,350
		Water Efficiency	300	1,200	1,200
	Green Products	Green Buildings	530	1,320	1,320
		Electric Vehicle	220	650	650
Public Funds	Environmental Remediation	Agricultural Land	400	600	1,200
		Groundwater	400	800	2,100
Total (in billion RMB)			14,560	24,280	29,880

Table 2. Estimated Needs for Green Finance in China (2021-2030)

in billion RMB

Primary Source	Category	Sub-category	Low	Medium	High
Private Funds	Sustainable Energy	Renewable and Clean Energy (electricity generation)	7,370	9,320	12,820
		Biomass Energy (non-electricity generation)	910	940	2,640
	Industrial Pollution Control	Industrial Wastewater	370	630	1,010
		Industrial Air Pollution	120	110	160
		Industrial Solid Waste	290	780	1,340
	Environmental Remediation	Industrial Land	3,400	15,040	18,800
Private Funds and Public Funds	Other Infrastructure, including for Environmental Protection	Municipal Water Supply	880	1,870	3,970
		Municipal Wastewater Treatment	1,430	1,100	12,860
		Municipal Rail Transportation	730	1,250	7,950
		Municipal Solid Waste Treatment	670	640	650
	Energy and Resource Efficiency	Energy Efficiency	320	410	1,150
		Water Efficiency	1,800	3,100	12,400
Public Funds	Environmental Remediation	Agricultural Land	3,600	5,400	10,800
		Groundwater	4,600	7,200	8,900
Total (in billion RMB)			26.490	47,790	95,450

The investment needs above represent sizable near-term costs. However, experience shows that greener growth can result in a more efficient use of capital and deliver savings that can offset the upfront costs of green transformation. As such, the actual cost may be lower over time than continuing a pollution-intensive and resource-intensive development path.

As a final note, there are many uncertainties about the future standards, goals, technology developments, and other variables. Present and future policy decisions play a decisive role in defining actual market supply and demand, particularly the setting of performance standards, the pricing of resources, the quality of regulatory enforcement, and decisions that change the costs of pollution and resource consumption. Given the uncertainty about future policies, the estimates for the period of 2021-2030 carry a substantially higher degree of uncertainty than the estimates for 2014-2020.

A Suggested Framework for China’s Green Finance

Figure 1 is a framework for green financial reform in China with four linked parts:

•**Government’s vision and policy framework** sets the tone for the speed and extent of the greening of the financial system, and also strongly influences the ceiling for green finance.

•**Enabling/driving (e/d) conditions** that are the keys for converting investment “need” into actual market “demand”. These e/d conditions comprise policies (e.g., standards and resource pricing) and tools (e.g., information disclosure) that shift incentives towards environmentally sustainable behavior and create a market rationale for investment. In designing a greener financial system, there is no substitute for sound environmental policies that will shift investment demand away from environmentally damaging activities and towards sustainable activities.

•**Demand side system** that is influenced by a number of implementation priorities associated with China’s environmental protection needs including the ‘War on Pollution’, the government’s vision of ecological civilization, and other areas of policy focus and public or private sector demands for green development.

•**Supply system** for Chinese green finance that spans banking, equity markets, bond markets, hybrid approaches through investment funds and PPP, and insurance markets that can supply demand for capital. Public funds and policy reforms represent separate instruments that play a critical role where the investment returns are too weak to attract private actors. The supply system also includes the capital that China provides for overseas finance through its own initiatives and its support of new development financial institutions.

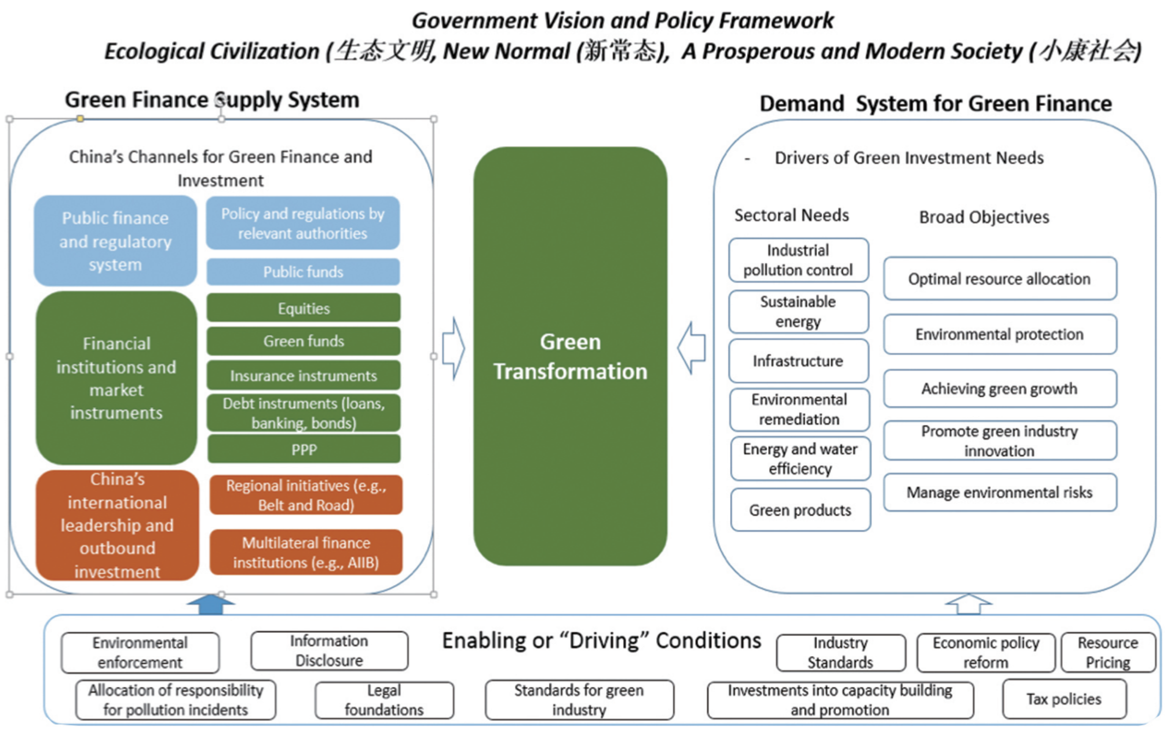

Figure 1. Strategic Framework of Green Financial reform in China

Challenges and Opportunities

The big challenge facing China, but also the source of opportunities, is to identify the right set of interventions (see Figure 2 for examples) into the strategic framework of Figure 1 to ensure that the supply and market demand for green finance are suitably matched at a scale sufficient to realize China's vision for an ecological civilization.

Figure 2. Challenges and Selected Opportunities for Green Financial Reform in China

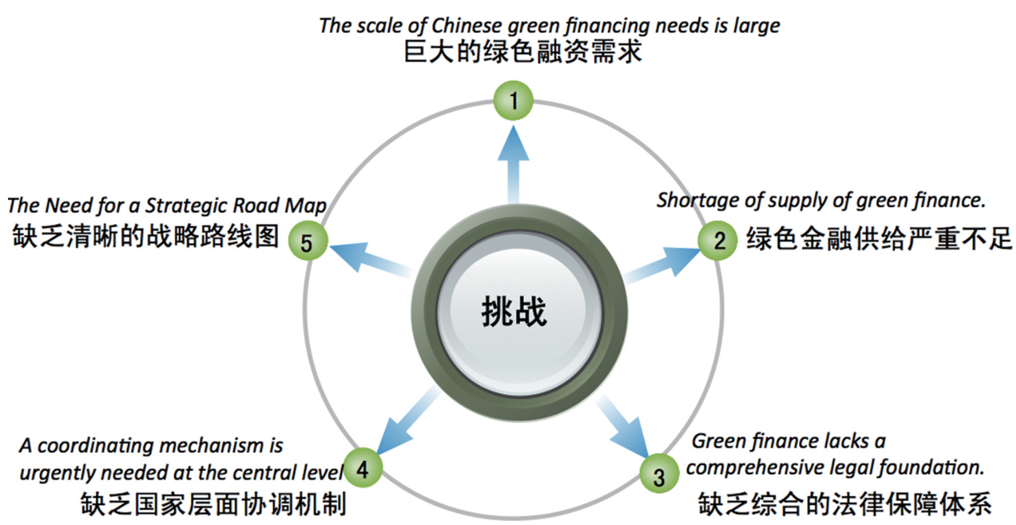

Figure 3. Five Challenges of Green Finance Reform in China

With the emergence of the economic new normal, China can gain significant benefits by speeding up the establishment of a greener financial system. In recent years, China has made substantial advances with its Green Credit Policy, pilot carbon trading schemes, and other such initiatives. However, these efforts are just a first step and their impact has been constrained because they are disparate initiatives, not yet integrated into a systematic policy framework coordinated with economic development policies. Figure 3 summarizes five challenges of green financial reform at a macro level. These are addressed at various points in this summary report.

Challenges Across Investment Categories

There are large pools of capital within the Chinese financial system that could be applied towards its green finance needs. However, despite the interest amongst Chinese financial institutions to capitalize on green investment opportunities, several major challenges noted below exist across all investment segments. This results in insufficient flow of finance to green projects.

Insufficient information and insight – The introduction of environmental laws and standards will only translate into the actual deployment of finance if financial actors understand critical information about the impacts of these changes. Which industries will be affected by new rules? What are the specific new investment needs? What are the risks and the revenue models underpinning green projects? Financial institutions often lack the information and other resources to answer these questions.

Lack of technical skills within financial institutions – Commercial banks and other financial institutions typically lack staff members who understand green technologies and who are familiar with the business models underlying green projects. As such, institutions have difficulty evaluating the feasibility and risks of green projects and managing such loans or investments..

Unfamiliarity with green investments – For many financial institutions, green investment may represent new types of projects and clients, and therefore may be perceived as carrying added and unfamiliar risk. In the absence of fiscal tools to de-risk investments (e.g., subsidies, guarantees) or policies to make "brown" investments less attractive (e.g., increased liability for financiers), financial institutions may prefer to stay with known customers and sectors due to perceived greater safety.

Limited market demand – While there are substantial investment needs, these are not sufficiently translating into public and private entities approaching financial institutions with well-prepared, fundable green projects. Environmental policies and instruments need to provide sufficient incentive to motivate enterprises and other economic actors to pursue investment into green improvements as opposed to business as usual. Financial institutions will not pursue green opportunities or build their own internal capabilities if they do not have active client demand.

Complexity of coordination amongst government bodies – The implementation of green financial reform requires the collaboration of numerous different parts of government (see Box 3). At present, there is an absence of a coordinating mechanism at the national level, which creates challenges in guiding reforms across the four components of the green financial reform framework.

Box 3. Government bodies involved in China's green finance system

Green financial system components involve many government agencies. For example, financial institutions are directly subject to the supervision of the PBOC, CBRC, CSRC, and CIRC. Standards for greening of projects are set by the Ministry of Environment, the Ministry of Water Resources, the Ministry of Commerce, and many others. Public finance programs and other mechanisms may be subject to any of the agencies listed above as well as by other agencies such as the NDRC and the Ministry of Finance.

Public finance administrative efficiency is low – China currently uses public finance in a number of ways to support green investment. However, there are substantive opportunities to improve the management and resulting impact of the funds.

Reform Opportunities

Opportunities are widespread—across banking, capital markets, and through innovations such as PPP and carbon trading. The GFTF focused its work around six key segments of finance that are critical to an effective flow of green finance: the banking system, stock markets, bond markets, public-private partnerships (PPP), carbon finance, and insurance.

Banking System

For some time to come, the main source of green investment will be banks. China Banking Regulatory Commission (CBRC) statistics show green credit accounted for about

9% of China's outstanding loan balance and approximately 6% of all bank assets in 2013. Given current total annual credit growth of 10 trillion RMB, the GFTF recommends aiming for 20% of credit growth to be concentrated in green investments (i.e., 2 trillion RMB). GFTF identified three key opportunities to achieve this outcome.

Deepening institutionalization of green finance within banks – Banks have encountered a number of business challenges to green investment, such as a lack of technical skills related to green investments and mismatches between their own funding horizons and the investment periods required for green projects. Further, due to limited consequences associated with funding pollution intensive projects or sectors, "brown" investments can be perceived as carrying lower risk than newer "green" investments. As such, green credit policies have not achieved their full potential. Opportunities to address these challenges include: setting up specialized green credit departments, creating rankings of banks based on their green finance performance, establishing internal objectives and performance incentives for staff and departments, using stress tests to assess the potential impact of environmental trends, and enhancing ability to quantify the environmental costs of projects.

Use of interest subsidies for green loans – Subsidizing interest allows government to use a relatively small amount of public finance to leverage a much larger sum of private capital and can be structured to transfer the responsibility for project identification and selection to more specialized commercial banks and other entities. Yet government has relied more heavily on direct subsidies and existing subsidy programs face administrative challenges. China could improve the terms offered by the subsidy programs as well as pilot initiatives using commercial banks to manage interest subsidy programs for green loans.

Create incentives for banks to avoid polluting industries – China does not stipulate clear environmental legal liabilities for commercial banks although this is done in many other countries. If motivated through regulations to consider the environmental impacts of their transactions, banks will guide their financial lending away from highly polluting industries and towards green projects. Such changes could be realized through changes to the Commercial Banking Law to stipulate liabilities and also allow environmental authorities, the public, or NGOs to seek redress when banks are deemed responsible for environmental damages.

Stock Markets

China's green equity markets have developed along three lines: (1) listed companies are required to disclose certain environmental information; (2) green stock indices offer market opportunities for investment; and (3) specialized green investment funds provide some opportunities for investment into the environmental protection and energy conservation industries. The effectiveness of equity markets can be enhanced through:

Improved information for investors – Strengthening disclosure requirements and their associated enforcement would influence both the behavior of companies and help protect the interests of investors. Initiatives to educate investors on green securities and the use of environmental information will deepen integration of environmental information into investment decision-making and create incentives for enterprises.

Improving green industries' access to IPOs – Extended waiting periods exist for companies seeking permission to file IPOs, and there are restrictions on the amount and ratio of fund-raising. Solutions such as fast track services or alternative listing venues will offer an important channel for enterprises to raise capital and provide an important complement to the banking system.

Green Bonds

Green bonds are particularly suitable for projects with stable cash flows that require medium to long-term financing. A successful green bond market would have the potential to eventually meet 20 to 30% of China's green financing needs and would enhance the capacity of banks to provide medium and long-term financing. An active green bond market could also make financing less expensive and more accessible for companies by reducing intermediary costs for banks as well as providing a route for direct issuance. To develop the green bond market, regulators should develop the necessary guidance, including monitoring and evaluation systems, to enable market actors to launch green bonds. Government can help kick-start the bond market through subsidies or interventions that will enhance creditworthiness of bonds.

Public Private Partnerships (PPP)

Within China, early efforts to employ the PPP model have already demonstrated successes, although there are various points of view as to the relative merits of PPP (see Box 4). The Ministry of Construction introduced rules in 2002 for PPP, and it is now a common financing approach for environmental infrastructure projects such as wastewater treatment plants or waste-to-energy incineration plants. With support from the government, the wastewater treatment rate increased from 40% in 2002 to 87% in 2013 and garbage treatment rate increased from 54% to 84%. China's formal PPP model introduced in 2014, relies on project finance and is mainly used for large-scale projects that are expected to have a stable cash flow once started, but face difficulties securing funding through traditional channels due to the volumes of funding required and the high levels of investment risk. The GFTF identified two opportunities:

Regional environmental PPP financing – Under this new approach, a PPP agreement is constructed around a package containing multiple projects such as the treatment of an entire river basin or an eco-city. The projects are inter-linked or complementary, and the agreement bundles together projects offering different levels of return on investment to achieve an overall acceptable return. This creates a compelling driver for innovation through technology collaboration, business models, and financing platforms. By establishing a program fund or special purpose vehicle to manage the portfolio of projects, a PPP can be structured to accommodate the varying risk and return expectations of different types of investors to maximize its ability to attract private capital and reduce its funding costs.

Improving attractiveness of PPP initiatives and their effectiveness – Various measures could be adopted to strengthen the implementation of PPP. Government can ensure promised payments and subsidies are incorporated into their budgets. Improving the pricing and fee collection mechanisms for public environmental services can establish the rate of return needed to attract private investors. Sustained public sector participation in the PPP vehicle (such as through an equity investment) can be used to ensure that the PPP remains focused on delivering quality public services.

Box 4. Perceived Strengths and Weaknesses of PPP

The potential shortcomings in PPP are widely debated in China and elsewhere: (1) cost of financing is high; (2) duration of financing/investment is long, typically 20 to 30 years; (3) contract documents are numerous and complex; and (4) negotiation is time-consuming, and the front-end cost is high. However, there are five reasons why adopting PPP to encourage private parties to provide public services at a large scale is suited to China's current needs: (1) fiscal resources are limited and private parties can help bridge the shortage; (2) risks are shared between government and private parties, with a strategic alliance reducing investment risks for each; (3) participation by private parties can enhance management efficiency and funding utilization rate, shorten project construction duration, and reduce costs; (4) competition among the private parties participating in the project can reduce project costs and improve investment efficiency; and (5) the government retains a level of decision-making power and control over the project even as it secures critical private investment.

Green Development Fund

China's green industries need to increase in size and scale as well as undergo consolidation in order to develop the capacities required for technology innovation and for competing internationally. However, the available public and private financing resources are not fully suited to supporting these industries. A Green Development Fund has been proposed in the draft 13th Five Year Plan, which could provide a critical vehicle for the transformation into green industries.

An equity-focused, market-oriented fund can fill gaps in the marketplace that cannot be readily addressed through other financing instruments. Many companies in the green industry sector – particularly SMEs and early stage companies – lack the capital base necessary to scale their business or innovate their technologies. Government subsidy programs can provide support that enables companies to remain solvent in the marketplace, but they can't provide the capital necessary to grow or enhance competitiveness. Further, many companies in the sector are unable to access bank financing to support their growth. An equity-oriented development fund could provide capital to enable companies to make the leap in scale necessary for sustained growth.

A market-oriented green development fund can have greater flexibility to make efficient and effective use of capital than traditional grant instruments. A fund has various options to design its structure and therefore can efficiently pool capital from public and private investors with differing risk appetites. This leveraging effect also makes it a more efficient tool since public finance is matched by private capital. Commercially oriented funds can secure staff with specialized skills in finance and environment and apply market discipline and standards to select investments. However, as a public-sponsored entity, the Green Development Fund can also take public needs into account.

The Green Development Fund might best operate on a commercial basis with professional management targeting medium-to-long term investments into large-scale projects. It should primarily make equity investments, but should also be given the flexibility to make debt investments, offer mezzanine financing, and provide guarantees. Investment priorities should include sectors that can support a green and low carbon economy such as: resource efficiency, renewable energy, industrial pollution control, and advanced vehicle technologies. The purpose of the Fund should not be profit maximization, but rather to provide public benefits while still remaining commercially sustainable.

The Fund should be designed with strong governance mechanisms to ensure that it maintains efficient operations focused on clear investment goals. The fund should establish performance targets, including both financial and environmental criteria. The Fund management evaluation and compensation criteria should be clearly defined, and regular audits conducted by independent third parties. Annual reporting, would highlight the commercial basis for the Fund, and strengthen the Fund's ability to attract different types of investors. Capitalization of the Green Development Fund could be targeted to reach 300 billion RMB over time with the option of raising further private capital as needed.

Insurance

In recent years, China has seen a dramatically increasing number of environmental pollution incidents, with a particular concentration in economically advanced regions such as Jiangsu, Shandong, Guangdong, Hunan, and Liaoning. Four of these provinces are ranked among the top ten provinces in GDP. These incidents not only pose an enormous threat to property and public health, but also affect social stability. The enterprises responsible for such incidents often face the risk of bankruptcy or closure due to an inability to provide compensation for the damage that they have caused. This trend points to the need for mechanisms that can drive performance improvements and manage the financial risks associated with pollution incidents.

The Ministry of Environmental Protection and the Chinese Insurance Regulatory Commission previously launched pilot programs in 2007 and 2013 to introduce environmental pollution liability insurance[2] . However, neither program secured substantial participation from either the insurance industry or enterprises in the targeted sectors. The reasons include: absence of clear statements within existing laws regarding compensation liabilities for damage caused by pollution; lack of a legal requirement to acquire insurance; and the unwillingness of insurers to underwrite policies due to their inability to reliably estimate the risks of accidents and claims[3].

Opportunities for improving the market for compulsory environmental pollution liability insurance (CELI) in China exist through the launching of programs at the regional level.

2. Pollution liability insurance is a type of insurance which covers costs associated with pollution. Depending on t he terms, this may include remediation, liability for injuries or deaths caused by the pollution, and other costs incurred by the polluter.

3. There was not sufficient information available on environmental management and risks amongst the target population of companies for insurers to reliably assess the likely number and nature of claims.

The CELI programs would define industries required to participate in such insurance. The programs gradually could be expanded to the national level and participation could be supported through the use of fiscal tools (subsidies or preferential tax treatment). The difficulties faced by insurers in analyzing risks could be resolved through the introduction of an information-sharing platform, or the creation of a national-level environmental liability insurance institution.

Carbon Finance

China has been piloting carbon emission rights trading in seven locations and intends to launch a national trading system in 2017–2020. Given that China has set clear post-2020 objectives for Intended Nationally Determined Contributions (INDCs) under the UNFCCC, it is important to accelerate the development of China’s carbon markets as a tool for cost efficiently lowering carbon emissions.

The piloting process has provided valuable lessons in the design of markets and also has highlighted some of the challenges. In all of the pilot markets, the level of trading has been low. Moreover, there are not sufficient penalty mechanisms for exceeding carbon emissions limits to substantively change behavior. Opportunities exist for:

Stepwise approaches to a unified, mandatory carbon trading market – The legal foundations for national carbon emission rights trading need to be established to smooth the transition from the current piloting systems. A national cap on carbon emissions and an allocation plan should be set. In order to ensure participation, the national monitoring system and penalty system should be improved. This includes having clear monitoring procedures, calculation methodologies, reporting systems, and registry management.

Participation of financial and intermediary institutions – Financial institutions should be encouraged to develop the range of services necessary to support the many parties in the carbon market. As the market matures, the government should support the development of derivative products such as carbon swaps, futures, options, and securitization products. The market can further be supported by integrating carbon assets into the financial system through means such as allowing enterprises to use emissions rights reductions as collateral to obtain financing, or supporting environmental enterprises in the issuance of debt financing instruments.

Role of Public Finance

Public financial policy is an important tool for promoting the development of green finance through the national budget, taxation policy, national debt, and fiscal subsidies. There are already elements within the public budget, non-tax revenues, and the tax system that relate to various aspects of environmental protection. Overall, the use of public finance has been characterized by subsidies (such as interest rate subsidies) and the use of dedicated funds to support green investment. Total investment into environmental protection during the 12th Five Year Plan has reached 3.4 trillion RMB.

While public finance has played an important role in supporting green investment to date, it remains relatively small in comparison to the overall investment needs. For example, China has launched the National Air Pollution Control Action Plan in response to the worsening air quality. The costs for this plan alone are expected to reach 1.7 trillion RMB over five years. As such, the investment gap facing China remains quite large. In addition, the actual budget utilization rate of national government funds earmarked for the environment remains relatively low. Some past performance evaluations have also found shortcomings in the use and management of funds set aside for environmental protection.

Of the funds allocated to environmental protection, the use of financial leverage could be improved and fiscal support for market mechanisms needs to increase. For certain types of projects, such as ecological protection or primary research on low carbon technologies, it is possible to allocate public funds. However, for projects with commercial value, the government should use mechanisms that leverage private capital to seek a larger impact through smaller expenditure. More generally, special funding for environmental protection needs to adjust its approach to be more systematic and performance-based.

There is also opportunity to enhance the use of fiscal stimulus policies. Currently, there are limited preferential tax policies for the green finance sector. There are opportunities to create incentives associated with taxes and also around non-tax revenue such as exemptions from supervision fees for industries. The use of mechanisms around tools such as interest subsidies could also be further improved to enhance their impact.

The Task Force made recommendations related to improving the administration and application of public funds. Dedicated environmental funds should be further integrated and managed much more closely on the basis of performance. This would include implementing a performance monitoring and evaluation system. Government should innovate its use of funds through offering preferential tax treatment for green finance, instituting non-tax revenue incentives to support green finance, improving the interest subsidy mechanism, and encouraging the use of PPP. Consideration could also be given to establishing a new fund or mechanism to provide credit guarantees for green loans and risk compensation for providers of risk guarantees.

China as a Catalyst for Global Green Finance

Even as it advances its own ambitious agenda for green finance domestically, China also can play a leading role in developing the global architecture of green finance. China is increasingly a driver in cross-border capital flows through its own investments and through driving the establishment of several new development finance institutions. In addition, China is also playing a visible role in multilateral forums, including the Presidency of the G20 in 2016. Through this confluence, China has an enormous opportunity to advance green finance internationally and can help embed green finance thinking into development agendas around the world.

Growth of China's Role in Overseas Investment

By the end of 2014, China's outward foreign direct investment stock in non-financial sectors reached 3.97 trillion RMB – 23 times what it was in year 2000. The average annual growth rate during this period was about 25% [4]. China's foreign aid has been increasing every year [5]. It is predicted that in 2015, China's outgoing FDI will exceed incoming foreign direct investment, which would be a milestone in the country's 'Going Global' strategy and make China a net exporter of capital [6].

With this major export of capital, Chinese institutions will face choices about which sectors to prioritize, the type of growth to support, and the risk management and mitigation processes to put in place. Currently, China's largest overseas industrial investments are in the mining, and oil and gas industries. These industries, and others such as the construction of large-scale infrastructure, present significant risks to the environment and local people associated with, for example, increased pollution, the degradation of natural resources, and the resettling of communities.

In addition to its own role as an investor, China also holds key positions through which

4. http://fec.mofcom.gov.cn/article/tjzl/jwtz/201501/1853462_1.html?COLLCC=2716141095&

5. China's Foreign Aid and Government-Sponsored Investment: Activities, Scale, Content, Destinations, and Implications. http://www.rand.org/pubs/research_reports/RR118.html

6. http://www.mofcom.gov.cn/article/tongjiziliao/v/201501/20150100880913.shtml it could help significantly advance green finance internationally. China is spearheading the development of two new development finance institutions – the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (NDB) – as well as the Belt and Road Initiative. These institutions will play a key role in shaping investment across the region through their decisions about the type of infrastructure to support and the type of ESRM policies to institute around their investments.

China has the opportunity to encourage these institutions (as well as its own Chinese financial institutions) to draw upon international best practice to systematically integrate the principles of sustainability into their collaborations with host countries. China could encourage high standards for environmental and social risk management, including strong stakeholder engagement mechanisms and the creation of ombudspersons to handle grievances. In addition, financial institutions should be encouraged to set green investment targets and reduce their support for polluting industries.

China's Influential Role as Host and Chair of the G20 Summit in 2016

China already has shown leadership by establishing a G20 Green Finance Study Group. This can play a critical role in promoting green finance among government, international organizations, financial institutions, and civil society. The GFTF suggests that the G20 Green Finance Study Group investigate the following aspects:

- How to build capacity of banks and other institutional investors to assess green investments.
- The viability of requiring financial institutions to conduct stress tests on their exposure to high-risk sectors and their preference for green industries.
- The possibility of requiring listed companies and bond issuers to disclose better environmental information, in order to enable capital markets to more easily allocate resources to green industries.
- The value of establishing consistent rules on the definition and classification of green bonds across the major financial markets to facilitate cross-border green investments.

With early efforts towards greening its financial system, China has practical experience and the opportunity to bring leadership to the global community to move green finance from an emerging concept to a common international practice.

GFTF Recommendations and Road Map

Selected Recommendations

The policy recommendations of the Task Force address various aspects of the legal, institutional, and policy foundations needed to support the greening of the financial system and a sustained flow of resources to green investment needs. Full details of the recommendations can be found in the Task Force's Final Report, on CCICED's websites. This section contains an abbreviated version of the recommendations.

Recommendation 1. Set green finance priorities for the period of the 13th Five Year Plan

Launch a National Green Development Fund – The Task Force recommends establishing a National Green Development Fund with a focus on medium-to-long term equity financing for large-scale projects. The Fund could be established with a goal of reaching 300 billion RMB over time using a combination of various public funds, development funds, available foreign currency reserves, and investments from other major financial institutions and companies. Operating with a market orientation under professional management, the purpose of the Fund should not be profit maximization, but rather to operate on a commercially sustainable basis while also delivering public benefits. The Fund also could have the option of developing specialized sector funds as well as funds targeted at specific regions such the strategic economic development zones identified by the government (e.g., Jing-Jin-Ji/Beijing-Tianjin--Hebei regional area).

Develop long-term sources of finance by promoting green bonds – The trend towards direct financing will grow significantly in the coming 15 years, particularly through the bond market. Bond markets provide long-term and stable capital at a reasonable cost, and are therefore suited to green investments. The GFTF recommends that the relevant authorities should: 1) issue guidance on green bonds; and 2) establish a monitoring and evaluation system for green bonds.

Speed the greening of China's banking system – China's financial system relies primarily on indirect financing, and the banking system plays the leading role. Credit will remain the primary source for green financing for the foreseeable future. The GFTF recommends to green the existing banking system by encouraging the establishment of professional departments within banks, establishing green credit targets, incorporating green credit into performance reviews, and strengthening banks' ability to assess environmental risks and opportunities.

Provide international leadership by incorporating green finance into the agenda of the 2016 G20 summit and encourage new multilateral finance institutions to support green finance – Many countries around the world are exploring green finance policies. As the chairing country of the G20 in 2016, China should use the G20 platform to proactively share its experience in green finance and enhance the establishment of a green financial system around the world.

Pilot test green finance reforms in one or more strategic economic zones – Successful implementation of green finance reform in a strategic economic zone will speed the flow of finance to local green industries. It will also advance the process of extending green finance reforms to a national level as well as speed China's green economic transformation.

Recommendation 2. Speed the establishment of the enabling conditions for green finance

Establish and enforce increasingly ambitious environmental laws, regulations, and standards – A sound system of environmental regulation is the foundation for generating actual demand for green finance. The system must establish the right incentives and send the correct market signals in order to create space for green industries to be competitive and grow.

Establish the legal basis for investors to undertake their environmental responsibilities – First, the Commercial Banking Law should be revised to clearly stipulate the obligation of commercial banks to evaluate, check and monitor the environmental impacts of the projects in which they invest. Second, the Securities Law and the Corporate Law should be revised to require listed companies and issuers of bonds to disclose environmental information.

Enhance and rationalize the structure of fiscal and tax incentives for green finance and use limited government funds to catalyze investments – (1)

Achieve a greater leverage effect from the use of public funds by enhancing the green credit subsidy mechanism and establish non-tax revenue incentives for green finance; (2) Integrate and systematize environmental special funds from the central budget to achieve greater efficiency in the use of government funds; and (3) Consider allowing green bond investors to exempt their interest income from corporate income taxes.

Optimize the pricing and charging structure for green industries – Green projects must provide competitive returns in order to attract and retain private investors. The rules related to pricing and charging structures applied to green investments should be reviewed to ensure that they allow for financially viable and attractive projects.

Recommendation 3. Establish the institutional structure to support green finance

Build a bridge between supply and demand systems – The quality of information flow between environmental protection departments and banks is a barrier to the development of green finance. Many banks are not sufficiently aware of environmental developments and are not skilled at evaluating environmental risks or related opportunities. Similarly, many environmental authorities do not have experience with finance. To overcome this barrier, the GFTF recommends that: 1) Environmental authorities should establish green finance development team(s) to enhance their ability to effectively communicate environmental information to the financial sector. 2) One Bank, Three Commissions should establish new structures to catalyze the innovation of green finance products. 3) Qualified universities should be leveraged to establish technical support teams to facilitate the transfer of environmental information into financial information, research policies, and develop green financing tools.

Establish a green finance reform coordinating mechanism at the central level – Green finance requires systemic change and involves many different areas of government. It is necessary to establish a mechanism at the central government level to establish clear roles amongst various agencies, support cooperation, and create integrated green finance policies.

A Three-Phase Road Map for Green Finance Reform

China will need until 2030 to complete its green transformation and develop into a middle income country. Three phases are suggested: green finance reform launch from 2016-2020; deepening green reform from 2021-2025; and green finance reform completion from

2026 – 2030.

Phase 1 – Launch of Green Finance Reform (2016-2020)

Establishing a strong foundation for green foundation is critical to enabling China to deal with its needs for pollution control and developing a low carbon energy infrastructure. The priorities in the launch phase will involve four areas. (1) China must further enhance its mechanism for pricing natural and environmental resources. (2) The six breakthrough areas related to banks, bonds, funds, insurance, and other areas should be the focus of revising policies and developing tools. Reforms in these areas will help not only to address pollution control needs, but also will serve as investments for improving China's resource efficiency and to lower the complexities and costs of pollution control in future phases of development. (3) China should initiate pilot programs for green finance with the Strategic Economic Development Zones identified by the government, such as the Beijing-Tianjin-Hebei Cooperative Development Plan, the Yangtze River Economic Area, the Belt and Road regions, free trade zones, etc. These pilot programs should support the participation of international organizations and generally work to promote the concept of green finance. (4) It is important to lay the legal foundations for green finance, including implementing suitable environmental policies and standards.

Phase 2 – Deepening Green Finance Reform (2021-2025)

Over the course of the first phase, China will make significant progress in remediating environmental pollution and establishing the foundation for low carbon development and broad-based deployment of cleaner production technologies. The second phase will build directly on these achievements through further reforms and expansion of Phase One efforts. Pricing reforms will pave the way for introducing markets and associated financial mechanisms for ecological services. Successful regional piloting programs can be expanded to cover a wider region. Environmental pollution remediation will have achieved key milestones freeing further financing resources to speed the pace of low carbon development. The introduction of further policy innovations, financing platforms, and market tools will further accelerate the development of cleaner production projects and technologies.

Phase 3 – Completion of Green Finance Reform (2026-2030)

The final phase will see the completion of the embedding of green finance throughout the financial system. This will include developing a culture and set of values within the financial system that emphasizes the establishment of an ecological civilization. China will remain engaged in a leading role in the international green finance community, supporting the promotion and development of this new concept.