INTRODUCTION

China, like many countries, is grappling with the challenge of how to finance the transition to a sustainable, low carbon economy. Complicating this challenge is the fact that the country is still going through the twin processes of industrialization and urbanization. As a result, many institutions – both public and private – have been focused mainly on poverty reduction or material improvement. Environmental protection and sustainable development by contrast have tended to rank further down the list of institutional priorities. In addition, the shift towards a market based economy is ongoing, which means the government continues to act as the key player in the economy. The net result is a financing system that does very well in some respects (eg, rapidly moving large sums to strategic industries when needed), but underperforms in others (eg, efficient allocation).

Despite this, much has been achieved in terms of financing low carbon development in China. The economy’s carbon intensity has fallen dramatically over the last 20 years through energy efficiency improvements, and more recently through the expansion of renewable energy. Public sector financing – through direct government spending and the investment of the large state-owned banks – has been instrumental in making this happen. China’s prodigious domestic savings rate (currently around 50%) has provided the state banks with huge volumes of low-cost funds.

But the scale of change still required in China is enormous. Public funding – as it is currently managed and used – will be insufficient to the task. As government funding for social services increases and as the economy moves away from saving towards greater consumption, the challenge will only increase. China therefore needs to reform both its public and private financing systems if it is to adequately finance climate action, restructure its economy and build the ‘eco-civilization’ its leaders have called for. In practice, this means: a) better management and efficient use of public funds, and b) the creation of the necessary frameworks and incentives for driving private sector capital (domestic and international) away from high carbon investment and into low carbon assets and developments instead.

The remainder of this briefing is in four main parts. The first gives an overview of current sources, institutions and applications of climate finance in China, while the second looks at the challenges ahead. The third section identifies options for improving the system, while the fourth looks at ways of widening sources of climate finance.
OVERVIEW

CLIMATE FINANCE SOURCES

Climate finance in China comes from both domestic and foreign sources, which can be grouped into five basic categories:

— Public finance (domestic and international)
— Carbon market finance (essentially through the Clean Development Mechanism)
— Mainstream private sector finance (such as domestic and foreign bank loans)
— Direct investment (domestic and foreign)
— Charitable and NGO finance

Figure 1 on the following page illustrates the flows and relationships of these different sources.

Domestic climate financing currently dominates total investment, as highlighted in Table 1 below. China’s state-owned banks1 in particular play a central role. At the end of 2011, the climate finance loan balance from these public institutions totaled approximately US$294 billion. Direct government climate spending was around US$41 billion for the year by comparison, while private sector investment was at least US$10 billion. Green bonds, private equity (PE), venture capital (VC) and stock market listings through initial public offerings (IPOs) all played a role. These domestic figures dwarf overseas sources of climate finance, both public and private. OECD government funding between 2006 and 2009, for example, was around US$1.68 billion. Multilateral funds meanwhile provided just US$0.29 billion for the period 2008-12. The extent of foreign private sector debt financing for climate action is unclear, but is likely to only account for a fraction of the US$70.5 billion of total foreign lending that occurred in 2011. The UN’s Clean Development Mechanism (CDM) has been a more significant source of low carbon financing, pulling in an estimated US$9.3 billion up to 2012.

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>AMOUNT (US$)**</th>
<th>PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic</td>
<td>$41 billion</td>
<td>2011</td>
</tr>
<tr>
<td>Foreign</td>
<td>$2 billion (min)</td>
<td>2006-12</td>
</tr>
<tr>
<td>Carbon market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDM</td>
<td>$9.3 billion²</td>
<td>Up to 2012</td>
</tr>
<tr>
<td>Private</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State banks</td>
<td>$294 billion</td>
<td>2011</td>
</tr>
<tr>
<td>Domestic green bonds</td>
<td>$6 billion</td>
<td>2011</td>
</tr>
<tr>
<td>Domestic PE/VC</td>
<td>$1.72 billion</td>
<td>2011</td>
</tr>
<tr>
<td>Domestic IPOs</td>
<td>$3.68 billion</td>
<td>2011</td>
</tr>
<tr>
<td>Foreign IPOs</td>
<td>$1.4 billion</td>
<td>2011</td>
</tr>
<tr>
<td>Foreign banks</td>
<td>Unknown</td>
<td>2011</td>
</tr>
<tr>
<td>Direct investment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic and foreign</td>
<td>$45.5 billion</td>
<td>2011</td>
</tr>
<tr>
<td>Charitable &amp; NGO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic and foreign</td>
<td>$0.6 billion</td>
<td>2011</td>
</tr>
</tbody>
</table>

*For further detail on these sources and for references, see Table A.1 in the Annex.

**Conversion of Chinese Yuan Renminbi to US dollars has been done using exchanges rates set out in Table A.2 in the Annex.

1The six key banks are: the China Development Bank, the Industrial and Commercial Bank of China, the Agricultural Bank of China, the Bank of China, the China Construction Bank, and the Bank of Communications.

2This figure is based on the average 2008-10 CDM credit price of US$14.09/ton.
FIGURE 1. Climate finance sources and flows in China

SOURCES
- Public finance from developed countries
- Domestic finance
  - China CDM Fund
  - Other policy funds
  - Policy banks
  - Social security fund
  - Sovereign wealth funds
  - Carbon finance services and intermediaries; carbon funds, carbon assets management companies, carbon emissions exchanges, carbon verification and certification firms, etc.

INSTRUMENTS
- Donation
- Concessional loans
- Incentive policies
- Risk management
- Carbon credit and derivatives
- Bonds
- Loans with market interest rate
- Stock equity
- Others

CHANNEL
- Diverse channels of disbursement

DEPLOYMENT
- Adaptation
- Mitigation

MAJOR CLIMATE FINANCE INSTITUTIONS

Figure 2 on the following page identifies the main domestic and foreign institutions that are involved in climate finance in China. The relative importance and roles of these institutions continue to shift as China’s economy grows and its climate financing needs become more sophisticated.

Bilateral institutions, for example, have grown less important as a source of funds, not least because China itself has become a provider of climate finance to poorer developing countries. Relationships with developed countries, meanwhile, are now increasingly based around strategic partnerships, rather than a ‘donor-recipient’ model. Engagement with multilateral institutions is also changing. Although the World Bank Group has played a limited role in climate finance in China, other multilateral banks, such as the European Investment Bank, are now providing funding on favorable terms.

Domestically, climate financing remains at a relatively immature stage among some state institutions. China’s state-owned banks\(^4\), for example, consider climate related investment as a corporate social responsibility issue and have yet to include climate impacts as key considerations of business development. However, the China Energy Conservation and Environmental Protection Group, an important policy investment platform, is a major investor in energy efficiency and clean energy technologies. It has developed a number of industrial parks dedicated to showcasing energy saving and environmental protection industries.

Commercial financial institutions are also beginning to provide climate related services and products. Some large commercial banks have established carbon asset management services and funds to make direct or indirect investment into emission reduction programs. As China begins to develop its own domestic carbon market, these organizations will also play a key role, helping to develop the secondary financial instruments, such as options and futures that are needed for the efficient functioning of the market. Insurance companies have an important role too. Specialized agricultural insurances companies, for example, have started to offer climate insurance, although this is still a very new and niche market. And, as institutional investors, insurance companies can have a major impact by directing their investments towards low carbon businesses.

APPLICATION

To date, most climate finance in China has been directed towards mitigation activities, particularly for renewable power and energy efficiency. Over the course of the 11th Five Year Plan (FYP) (2006-10) for example, China invested approximately US$256 billion\(^5\) in the new energy sector and US$127 billion\(^6\) in energy efficiency. Under the 12th FYP (2011-15), the government has estimated a need for close to US$800 billion of investment in clean technology, renewable energy, energy efficiency and environmental protection. The majority of this funding will come from the private sector with the government expecting to leverage four times as much private capital for every Yuan of public funding it invests.

Private capital has followed public finance into mitigation sectors. Unsurprisingly, investment has gone where returns have been the greatest. This has meant more funding for renewable power, such as wind and solar, clean tech manufacturing and industrial energy efficiency. Less investment has gone into energy conservation for buildings and transportation, which have required higher upfront costs and longer payback periods.

\(^4\)China’s state policy banks differ from their commercial counterparts in that they have specific principles for financing. Their objectives are to facilitate the achievement of national goals relating to industrial policy and regional development, rather than being driven purely by profit motive.

\(^5\)RMB 1.73 trillion converted to US$ using 2010 average exchange rate (6.7696)

\(^6\)RMB 859 billion converted as above.

\(^7\)RMB 5 trillion converted to US$ at 2012 average exchange rate (6.3088)
| FIGURE 2. Main climate finance institutions in China |

### International Funding

#### Multilateral Financial Institutions (MFIs)
- Multilateral development banks (MDBs):
  - International level (the World Bank Group)
  - Regional development banks (e.g., Asian Development Bank)
  - Sub-regional development banks
- Multilateral climate funds
  - Global Environment Facility (GEF)
  - Adaptation Fund (AF)
  - Green Climate Fund (GEF)
  - Other UN operated funds
  - Other multilateral climate funds
- Multilateral Investment Guarantee Agency (MIGA)
- International Monetary Fund (IMF)
- Kreditanstalt für Wiederaufbau (KfW)
- Japan International Cooperation Agency (JICA)
- Bilateral development institutions in other countries

#### Bilateral Financial Institutions (BFIs)
- Bilateral development institutions and bilateral banks
  - Agence Française de Développement (AFD)
  - Japan’s International Cooperation Agency (JICA)

#### Traditional International Financial Institutions
- Insurance companies
- Investment banks
- Funds
  - Pension funds
  - Sovereign wealth funds
  - Private equity funds
- Other international financial institutions
  - Trust funds
  - Financial leasing companies
  - Others

#### Carbon Financial Institutions
- Carbon funds
  - Public carbon funds
  - Public-private carbon funds
  - Private carbon funds
- Carbon assets management companies
- Carbon emissions exchanges
- Carbon verification and certification firms
  - Domestic designated operation entities (DOEs) including China Quality Certification Center, China Environmental United Certification Center, etc.
- Other international financial institutions
  - Carbon credit rating agencies
  - Carbon market information service providers

### Domestic Funding

#### Domestic Policy Financial Institutions and Funds
- State financial institutions
  - Agricultural Development Bank of China
  - Export-Import Bank of China
- China CDM Fund and other policy funds
- China Energy Conservation Investment Corp
- Traditional commercial financial institutions in China
  - Insurance companies
  - Commercial banks
  - Investment banks
  - Investment fund managers
  - Others

#### Other financial institutions
- Export Credit Agencies
- Multilateral Development Banks (MDBs)
- Regional Development Banks (e.g., Asian Development Bank)
- Sub-regional Development Banks
- Multilateral Climate Funds
- Global Environment Facility (GEF)
- Adaptation Fund (AF)
- Green Climate Fund (GEF)
- Other UN Operated Funds
- Other Multilateral Climate Funds
- Multilateral Investment Guarantee Agency (MIGA)
- International Monetary Fund (IMF)
- Kreditanstalt für Wiederaufbau (KfW)
- Japan International Cooperation Agency (JICA)
- Bilateral Development Institutions in Other Countries
- Bilateral Development Institutions and Bilateral Banks
  - Agence Française de Développement (AFD)
  - Japan’s International Cooperation Agency (JICA)
- Bilateral Development Institutions in Other Countries
- Bilateral Funds
  - Germany’s International Climate Initiative (ICI)
  - Japan’s Fast Start Finance (FSF)
  - Australia’s International Forest Carbon Initiative (IFCI)
  - Norway’s International Climate and Forest Initiative (NICFI)
  - UK’s International Climate Fund (ICF)
  - Other Bilateral Climate Funds
- Export Credit Agencies
Flows of capital for adaptation have been much lower than for mitigation. Incomplete disclosure of information makes it difficult to estimate the overall scale of national adaptation investment. However, a review of relevant accounts in the national budget suggests that public expenditure was about US$7.5 billion in 2012. It is clear that this public investment plays a major role, with funding going into agriculture, water resources, marine management, health and meteorological activities. The fact that much of this could be considered as traditional infrastructure investment, underlines why it is difficult to distinguish additional climate adaptation spending.

A recent development in China’s climate financing regime has been the emergence of China as a donor and financier to poorer developing countries. In 2011, a ‘South-South’ Cooperation Fund of around US$31 million was established to support capacity building and donate energy saving products. China’s state banks have also been active. The China Development Bank, for example, has a special loan facility of US$774 million for small and medium enterprises (SMEs) in 29 African countries.

8RMB47.1 billion converted to US$ at 2012 average exchange rate (6.3088)
9RMB200 million converted to US$ at 2011 average exchange rate (6.4630)
10The China Development Bank is in fact a former state policy bank. It is now a commercial, joint-stock operation although it continues to receive funding from the Ministry of Finance.
CHINA HAS DRAMATICALLY INCREASED ITS LOW CARBON AND CLIMATE RELATED SPENDING OVER THE LAST DECADE.

CHALLENGES

Driven by economic and industrial restructuring, as well as energy saving and emission reduction policies, China has dramatically increased its low carbon and climate related spending over the last decade. Despite this growth, climate financing faces three broad challenges that must be addressed if China is to fully develop a sustainable, low carbon economy. These challenges are:

— A current lack of clarity and precision regarding the amount of public climate finance and its use.
— Regulatory and policy systems that are not currently fit for purpose.
— A financial system that is underdeveloped, lacking sufficient incentives for scaling climate finance and affected by a challenging macro environment.

SCALE AND USE OF PUBLIC FINANCE CHALLENGES

China’s public investment in climate change related activities represents a significant proportion of total spending. In 2012, it was estimated that US$26 billion of public funds were spent, accounting for 20% of the total volume of nationwide climate related investment[^12]. This contrasts with countries such as Germany and the UK where government spending was under 5% of total investment. Given the key role that the government plays, clarity over the volume and use of public finance is therefore critical, to ensure the necessary scale and pace of investment in climate change and low carbon activities.

Despite this importance, the total volume of public finance to be committed remains uncertain over the short to medium term. The National Development and Reform Commission has informally disclosed that around US$160[^13] billion worth of public investment will be made across the period of the 12th FYP (2011-15), which is expected to leverage a further US$634 billion in capital[^14]. But the precise arrangements for raising this funding – and how it will be used – remain unclear. China’s National Climate Change Plan[^15] provides the only available statement about the long-term objective of climate financing in the country. The short, qualitative statement notes that a ‘national mechanism will be established’ and funding will come from ‘various sources’. This lack of clarity around public climate finance has become an obstacle to implementation by executive government departments as well as many private sector climate programs.

REGULATORY AND POLICY SYSTEM CHALLENGES

The current state of China’s regulatory and policy systems poses a range of challenges to the effective deployment of climate finance, including:

— The division of responsibilities and coordination between key government departments is unclear, resulting in duplication and inefficient utilization of funding (see Box 1).
— There is a lack of detailed regulatory standards and guidance for financial institutions regarding green credit products.
— There is a lack of government statistics and information relating to energy saving and emission reductions activities by enterprises, making it difficult for financial institutions to include environmental performance and climate impacts as assessment criteria when considering projects that are high or low carbon in nature.
— Statistical information is also lacking with respect to climate finance flows, making it difficult to develop robust surveillance, accounting and management of international climate funds.
— China’s main climate plans, such as the National Plan on Addressing Climate Change (2011-2020), lack the legal standing and force necessary to guarantee that climate policy programs will drive associated financing.

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[^12]: Estimated according to the total amount of related items from [http://www.mof.gov.cn/2012zhongyangyusuan/t20120322_637093.html](http://www.mof.gov.cn/2012zhongyangyusuan/t20120322_637093.html)
[^13]: RMB1 trillion converted to US$ at 2012 average exchange rate (6.3088)
[^14]: RMB 4 trillion converted as above. RMB figure comes from public speech by XIE Zhenhua, Dec 2012.
[^15]: National Development and Reform Commission, 2007, China’s National Climate Change Plan
**BOX 1: GOVERNMENT DEPARTMENTS INVOLVED IN CLIMATE FINANCE**

The administration and coordination of all climate change, energy saving and emission reduction work in China is the responsibility of the ‘National Leading Working Group on Climate Change (NLWG). The NLWG is chaired by the Premier and its members include the Vice Premier and heads of various ministries and commissions. Under the leadership of the NLWG, the NDRC, the Ministry of Finance (MoF) and other related executive departments and financial regulatory bodies are responsible for the implementation of all programs and related financial control. The basic relationships, activities and funds are set out in the diagram below.

<table>
<thead>
<tr>
<th>AREA OF ACTION</th>
<th>LEAD AGENCIES</th>
<th>EXECUTIVE AGENCIES</th>
<th>DESCRIPTION OF ACTIVITIES</th>
<th>FINANCE SOURCE EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIMATE CHANGE</td>
<td>National Leading Working Group on Climate Change</td>
<td>Ministry of Industry and Information Technology, Ministry of Housing and Urban-Rural Development, Ministry of Transport, National Energy Administration</td>
<td>Industrial restructuring, elimination of outdated production capacity, development of strategic emerging industries, energy saving in industries, buildings and transportation, development of new energy and carbon market, increasing carbon sink in agriculture and forestry, etc.</td>
<td>Special fund from central government for strategic emerging industries, special fund for energy saving, emission reduction and tech transformation, special fund for renewable energy</td>
</tr>
<tr>
<td>MITIGATION</td>
<td>NDRC and the Ministry of Finance</td>
<td>State Oceanic Administration, Ministry of Health, China Meteorological Administration</td>
<td>Water conservation in agriculture, grain security, rational utilization and development of water sources, marine disaster prevention and reduction, increasing the ability to address extreme weather and the prevention and surveillance of diseases caused</td>
<td>China Green Carbon Foundation</td>
</tr>
<tr>
<td>CLIMATE CHANGE</td>
<td>Ministry of Industry and Information Technology, Ministry of Housing and Urban-Rural Development, Ministry of Transport, National Energy Administration</td>
<td>Ministry of Science and Technology, National Bureau of Statistics</td>
<td>Development, demonstration and promotion of low carbon tech, education on climate change, statistics about energy systems and GHGs</td>
<td>Innovation Fund for technology-based firms, COM funds</td>
</tr>
<tr>
<td>ADAPTATION</td>
<td>State Oceanic Administration, Ministry of Health, China Meteorological Administration</td>
<td>Ministry of Commerce</td>
<td>International information communication and resource sharing, tech cooperation, ‘south-south cooperation’ to address climate change</td>
<td>Loan from International Fund for Agriculture Development</td>
</tr>
<tr>
<td>TECHNOLOGY DEVELOPMENT AND CAPACITY BUILDING</td>
<td>Ministry of Science and Technology, National Bureau of Statistics</td>
<td>Ministry of Commerce</td>
<td>Development, demonstration and promotion of low carbon tech, education on climate change, statistics about energy systems and GHGs</td>
<td>International information communication and resource sharing, tech cooperation, ‘south-south cooperation’ to address climate change</td>
</tr>
<tr>
<td>INTERNATIONAL</td>
<td>Ministry of Commerce</td>
<td>Ministry of Commerce</td>
<td>Development, demonstration and promotion of low carbon tech, education on climate change, statistics about energy systems and GHGs</td>
<td>Loan from International Fund for Agriculture Development</td>
</tr>
<tr>
<td>COOPERATION</td>
<td>Ministry of Commerce</td>
<td>Ministry of Commerce</td>
<td>Development, demonstration and promotion of low carbon tech, education on climate change, statistics about energy systems and GHGs</td>
<td>Loan from International Fund for Agriculture Development</td>
</tr>
</tbody>
</table>

The NDRC and MoF have the lead role in planning national investment, creating budgets with other departments and developing the policies within which the financial markets operate in China. Although the diagram above suggests a clear hierarchy and delineation of responsibility, in practice this is not necessarily the case. For example, the Department of Climate Change, which is part of the NDRC, is nominally responsible for specific climate change tasks from the NLWG. However, because it is not the same decision-making level as other departments it is limited in its ability to plan and coordinate related projects. This system has led to inefficient utilization of funding.
— Certain key policies are not currently utilized, for example a carbon tax.

— Other policies are not comprehensive enough, benefiting certain players but failing to drive change through the whole of a sector. Tax relief, for example, is provided to purchasers of energy efficiency products, but there are no beneficial policies for companies that provide energy efficiency services, such as manufacturers of energy efficient products or consultants.

— Pre-conditions imposed by certain policies, such as the requirement that companies must make a profit to qualify for certain benefits or incentives, unnecessarily preclude many emission reduction projects and SMEs in their start-up phase.

— A mismatch between finance policy and financial instruments and activities has meant that government action has failed at times to fully ‘crowd-in’ private sector investment.

— There is no strategic management or strategy for adaptation, so there are few incentives for private sector investment in the area.

— The government’s insufficient engagement in international or regional climate finance platforms, such as the G20’s ‘Green Growth Action Alliance’, limits China’s ability to shape new rules and institutions, which may impede access to international climate finance in the longer term.

FINANCIAL SYSTEM CHALLENGES

Many of the challenges that afflict the regulatory and policy systems directly impact the broader financial sector. In particular, the lack of clear, consistent or sufficiently strong policy and regulation, has led to a situation where financial institutions have limited incentive for engaging in climate related financing. In other words, the risk-reward calculation for institutions is not yet in favor of expanding climate finance activities. This is part of the reason for a growing gap between climate finance needs and supply in China. Some of the specific challenges to scaling private sector finance include:

— Policies and regulations lack binding force: The Green Credit Guidelines from the China Banking Regulatory Commission are a case in point. These Guidelines require banks to increase their ‘support’ for lending to low carbon and environmentally focused businesses. But as the Guidelines lack specific rules or measures, and cover sectors which are seen by banks as carrying higher risk, growth in green credit financing in China has been slow. For those banks that are developing services in the area, there remain challenges to overcome as they move down the learning curve for this new class of financial products.

— Lack of essential financial assessment information: The failure of government departments to effectively collect and/or distribute key environmental, energy or emissions statistics can make it difficult for financial institutions to assess applications for environmental performance and climate impacts, since they may not have the necessary benchmarks.

— Limited institutional knowledge: Many domestic financial institutions have limited climate finance knowledge. This is a reflection of an imperfect legal framework, as well as a lack of cross-departmental environmental performance assessment and information sharing, which prevents the development of climate bonds, funds and insurance products. International experience would be a useful reference for local financial institutions.

— Weak investor interest in climate finance products: Investors have shown limited interest in climate-related products internationally and this is also the case in China. Investment funds in particular, with their focus on maximizing profitability to maintain a high ranking, have avoided climate-related products. As a result, traditional finance instruments such as bonds and trust investment have not yet played a major role in climate financing in China.
In addition to domestic challenges, there are also a number of international issues which effect the development of China’s climate financing system. These include:

— **Declines in financing from certain sources:** In particular, a decline in public finance from developed countries as a result of austerity budgets and a shift in overseas aid away from large emerging economies, towards poorer developing countries. Revenue from the CDM is also declining due to a collapse in the price of CDM credits and increasing restrictions in the EU on where credits can be sourced from.

— **Macroeconomic challenges:** Most obviously the continuing slow economic recovery in the US and Europe, which has shrunk the overall volume of financing available. It has also hit demand for Chinese low carbon products, such as solar and wind generation equipment. With company margins squeezed, there has been increased pressure to make sales which has led to escalating trade disputes, particularly with respect to accusations of dumping of solar PV products. All of this has led to greater business risk and hence greater financing challenges for China’s low carbon sectors.

— **Slow progress in UN climate talks:** Although countries have agreed to reach a new global climate deal by 2015 to enter into force in 2020, there is little certainty or clarity about how international climate finance will be scaled up until then. Setting a strong carbon price in developed and large emerging economies and linking national carbon markets would provide one means of increasing climate finance, but such coordination outside of the UN process seems unlikely at present.
IMPROVING CHINA’S CLIMATE FINANCING FRAMEWORK AND POLICY SYSTEM

Dealing with China’s climate financing challenges requires clarification of finance targets and an overhaul of the existing finance framework and policy system. This section considers the finance required and the likely gap based on current funding. It then sets out a two stage plan for reforming the financing framework and policy system.

FINANCE TARGETS AND FUNDING GAP

Based on a review of existing government planning scenarios for achieving the agreed 2015 and 2020 emission intensity targets (i.e. a 17% cut from 2010 levels and 40-45% cut from 2005 levels respectively), the NDRC’s Energy Research Institute (ERI) estimates that China will need to invest US$273-305 billion a year by 2015, escalating to US$353-385 billion a year by 2020 on mitigation action. According to the NDRC, the majority of this investment is on the energy demand side to drive energy efficiency improvements. Figures for 2015 and 2020 are estimated to be US$193 billion and US$273 billion a year respectively. The remaining investment is to cover the expansion in renewable energy. where between US$80-112 billion is expected to be spent each year through 2020.

For adaptation there are no comparative government figures, but the speculated spend is between US$24-27 billion a year over the period. Combined spending on research and development (R&D) and capacity building is estimated to reach US$943 million and US$1.35 billion a year in 2015 and 2020 respectively, based on the growth target set under the 12th FYP (25.7%), and an annual GDP growth rate of 7.5%. Spending on international climate cooperation is assumed to at least remain at current levels (~US$10.7 million a year) through 2020. Table 2 below summarizes estimated climate finance over the 2013-2020 period.

Table 2. Total estimated financing required in China, 2015 and 2020

<table>
<thead>
<tr>
<th>AREA</th>
<th>2015 (US$ BILLION A YEAR)</th>
<th>2020 (US$ BILLION A YEAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation</td>
<td>273-305</td>
<td>353-385</td>
</tr>
<tr>
<td>Adaptation</td>
<td>24-27</td>
<td>24-27</td>
</tr>
<tr>
<td>R&amp;D and capacity building</td>
<td>0.94</td>
<td>1.35</td>
</tr>
<tr>
<td>International cooperation</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Total estimated finance required</td>
<td>298-333</td>
<td>378-413</td>
</tr>
</tbody>
</table>

Although the process is more art than science, it is possible, using the figures above plus current spending figures and economic growth rates, to estimate the likely gap in climate finance for China over the coming decade. In 2012, China’s total investment (both public and private) in energy saving, emission reduction industries and renewable energy, amounted to approximately US$87 billion. Estimated 2012 government spending for adaptation was around US$7.5 billion. Assuming climate related investment grows at the same speed as the overall economy (i.e. 7.5% a year as targeted in the 12th FYP), this would lead to annual mitigation and adaptation spending of US$109 billion and US$9.4 billion by 2015 respectively. The figures for 2020 would be US$156 billion and US$13.5 billion. R&D, capacity building and international cooperation spending would add approximately another US$1.09 billion a year by 2020. Table 3 summarizes these figures and the financing gap.

16RMB 1.2 trillion and 1.7 trillion for 2015 and 2020 respectively, converted to US$ at 2013 year-to-date exchange rate (6.2266)
17Source: interview with senior official from the Energy System Analysis Research Center, ERI. February 2013
18Figures are based on World Bank calculations for global adaptation spending in developing countries and an assumption that China would account for around 1/3 of the total. See World Bank, 2010. The Economics of Adaptation to Climate Change
19RMB 5.87 billion and 8.43 billion respectively, converted to US$ at 2013 YTD exchange rate (6.2266)
20RMB 200 million every three years converted as above. Assuming the budget for this fund increases as the rate of GDP the 2020 annual figure is likely to be closer to US$16.5 million.
22Based on a review of relevant accounts in the national budget.
### TABLE 3. China’s climate financing gap

<table>
<thead>
<tr>
<th>Area</th>
<th>2015 (US$ BILLION A YEAR)</th>
<th>2020 (US$ BILLION A YEAR)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current estimation</td>
<td>Required</td>
<td>Gap</td>
</tr>
<tr>
<td>Mitigation</td>
<td>109</td>
<td>273-305</td>
<td>164-196</td>
</tr>
<tr>
<td>Adaptation</td>
<td>9.4</td>
<td>24-27</td>
<td>14.6-17.6</td>
</tr>
<tr>
<td>R&amp;D etc</td>
<td>0.76</td>
<td>0.95</td>
<td>0.19</td>
</tr>
<tr>
<td>TOTAL</td>
<td>119</td>
<td>298-333</td>
<td>179-214</td>
</tr>
</tbody>
</table>

The gap in 2015 is equivalent to around 2% of China’s projected GDP in that year. Plugging this gap will rely on increased public sector finance, with private sector financing playing an increasing role beyond 2015. To ensure this happens, China will need to create the framework and incentives that can leverage large amounts of private finance using the still substantial – and increasing – levels of public funding.

### TWO STAGE REFORM PLAN

A two stage plan is proposed for reforming how climate financing works in China. The first stage covers the short-term period through to 2015, while the second stage recommends changes that can be put in place by 2020. Figure 3 below summarizes the short term plan.

**FIGURE 3** Short-term working plan of China’s climate finance management system

NB: Circles and text in red indicate new reforms
Through to 2015, the changes recommended are more evolution than revolution. The aim is to work within the policy framework already set by the 12th FYP by, for example, improving and coordinating existing arrangements between government departments.

The key changes recommended through to 2015 are:

— **Establish a system for gathering climate finance statistics** from: a) central and regional government departments, in order to track and monitor the spending of funds which have not been categorized under special climate accounts in the national budget and; b) the domestic financial market.

— **Use these new statistics to provide an information service** to financial markets to increase awareness of low carbon investments and drive greater investment as a result as well as to achieve a more balanced disbursement of climate finance into various sectors.

— **Establish a section-level account in the national budget** dedicated to addressing climate change, with sub-sections for specific areas of expenditure as necessary.

— **NDRC and MoF should undertake a review of all existing climate funding** in order to merge accounts as required, and to clarify and focus the use of existing finance.

— **Carry out analysis of expected demand across all areas of climate action** (mitigation, adaption, etc) and establish the baseline for climate spending in the central government budget.

— **Establish a mechanism for steadily increasing climate budget allocation** over time, ensuring that the increase is greater than the GDP growth rate. Create the necessary incentives and penalties for government officials (e.g. performance indicators) to ensure the increase occurs.

— **Establish a special National Fund for Climate Change** in addition to the section level account in the national budget. Use this fund to finance exemplary climate related projects to highlight the role of national investment and attract greater private sector investment.

— **Expand and strengthen the ‘South-South’ Cooperation Fund** to broaden channels for climate finance.

— **Develop the necessary performance evaluation system** for the government’s climate change funds.

— **Establish energy conservation and greenhouse gas emission databases** (in conjunction with the development of China’s carbon market pilot schemes) for use by government departments and financial institutions in developing the market for ‘green credit’.
The reforms proposed in stage two are more substantive and innovative than in stage one. Figure 4 below summarizes the key changes.

**FIGURE 4.** Medium-term reforms for climate financing in China.

Stage two reforms are legislative and institutional in nature. The key recommended reforms are as follows:

— **Formulate and implement national climate change laws** to establish a firm legal framework that drives climate action through all government departments, and economic and social development plans and programs.

— **Establish a new Ministry of Climate Change and Energy** directly under the State Council with powers to coordinate all national climate action.

— **Establish an International Development Agency** to coordinate China’s international climate financing initiatives.

— While the above departments are being established, **create a horizontal coordination agency** to connect the NLWG, NDRC, MoF, People’s Bank of China as well as policy and commercial banks, to promote international communication and foreign investment.
— Establish developmental finance institutes to enlarge and facilitate the sourcing of climate finance. A two-step process is proposed:

— **Creation of a National Climate Fund (NCF):** Supervised by the MoF or jointly with the China Development Bank. The NCF would merge and guide public and private capital, while also supervising and evaluating finance use.

— **Creation of a Green Investment Bank:** Either a brand new institution that manages the NCF, or a new role undertaken by the China Development Bank. In either case, the institution would further expand the NCF’s core funding by issuing ‘green’ or ‘climate’ bonds and accessing traditional capital markets.

— **Establish a Carbon Trading Regulatory Commission** to ensure adequate regulation of a national carbon market and coordination among the seven regional pilot schemes currently being implemented. The commission would be an independent body, separate from central and regional department control.

**COMPLEMENTARY, SUPPORTING POLICY REFORMS**

In addition to the institutional and legislative changes described above, a range of policy reforms could also be made to support the growth of finance for climate-related activities. These include:

— **‘Greening’ the current tax system:** For example, increasing the sales tax for energy and emission intensive products and offering preferential value-added tax rates for car fuels that meet the next phase of vehicle emission standards. Changing resource taxes on oil, coal and natural gas to ad valorem, rather than a per unit basis would help to both raise government revenue for climate finance and increase the cost of these high carbon fuels. Increasing the export tax for energy and emission intensive products could suppress the manufacturing and export of such products. And lowering import tariffs on key inputs and raw materials would help lower costs for manufacturers of green products and renewable energy project developers.

— **Reform environmental pricing policy:** A range of options exist in this area. For example, the government could incorporate the environmental cost of extractive industries (e.g. coal, oil and natural gas) in the pricing of these commodities. It could introduce differential power pricing for high energy consumption and heavily polluting industries. Similar types of tiered pricing for residential power and water use could also be introduced.

— **Improve environmental finance services:** The government could facilitate access to green credit by directing the central bank to provide commercial banks with credit at a discounted rate, so long as it was used for lending for climate related activities. The central bank could also be directed to establish a credit risk surveillance system for low carbon industries so that commercial banks have the information they need for making informed investment decisions. Finance market reforms to make it easier for low carbon enterprises to publicly list and issue bonds would also be beneficial.

— **Use market mechanisms to promote energy efficiency:** Options here include upgrading energy efficiency labelling and certification schemes to expand coverage and to promote energy efficient products among consumers. Improving the business environment for energy service companies (ESCOs) through fiscal policies and financial incentives would also drive an expansion in energy performance contracting (EPC).

The key point with all of the above policy options is that they help shift the risk-reward equation for investors in favor of more climate friendly investments.
NEW CAPITAL SOURCES NEED TO BE DEVELOPED AND EXISTING ONES WIDENED TO ACHIEVE THE VOLUME OF FINANCING THAT CHINA WILL REQUIRE IN THE COMING DECADES.

WIDENING CHINA’S CLIMATE FINANCE CHANNELS

Although China enjoys a relatively wide range of climate finance sources, the narrowness of some financing channels remains a problem. In the future, new capital sources need to be developed and existing ones widened to achieve the volume of financing that China will require in the coming decades. Figure 5 below shows current and potential sources of funding and highlights the focus for scaling up finance in each area.

FIGURE 5 China’s major climate financing channels
To ensure adequate access to all these sources, China’s government must pursue a variety of strategies and policies.

— **International climate funds**: For the foreseeable future, access to global climate finance, particularly from the international financial institutions, will remain important. China should therefore actively engage in climate finance discussions within these forums and others such as the UNFCCC’s Green Climate Fund. At the same time, the government should also develop new bilateral collaboration mechanisms and include climate as a key part of bilateral cooperation efforts. On the private sector side, the government also needs to ensure the country is increasingly attractive to institutional investors, such as pension funds, which control trillions of dollars of investment finance. These investors are looking for long-term, safe, stable returns, which a range of climate related investments could deliver provided the right investment environment is in place.

— **Off-budget public capital**: China’s sovereign wealth funds (SWFs) have total assets of some US$1.1 trillion. These funds account for 24% of total global SWF assets, which collectively makes them the largest in the world. Together with capital managed by the National Council for Social Security Fund, these off-budget sources of public capital could easily be directed to climate related investments if suitable investment products were created to meet their investment criteria. The China Investment Corporation (CIC), one of the world’s largest SWFs, is showing the way forward. It has already indirectly invested in Chinese new energy businesses by buying equities in those companies listed overseas.

— **Accelerate implementation of national carbon market**: The sooner a national carbon market is in place the better for increasing climate finance in China. In the longer term, the sale of emission allowances could provide the government with a new source of revenue that could be recycled for climate related activities. In the meantime, simply pricing carbon will help tilt private sector investment away from high carbon business to low carbon enterprises.

— **Reduce fossil fuel subsidies**: In line with recommendations from the International Energy Agency, China should phase out fossil fuel subsidies and abolish preferential policies that support high energy consumption energies and products. The funds saved from this unnecessary subsidization could instead be directed to climate related investment.

— **Strengthen Green Credit Policy**: The current ‘instructive guidance’ laid down by the government for green credit policy should be upgraded and made mandatory, with related laws and regulations improved to facilitate implementation of policies. These changes should look at how risks are shared and how banks can be properly incentivized. Standards and indicators for green credit should also be established. This will help ensure that environmental, social and climate benefits are incorporated into the credit assessment process undertaken by banks, as well as highlight the risks associated with current high carbon investments.

— **Establish a climate finance stakeholder alliance**: Raising the volume of climate finance would be greatly helped by increasing the connections among essential financing stakeholders. A formal alliance, supported by government departments and bringing together financial institutions, businesses, academics and trade associations, would accelerate the development of appropriate standards, information disclosure and risk sharing mechanisms, as well as help pilot innovative financial mechanisms. At the very least such an alliance would act as a bridge connecting financial institutions with businesses.

— **Leverage non-traditional sources of capital**: Non-traditional sources and channels of funding, such as micro-financing and crowd-sourced finance, offer new and potentially important sources of climate finance. These sources could be especially valuable for small and medium sized enterprises (SMEs), particularly in countries, like China, where SMEs can struggle to access traditional financing systems. Local initiatives are already underway in China, such as Wenzhou City’s Integrated Financial Reform Pilot Area, established in April 2012, and the local policies published by the Erdos City Government in June 2012. If projects such as this prove successful, government should encourage further development of such financing by establishing the right policy and regulatory incentives.
CONCLUSION

The purpose of this briefing has been to provide an overview of the main elements and challenges that define the climate finance landscape in China today. It is clear from preceding pages that China faces a variety of challenges. These must all be addressed if the country is to finance the transition to a sustainable, low carbon economy over the coming decade and beyond. But the main conclusion is undoubtedly that the solutions to China’s climate financing gap can be found in the hands of its policy and decision makers.

Although the gap in finance identified is a substantial figure, it is also true that it represents around a relatively modest 2% of GDP. As this summary (and the original Chinese report) demonstrates, China’s leaders have the tools to close this gap. Reforms in public funding governance, and new or improved incentives for private sector institutions and investors, can create the environment that shifts investment from high to low carbon activities.

Because of China’s economic and political influence, these domestic reforms will have global implications. They will of course benefit China directly by attracting greater foreign investment as improved transparency and clearer incentives lower risks for overseas financial institutions. But they will also send a powerful message to both investors and other governments about the direction of China’s economy. By moving now in implementing reforms, China could create the tipping-point in global financial and political attitudes towards low carbon investment.

The good news is that China’s transformation over the past three decades has demonstrated its ability to deliver profound economic and social change when the right incentives and frameworks are in place. If China is to build the ‘eco-civilization’ its leaders have called for and restructure its economy around the principles of sustainable development, then implementing the kind of financial reforms and recommendations laid out in this briefing will be essential. As with so many issues relating to China, this matters not just to its own future prosperity, but to the world’s as well.
# Annex

## Table A.1 Indicative volumes and sources of climate finance in China

<table>
<thead>
<tr>
<th>Source</th>
<th>International</th>
<th>Domestic</th>
<th>Carbon market</th>
<th>Private</th>
<th>Charity</th>
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<td>National</td>
<td>National</td>
<td>International</td>
<td>International</td>
<td>Domestic</td>
</tr>
<tr>
<td>Public</td>
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<td>OECD bilateral development aid</td>
<td>National investment</td>
<td>Commercial loans</td>
<td>State-owned banks</td>
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<td>US$40.86b</td>
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<tr>
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<td></td>
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<td>Domestic IPO</td>
<td>Overseas IPO</td>
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<td></td>
<td>in clean tech</td>
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<td></td>
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<td>Domestic IPO</td>
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### Notes

30China Banking Regulatory Commission

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<td>2012</td>
<td>6.3088</td>
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<tr>
<td>2013 YTD*</td>
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*Average for Jan-Feb 2013

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http://www.federalreserve.gov/releases/h10/hist/dsf00_ch.htm