

THE NEGLECTED RISK

Why deforestation risk should matter to Chinese financial institutions





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KEY FINDINGS

- China has become the largest importer and consumer of soy, with a heavy dependence on foreign sources, especially Latin America. This exposes China's soy supply chain to deforestation risks. New analysis by CDP found that **at least US\$2.1 billion** of loans made by Chinese financial institutions to Chinese companies in the soy supply chain are exposed to deforestation risks, representing 40.09% of total loans provided to the sector; bond and share issues with value of **over US\$7.1 billion** are exposed, as are **US\$1.55 billion worth** of shares.
- None of the financial institutions identified** has assessed its capital exposure related to deforestation risks, nor have any developed dedicated policies to address deforestation risks. **Only 23% (eight out of 35)** have a policy in place to integrate general environmental considerations into financial decision-making.
- Bank of China, Industrial and Commercial Bank of China and Agricultural Bank of China** are the top three banks lending to the soy sector, providing 62% of the total loans. **Bosera Asset Management Company, China Southern Asset Management Company and E Fund Asset Management Company** are the top three institutional investors funding the sector, representing 25% of the total value of shareholdings in the soy sector.
- Five companies (Archer Daniels Midland (ADM), Cargill, Bunge, Louis Dreyfus Company and COFCO¹)** covered in the sample, which account for 52% of Brazilian soy imports into China, have taken steps to manage deforestation risks within their supply chains. The majority of Chinese companies, however, focus primarily on local pollution control; only a few companies – **Muyuan Foodstuff Co., Ltd., Sunner Development Co., Ltd, and Wens Foodstuff Group** – have taken action to tackle climate change.
- Overall, environmental management by Chinese financial institutions focuses primarily on **pollution control**. The banking sector demonstrates a better awareness of climate risks than institutional investors, but the awareness of deforestation risks linked to soft commodities remains a work in progress.
- Financial institutions with environmental risk management systems in place should take steps to improve their practices.** They should first assess the proportion of capital in their portfolio or loan books that is exposed to deforestation risks, before assessing individual exposures to deforestation risks, developing policies to integrate deforestation risk assessment and management, engage and collaborate with portfolio/client companies to eliminate deforestation and mitigate the risks associated with it.

1. Of these, ADM, Cargill, and Bunge responded to the CDP forests questionnaire in 2018 and respectively received scores of C, C and B-. COFCO also responded for the first time but didn't receive a score.

EXECUTIVE SUMMARY

As the global financial sector increasingly recognizes the risks posed by environmental challenges, financial institutions have been integrating environmental concerns into their financial decisions.

Financial institutions are also acknowledging the crucial role of forests in climate change mitigation, and that deforestation could erode the value of companies participating in the production, trading and use of the commodities – soy, timber, palm oil and cattle products – most associated with deforestation. Financial institutions are therefore increasingly considering deforestation risks in their decision making.

China is the biggest consumer of forest-risk commodities. In particular, China is the largest importer and consumer of soy. In 2017, China imported 63% of the soy traded globally. In addition, with growing domestic demand for soy and uncertainties around Sino-US trade relations, it is foreseeable that Chinese demand for soy from high-deforestation areas, particularly Latin America, will continue to rise. This could potentially trigger further and faster deforestation which, in turn, poses increased regulatory, reputational and operational risks to the soy sector and associated financial institutions in China.

However, these financial institutions are yet to pay attention to the impacts of deforestation and risks linked to forest-risk commodities. This research examines one forest-risk commodity – soy – and the deforestation risks associated with it as an example to investigate the connection between such risks and Chinese financial institutions. By analyzing financial flows to 30 companies active in China's soy supply chain, including soy importing, crushing, animal feed manufacturing, and poultry, pig and cattle breeding companies, this research provides an overview of the financing landscape in the sector and highlights the estimated value and distribution of capital exposed to deforestation risks.

CDP's research found that:

- Financial flows exposed to deforestation risk are unevenly distributed across sectors.

All types of flow are clustered in the feed manufacturing, poultry and pig breeding sectors. In particular, pig breeding sector attracts the largest amount of investment, and bond and share underwritings.

- Over the 2013-17 research period, US\$2.1 billion of loans exposed to deforestation risks were made by Chinese financial institutions, accounting for over 40.09% total loans provided to the soy sector. More than US\$7.1 billion of bond and share issuance underwriting, accounting for 54.7% of shares and bonds issued by the sector, potentially faced deforestation risk. As of the end of 2017, about US\$1.55 billion of shareholdings were estimated to be exposed representing 64.85% of total shareholdings.

- Only 23% (eight out of 35) of financial institutions active in the soy sector have a policy of integrating environmental considerations into financial decisions. None of the identified financial institutions has assessed the proportion of their capital that is exposed to deforestation risks, nor has acquired the data and tools to quantify deforestation risks.

Chinese financial institutions have not demonstrated sufficient awareness of deforestation issues linked to forest-risk commodities. Some Chinese asset managers have acknowledged the long-term value of tackling climate change and lowering the carbon footprints of their portfolios. However, they have not yet extended their focus to deforestation and the potential risks associated with it. Deforestation is an overlooked yet critical source of risks posed to Chinese financial institutions. The risks involved should be considered in financial decision-making.

Step1



Step2



Step3



Step4



Step-by-step recommendations

To encourage Chinese financial institutions to do so, CDP offers recommendations based on an analysis of current management status and good practice from overseas. The steps set out below allow institutions seeking an inclusive and sustainable approach to investment to progress according to their own context and goals.

Starter level	Financial institutions should first understand their exposure to deforestation linked to soy trading and processing. Financial institutions should identify and estimate the volume of financing exposed to soy-driven deforestation.
	Financial institutions should analyse their exposure to deforestation risks by understanding the degree to which portfolio and client companies are sensitive to deforestation and exposed to the soy value chain.
Advanced level	Financial institutions should develop deforestation risk management policies to guide the integration of deforestation concerns into decision-making processes. For financial institutions with existing environmental management frameworks, deforestation risk management should be integrated.
	Financial institutions may want to engage with client/portfolio companies to encourage collaborative efforts to tackle deforestation risks, including quality data collection, target-setting, supportive education, etc. Financial institutions may also choose to enter into strategic collaborations to encourage deforestation management in client/portfolio companies.

Chapter 1

Introduction

GLOBAL TRENDS IN ESG INVESTMENT

Facing multiple sustainability challenges, investors are attempting to better understand how ESG issues impact their lending and investments. This growing concern is evidenced in the growth of the UN-backed Principles for Responsible Investment (PRI) which, since its launch in 2006, has attracted more than 2,300 signatories, representing around US\$90 trillion in assets as of 2018.

They commit to integrating ESG considerations in their investment. Between 2002 and 2019, the number of investors requesting climate change, water security and forest stewardship information through CDP rose from 35 to 525. In 2019, these investors represent US\$96 trillion in assets. In addition, 'green investment', focusing on generating a positive environmental impact, has increased dramatically. The issuance of green bonds has surged from US\$10 billion in 2013 to over US\$170 billion in 2017². China has become the second largest player within the green bond market, accounting for 21.8% of total issuance in 2017.

In China, the significant growth of green bonds over the past two years has been largely attributed to a range of regulatory changes and political encouragement for the development of the green

bond market as a tool to finance sustainable infrastructure.³ In 2016, the Guidelines for Establishing the Green Financial System was jointly issued by seven authorities, setting out a comprehensive green finance policy framework.⁴ China has not only become a major player in the green bond market, but is also playing a leading role in developing green finance and investment.

Many financial institutions in China have recognized the significance of facilitating the transition towards a sustainable economy, and the potential benefits such a transition offers beyond financial returns. However, there is an overlooked exposure that poses multidimensional risks to financial institutions – deforestation risk, channeled through companies involved in the production and trade of the commodities that contribute to deforestation.



2. Climate Bonds Initiative and China Central Depository & Clearing Company (CCDC) (2018), *China Green Bond Market*.

3. Ibid.

4. In 2016, the Guidelines for Establishing the Green Financial System were jointly-issued by: the State Council; People's Bank of China; Ministry of Finance; National Development and Reform Commission; Ministry of Environmental Protection; China Banking Regulatory Commission; China Securities Regulatory Commission; and China Insurance Regulatory Commission. See "Seven state ministries jointly issue 'Guidelines for Establishing the Green Financial System'", Deloitte China.

AN OVERLOOKED INVESTMENT RISK

According to CDP's 2017 Global Forests Report, up to US\$941 billion of turnover globally is dependent on commodities linked to deforestation.⁵ The vast majority (87%) of companies responding to CDP's forests questionnaire recognize at least one operational, reputational, or regulatory risk from deforestation. One third (32%) have already experienced impacts associated with the production or consumption of forest-risk commodities.

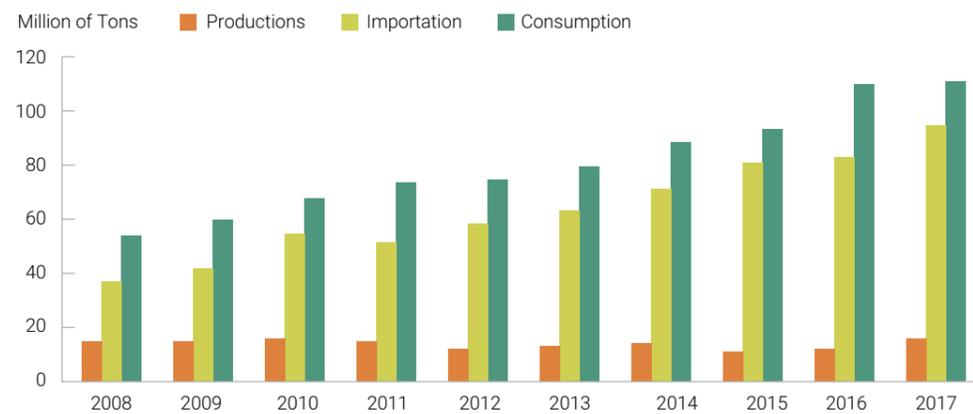
Deforestation and forest degradation are major contributors to climate change, generating around 10-15% of all greenhouse gas (GHG) emissions. It is estimated that the cost of climate change impacts related to forest emissions will rise to around \$1 trillion a year by 2100.⁶ Land-use change to produce agricultural commodities is the most significant driver of deforestation. Up to 80% of forest land conversion is linked to agricultural production, particularly for cattle products, soy, palm, and timber and pulp – the main forest-risk commodities. Risks associated with these commodities extend from the producers through trading companies to the manufacturers and retailers that consume them, risking potential business losses.

China is the world's largest importer of soybeans, and the volume of soy it imports continues to rise (Figure 1). In 2017, 87% of its soybeans, around 96 million tons, were from foreign sources (Figure 2).⁷ Of this, around 60% was sourced from Latin America, namely Brazil and Argentina.⁸ Soy production is one of the main drivers of conversion of native vegetation in Latin America,

and has led to rapid deforestation in recent years. Such deforestation could severely undermine global climate mitigation efforts, result in irreversible damages to biodiversity, and degrade water security.⁹ Companies producing soy are exposed to legal and regulatory efforts to reduce deforestation, reputational impacts as public concern over the issue grows, as well as physical impacts from climate change. Their customers are also exposed to reputational issues, as well as potential supply disruptions. Financial institutions investing in or lending to these companies are therefore linked to deforestation risks.

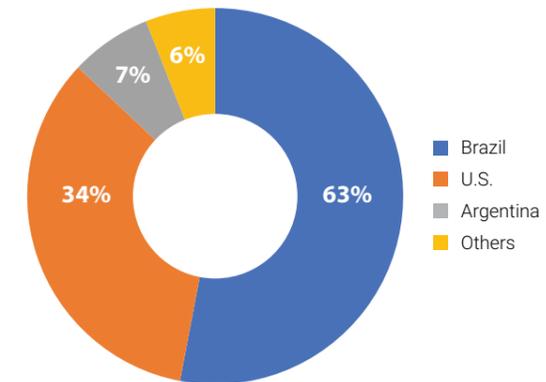
Direct links are being made between deforestation and Chinese buyers: a recent study found that China's soy imports are associated with the recent increase in deforestation in Mato Grosso.¹⁰ Figure 3 shows how soy imported into China from Brazilian producers is linked to deforestation. In 2017, Brazilian soy exported to China was associated with more than 49,000 hectares of land conversion risk, accounting for 50% of the land conversion risk associated to Brazil's soy exports.¹¹

Figure 1 China's annual soy imports



Source: PRI Newswire, 2018. China Soybean Industry Report 2018: Brazil was the Largest Source of Imported Soybeans to China. Available at <https://www.prnewswire.com/news-releases/china-soybean-industry-report>

Figure 2 Main soy exporters to China in 2017



Source: reproduced from <http://www.chyxx.com/industry/201808/667449.html>

Figure 3 Linkage between China's soy imports and deforestation risks in Brazil¹²



Source: <https://trase.earth/>

International soy traders operating in China, such as Louis Dreyfus Company, Bunge and Cargill, have recognized their exposure to deforestation risks and have started to act to manage these risks in their supply chains, according to their public reports. However, Chinese companies and financial institutions active along the soy supply chain have not yet acknowledged their exposure to deforestation risks and the potential associated impacts.

12. Extracted from the Trase database (Transparent supply chains for sustainable economies).

5. CDP, 2017, *From risk to revenue: The investment opportunity in addressing deforestation*
 6. J. Eliasch, 2008, *Climate Change: Financing Global Forests-The Eliasch Review*, accessed 12 April 2018.
 7. "China Soybean Industry Report 2018: Brazil was the Largest Source of Imported Soybeans to China", PRNewswire, 31 May 2018.
 8. China Industry Information Network, "Analysis of China's soybean imports and import sources in 2018", accessed 11 April 2018
 9. See, for example: "Deforestation and Climate Change", Lauren Bennett, 18 April 2017, Climate Institute; "The neglected truth: forest facilitates mitigation of climate change", Chengyi Zhang, Lan Yi, Hongwang Ji, China Weather, Earth Eclipse, "How Does Deforestation Affect Climate Change?", all accessed 11 April 2018
 10. BU Global Economic Governance Initiative (2015), China's Influence on Deforestation in Brazilian Amazonia: A Growing Force in the State of Mato Grosso, working paper.
 11. Data retrieved from the Trase database

WHY SHOULD FINANCIAL INSTITUTIONS ADDRESS DEFORESTATION IN THEIR VALUE CHAINS?

Globally, the food and agriculture industries represent US\$5 trillion in assets.¹³ As of 2017, there were more than 440 funds globally – up from just 38 in 2005 – focused on agriculture and food, with assets under management of more than US\$73 billion.¹⁴

China's fixed asset investment in the agricultural sector reached US\$340 billion in 2016¹⁵ and rose to US\$367 billion by the end of 2017.¹⁶ Direct overseas investment by Chinese entities in agriculture, forestry and fisheries, increased tenfold from 2009 to 2016, reaching US\$3.3 billion in 2016.¹⁷

Financial institutions invest in and lend to companies involved in the soy supply chain, exposing themselves to deforestation risks. Banks provide financial services to growers, traders, processors and retailers. In making these investments, banks will consider the customer's reputation, compliance and business performance. Institutional investors may have considerable asset exposure to the agricultural commodities by investing in companies participating in agricultural supply chains, including food and beverage producers

consuming forest-risk products.¹⁸ Similarly, reputational, market, regulatory, physical and operational risks faced by portfolio companies can potentially translate into material risks for their investors. It is necessary for financial institutions to acquire an understanding of the impacts associated with the deforestation risks faced by companies, with their environmental footprints, and with their capital exposure.

In addition, financial institutions can be part of the solution. They can use their influence with their clients and portfolio companies to encourage them to address deforestation and mitigate the associated risks. Addressing deforestation driven by agriculture production is also vital to the mitigation of climate change and achieving the goal of the Paris Agreement in limiting the global temperature increase to less than 2 degree Celsius above pre-industrial levels.

Figure 4 The soft commodity supply chain

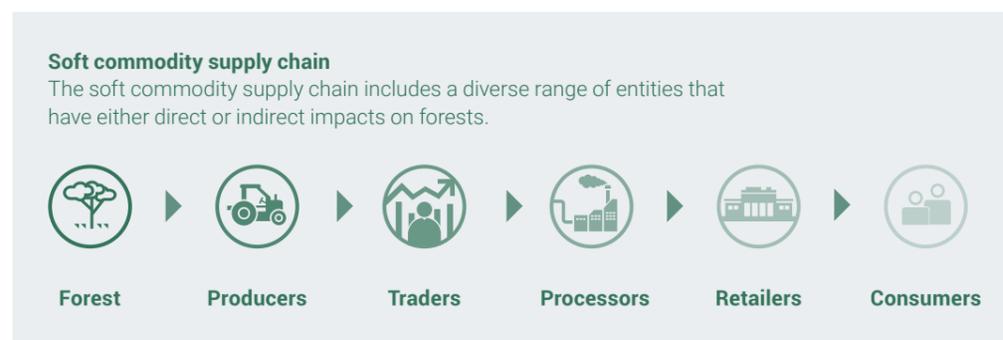
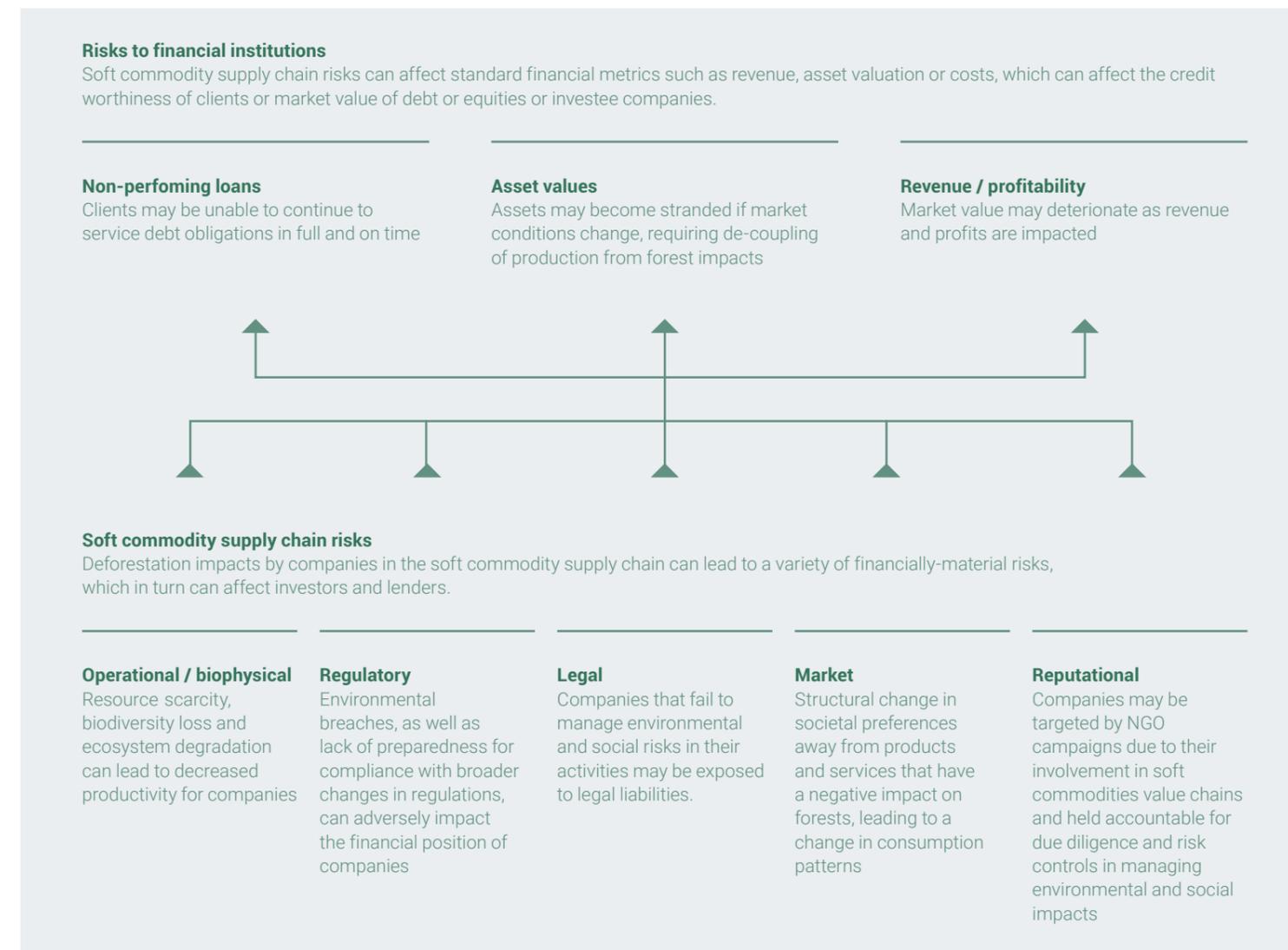


Figure 4 provides an overview of the forest-risk products supply chain, including soy. Figure 5 explains the mechanisms by which risks linked to deforestation can be translated into risks to corporates and financial institutions.

Figure 5 How company risk becomes investor risk¹⁹



13. Lutz Goedde, Maya Horii & Sunil Sanghvi, "Pursuing the Global Opportunity in Food and Agribusiness", July 2015, McKinsey.

14. Valoral Advisors (2018), *2018 Global Food & Agriculture Investment Outlook*.

15. National Bureau of Statistics The agriculture sector includes planting industry, forestry, fishery and animal husbandry.

16. The China's fixed asset investment in the agriculture sector reached CNY2.28 trillion in 2016, and rose to CNY2.46 trillion by the end of 2017, using an exchange rate of US\$1=CNY 6.7.

17. Fred Gale and Elizabeth Gooch, "China's Agricultural Investment Abroad Is Rising", 24 April 2018, USDA Economic Research Service

18. UNEP (United Nations Environment Programme) (2015), *Bank and Investor Risk Policies on Soft Commodities*.

19. Global Canopy and CDP (2017), *Financial Institution Guidance: Soft Commodity Company Strategy*.

RESEARCH OBJECTIVES

Given the important role of Chinese demand in soy production, and of Chinese financial institutions in financing and investing in the soy value chain, CDP sought to better understand the investment and lending decisions of the Chinese financial institutions involved. Our research examined the financial flows from Chinese financial institutions to companies participating in the soy supply chain, identified major players, and estimated the volume of investment exposed to deforestation risk.

The rest of this report is organized as follows:

Chapter 2

- ▼ shows the top creditors and shareholders involved in the soy supply chain and the current status of their environmental management;

Chapter 3

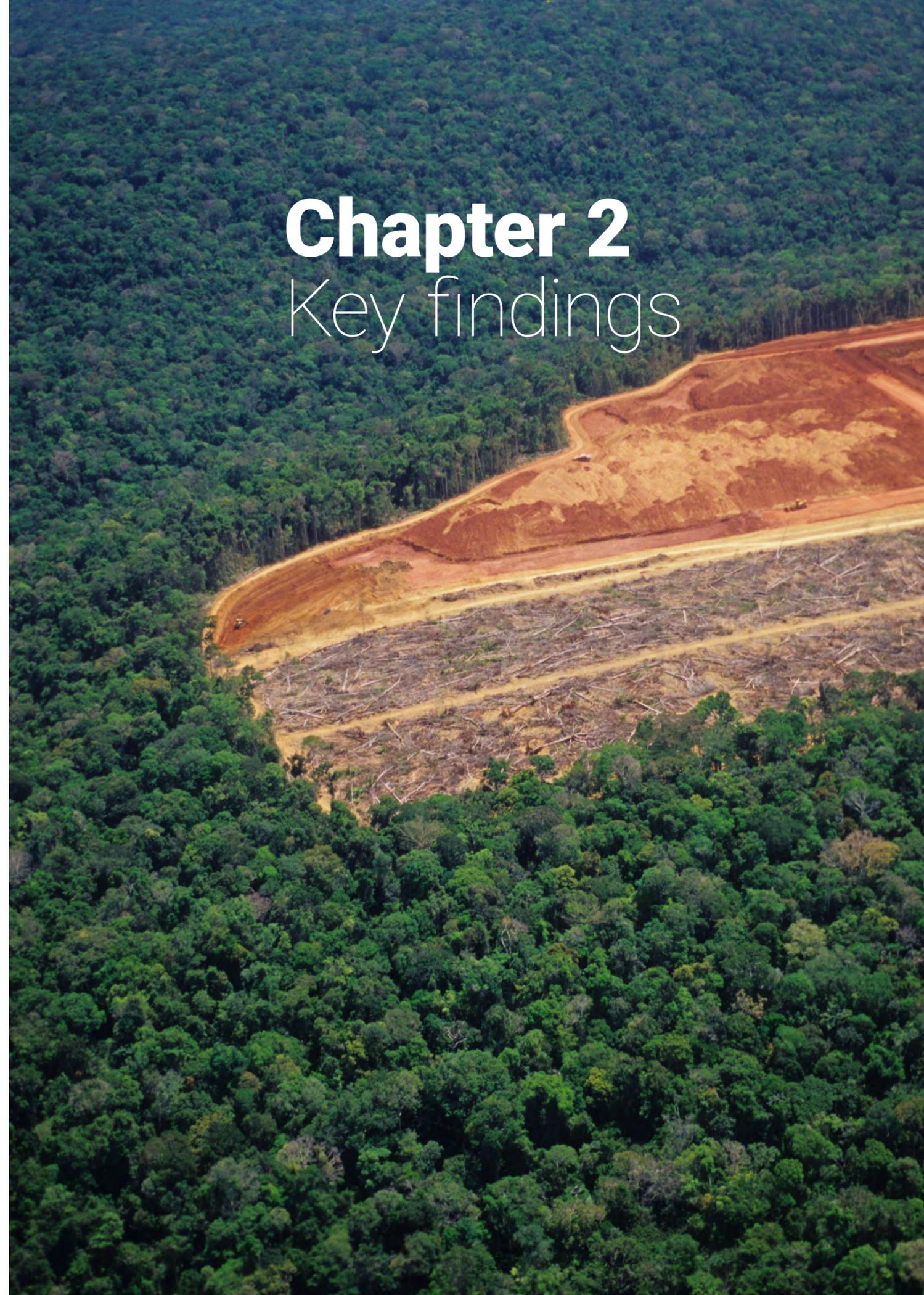
- ▼ describes good practice for managing deforestation risk; and

Chapter 4

- ▼ offers recommendations for Chinese financial institutions in managing deforestation risk.

Chapter 2

Key findings



THE CURRENT STATE OF FINANCIAL INSTITUTIONS' ENVIRONMENT MANAGEMENT

The Chinese financial institutions identified by this analysis vary in terms of the degree of awareness they demonstrate of the environmental challenges they face. As well as drawing on public sources, CDP conducted interviews with practitioners from identified key financial institutions to acquire additional information.

- ▶ Banks, underwriters and institutional investors report varying levels of environmental management. Overall, the banking sector demonstrates a relatively better awareness of environmental challenges, including climate issues, and a wider range of practices, such as GHG accounting and internal low-carbon policies, while underwriters' disclosures show lower levels of awareness and fewer activities. Institutional investors do not generally publicly demonstrate much environmental management, but a few leaders are actively making efforts to apply responsible investment techniques.
- ▶ None of the financial institutions identified in the research and interviewed mentioned the operational risks posed by forest-risk commodities. However, all financial institutions demonstrated concern regarding regulatory risks, and some (five out of 30) also mentioned reputational risks.
- ▶ Overall, financial institutions have not yet integrated deforestation into their financial decision making, nor have they made substantial progress in quantifying environmental risks. Two possible barriers are a lack of the corporate environmental data required for such analysis, and a lack of awareness of the possible impacts of deforestation on the financial sector.

Institutional Investors

Overall, financial institutions in China focus primarily on pollution management. Some institutional investors have taken the next step, and recognized the importance of integrating climate change considerations into investment decisions.

According to interviews with some key mutual fund management companies, deforestation risks have not yet attracted their attention, compared with other environmental issues. Forward-looking investors actively exploring ESG investment practices have started to form ESG teams. China Asset Management Company (China AMC), E Fund Asset Management Company and Harvest Fund Management Company, representing 2%, 4.8% and 1.4% of total investment in sample companies respectively, have incorporated ESG topics into their research streams. However, they have not conducted research focused on deforestation. These mutual funds have not recognized the significance of forests in mitigating climate change, nor the linkage between the finance sector and deforestation driven by agricultural production.

On the other hand, looking at the bigger picture beyond forest risks, mutual funds believe that ESG will be one of their main areas of focus in the future. They have drawn up firm-wide ESG strategies and have started to explore the methodologies required to incorporate climate factors into traditional investment decisions. Furthermore, they also realize the importance of collecting high-quality data to enable assessments of portfolio carbon footprints. Some are planning to establish in-house reporting platforms to acquire the environmental data needed. Some are actively engaging with key portfolio companies regarding the disclosures necessary for effective ESG investment analysis.

Some mutual funds explained that the primary reason for neglecting deforestation risks channeled through the agricultural sector is that the aggregated investment value in agricultural companies is relatively small. In addition,

the current means by which environmental performance is translated into financial performance is limited to financial penalties, due to excessive pollution, under China's Environmental Protection Law.

Other investors that have not yet made substantial progress in managing deforestation risk do not consider addressing ESG factors to be a pressing issue. They do not prioritize it due to a lack of awareness of climate and deforestation issues, and the lack of examples demonstrating value creation from ESG management. In addition, they lack the data and expertise to take substantive action.

Creditors – banks

The top loan-providing banks identified from financial flows can be roughly divided into two groups: one group with high levels of awareness and which is taking action, and one with low levels of awareness and which is inactive. Industrial and Commercial Bank of China (ICBC) is the most active bank in addressing climate change and promoting sustainable finance. It is one of the founding members of the UNEP Finance Initiative Principles for Responsible Banking, and it has signed the statement of support committing to the voluntary recommendations of the industry-led Financial Stability Board Task Force for Climate-related Financial Disclosures (TCFD). ICBC is also one of the pilot organizations trialling the UK-China Climate and Environmental Information Disclosure Initiative, and is active in promoting ESG investment that aligns with the TCFD recommendations. Five of the top ten lending banks – ICBC, Bank of China, Agricultural Bank of China, China Construction Bank, and China Ex-Im Bank – are permanent members of the China Green Finance Committee.

Based on interviews with identified banks, they assess the environmental impacts of

client companies and projects when they grant corporate loans and/or letters of credit. However, banks tend to be more cautious with client companies falling into the category of 'key polluters' as defined by the Ministry of Ecology and Environment.²⁰ Banks tend to avoid granting loans to these key polluters, and restrict the volume of letters of credit they provide to them. This is to avoid and mitigate reputational risks linked to pollution. Based on publicly disclosed information, banks recognize in general the potential regulatory and reputational risks linked to environmental factors; however, these tend to be limited to pollution-related issues.

Overall, neither banks nor mutual funds have demonstrated sufficient awareness regarding environmental challenges, especially climate change and deforestation, nor have they established an inclusive policy framework to integrate environmental challenges into their decision-making processes. They have shown a strong policy-oriented tendency, indicating a reluctance to step significantly ahead of current policy requirements. However, there is already a gap between the current practice of Chinese financial institutions and recommended practices in line with existing guidelines – such as the Guidelines for Establishing the Green Financial System²¹ – as well as international policies and goals (such as the Paris Agreement and SDG 15).²² There is also existing gap between the practices of Chinese financial institution and good practices of their global peers as discussed in Chapter 3. Both gaps call for immediate attention as well as action on deforestation risks. However, as we have seen elsewhere, banks and investors tend to place great importance on their reputations and closely watch progress made by their competitors, offering potential for a 'race to the top'.

20. The list of 'key polluters' is updated quarterly by the Ministry of Ecology and Environment. The latest list can be found at: www.mee.gov.cn/xxgk/2018/xxgk/xxgk01/201811/t20181122_674726.html

21. Xinhua News Agency, "Seven state ministries jointly issue 'Guidelines for Establishing the Green Financial System,'" September 2016.

22. The Guidelines emphasize that the green finance system should be supportive to not only environmental improvement, but also to climate change mitigation and the more efficient utilization of resources.

THE CURRENT STATE OF CORPORATES' DEFORESTATION RISK MANAGEMENT

Meanwhile, companies covered in the CDP research also demonstrated varying levels of environmental management.

- ▼ Only a few companies (ADM, Cargill, Bunge, Louis Dreyfus Company and COFCO) covered in this research, have disclosed actions to manage deforestation risks within their supply chains
- ▼ Hong Kong-listed companies covered by CDP research have shown awareness of ESG and climate change impacts, while their attention is yet to be extended to deforestation issues
- ▼ Overall, Chinese companies also focus primarily on local pollution control with only a few companies recognizing the significance of tackling climate change.

Based on responses to the 2017 CDP forest questionnaire, CDP found that more respondents from the agriculture production sector reported operational, regulatory, or reputational risks than those from any other sector. These risks can be passed along the supply chain to downstream sectors such as crushing, feed manufacturing and animal husbandry. However, due to the small number of Chinese respondents, the data does not provide a clear picture of the exposure of Chinese companies to deforestation risks, and how they might be responding.

Table 1 Identified forest-risk commodity exposures, by sector²³

COMPANY SECTOR	Operational risks	Regulatory risks	Reputational risks	At least one risk
Agriculture production	81%	75%	94%	94%
Consumer durables, household and personal products	83%	56%	94%	100%
Food and staples retailing	45%	64%	91%	91%
Industrials	72%	59%	78%	88%
Materials	82%	76%	88%	97%
Retailing	46%	62%	85%	85%
All companies	65%	62%	80%	87%



Table 2 Comparison of international best practice and Chinese corporate environmental initiatives in 2017

	Discloses % of revenue dependent on commodity in the reporting year	Discloses deforestation risk assessment procedure	Discloses identified risks and opportunities related to commodities	Discloses system to track and monitor origin of raw materials	Discloses the highest level of direct responsibility for climate change	Discloses emission reduction or renewable energy consumption or production	Disclose Scope 1 Scope 2 emission accounting figures	Discloses engagement on GHG emissions and climate change strategies	Discloses pollution emission accounting and management	Discloses water consumption	Disclosure status
ADM	×	●	●	●	●	●	●	●	●	●	CDP, 2017 Sustainability report
Cargill	×	●	●	●	●	●	●	●	●	×	CDP, 2017 Sustainability report
Louis Dreyfus Company	×	●	●	●	×	●	×	●	●	●	CDP, 2017 Sustainability report
Bunge	×	●	●	●	●	●	●	●	●	●	CDP, 2017 Sustainability report
COFCO Group*	×	●	×	×	●	●	●	●	●	●	CDP, 2017 Sustainability report
SINOGRAIN	×	×	×	×	×	×	×	×	×	×	No reporting
Yihai-Kerry	●	●	●	●	●	●	●	●	●	●	CDP, 2017 Sustainability report
Beidahuang	×	×	×	×	×	×	×	×	×	×	2017 Annual report
Jiusan Group	×	×	×	×	×	×	×	×	×	×	No reporting
Bohi Group	×	×	×	×	×	×	×	×	×	×	No reporting
Chinatex	×	×	×	×	×	×	×	×	×	●	Official website
New Hope Group	×	×	×	×	×	×	×	×	×	×	Official Website
DaChan Food (Asia)	×	×	×	×	×	×	×	×	×	×	2017 Annual report
Zhengbang Group	×	×	×	×	×	×	×	×	×	×	2017 Annual report
New Hope Liuhe	×	×	×	×	×	×	×	×	×	●	2017 CSR report
Wens Foodstuff Group	×	×	×	×	×	×	×	×	×	●	2017 CSR report
CP Group*	●	●	●	●	●	●	●	●	●	●	CDP, 2017 Sustainability report
Tangrenshen Group	×	×	×	×	×	×	×	×	×	●	2017 Annual report
Sunner Development	×	×	×	×	×	×	×	×	×	×	2017 CSR report
Huaying Agricultural Development	×	×	×	×	×	×	×	×	×	×	2017 CSR Report
WH Group	×	×	×	×	×	●	●	●	●	●	2017 Sustainability Report
Doyoo	×	×	×	×	×	×	×	×	×	×	No reporting
Yisheng Livestock & Poultry	×	×	×	×	×	×	×	×	×	×	2017 Annual report
Tyson China*	●	●	●	●	●	●	●	●	●	●	CDP, Corporate Website
Yurun Group	×	×	×	×	×	×	×	×	●	●	2017 CSR report
Chuying Agro	×	×	×	×	×	×	×	×	×	×	2017 CSR report
Muyuan Food stuff	×	×	×	×	×	×	×	×	●	●	2017 CSR report
Tech-Bank Food	×	×	×	×	×	×	×	×	×	×	2017 CSR report
Haoyue Group	×	×	×	×	×	×	×	×	×	×	No reporting
Inner Mongolia Kerchin Cattle Group	×	×	×	×	×	×	×	×	×	×	No reporting

Note:

This table only shows the disclosure status of sample companies and intends to demonstrate the transparency of their environmental management, with O indicating "disclosed" and X indicating "not disclosed".

The indicators chosen in this table are considered key indicators reflecting key elements of forest risk management and climate risk management.

*Some CDP responses were submitted on behalf of companies' subsidiaries or parent companies:

COFCO Ltd: China Agri-Industrial Holding Ltd disclosed to the 2017 CDP climate change questionnaire;

Yihai-Kerry: Wilmar International Ltd disclosed to the 2017 CDP climate change and forest questionnaires;

CP Group: Charoen Pokphand Foods PCL. disclosed to the 2017 CDP climate change and forest questionnaires;

Tyson China: Tyson Inc. disclosed to the 2017 CDP climate change and forest questionnaires.

Details of CDP responses for each indicators can be found in Appendix V.

In addition to information disclosed in corporate reports and their websites, this research also selected a sample of metrics from 2017 CDP questionnaires to provide a high-level snapshot of environmental management across sample companies, as shown in Table 2²⁴.

Wilmar International (the parent company of Yihai-Kerry) and Tyson Inc. (the parent of Tyson China) are the best-performing among the sample companies in terms of deforestation risk management. Both received a B (management level) score for their CDP forest questionnaire. ADM, Bunge and Cargill received C (awareness level) scores in 2017.

These companies disclose effective data and information through both their corporate publications and CDP responses, including deforestation risk and opportunities identification, risk assessment and monitoring practices, as well as measurement and management in response to climate risks.

In terms of transparency, there is also an obvious gap between the extent of disclosure by Hong Kong-listed companies – WH Group and Yurun Group – and those of companies headquartered in mainland China.

The environmental management and disclosure of Hong Kong-listed companies is closely aligned with the ESG Reporting Guide released by the Hong Kong Stock Exchange, which covers pollution control, GHG emissions accounting, and water and energy consumption, but which does not address deforestation risks. Moreover, although those companies have carried out engagement with their supply chains, those engagements are mainly related to food safety and fair trade, rather than addressing environmental issues.

The majority of companies headquartered in mainland China, either listed or non-listed, do not currently demonstrate good levels of transparency, due to insufficient disclosure of environmental management, lack of benchmarks in their corporate reports, and limited demonstrated awareness of climate risks. Their primary environmental concerns are still limited to pollution emissions management, and only a few of the mainland companies have integrated the consideration of climate change into their CSR reports.

These companies, compared with CDP responding companies and Hong Kong-listed firms, also show the lowest consistency regarding disclosure, and the largest variation of reporting quality, compared with the other two groups. Some companies, such as Sunner Development Co., Huaying Agricultural Development and Tech-Bank Group, release brief corporate social responsibility (CSR) reports where they publish descriptive information, without substantive details, regarding their environmental management practices.

Others, such as Zhengbang group, Yisheng, Beidahuang and Tangrenshen Group, do not have individual CSR reports but include a CSR section in their annual reports where information disclosed is insufficient to allow effective analysis by their investors. A common reason for such cases is that these companies are not categorized as 'key polluters' by the Ministry of Ecology and Environment, and therefore do not pay sufficient attention to pollution management and other environmental issues related to their operations.²⁵

However, there are a handful of leading mainland listed companies that have begun to address the climate and water security risks they face, and which should extend these efforts to deforestation exposures:

Sunner Development Group has undertaken pioneering work that indicates advanced awareness and implementation of corporate environmental management. It has achieved zero wastewater disposal from its poultry broiler plants, by pairing each broiler plant with sewage treatment, enabling the discharge of reusable water. Sunner Development has also reused chicken manure and corn husks as fuel to generate power, and has built renewable energy capacity with an annual power output of 173 million kWh.²⁶ However, the company does not disclose concrete details or data regarding its good practices in its CSR or annual reports. In addition, it has not yet taken steps to measure and manage deforestation risks in its supply chain.

Muyuan Foodstuff Co. is the only mainland-listed company that requires its suppliers to carry out

environmental assessments. While there is no mention in its reporting of deforestation risks, the company demonstrates a strong awareness of supply chain environmental management, which provides a good foundation for managing deforestation risks. Muyuan is also one of the only two mainland-listed companies that structures its CSR report with reference to Global Reporting Initiative (GRI) standards. It discloses that it does not have established assessment methodologies for GHG emissions and energy consumption, but it plans to disclose quantitative pollution emissions figures in the future. In 2018, Muyuan was included in the China ESG 50 Index, recognizing its good ESG performance and relatively high resilience to downside risks.²⁷

Wens Foodstuff Group also refers to GRI standards to structure its CSR report. In its 2017 CSR report, Wens Foodstuff mentioned "green agriculture" and "green production" as components of its corporate values, and disclosed corresponding actions such as the adoption of renewable energy, development of a green logistics system, and improvements in resource efficiency and effluent treatment. However, it did not disclose further details such as measurements of GHG emissions or energy consumption. Its report shows that Wens Foodstuff Group recognizes the significance of environmental management and has undertaken some action, but it does not provide data to inform financial institutions' decision-making processes.

Another finding is that Chinese companies have not recognized the role financial institutions can play in improving their environmental management, including by building sustainable soy supply chains. Foreign companies, such as Bunge, can provide examples of good practice for Chinese companies. For example, it collaborated with Santander, a global bank, and The Nature Conservancy, an environmental NGO, to offer long-term loans to farmers that are willing to commit to no further deforestation or conversion of native habitat in their soy production.²⁸ This new financing mechanism is a good example of NGOs, banks and companies working together to facilitate sustainable soy production.

25. Supervision Center of Ministry of Environment and Ecology, "Announcement on national supervision of key polluters" (2016 Q4), , March 2017

26. Sunner Development corporate brochure

27. Muyuan Group Media Centre, *Muyuan is included in the China ESG 50 Index*. November 2018.

28. Bunge, Santander & TNC Offer Soy Farmers Long-Term Loans, 2018 August, <https://www.bunge.com/news/bunge-santander-brasil-and-tnc-offer-soy-farmers-long-term-loans-expand-production-without>

FINANCIAL INSTITUTIONS ACTIVE IN THE SOY SECTOR

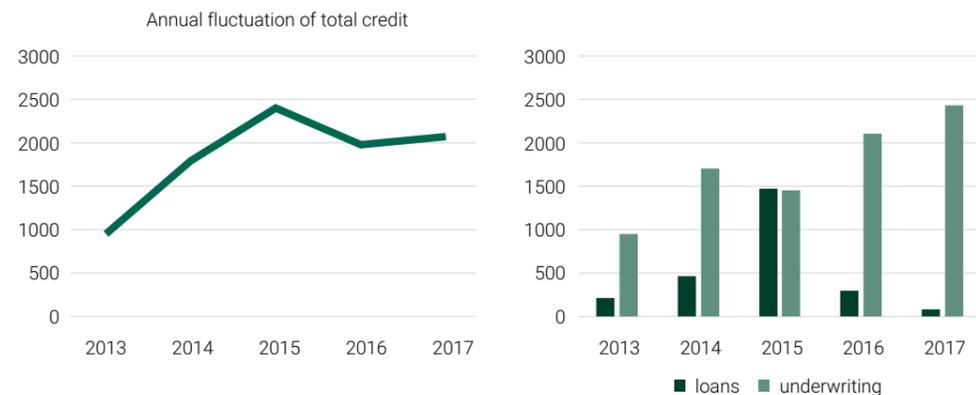
CDP research found that considerable financing provided to these companies is potentially exposed to deforestation risks.

- Over the period of CDP research (2013-17), the companies analyzed took out loans worth US\$5.2 billion, of which an estimated US\$2.1 billion (or 40.09%) was exposed to deforestation risks linked to soy-related businesses. Over the same period, these companies issued bonds and shares worth US\$13 billion, with over 54%, at least US\$7.1 billion, exposed to deforestation risks.
- On the other hand, as of 31 December 2017, Chinese financial institutions held US\$2.39 billion worth of equity in listed sample companies, of which over 64.85% (US\$1.55 billion) was potentially exposed to deforestation risks.
- Moreover, CDP estimated that, among identified financial flows exposed to deforestation risks, at least US\$378 million worth of underwriting, US\$110 million of debt provided to soy businesses and US\$82 million worth of equity of listed companies covered in the research are linked to Brazilian soy sourced from areas of high deforestation risks.

Creditors

Figure 6 shows annual variations in loans to and stock and bond issues from sample companies. The credit flows identified increased between 2013 and 2015, by over 2.52 times. This was possibly attributable to an increase in crushing capacity, driven by growing demand for animal feed and meat.²⁹ In 2017, the total value of the sample companies' loans, shares and bond issues over the period totaled US\$2.07 billion, almost 2.2 times that of 2013. Breaking down by financing types, loan data shows more significant fluctuations than stock and bond issues over the period of the research. Identified fundraisings show a shift of financing preferences from 2015 to 2017: the value of loans provided to soy-involved business activities was falling over the period, while that of stock and bond issues was gradually increasing.

Figure 6 Annual fluctuation of loans, share and bond issues (2013-17, US\$ million)



Data source: multiple sources, please see Appendix I. Research Scope and Methodologies

The top 10 banks providing loans to sample companies are listed in Table 3 below. Bank of China accounts for the largest share of lending to the soy supply chain, with over US\$676 million associated with soy-related business activities over the period. As shown in the table, loan providers in the soy sector are highly concentrated – loans provided by the top 10 account for 92% of the total loans provided by all banks.

Table 3 Top 10 Chinese banks providing loans to the soy value chain (2013-17, US\$ million)

	Loan-providing banks	Sum of adjusted loan value (US\$ mln)	Share of grand total adjusted loans (US\$ mln)
1	Bank of China	676.23	32%
2	Industrial and Commercial Bank of China	341.35	16%
3	Agricultural Bank of China	292.60	14%
4	China Construction Bank	178.52	9%
5	China Eximbank	128.95	6%
6	Shanghai Pudong Development Bank	94.20	5%
7	Bank of Communications	79.91	4%
8	China Merchants Group	63.71	3%
9	Jiangxi Bank	31.25	1%
10	CITIC Bank	24.55	1%
Cumulative share of top 10		1911.25	92%
Grand total of adjusted loan value		2083.29	100%

Data source: multiple sources, please see Appendix I. Research Scope and Methodologies.

Note: Loans here include corporate loans and mortgages. Revolving credit facilities are regarded as short-term loans and excluded in this ranking because of the difficulty of tracking the purposes to which they are put.

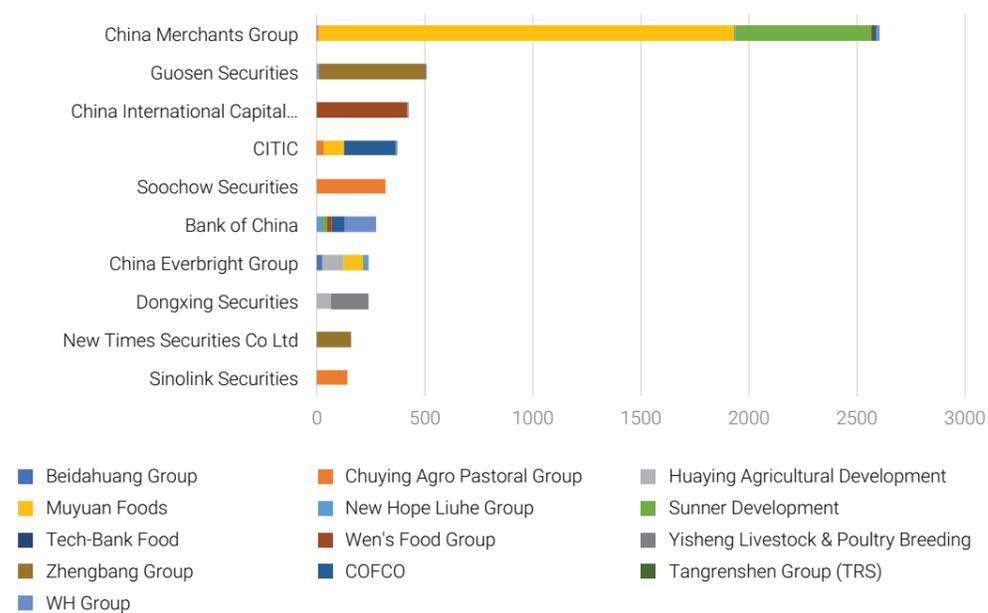
Table 4 shows the top 10 bond and share underwriters to the soy sector in China, with a breakdown of underwriting by companies. Identified share and bond issues show that China Merchant Group underwrote the biggest proportion (36%) of bond and share issuances in the soy supply chain, amounting to over US\$2.6 billion over 2013-17. Muyuan Foodstuff Co. was the largest issuer of both shares and bonds, with almost US\$1.92 billion. The particularly high figure is the result of two factors: first, the absolute size of Muyuan's fundraising over the period and second, its relatively simple business structure, focusing on pig breeding with nearly all feed production provided primarily to its own demand. Hence 100% of financial flows to Muyuan can be regarded as financing of soy-involved segments. Appendix II includes a more detailed breakdown of bond and share underwriting.

Table 4 Top 10 share and bond underwriters (2013-17, US\$ million)

	Underwriters	Sum of adjusted value (in mln US\$)	Share in grand total adjusted (in mln US\$)
1	China Merchants Group	2603.63	36%
2	Guosen Securities	510.43	7%
3	China International Capital Corporation	425.77	6%
4	CITIC	372.28	5%
5	Soochow Securities	317.26	4%
6	Bank of China	276.54	4%
7	China Everbright Group	241.23	3%
8	Dongxing Securities	239.81	3%
9	Sinolink Securities	225.12	3%
10	New Times Securities Co Ltd	160.00	2%
	Cumulative share of top 10 underwriters	5372.04	75%
	Grand total of adjusted value	7140.08	100%

Data source: Multiple sources. Please see Appendix I. for more information.

Figure 7 Top 10 underwriters (2013-17, US\$ million)



Data source: Multiple sources. See Appendix I. for more information.

In addition to quantitative relationships, this research also identified qualitative relationships between financial institutions and companies with no clear starting date and/or specific value (Table 5). These relationships are usually described as 'cooperation' or 'client relationships' in original sources, without further quantitative details. These relationships usually indicate relatively stable and long-term partnerships between companies and loan-providing banks. However, companies tend to release such information on a voluntary basis for reputational reasons – it therefore lacks completeness and consistency.

Table 5 Qualitative relationships between 2013 and 2017

Group	Investor parent	Year
Huaying Agricultural Development	Agricultural Bank of China	2015
	Bank of China	2016
	Industrial and Commercial Bank of China	2014
	Ping An Insurance Group	2015
	Rabobank	2016
New Hope Liuhe Group	China Minsheng Bank	n/a
Sinograin	Agricultural Development Bank of China	n/a
Yurun Group	Bank of Nanjing	2014
	China Guangfa Bank	2014
Zhengbang Group	China Construction Bank	2012
	CITIC	2016
	China Development Bank	2018

Source: multiple source, please see Appendix IV.

In addition, CDP research found that some sample companies are more closely aligned with certain financial institutions than is implied by the financial flows alone, suggesting an already established relationship to drive actions to remove deforestation. For example, New Hope Group, the parent company of New Hope Liuhe, is one of the co-founders and principal shareholders of China Minsheng Bank (the seventh largest shareholder, owning 4.18% of its shares).³⁰ New Hope Group also operates in the financial sector, including insurance and securities companies, as well as a dedicated business providing guarantees and financing to companies along the agricultural supply chain, especially to small and medium-sized and/or rural companies.³¹ With such close relationships and an established finance division, New Hope Group has a good starting point to assess and manage risks linked to soy-driven deforestation, as well as to develop business cases in which the bank's and the client's exposures to deforestation risks can be assessed simultaneously.

Another example is Charoen Pokphand Group, the parent company of CP Group (China), which owns 10% of the shares of CITIC Ltd. (50% owned by CITIC Group) and 15.6% of the shares of Ping An Insurance Group. Both CITIC Group and Ping An Insurance Group have a considerable presence offering financial services to the soy sector.

As both soy-related companies and owners of financial institutions, such companies are possibly exposed to deforestation risks both through their own operations, and by providing finance to companies in the soy sector. On the other hand, with two identities, these companies face policy, regulatory, and civil society pressure regarding deforestation directed at both corporates and financial institutions.

30. *Top 10 shareholders of China Minsheng Bank*, jrj.com

31. *New Hope Group's operations in the financial sector*, www.newhopegroup.com.

INSTITUTIONAL INVESTORS

This section provides an overview of Chinese institutional investors investing in the shares of the listed companies in the research sample. Nineteen of the 30 companies analyzed are publicly listed, as per Table 6.

Table 6 Listed companies for each sector along the soy supply chain

Soy importing	Soy crushing	Animal feed manufacturing	Poultry breeding	Pig breeding	Cattle breeding
ADM	Yihai-Kerry Ltd (Wilmar International)	New Hope Liuhe	Sunner Development Co. Ltd	Muyuan Foodstuff Co. Ltd.	(No listed companies in the sample)
Bunge	Beidahuang Group	Wens Foodstuff Group	Huaying Agricultural Development Co., Ltd	Chu-ying Agro Pastoral Group	
Louis Dreyfus Company		CP Group (China)	WH Group	Tech-Bank Food Co., Ltd.	
COFCO		Tangrenshen Group	Yisheng Livestock & Poultry		
		DaChan Food (Asia) Ltd.			
		Zhengbang Group			

At the end of 2017, Chinese financial institutions collectively held more than US\$2.38 billion worth of shares in the sample companies, of which US\$1.55 billion was potentially associated with deforestation risks linked to soy. Among the types of institutional investors identified – mutual fund companies, investment companies and securities houses – mutual funds account for the majority of investment in shares of sample companies.³² The top 10 mutual fund management companies identified from shareholdings are listed in Table 7. The biggest investor in the soy supply chain is Bosera Asset Management Company, representing about 15% of the total shares held by all Chinese investors by value. Its largest holding is in Muyuan Foodstuff Co. Ltd, worth US\$199.6 million, and representing 88% of the total investment value (Figure 8). Most investors tend to concentrate their exposure to the sector in one dominant investee company, apart from China AMC, which has a more diversified portfolio. Among the listed companies covered by the sample, Muyuan received the most investment, at US\$555 million, followed by Yisheng Livestock and Poultry Breeding Company.



Table 7 Top 10 mutual fund companies (31 December 2017, US\$ mln)

	Top Chinese shareholders – mutual funds	Sum of adjusted investment value (US\$ mln)	Share in grand total of adjusted investment value (%)
1	Bosera Asset Management	226.76	15%
2	China Southern Asset Management (CSAM)	76.54	5%
3	E Fund Management	74.88	5%
4	Lion Fund Management	74.3	5%
5	Yinhua Fund Management	55.63	4%
6	China Orient Asset Management	54.36	4%
7	China AMC	35.86	2%
8	Fullgoal Fund Management	25.33	2%
9	Beixin Ruifeng Fund Management	23.55	2%
10	Changsheng Fund Management	23.79	2%
Cumulative share of top 10 investors:		671.00	43%
Grand total of adjusted investment value:		1548.48	100%

Data source: multiple sources, please see Appendix I. Research Scope and Methodologies

Figure 8 Top Mutual Fund Shareholders (31 December 2017, US\$ mln)



Data source: multiple sources, please see Appendix I. Research Scope and Methodologies

DISTRIBUTION OF CAPITAL AND EXPOSURE TO DEFORESTATION RISKS ACROSS SECTORS

Identified financial flows provided to soy businesses distribute very unevenly across sectors. As shown in Figure 9, both investment and credits are mainly clustered around the feed manufacturing, and poultry and pig breeding sectors, especially in the pig breeding sector.

Figure 9 Distribution of soy-related capitals across sectors

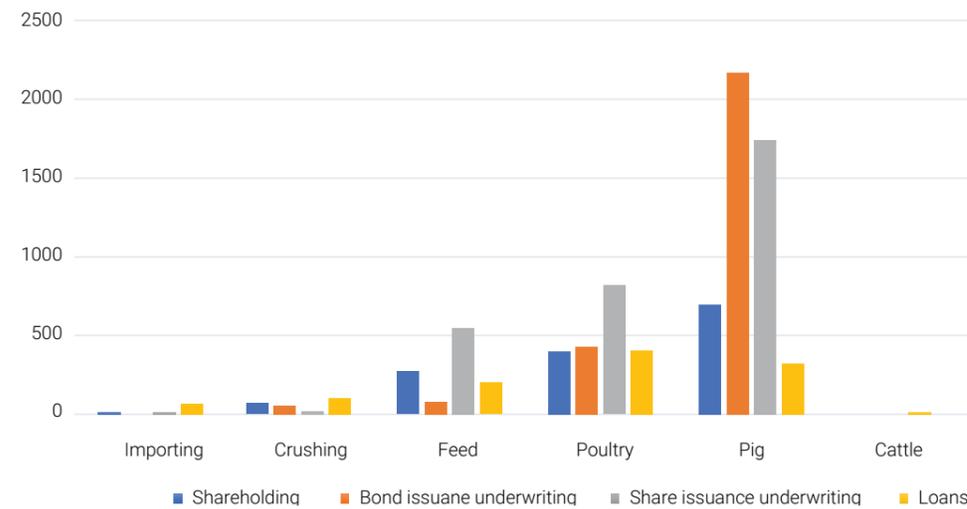


Table 8 Capital distribution across sectors

Soy-related Capital (US\$ mln)	Importing	Crushing	Animal feed manufacturing	Poultry breeding	Pig breeding	Cattle breeding
Shareholding	8.64	71.12	242.35	389.23	685.42	
Bond issuance underwriting	0	58.04	251.70	555.13	1915.07	
Share issuance underwriting	0	116.65	732.37	815.19	1903.83	
Loans	131.74	105.09	212.49	407.41	372.38	10.43

Source: See Appendix I. for methodology and data sources, . Shareholding data: 31 December 2017, Credits data: 2013-2017

In order to map financial flows more precisely with the origin of deforestation activities, CDP adopted an exposure indicator from Trase³³ – soy deforestation risk – to estimate financial flows linked to soy sourced from high deforestation risk area, Matopiba, Brazil. This step consisted of understanding the level of exposure to Brazilian soy faced by a specific sector, and then multiplying the percentage of soy sourced from Matopiba, a high deforestation risk area. According to Trase, five key importing companies collectively accounted for 50.33% of deforestation risks linked to China's soy imported from Brazil in 2017, and 51.70% of soy exported to China from Matopiba.³⁴ This implies a higher potential for corporate deforestation risks to be translated into losses borne by financial institutions. In total, CDP estimates that there was at least US\$378 million worth of underwriting, over US\$110 million of debt provided to soy businesses and US\$82 million worth of equity of listed companies covered in the research were linked to Brazilian soy sourced from such area of high deforestation risks.

It should be noted that the above analysis is based on the share of Brazilian soy imported in 2017. This figure increased dramatically in 2018 due to uncertainty around Sino-US trade relations, which has a big impact on patterns of Chinese soy imports. Over 2018-19, US soy exports to China are predicted to fall by 88.1%.³⁵ Much of the shortfall is likely to be made up with imports from Brazil, which are forecast to increase to 70% of the total. This implies that the uncertain trade situation is potentially driving massive deforestation in Brazil. It is estimated that 5.7 million hectare to even 12.9 million hectare of land in Brazil will be needed to cover US shortfall,³⁶ representing 25 times to 57 times of total deforestation area linked to China's demand for soy over 2013-2017.³⁷ The high dependence on Brazilian soy implies a higher level of exposure to deforestation risk among Chinese soy importers and their investors.



33. See Trase.earth for more details on this indicator.

34. Data retrieved from the Trase database.

35. "U.S. soybean exports to China fell sharply as of Sept 27 2018", www.chinagrains.cn.

36. Richard Fuchs, Peter Alexander, Calum Brown, Frances Cossar, Roslyn C. Henry and Mark Rounsevell. Why the US-China trade war spells disaster for the Amazon. Nature, March 2019.

37. According to Trase, about 223,000 hectare of deforested land was linked to soy exported to China over 2013-2017. <https://brazilian.report/money/2019/04/26/trase-brazil-soy-china/>

Chapter 3

International policies, initiatives and good practice

Recent years have seen growing calls from environmental campaigners and policymakers for action to tackle deforestation. Protecting the world's forests is becoming widely recognized as a critical component of climate action. International policies, initiatives and action taken by financial institutions are becoming increasingly high profile. This chapter introduces leading practices among banks, asset managers and asset owners that can hopefully inspire financial institutions in China.

INTERNATIONAL POLICIES AND INITIATIVE

In 2015, Article 5 of the Paris Agreement included forest conservation and restoration as a global climate goal, sending a strong political signal of the need to halt deforestation globally.³⁸ In the same year, the UN Sustainable Development Goals (SDGs) also included halting deforestation as a target, under SDG 15: Life on Land, which sets a goal of stopping deforestation and restoring degraded forests globally by 2030.³⁹ These international policies have challenged financial institutions and companies to include deforestation among their environmental considerations.

They are responding. For example, at the Global Climate Action Summit in September 2018, 50 investors managing over US\$5.6 trillion in assets launched a coalition calling for zero deforestation in Brazil's Cerrado region.⁴⁰ The Cerrado Manifesto urges the adoption in the region of sustainable land management practices and commits the financial institutions to mitigate climate change by reducing carbon emissions in their portfolios and addressing the financial risks associated with deforestation. The coalition sends a strong signal that the financial sector recognizes the risks from deforestation and intends to address the risks posed to its operations.

Organizations targeting deforestation in the financial sector are also putting pressure on investors across the world while working with financial institutions to develop practical and effective solutions. **CDP's forest program** aims to provide global investors with information on risk and opportunities linked to forest-risk commodities. In 2018, CDP requested information on these commodities on behalf of 656 institutional investors, with US\$87 trillion in assets, receiving 239 responses—an increase of 18% from 2017.⁴¹ It is clear that international investors are increasingly concerned about the impacts of deforestation on their portfolios.

In addition, the UN-backed Principles for Responsible Investment (PRI) and Ceres, a US non-profit organization, launched in 2017 the Investor Initiative for Sustainable Forests, supporting institutional investors in their engagement with companies to eliminate deforestation from their value chains.⁴²

In 2010, some of the world largest banks initiated the Banking Environment Initiative (BEI), convened by the Cambridge Institute for Sustainability Leadership (CISL). BEI aims to mobilize capital towards environmentally and socially sustainable economic development. Four years later, the BEI and the Consumer Goods Forum jointly launched the Soft Commodities Compact, to focus on four forest-risk commodities and to support deforestation reduction in agricultural supply chains. The compact aims to help the banking sector identify and implement policies that drive deforestation reduction practices in the agricultural supply chains of their client companies. In a recent seminar, the Compact recalibrated its strategy towards deeper bonding with leading international initiatives, enhancement of connections between banks and local companies, and revisions of its guidance. Despite progress made, the Compact also recognized that more effort, assessment and experience regarding the implementation of deforestation policies by the banking sector is needed to address such a complex challenge.⁴³

With mounting pressure and growing awareness, financial institutions and companies have been proactively taking much-needed action to curb deforestation driven by the expansion of agricultural production. Some have made progress that could show way Chinese financial institutions how they might tackle risks associated with deforestation.

Fact Box: CDP supply chain forest project

In 2016, CDP launched The Power of Procurement: catalysing action on deforestation risk in commodity supply chains from Latin America to China and Europe. The main objective of the project is to bring together the private sector from Latin America (Brazil, Peru and Colombia), China, and Europe to develop, adopt, and implement deforestation-free policies and practices in the supply chains of the key agricultural commodities that drive deforestation. Its aim is to facilitate increased collaboration between buyers and suppliers through the CDP supply chain program, and encourage large purchasing companies to take action and make public commitments to remove deforestation from their supply chains. So far, 13 companies have joined the CDP supply chain forests program to manage the deforestation risks in their supply chains. These companies include McDonalds, L'Oréal, Restaurant Brands International, and Kao Corporation.

38. Nancy Harris & Fred Stolle, "Forests Are in the Paris Agreement! Now What?", 5 January 2016, World Resources Institute.

39. UNEP Finance Initiative (2018), *Impact Investing Market Map*.

40. FAIRR Initiative (2018), *Cerrado Manifesto Statement of Support*.

41. CDP Global Forests Report (2017), *From Risk to Revenue: The investment opportunity in addressing corporate deforestation*.

42. "PRI and Ceres open collaborative engagement on deforestation to global investors", PRI Press Release, 12 September 2017.

43. The Banking Environment Initiative (BEI) and Consumer Goods Forum (CGF)'s Soft Commodities' Compact. <https://www.cisl.cam.ac.uk/business-action/sustainable-finance/banking-environment-initiative/programme/sustainable-agri-supply-chains/soft-commodities>

BANKS

HSBC Bank – Evolving sustainability risk and agricultural commodities policies



Palm oil

HSBC Bank has had a sustainability risk policy since 2002.⁴⁴ In 2004, it published an agricultural commodities policy dedicated to addressing deforestation risks in the value chain, covering palm oil, soy, cattle farming, and rubberwood.⁴⁵ Its policies on palm oil and soy are summarized below:

Palm oil production is widely recognized as a major driver of tropical forest conversion. HSBC Bank will not knowingly provide financial services to high-risk sectors with potential for unacceptable environmental impacts. With a considerable customer base in the palm oil sector, the bank continues to evolve its agricultural commodities policy. In its latest update, released in 2016, HSBC requires global customers involved in the palm oil supply chain to meet the three requirements below:

- ▼ Certification**
 client companies (including growers, traders, mills and refiners) must be members of the Roundtable on Sustainable Palm Oil (RSPO), with 100% certification achieved by December

2018. In addition, refiners and traders need to provide evidence of 'traceability' for excluding controversial sources;

- ▼ 'No Deforestation, No Peat and No Exploitation' (NDPE) commitment**

client companies need to make a public commitment to protect high carbon stock (HCS) forest and peatland, typically via a NDPE commitment.⁴⁶ Growers and mills are required to publish due diligence results on HCS forest and peatland;

- ▼ Independent and publicly available verification of HCS and peatland commitments.**

HSBC utilizes independent certification schemes, such as RSPO, which include broad membership, and global networks of experts, as a technical tool to manage risk exposure of client companies, and therefore its own risk exposure. Both banks and institutional investors can take advantage of such certification schemes and look for certified companies when assessing risk exposures and making strategic investments.⁴⁷



Soy

HSBC takes a similar approach to managing deforestation risks linked to the soy supply chain as to palm oil. It requires customers to acquire Roundtable of Responsible Soy (RTRS) certification, which provides a global zero-deforestation assurance.⁴⁸

In addition to its policies, HSBC has established a specific governance framework for sustainability risks, involving relationship managers, sustainability risk managers and its central group sustainability risk team. The relationship manager is the main contact point with customers, and is responsible for checking whether they meet relevant policies. Sustainability risk managers provide risk ratings for client companies on the basis of their compliance, and technical support to relationship managers. The central group provides higher-level guidance and is responsible for developing policies. HSBC will exit relationships with companies rated as 'non-compliant'.

The bank assures transparency by making information publicly available on its website.⁴⁹

As of the end of 2014, the bank had 176 customers from the palm oil sector, with the highest concentration in South-east Asia. HSBC estimated that its customer companies were responsible for 1.7 million hectares of sustainably certified palm oil plantations globally, accounting for 54% of total global certified plantations and around 52% of the global sustainable palm oil market. After the publication of the 2014 policy, 104 customers were deemed not willing or not able to become fully compliant. HSBC pledged to exit relationships with those companies as soon as its contractual obligations came to an end. In June 2017, as its requirement for its customers to meet its NDPE commitment came into effect, around 75% of its customers had become fully compliant. Currently, there are no Chinese companies active in the palm oil sector that are fully compliant with HSBC's policies. The bank says Chinese companies have difficulties meeting all its requirements, especially regarding the NDPE commitment.

Roundtable on Responsible Soy

The Roundtable on Responsible Soy (RTRS) is the only sustainable soy verification system that provides proof of 'zero deforestation'. This verification is based on five principles:

- ▼ Legal compliance and good business practice;**
- ▼ Responsible labor conditions;**
- ▼ Responsible community relations;**
- ▼ Environmental responsibility; and**
- ▼ Good agricultural practice.**

In particular, the fourth principle requires soy growers to: measure and assess the environmental impacts of soy production; minimize pollution and manage emissions responsibly; make efforts to reduce GHG emissions; and expand soy cultivation responsibly.

Financial institutions can become RTRS members and commit to encourage companies within their value chains to establish or improve sustainable soy supply chains and procurement. Rabobank Group, RobecoSAM, Robeco, Standard Chartered Bank, the International Finance Corporation, and HSBC have committed to use RTRS as a deforestation risk management tool and to incorporate its application into financial decision-making processes and evaluations of client or portfolio companies.

Source: www.responsiblesoy.org, "New version of the RTRS soy production standard – approved", June 2016, accessed 23 May 2019.

ING Group – Sustainability performance-based loans

Dutch financial services firm ING Group has developed its environmental and social risk framework (ESR Framework) to actively manage social and environmental risks in its direct and indirect operations, as well as provide essential information to inform business decisions and ensure responsible financial services.⁵⁰

The ESR Framework requires that all financial products and services are screened in regard to both the client company and the transaction, subject to the ESR Exclusion Policy and ESR Sector Policies.

ING will first check whether operations of client company align with ING's values, its underlying human rights and environmental management policy, and its ESR Exclusion Policy;

The ESR Exclusion Policy restricts financial services provided to certain activities in areas including forestry and agro-commodities, precluding the bank from doing business involving timber from illegal logging, deforestation of tropical rainforest, or removal of primary or high-conservation value forests.

ING recognizes that certain sectors are more likely to bring environmental and social risk exposures. Client companies not falling within the scope of its ESR Exclusion Policy, proceed to an advanced risk assessment subject to the ESR Sector Policy. In particular, the ESR Sector Policy for Forestry and Agrocommodities applies to all products companies operating in the forestry and agrocommodities sector. Under this sector policy, plantations, harvesting, milling, refining and processing of six agrocommodities (i.e. coffee, tea, cocoa, cotton, soy and palm oil) are considered as activities related to environmental and social risks that require further assessment. ING has also developed technical tools to identify risks that are most associated with land use, loss of biodiversity, degradation of ecosystem services and natural stock depletion, etc. To manage these risks, ING has developed assessment tools with environmental and social considerations, and it continuously encourages clients to move towards best practice.

In addition, the sector policy also encourages programmes and certificates relevant to each commodity, such as the RTRS and Basel Criteria for Responsible Soy Production.

44. HSBC, Introduction to HSBC's Sustainability Risk Policies, July 2018.
 45. HSBC, HSBC Agricultural Commodities Policy, February 2017.
 46. RSPO (Roundtable on Sustainable Palm Oil), Certified Companies searchable database.
 47. Ibid
 48. RTRS, How RTRS offers access to responsible soy, website summary.
 49. HSBC, Forestry and agricultural commodities sustainability, 2014-17 summary.

50. ESR Framework, ING Group

In addition, ING Group also demonstrates good practice in terms of innovative financial products that facilitate sustainable agricultural supply chains. The bank has developed an innovative loan product to help client companies transition towards sustainable practices. It offers sustainability performance-linked loans where the interest rate for a part of the loan is reduced if the borrower achieves agreed ESG goals.⁵¹ Compared with 'green loans', which tend to be hypothecated for specific projects or activities, this product is linked to a company's overall sustainability performance. In November 2017, Wilmar became ING's first client in Asia and the first client partner in the palm oil industry to receive such a loan.⁵² ESG ratings firm Sustainalytics will track a customized set of ESG indicators to monitor Wilmar's progress in achieving its ESG commitments. This loan product offers a strong financial incentive for companies who are keen to improve their ESG performance.

JPMorgan Chase & Co. – Firm-wide environmental and social policy

J.P. Morgan believes that understanding its clients' environmental and social (E&S) performance relates closely to its own risk assessment and management.⁵³ A lack of E&S management can damage clients' operations, reputation, and long-term economic viability, J.P. Morgan's own reputation, and the communities and environments in which they operate. In 2017, the bank released a firm-wide environmental and social policy to guide its integration of social and environmental perspectives into regular decision-making.

To manage deforestation risk in its portfolio, as a CDP signatory and a member of the Soft

Commodities Compact, J.P. Morgan has designed a tailored approach to manage forest risk for sensitive sectors.⁵⁴ J.P. Morgan commits not to provide financial services to activities such as:

▼ **Illegal logging:** Transactions with entities or projects that collude with or are knowingly engaged in illegal logging. Clients that process, purchase, or trade wood products from high-risk countries (i.e., where more than 50% of the harvest is illegal) must have certifiable systems in place to ensure that the wood they process or trade comes from legal sources. Due diligence includes company representations as to its practices, monitoring and chain of custody certification (e.g. Forest Stewardship Council-controlled wood standard) for illegal logging;⁵⁵

In addition to restricted services to certain activities, the bank conducts an environmental and social review on transactions related to sensitive sectors determined by the E&S policy. J.P. Morgan applies the Equator Principles as the framework for these reviews. The soft commodities sector is considered a sensitive sector that requires an advanced review.

Three soft commodities are covered: palm oil, soy and timber. For soy specifically, the bank requires client companies involved in soy production to demonstrate a commitment to the relevant responsible practice framework – the RTRS. Any transaction would also be required to go through additional due diligence procedures and be subject to additional examination for potential policy issues. In addition, J.P. Morgan strictly prohibits financing of plantations on forested areas (including previously planted areas) or on heavily degraded forestland.



51. ING, Sustainability Improvement Loan factsheet.

52. ING, "Wilmar and ING collaborate on sustainable loan", 2018 press release.

53. J.P. Morgan, *Environmental and Social Policy Framework*, April 2014.

54. J.P. Morgan, *2017 Soft Commodities Compact Report*.

55. J.P. Morgan Chase & Co. *Environmental and Social Policy Framework*.

INSTITUTIONAL INVESTORS

Forward-looking institutional investors have also taken action to mitigate deforestation risk in their portfolios

KKR – ESG policy and KPIs

KKR is an investment firm managing multiple alternative asset classes, including private equity. The company believes that it is its duty to maximize the returns on investment for its clients, and that ESG risks should therefore be managed to avoid reducing an organization's ability to create and preserve economic, environmental and social value for itself and its stakeholders.

In 2016, KKR developed an ESG policy to define its approach to integrating ESG risks and value creation opportunities into the investments made by its private equity fund.⁵⁶

In addition to its ESG policy, KKR identified a series of global challenges that can potentially impact investment performance, including sustainable agriculture and climate change, around which it collaborates with investee companies. For example, in response to increasing global demand for food, KKR worked with Yuehai Feed Co., and COFCO Meat to explore more efficient production solutions that produce less pollution.

To track the progress of ESG management within its investee companies, KKR has defined a series of qualitative ESG key performance indicators (KPIs), in line with relevant PRI principles, on which it reports publicly. For example:

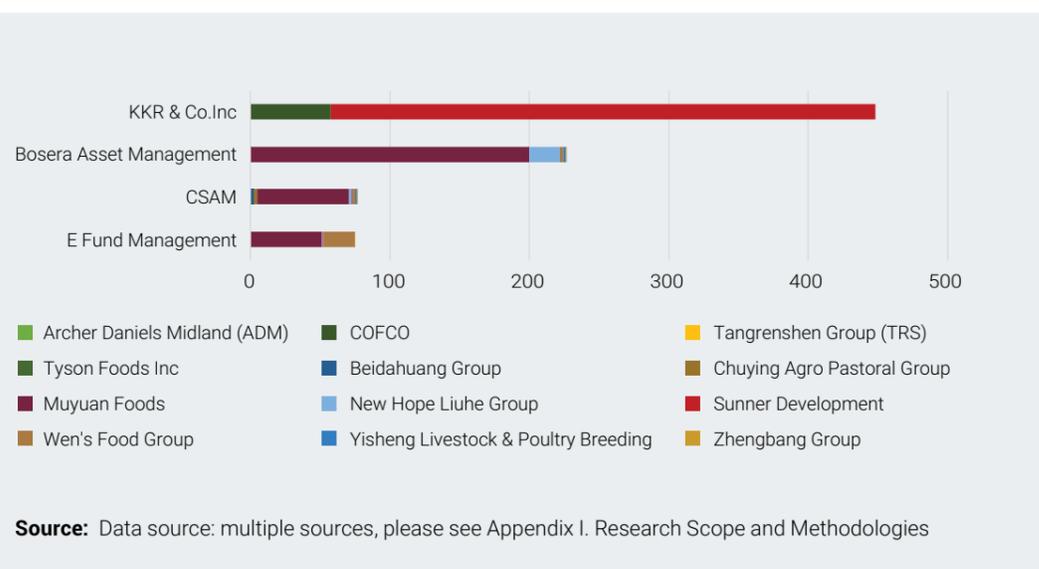
▼ **Responsible Sourcing Initiative (PRI Principle 2):** KKR commits to enhance portfolio companies' policies and procedures for opportunities associated with supply chain responsibility.

▼ **Transparency and stakeholder engagement (PRI Principle 3):** KKR commits to encourage portfolio companies to report on their sustainability and ESG efforts to key stakeholders.

As a US investor, KKR has a significant presence in China's soy supply chain. For example, as of the end of December 2017, it owned US\$443 million of the shares of COFCO and Sunner Development Co., Ltd (Figure 10). KKR has been one of the top shareholders of Sunner since 2013, owning 16.14% of the company.⁵⁷

KKR takes deforestation and land-use management into consideration when making investment decisions, but recognizes the opportunities that can be presented by companies which are determined to improve performance. For example, Santanol, an Indian sandalwood oil producer and one of its portfolio companies, is highly exposed to deforestation risks but is highly attractive to KKR because of its objectives of addressing social and environmental challenges and its concrete deforestation risk management plan.⁵⁸

Figure 10 KKR and Top 3 Chinese Shareholders (31 December 2017, US\$ mln)



Source: Data source: multiple sources, please see Appendix I. Research Scope and Methodologies

ASSET OWNERS AND ASSET MANAGERS

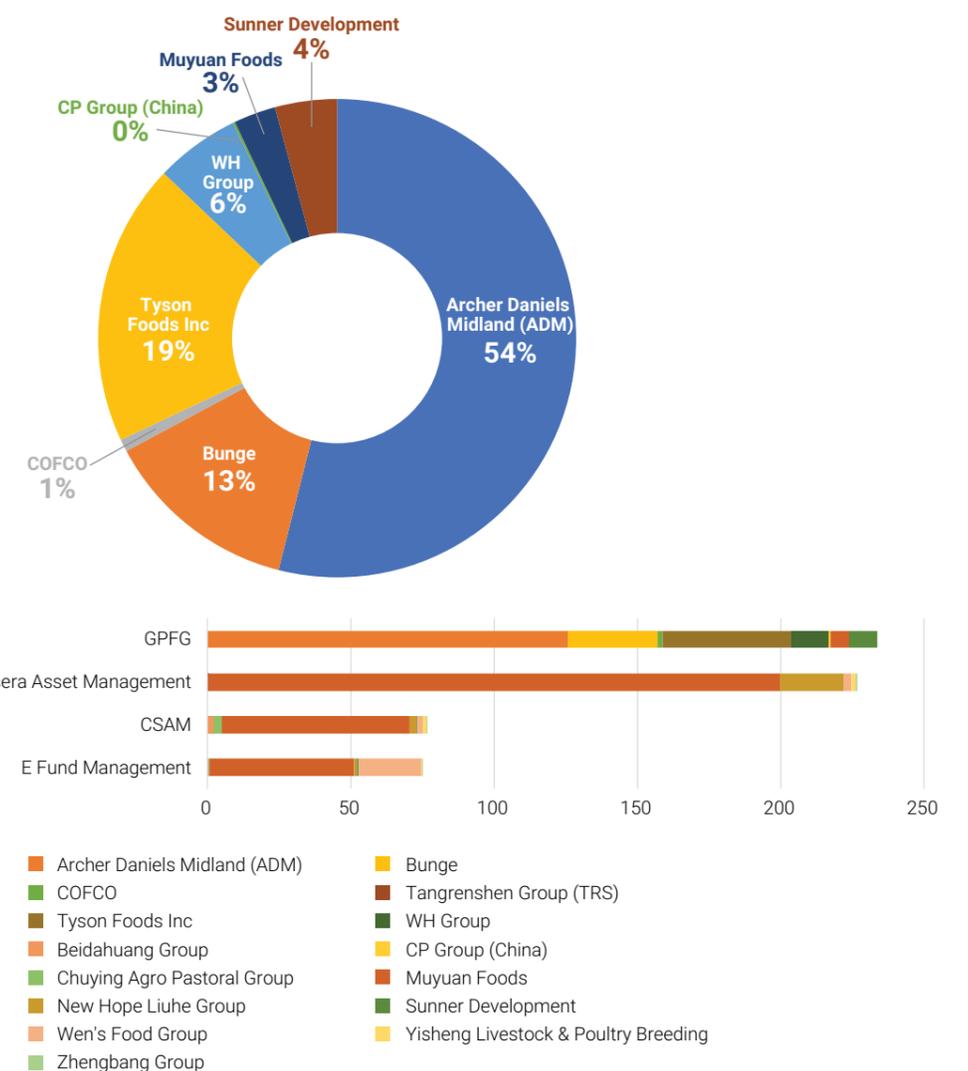
Norwegian Government Pension Fund Global and NBIM

Norway's Government Pension Fund Global is the world's biggest sovereign wealth fund, with around US\$1 trillion in assets.⁵⁹ Its asset manager, Norges Bank Investment Management (NBIM), is charged with ensuring that the fund is managed according to its ethical guidelines and the expectations of the Norwegian Parliament with regard to social and environmental sustainability.⁶⁰ As disclosed in the fund's 2017 annual report, NBIM divested from three

companies involved in palm oil production and one company involved in soy production in Brazil because of deforestation concerns.⁶¹

The fund is an investor in several of this report's sample companies, with shares worth over US\$233 million as of 31 December 2017. These include holdings in WH Group (US\$13.3 million), Sunner Development Co., Ltd. (US\$9.8 million) and Muyuan Foodstuff (US\$6.6 million).

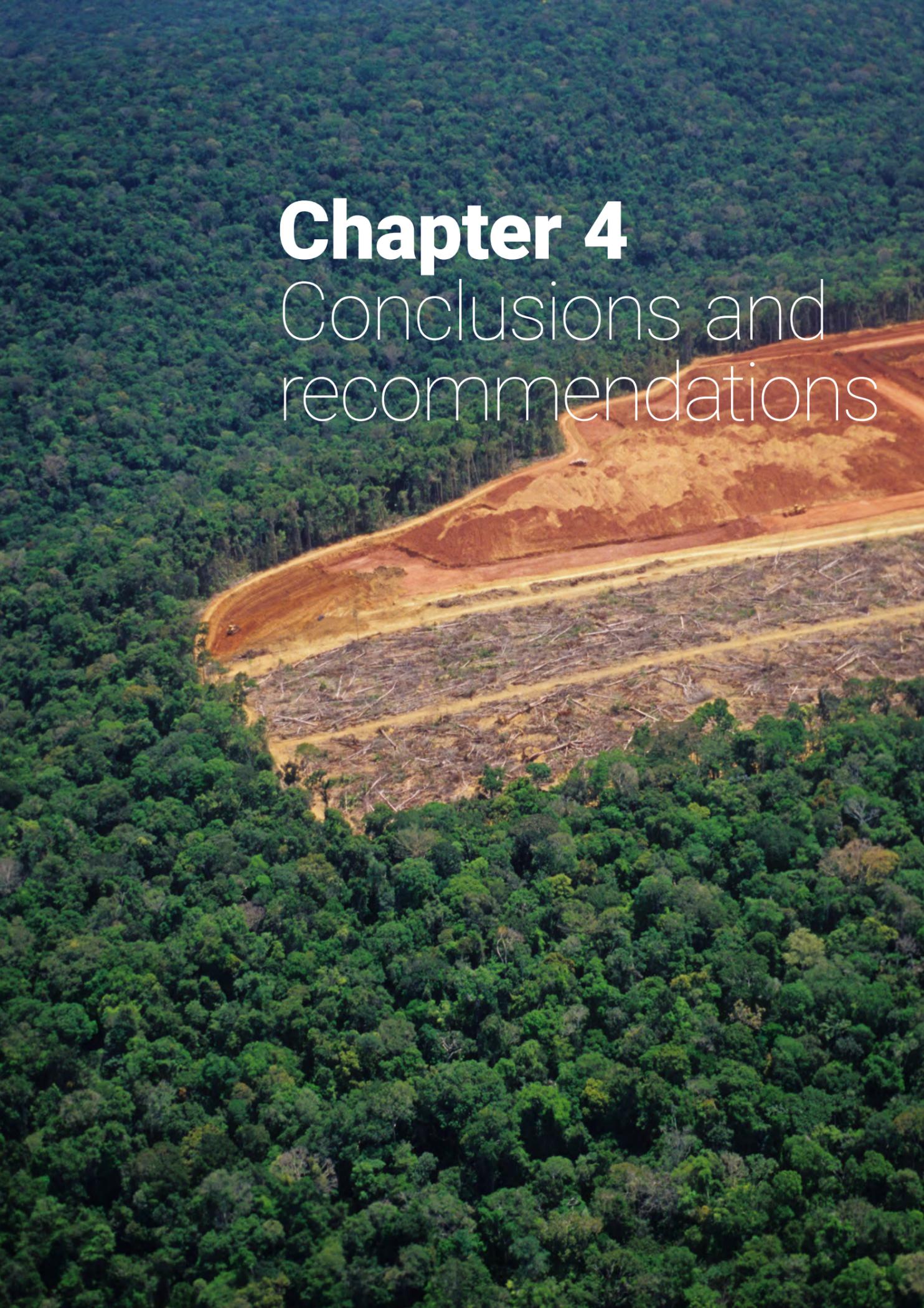
Figure 11 Investment of GPFG in sample companies (31 December 2017, US\$ mln)



Data source: multiple sources, please see Appendix I. Research Scope and Methodologies

56. Kohlberg Kravis Roberts, *Private Equity ESG Policy*, July 2016.
 57. Top 10 shareholders of Sunner Development Co., Ltd., jrj.com
 58. Aaron Dickie, "Santanol and Sustainable Solutions", 13 September 2016, KKR

59. Norges Bank Investment Management website.
 60. Trevor Nace, "Norway Just Banned Deforestation", 18 July 2016, Forbes.
 61. Norges Bank Investment Management, Government Pension Fund Global 2017 Annual Report.



Chapter 4

Conclusions and recommendations

CONCLUSIONS

With its growing demand for soy, China is likely to remain the largest importer of the commodity, and Brazil is likely to remain its largest supplier, potentially posing deforestation risks to Chinese companies and financial institutions active in the soy supply chain.

As Sino-US trade tensions create further uncertainties in the trade of soy between China and the US, higher Chinese demand for Brazilian soy is likely to worsen deforestation in that country. Given China's current dominant role in the Brazilian soy market and this growing demand for soy, it is important to highlight the close connections between China's financial sector and deforestation linked to soy importing and processing. This research aims to highlight deforestation risks as a missing part of the considerations that lie behind everyday financial decisions.

CDP investigated secondary corporate financial data of 30 key companies involved in the soy supply chain in China, covering importing, crushing, animal feed manufacturing and the poultry, pig and cattle husbandry sectors, and identified the top financial institutions active in the soy sector. In total, during 2013-17, Chinese banks extended US\$5.2 billion in loans to sample companies, of which 40.09%, or US\$2.1 billion, was exposed to deforestation risks. Underwriters active in the soy sector raised over US\$7.1 billion in bonds or shares potentially associated with deforestation risks. Institutional investors held over US\$2.38 billion of shares issued by sample companies as of the end of 2017, of which 64.85% (US\$1.55 billion) was estimated to be exposed to deforestation risks.

Chinese financial institutions exposed to the soy sector show varying levels of awareness of the environmental impacts involved, and have taken limited, if any, steps to address them. None of them have processes in place to identify and assess the overall percentage of their loans and investments related to forest-risk products in general and the associated deforestation risks. A few financial institutions have recognized the importance of assessing exposure and risks linked to climate change, and have made efforts to seek methodologies, expertise and data to do so, while the majority of financial institutions identified as being active in the sector are not aligned with global environmental policies and targets.

The awareness of and response to environmental impacts also vary widely across sample companies, resulting in a complicated landscape for the financial sector to navigate. International companies (mainly soy importers) tend to provide much better and complete data regarding their environmental management, including tackling climate change and deforestation issues. Chinese companies, however, have not shown sufficient awareness and practice beyond pollution control, and only a few companies have undertaken actions intended to address climate change.

RECOMMENDATION

Investors, banks and debt and equity underwriters need to have a clear overview of their exposure to deforestation risks by ensuring that the companies they finance are transparent on this issue. Based on the findings of the research, we offer below step-by-step recommendations for good practice that could be adopted by Chinese financial institutions.

Starter Level

1 Understand exposure to deforestation risks in existing investment

Financial institutions should start by understanding the significance of forests to the mitigation of climate change. Creditors and investors should conduct customized assessments of their exposures by assessing the amount of capital linked to the soy sector.

Banks can categorize client companies and transactions in the context of avoiding exposure to deforestation. Banks should track and assess transactions related to the soy sector, document the types of products traded, and the companies involved as well as the origins of traded commodities when providing letters of credit. In addition, banks should track the uses of proceeds of loans provided to companies involved in high-risk sectors, such as sectors along the soy supply chain covered in this research. With this information, banks are able to form an overview of the proportion and value of their financings provided to soy-involved production, trade and

other business activities, and develop a profile of companies with significant involvement in forest-risk products.

For **underwriters and shareholders** selling and/or holding bonds and shares, a list of portfolio companies involved in sensitive sectors should be drawn up. **Underwriters** should exercise caution about the purpose of bond and share issuances they underwrite, especially for long-term and perpetual bonds. Companies in exposed sectors should be required to disclose the purposes to which they plan to put the proceeds of bonds and shares issues. With such information, underwriters can filter out investments exposed to deforestation risks. As for shareholdings, investors can adjust financial flows made at the corporate level to assess the proportion that is soy-related.⁶²

2 Analyze deforestation risk

Both creditors and shareholders can further gauge their sensitivity to deforestation risks by investigating how dependent on soy their clients or portfolio companies are. Among other data sources, they can use information disclosed by companies to CDP detailing their exposure to forest-risk commodities; similarly, they should encourage client and investee companies to disclose data through a standardised and global reporting framework, such as that provided by CDP, to inform effective analysis. Essential information includes the share of soy in production processes or trade volume, the share of the production cost associated with soy, the

elasticity of turnover in response to the soy price, etc. Additionally, it is also crucial for financial institutions to learn directly from companies about their awareness of climate risk and deforestation in their value chain, as well as their strategies to address those issues. Companies with high dependence on soy, large shares of their costs associated with soy, and insufficient awareness of related climate issues may perform poorly in the long run, as they may fail to anticipate regulatory, legal and operational costs that affect their future viability. These costs could eventually translate into losses for their investors and creditors.

Advanced level

3 Develop forest risk management policies

To monitor, manage and remove deforestation from their investments and financial services, financial institutions should develop public and time-bound policies to integrate considerations of forest risk into their decision-making processes. These policies should prevent conversion of natural forest into agricultural land, define clearly the governance approach to ensure oversight, monitor and manage deforestation risks, and integrate both risks and opportunities into business strategy.

Banks should develop policies to guide the integration of environmental impact assessments into traditional due diligence and strategic planning for future financing plans. For loans and letters of credit provided to companies operating in sensitive sectors or for sensitive purposes, banks should employ additional due diligence, including additional impact assessments regarding deforestation conducted by third-party organizations.

Underwriters should introduce relevant policies to incorporate considerations of forest risk into due diligence processes for bond and share issues. Underwriters should take current forest risk management and relevant long-term strategic planning of client companies into consideration, especially for long-term and perpetual bonds, to encourage long-term strategic planning and secure issuers' future viability.

Shareholders should develop policies to guide the integration of environmental management into investment decisions. Shareholders should select a range of indicators that can be used to monitor and track the progress of environmental management by potential investees and portfolio companies. Indicators can be both quantitative (e.g. GHG emissions) and qualitative (e.g. awareness of climate change risk and deforestation, commodity supply chain transparency and traceability, etc.).

4 Collaborate with companies

At this stage, financial institutions should develop a clear method for engaging with client/portfolio companies and verification of supplier compliance with their forest policies.

Underwriters can encourage companies to develop environmental management policies incorporated with forest risk management. For companies operating in the upstream part of the soy supply chain, underwriters can strongly encourage companies to obtain sustainability certifications, such as RTRS. Evidence of environmental management by companies can also contribute to risk mitigation.

them to build capacity (either by themselves or through third-party organizations/experts). Shareholders can provide access to technical support for effective disclosure of high-quality data and information related to forest and climate risk management that can be used for investment analysis, especially from those companies that have undertaken action to address climate change.

Banks and shareholders can encourage client/portfolio companies to obtain credible certifications and/or to source commodities from certified sources.

Shareholders can engage with portfolio companies regarding ESG management target-setting and progress tracking, and by helping

APPENDIX I: RESEARCH SCOPE AND METHODOLOGY

Further Reading

- ▼ UNEP FI (2015), *Bank and Investor Risk Policies on Soft Commodities: A framework to evaluate deforestation and forest degradation risk in the agricultural value chain*
- ▼ UNEP FI (2016), *Guidelines for Establishing the Green Financial System*
- ▼ UNEP FI (2018), *Impact Investing Market Map*
- ▼ CDP (2017), *From risk to revenue: The investment opportunity in addressing corporate deforestation. 2017 Forest Report*
- ▼ CDP (2015), *Soybean overlooked? The investor case for deforestation-free soy*
- ▼ CDP (2017), *Financial Institution Guidance: Soft commodity company strategy*



This research set out to investigate financial flows to high-impact companies in the soy supply chain in China, identifying key financial institutions, and estimating the amount of capital exposed to deforestation risk driven by soy production. This chapter introduces the universe of 30 companies identified as involved in the soy supply chain, the rationale of company selection, and the methodology used to analyze the capital at risk.

Research scope

The research focused on companies operating in the upstream and midstream parts of the soy supply chain in China that are most exposed to deforestation risk, namely:⁶³

- ▼ **Upstream:** soy importers and soy crushers.
- ▼ **Midstream:** mainly animal feed manufacturers and livestock breeding companies. The research covered poultry, pig and cattle feed manufacturers which account for 88% of soy used in feed production in China,⁶⁴ and poultry, pork and cattle producing companies.

Some companies engage in various stages of the soy supply chain, for example Wens Foodstuff Group, which is a vertically integrated company operating in pig and poultry feed manufacturing, pig and poultry breeding, pork processing and retailing sectors. In such cases, the research covers financial flows only to segments of interest: in the case of Wens Foodstuff Group, to its feed manufacturing and breeding segments, excluding downstream segments (food processing and retailing). The research was not extended to downstream sectors primarily due to a lack of essential corporate data, such as reliance on imported soy.

Company selection methodology

Companies were selected on the basis of their market impacts. **Importers** were selected if they were among the biggest importers of Brazilian soy into China according to Trase data.⁶⁵ **Crushers and other meat manufacturers** were identified by market share using secondary data.⁶⁶ The full list of the 30 sample companies identified, with cumulative market shares, is displayed in Table A1. To provide a representative financing landscape, the research aimed to include the majority of market players. However, for the pig and cattle breeding sectors, the research covered a much smaller share of the market, given market segmentation and data availability. In fact, these two sectors are more disaggregated than other sectors covered by the research.⁶⁷

As there is often limited publicly available company financial data, especially for non-listed and state-owned companies, the research looks into their parent companies or subsidiaries, and uses financial flows to parent companies or subsidiaries as proxies to identify key financial institutions. For example, New Hope Group, which is non-listed and has little public data regarding its relationships with financial institutions, is represented in the research by its listed subsidiary, New Hope Liuhe. Yihai-Kerry Ltd, owned by parent Wilmar International, is represented by that company. Chinatex, a non-listed, state-owned soy crushing company, was acquired by COFCO in 2016, and was regarded as COFCO for the purposes of the analysis.

63. Global Canopy Programme (2016), *The Forest 500: 2016 Company Selection Methodology*.

64. Solidaridad (2017), *China's Soy Crushing Industry: Impacts on the Global Sustainability Agenda*.

65. Trase, 2003-2017 Brazilian soy tracking report.

66. Data sources include Solidaridad and Global Canopy reports, and databases such as those maintained by Euromonitor, Waganet, and Emis. These sources provide information on market share and production capacity of stated companies.

67. For the pig breeding sector, the research focused on a manageable number of major companies with sufficient public data, representing 13.37% of total market. As the cattle breeding sector is the least industrialized and most disaggregated, the research includes the biggest market players, with a total market share of 2.04%.

Table A1 Sample companies in the research

Importing	Crushing	Animal feeds	Poultry breeding	Pig breeding	Cattle breeding
Cargill	Yihai-Kerry Ltd	New Hope	Wens Foodstuff Group	WH Group	Haoyue Group
Bunge	Jiusan Group	New Hope Liuhe	New Hope Group (New Hope Liuhe)	Wens Foodstuff Group	Inner Mongolia Kerchin Cattle Group
ADM	Beidahuang Group	Wens Foodstuff Group	Doyoo Group	Muyuan Foodstuff	
Louis Dreyfus Company	Bohi Group	COFCO	Sunner Development Co., Ltd	CP Group	
COFCO	Louis Dreyfus Company	CP China	Huaying Agricultural Development	Chuying Agro Pastoral Group	
	Chinatex (COFCO)	Tangrenshen Group	DaChan Food	Zhengbang Group	
	Bunge	DaChan Food	WH Group	New Hope Liuhe	
	Cargill	Zhengbang Group	Yisheng Livestock&Poultry	Tech- Bank Food	
	COFCO		Tyson		
	Sinograin		Yurun Group		
Cumulative market share: 52.20%	Cumulative market share: 85.86%	Cumulative market share: 70.0%	Cumulative market share: 52.80%	Cumulative market share: 13.47%	Cumulative market share: 2.04%

Financial flow analysis methodology

The analysis seeks to highlight the linkages between China's financial sector and soy-driven deforestation as well as raise awareness of those Chinese financial institutions that provide finance to companies along the soy supply chain. It mainly focuses on bilateral financial relationships between Chinese financial institutions and sample companies. There are three types of financial flows analyzed: loans, underwriting and shareholdings.

Credits

Loans

Loans covered in this research include corporate loans, revolving credit facilities and mortgages. Financial institutions providing loans are commercial and policy banks. Loans and credits are the most common financing measures. Banks' potential environmental impacts usually arise from the provision of financial services to client companies operating in sensitive sectors. In the case of deforestation, banks might indirectly finance deforestation activities via business relationships with companies involved in the production, trading and processing of forest-risk commodities. In the case of mortgages, banks can be directly exposed to environmental risks if assets taken as collateral are directly affected by environmental impacts.

Underwriting

The underwriting of the issuance of both shares and bonds are analyzed for this research. Underwriters' potential environmental impacts arise from their exposures to the reputation, compliance, creditworthiness and profitability of client companies.

Investment

Shareholdings

Shares of listed companies can be bought by investment companies, securities houses, mutual funds, private equity funds and the investment departments of banks or investment banks. Financial institutions investing in shares are known as institutional investors. They are exposed to environmental risks from their partial ownership of portfolio companies operating in sensitive sectors. Thus the reputation, compliance and profitability of portfolio companies is closely linked to those of the institutional investor.

Relationships

In addition to quantitative financial flows in the forms noted above, the research also collected qualitative information describing 'relationships' between sample companies and financial institutions.

This research sources bilateral financial data from major databases including Thomson Reuters Eikon, Bloomberg, Trade Finance Analytics, Thomson EMAXX and WIND, as well as from corporate publications, such as annual reports. For loans and stock or bond underwriting, the research collected data covering 2013 to 2017.⁶⁸ For shareholding data, the research utilizes data as of 31 December 2017. Qualitative information was collected from corporate websites and media articles.

The methodology of estimating financial flows at the corporate level, and the amount associated with soy, is explained as follows:

For listed companies:

Data collection:

Shareholding information was sourced from annual reports, stock information websites,⁶⁹ and the databases listed above. Bilateral information regarding other financial flows are mainly sourced from databases.

Estimation of financial flows to soy-involved business activities:

Data collected from public sources described financial flows at the corporate level. Companies redistribute finance raised into their various business activities and operational purposes, some of which involve soy, and some which do not. In order to acquire a precise estimation of capital exposed to soy-driven deforestation, the data had to be adjusted from the corporate level to the soy-related segment level.

68. Given that applying for loans and the issuing of bonds and shares are not necessarily continuous processes, this research utilizes a range period as opposed to a single time-point in determining its data sample.

69. Specifically, www.jrj.com.cn/

To do so, adjusters were developed to approximate the share of capital specifically used for the soy trade and soy-related production, and therefore exposed to soy-driven deforestation risk. For shareholdings, the adjuster could describe the proportion of the corresponding soy-related segment asset compared with the total corporate asset, calculated from corporate annual reports. However, as information disclosed in annual reports varies largely across companies, the more commonly disclosed indicator, segment revenue, was used as an alternative. For loans and underwriting, the adjuster could be the proportion of soy-related segment capital expenditures (capex) in total capital expenditures, also known as additions to fixed assets. The closest alternatives were segment liabilities, followed by segment assets and segment revenue.

For companies with little publicly available financial information, in-depth interviews were undertaken as a complementary approach to collect bilateral financial information.

For non-listed companies:

Similarly, the methodology of finding financial information relating to non-listed companies was consistent with that of listed companies, except that it excluded share listings. Corporate-level bilateral data was collected from the databases listed above, and media articles if appropriate.

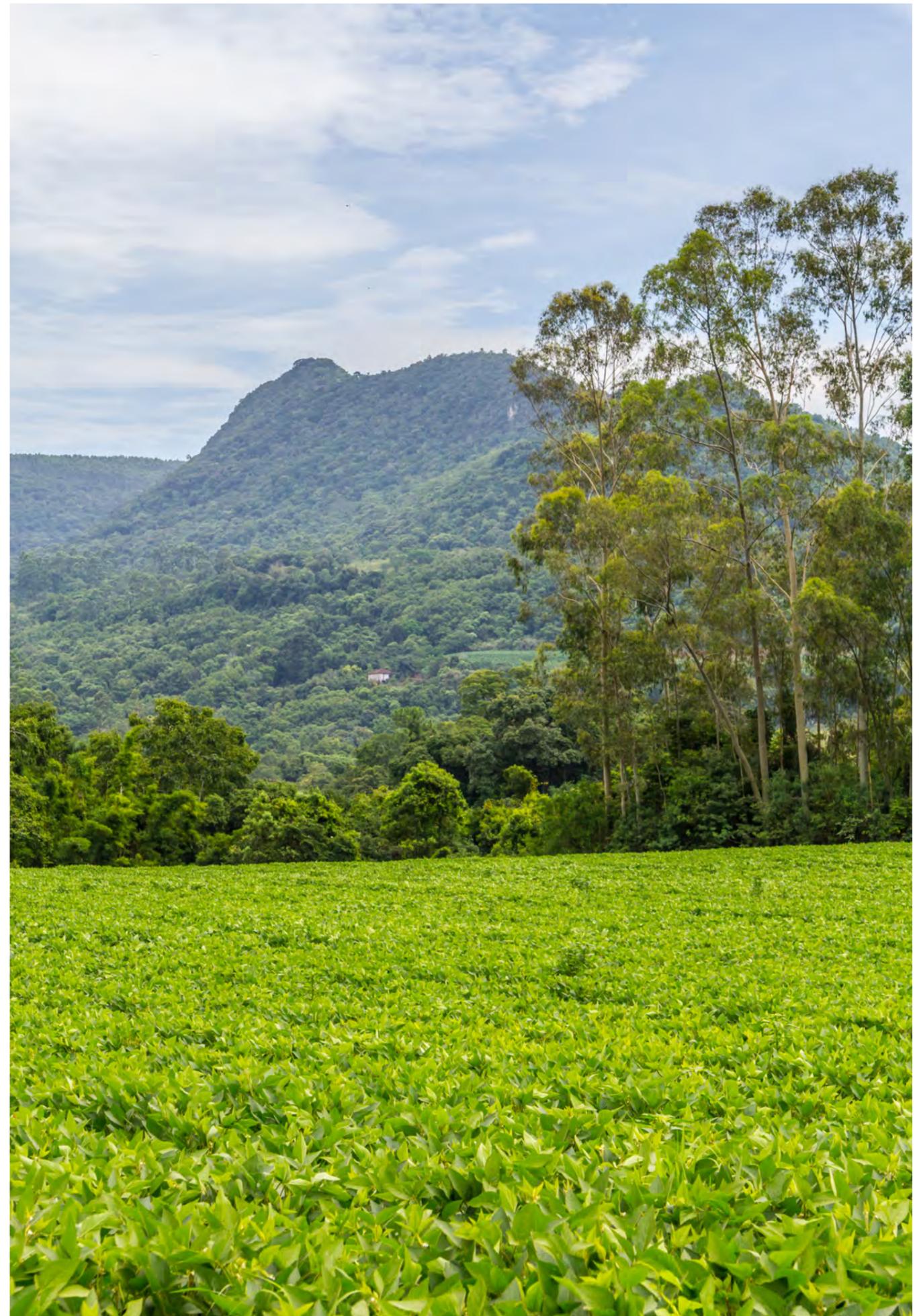
For non-listed companies, financial flows were in forms of loans and bond issuance underwriting only. Thus, the share of capital expenditure related to soy was used to adjust capital values. The closest alternative was segment liabilities, followed by segment asset and segment revenue.

By collecting the financial flows to sample companies it was possible to rank financial institutions financing soy-driven deforestation and estimate the extent of exposure to soy-driven deforestation risk faced by Chinese creditors and investors.

Methodology of estimating soy-related capital across sectors

Similar to the methodology used for estimating total soy-related financial flows, CDP's research breaks down financings across sectors using segment adjusters, measured by segment asset, liabilities, revenue, or capital expenditure accordingly. In 2017, 53% of imported soy to China was sourced from Brazil.⁷⁰

In estimating financial flows exposed to deforestation risks, CDP adopted an exposure indicator used by Trase⁷¹ – soy deforestation risk. This indicator measures the annual rate of soy deforestation risk, defined by the total area (ha) of deforestation and habitat clearance over the past five years that is associated with soy expansion averaged over the five-year period (2013-2017). According to Trase, about 50.33% of deforestation risks was associated with China's soy import via 5 key soy importing companies covered in the research⁷² and they collectively sourced 51.7% of soy exported from Matopiba in 2017. In total, about 10% of Brazilian soy exported by these 5 companies was considered to be exposed to deforestation risk linked to high risk area and therefore potentially cascade higher degree of risks along the soy supply chain in China.



70. China Industry Information Network, "Analysis of China's soybean imports and import sources in 2018", accessed 11 April 2018.

71. Please see trase.earth for more about soy deforestation risk.

72. Data retrieved from the Trase database.

APPENDIX II: BOND AND SHARE UNDERWRITERS

Research limitations

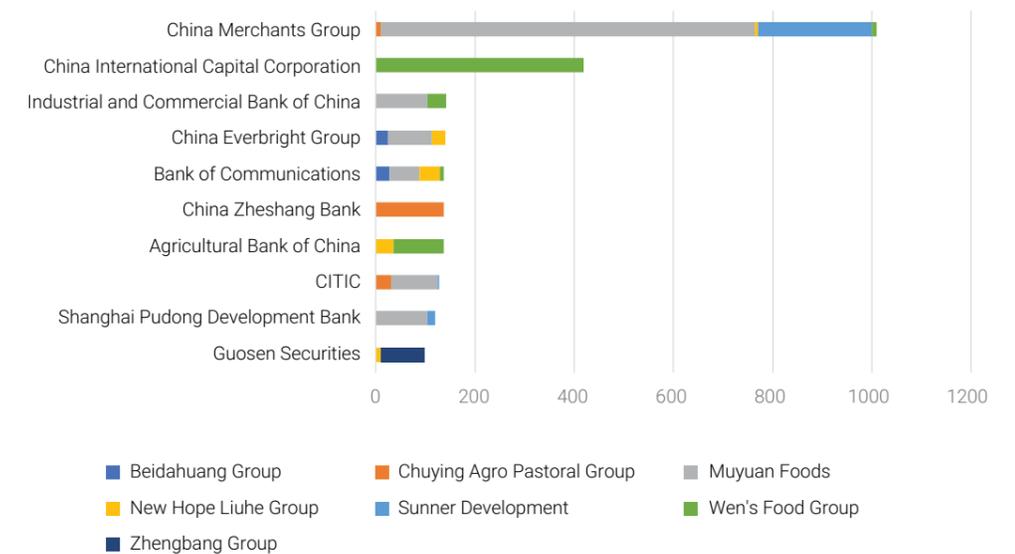
The research methodologies have three main limitations. First, the analysis is based on publicly available data and information, which imposes limitations relating to data availability, especially with non-listed and state-owned companies. Major financial institutions and their financial flows identified do not provide a comprehensive picture of the soy sector, nor of the financial flows related to deforestation. The extent and quality of data collection could be improved with greater engagement with the financial sector.

Second, this research only covered 2.04% of the cattle breeding industry and 13.47% of pig breeding industry due to industry segregation and data availability. This might result in an unrepresentative sample that does not accurately reflect the overall financial flows within these two sectors.

Third, this research calculates the 'soy adjusters' based solely on public sources, mainly annual reports. This approach is unlikely to reflect the exact allocation of finance raised by each company, which are not often publicly available. Improvements could be made by acquiring precise information directly from sample companies through engagement or field visits. As the scope and quality of disclosures vary significantly between companies, the calculation of adjusters lacks consistency and accuracy. Further studies could improve precision through collaboration with financial institutions involved in the soy supply chain for higher-quality and more complete datasets. They could also use additional sources, including visiting or contacting sample companies.

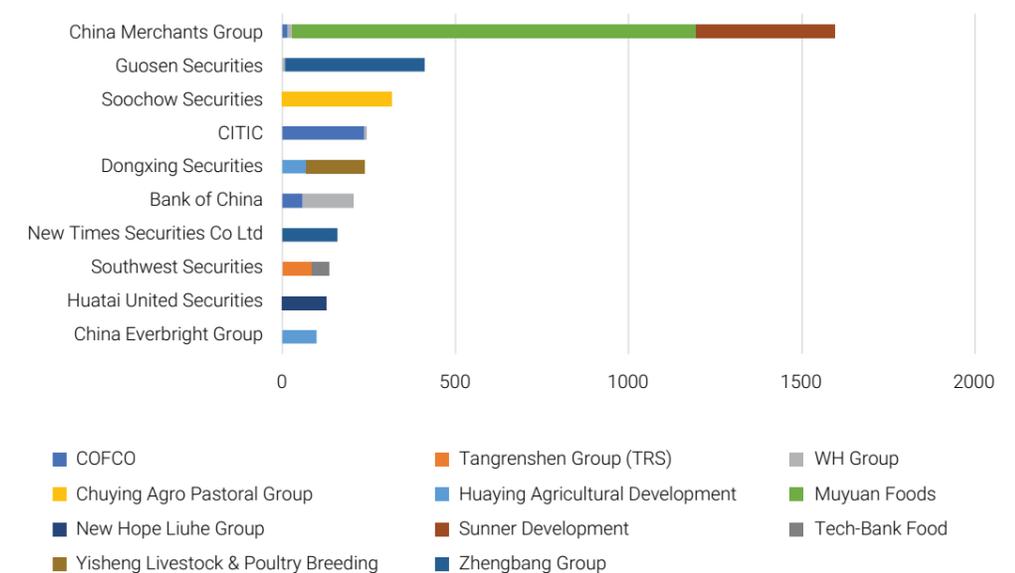
Fourth, this research estimates exposure to Brazilian soy and associated deforestation risks across sectors using the proportion of Brazilian soy sourced from high deforestation areas in Brazil that is utilized across sector. However, the exposure is also determined by the extent to which a company's revenue is dependent on imported soy. This implies that distribution cannot reflect the exact exposure to imported soy and associated deforestation risks. In fact, the ratio of soy used by breeding companies can vary across companies and sectors. However, this information is currently not publicly available and extensive corporate-level information will be needed for more precise analysis. In addition, this research assumes equal sensitivity of upstream and midstream companies in response to deforestation. However, for example, a pig breeding company would be much less sensitive than a crushing company to disruptions in soy supply as soy is a substitutable and adjustable feed input for the pig breeding industry; the crushing company would face more significant fluctuations in its gross margin from such disruption. Further studies are needed to investigate the various dependencies and sensitivities across sectors and how operational performance reacts to changes in soy supply for each sector.

Figure A1 Top 10 bond underwriters by issuing company (2013-17 US\$ mln)



Source: multiple sources, please see Appendix I Research Scope and Methodologies

Figure A2 Top 10 share underwriters by issuing company (2013-17 US\$mln)



Source: multiple sources, please see Appendix I Research Scope and Methodologies

APPENDIX III: TOP 20 INVESTORS

Table A2 Top 20 Investors (31 December 2017, US\$ mln)

	Top Chinese Shareholders	Sum of adjusted shareholding value (in mln US\$)
1	Bosera Asset Management	226.76
2	Central Huijin Asset Management	117.47
3	China Southern Asset Management (CSAM)	76.54
4	E Fund Management	74.88
5	Lion Fund Management	74.30
6	Industrial and Commercial Bank of China	64.90
7	Lucion Group	56.38
8	Yinhua Fund Management	55.63
9	China Orient Asset Management	54.36
10	Ping An Insurance Group	47.57
11	National Social Security Fund	45.98
12	China Fortune International Trust	38.06
13	China AMC	35.86
14	China Merchants Group	34.39
15	China Everbright Group	33.59
16	China Europe International Group	26.50
17	Fullgoal Fund Management	25.33
18	China Pacific Insurance Group	24.41
19	Caitong Securities	24.38
20	Beixin Ruifeng Fund Management	23.79

Source: multiple sources, please see Appendix I Research Scope and Methodologies

APPENDIX IV: QUALITATIVE RELATIONSHIPS

Table A3 Qualitative relationships between 2013 and 2017

Group	Investor parent	Year	Source
Huaying Agricultural Development	Agricultural Bank of China	2015	1
	Bank of China	2016	2
	Industrial and Commercial Bank of China	2014	3
	Ping An Insurance Group	2015	4
	Rabobank	2016	5
New Hope Liuhe Group	China Minsheng Banking	n/a	6
Sinograin	Agricultural Development Bank of China	n/a	7
Yurun Group	Bank of Nanjing	2014	8
	China Guangfa Bank	2014	9
Zhengbang Group	China Construction Bank	2012	10
	CITIC	2016	11
	China Development Bank	2018	12

Source:

- Huaying Agricultural Development (2015, February 7), "金融单位看好华英发展前景", online: <http://www.hua-ying.com/article/detail/id/1668.htm>, viewed in December 2018.
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APPENDIX V: CDP RESPONSES

	F1.2 % of revenue dependent on commodity in the reporting year	F2.1 Deforestation risk assessment procedure	F3.1/ F4.1 Deforestation risk & opportunity identification	F6.1 System to track and monitor origin of raw materials	CC1.1 The highest level of direct responsibility for climate change	CC3 emission reduction or renewable energy consumption or production	CC9/CC10/CC14.1 Scope 1 emission breakdown Scope 2 emission breakdown Scope 3 emissions	CC14.4 Engage with any elements of the value chain on GHG emissions and climate change strategies	Pollution emission accounting and management	Water consumption	Disclosure status
ADM Palm oil and soy	Not disclosed and not explained	Integrated into a comprehensive, company-wide risk assessment process	Operational risks driven by changes in physical parameters Risks driven by changes in regulation; Reputational risks Reputational gain	Yes	Board or individual/ subset of the Board or other committee appointed by the Board	Yes, Scope1, Scope 2 emission reduction target (intensity targets)	Scope 1, Scope 2 and Scope 3	Yes, suppliers, customers and other partners in the value chain	Yes	Yes	Disclosed to CDP 2017 Forest Questionnaire Score:C (Soy) 2017 Climate change questionnaire Score:C Individual Sustainability Report
Cargill Palm oil and soy	Not disclosed, Cargill considers this information proprietary.	Undertaken independently of other risk assessments	Risks driven by changes in regulation Reputational risks Driving demand for sustainable materials	Yes	Senior Manager/ Officer	Yes, Scope1, Scope 2 emission reduction target (intensity targets)	Scope 1, Scope 2 and Scope 3	Yes, suppliers, customers	Yes	Water efficiency only	Disclosed to CDP 2017 Forest Questionnaire Score:C (Soy) 2017 Climate change questionnaire score: B-
Bunge	Not disclosed because soy represents a major portion of commercial activity and commercial information is confidential	Integrated into a comprehensive, company-wide risk assessment process	Operational risks driven by changes in physical parameters; Reputational risks Increased shareholder value; Increased brand value	Yes	Board or individual/ subset of the Board or other committee appointed by the Board	Yes, scope 1+2 (intensity target)	Scope 1, Scope 2 and Scope 3	Yes, suppliers, customers	Yes	Yes	Disclosed to CDP 2017 Forest Questionnaire Score: C (Soy) 2017 Climate change questionnaire score: C Individual sustainability report
Yihai-Kerry (Wilmar International*) Palm oil only	Yes, based on segment earnings	Integrated into a comprehensive, company-wide risk assessment process	Operational risks driven by changes in physical parameters; Risks driven by changes in regulation; Reputational risks Increased brand value; increased shareholder value; staff retention/ satisfaction/ New market or product/ service opportunities/ increased security of supply/ increased efficiency and transparency; increasing capacity of sustainable commodity markets	Yes	Board or individual/ subset of the Board or other committee appointed by the Board	Yes, Scope 1 emission reduction target (absolute targets)	Scope 1. Scope 2 (Scope 3 not evaluated but explained)	Yes, suppliers, customers and other partners in the value chain	Yes	Yes	Wilmar international disclosed to CDP, 2017 Forest Questionnaire Score: B (palm oil only) 2017 Climate change questionnaire score: C Individual sustainability report
CP Group* Palm oil, soy and timber	Yes, revenue -based approximation	Undertaken independently of other risk assessments	Operational risks driven by changes in physical parameters; Reputational risks Increased brand value; new market or product/service opportunities; increased security of supply; increased transparency	Yes	Board or individual/ subset of the Board or other committee appointed by the Board	Yes, scope1, scope 2(intensity and absolute targets)	Scope 1. Scope 2 Scope 3	Yes, suppliers, customers and other partners in the value chain	Yes	Yes	Disclosed to CDP, 2017 Forest Questionnaire Score: B (Soy) 2017 Climate change questionnaire score: B Individual sustainability report
WH Group											Disclosed to CDP 2017 Forest Questionnaire-non-public 2017 Climate change questionnaire – non-public Individual sustainability report
COFCO (China Ari-industrial Holdings, COFCO International)	No	Deforestation risks are assessed	No	No	Board or individual/ subset of the Board or other committee appointed by the Board	Yes, Scope 1(absolute target)	Scope 1	No	Yes	Yes	Disclosed to CDP, 2017 Climate change questionnaire score: D- Individual sustainability report
Tyson China (Tyson Inc.) Cattle Products and soy	Yes, segment sales and revenue -based approximation	Deforestation risks are not assessed	Operational risks driven by changes in physical parameters; Reputational risks Opportunities have not evaluated	Yes	Senior Manager/ Officer	No	Scope 1. Scope 2 Scope 3 emissions not evaluated but explained	Yes, suppliers, customers	Yes	Yes	Disclosed to CDP, 2017 Forest Questionnaire Score: B (Soy) 2017 Climate change questionnaire score: C Individual sustainability report

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This report was supported by:

